THE ANALYSIS OF HIGHER-ORDER THINKING SKILLS (HOTS) BASED ON REVISED BLOOM'S TAXONOMY IN ENGLISH EXAMINATION TEST ITEMS USED IN SENIOR HIGH SCHOOL IN LAMPUNG TENGAH

A Thesis

Submitted in Partial Fulfillment of the Requirements for the Bachelor Degree

By

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ABSTRACT

Today, humans must think critically to face all challenges. In order to improve Indonesia's PISA survey results, the government developed the 2013 curriculum, which emphasizes critical and creative thinking. Thus, this study aims to determine the proportion of higher-order thinking skills and HOTS characteristics reflected in high school English test questions.

This study used a descriptive design with qualitative methods to analyze, describe, interpret data, and recognize the proportions and characteristics of HOTS-based test items in the mid-term and final exams for English subjects at the 10^{th} and 11^{th} grade levels used at MAN 1 Lampung Tengah in the second semester of the 2021–2022 academic year. The research data was in the form of midterm and final semester English exams for grades 10^{th} and 11^{th} which were collected from an English teacher at MAN 1 Lampung Tengah in the form of a Google Form link which the researcher could access independently to record these questions for analysis.

The current research has found that the HOTS composition at the cognitive level in the mid-term English exam for grade 10^{th} in the second semester consists of 6 items with a percentage of 20%, which can be categorized as "very low," while for the mid-term grade 11^{th} in the second semester consists of 14 item questions with a percentage of 46.67%, which were categorized as "enough," for the final Exam 10 class in the second semester, 5 items were found with a percentage of 12.50%, which was categorized as "very low", and for the final exam 11 in the second semester, 13 items with a percentage of 32.50%, which can be considered "low." The results of HOTS-based questions with questions about critical thinking skills are more common, with a percentage of 86.84%. This is followed by HOTS questions that help develop creative thinking skills, with a percentage of 10.52%, and questions that help develop problem-solving skills, with a percentage of 2.63%. Therefore, it is recommended for teachers to use the revised Bloom's taxonomy theory as a reference for assessing students' knowledge so that it is easier to compose good test questions.

Keywords: Characteristics of HOTS, Content Analysis, Evaluation, HOTS, Test

FREE PLAGIARISM LETTER

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MOTTO

إِنَّ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ وَاخْتِلَافِ اللَّيْلِ وَالنَّهَارِ لَآيَاتٍ لِأُولِي الْأَلْبَابِ .الَّذِينَ يَذْكُرُونَ اللَّهَ قِيَامًا وَقُعُودًا وَعَلَىٰ جُنُوبِهِمْ وَيَتَفَكَّرُونَ فِي خَلْقِ السَّمَاوَاتِ وَالْأَرْضِ رَبَّنَا مَا خَلَقْتَ هَٰذَا بَاطِلًا سُبْحَانَكَ فَقِنَا عَذَابَ النَّارِ

Indeed, in the creation of the heavens and the earth and the alternation of the night and the day are signs for those of understanding (190).Who remember Allah while standing or sitting or [lying] on their sides and give thought to the creation of the heavens and the earth, [saying], "Our Lord, You did not create this aimlessly; exalted are You [above such a thing]; then protect us from the punishment of the Fire (191). (Q.S. Al-Imran Ayat 190-191). [1]

[1] Kementerian Agama Republik Indonesia Al-Quran Tajwid dan Terjemahnya, Mushaf Al-Qur'an Tajwid dan Terjemah, Yayasan Penyelenggara Penerjemah Al-Qur'an, Lajnah Pentashihan Mushaf Al-Qur'an. (PENERBIT ABYAN, Banjarsari: Solo, 2014) p. 75

DEDICATION

All gratitude and thankfulness to Allah SWT, who has blessed me with the ability to complete my thesis. This thesis is dedicated from the bottom of my heart to those who never stop supporting and praying for me, including:

1. My beloved parents, Mr. Medi Akhmad Maulidi and Mrs. Hartini, who have given unconditional love and endless support, thank you for always supporting and motivating me so as not to give up, not only for the completion of my studies but also for the success of my life under any circumstances. Therefore, this thesis is absolutely dedicated to those of you who I love the most in this life.
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CURRICULUM VITAE

The researcher's full name is Kania Sausan and she is often called Kania. She was born in Bengkulu on April 30, 2000, the first child of a married couple, Mr. Medi Akhmad Maulidi and Mrs. Hartini. She has one younger sister named Naufal Khalista.

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Bandar Lampung, 23 December 2022
The Writer

Kania Sausan
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CHAPTER I
INTRODUCTION

In this chapter explain about Title Confirmation, Background of the Problem, Focus and Sub-focus of the Research, Problem Formulation, Objective of the Research, Significance of the Research, Relevant Research, Research Methodology and Systematic Discussion.

A. Title Confirmation

This thesis titled **"The Analysis of Higher Order Thinking Skills (HOTS) Based on Revised Bloom's Taxonomy in English Examination Test Items Used in Senior High School in Lampung Tengah"**, which discussed the analysis of the values of critical thinking skills, or what is known as the Higher-Order Thinking Skills (HOTS), on senior high school test items focused on English subjects.

In the 21st century, everyone must be able to think critically when receiving or giving information. In response to this issue, the Indonesian government, through the Ministry of Education and Culture, developed a K–13 or 2013 curriculum that encourages Higher Order Thinking Skills (HOTS) in the learning process, especially in assessment, to meet the need for critical and creative thinking skills in this era of globalization. The purpose of the 2013 curriculum is intended for students to prioritize critical thinking skills in all fields so that they can transfer knowledge and solve problems they face in everyday life with practical and innovative solutions. If so, then in the field of assessment of learning outcomes, teachers are required to compile and develop questions based on critical thinking skills (HOTS).

Therefore, the purpose of this study is to find out whether the HOTS-based exam questions were still applied and to find out what proportion, distribution and also the characteristic of HOTS-oriented exam questions were made by the teacher. To emphasize the title of this thesis, it was briefly explained the keywords in this thesis. Here are the keywords used:

1. **Analysis**

   Sugiono stated that analysis is the process of looking for patterns or ways of thinking by systematically testing

something to find its parts, their relationships with each other, and how they fit into the whole.[1] Therefore, it can be defined as an activity that includes considering the way to describe or solve a problem in detail. In general, analysis is an activity that consists of a series of activities such as parsing, distinguishing, and sorting things to be regrouped according to certain criteria, and then looking for the relationship and interpreting the meaning.

2. **HOTS**

   HOTS (Higher-Order Thinking Skills) are skills to explore questions about knowledge that do not have definite answers and require a person to transfer knowledge, solve problems, make conclusions, categorize, analyze, and build relationships to find solutions by involving the activities in real life. HOTS are 3 cognitive levels of Revised Bloom's Taxonomy; those are analysis, evaluation, and creation. These abilities are critical, especially for learners, who must practice thinking critically, logically, and creatively in order to generate concepts in complex problems.[2]

3. **Revised Bloom's Taxonomy**

   The Revised Bloom's Taxonomy is a classification of levels that educators can use to regulate the process and targets of student learning (otherwise known as learning objectives). There are 6 levels, namely: remembering, understanding, applying, analyzing, evaluating, and creating. Revised Bloom's Taxonomy aims to make it easier for teachers to classify what students should learn at a certain time.[3]

4. **Test**

   A test is a series of questions designed to measure a person's abilities or disclose particular characteristics. Essay, objective,

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[1] Audina Dewi Irmayanti, *"An Analysis of Higher Order Thinking Skill (HOTS) in English National Examination Question at Junior High School in Indonesia,",* (Thesis, Pekanbaru: State Islamic University of Sultan Syarif Kasim Riau, 2022), p.10.

[2] *Ibid.*, p. 10.

[3] Zulafa Hayati Fauziyah, *"The Analysis of HOTS in English Test Items Used in Junior High Schools during the COVID-19 Pandemic: an Indonesian Context,",* (Thesis, Bandung: UIN Sunan Gunung Djati, 2021), p. 6–7.

multiple-choice, matchmaking, and short-answer examinations are additional types. Multiple-choice tests feature already-given answers, and the test-taker must pick the proper one from a list.[4]

B. Background of the Problem

Time keeps on moving until it comes to the 21st century now. Therefore, education turns into a challenge since education itself cannot be controlled customarily. In the 21st century, globalization unavoidably adds to the fast change of human existence in all fields. One of those fields is school education.[5]

According to Lewis and Smith, teaching HOTS to students is considered an essential part of education around the world. Hence, to be able to face civilization in this millennial era, everyone, especially students and educators, must have the ability to think critically. As stated by Brookhart, HOTS are needed by an individual to meet the challenges of the 21st century. Ganapathy and Kaur claimed that HOTS is an important skill for making people who are innovative and creative.[6] So that they can face global economic developments, increasingly sophisticated technological growth, and a fast-paced world.

PISA (The Program for International Student Assessment) is a program initiated by countries that are members of the OECD (Organization for Economic Cooperation and Development). PISA is an assessment process that measures reading, math, and science for 15

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[4] Siti Fatimah and Triesninda Pahlevi, "Pengembangan Instrumen Penilaian Berbasis HOTS (Higher Order Thinking Skills) Pada Kompetensi Dasar Menerapkan Sistem Penyimpanan Arsip Sistem Abjad, Kronologis, Geografis, Nomor, dan Subjek di Jurusan OTKP SMKN 1 Bojonegoro," *Jurnal Pendidikan Administrasi Perkantoran (JPAP)* Vol. 8, No. 2, (2020): p. 320.

[5] Walida Wahid Fitriani, "The Realization of HOTS on Summative Test Items Designed by English Teacher Group Discussion," *English Focus,* Vol. 2, No. 2, (2019): p. 1.

[6] Tomy Kartika Putra and Debiga Fikky Abdullah, "Higher-Order Thinking Skill (HOTS) Questions in English National Examination in Indonesia," *Jurnal Bahasa Lingua Scientia* Vol. 11, No. 1 (June 24, 2019): p. 179, https://doi.org/10.21274/Ls.2019.11.1.145-160.

year old students every three years.[7] The results of the PISA study, conducted six times from 2000-2015, stated that Indonesia was always listed as one of the countries that scored below the average score of all OECD study participating countries. In the 2018 PISA survey, Indonesian students were placed in the lowest rank and the results were significantly lower than in 2015. In the reading ability category, Indonesia ranked 74th, down from 64th, with an average score of 371.[8] According to the Ministry of Education and Culture of Indonesia, it might happen because Indonesian students have a poor ability to (1) understand complicated information; (2) understand the theory; analyze, and solve problems. (3) use tools, follow procedures, and troubleshoot problems (4) carry out an investigation.[9]

Based on the results of the PISA, the Indonesian Ministry of Education and Culture seeks to improve the quality of education and catch up with the ranking of Indonesian students at the international level. One of which is by implementing a curriculum oriented to the development of critical thinking skills, namely the 2013 curriculum.

The 2013 curriculum is executed with the intention of teaching Indonesians to live as individuals and citizens who are loyal, productive, creative, inventive, and affective, and who are able to contribute to the life of society, country, and global civilization.[10] Since the 2013/2014 academic year, the Indonesian Curriculum 2013 has been approved by the government and is being implemented gradually at all levels of schooling across Indonesia. The program prepares students of all ages to face globalization. The government

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[7] Tahsin Fırat and İlhan Koyuncu, "Investigating Reading Literacy in PISA 2018 Assessment," *International Electronic Journal of Elementary Education* Vol. 13, No. 2 (January 1, 2021): p. 263-264, https://doi.org/10.26822/Iejee.2021.189.

[8] Gita Realita Chintia, Machdalena Vianty, and Ida Rosmalina, "An Investigation Into Students' PISA Reading Literacy Performance and Reading Engagement," *The Journal of English Literacy Education,* Volume 5, Number 2, (Nov 2018), p. 120.

[9] Putra and Abdullah, *Loc. Cit.,* p. 179.

[10] Mahdiansyah et al., *Penilaian Kependidikan: Sistem Penilaian, Hasil Belajar dan Kemampuan Guru Melaksanakan Penilaian Berdasarkan Kurikulum 2013*, Jakarta: Pusat Penelitian Kebijakan Pendidikan dan Kebudayaan, Balitbang, Kemendikbud, (2017), p. 2.

developed a curriculum in 2013 that enhances a student's capacity for seriousness in the twenty-first century.[11]

The ability to conduct an assessment of learning outcomes, which is one of the learning evaluation activities, is one of the pedagogical competencies that must be possessed by the teachers. The government of Indonesia urges teachers to empower students to fortify their critical thinking skills, which includes analyzing, evaluating, and creating, which is normally demonstrated as HOTS (Higher-Order Thinking Skills) listed in the curriculum 2013. HOTS may thusly be depicted as abilities for analyzing, evaluating, and creating that incorporate critical thinking, correspondence, cooperation, and self-development.[12]

Today, a person is required to be able to think critically in order to solve all problems logically and practically in order to keep abreast of the times. In this case, many interpret the meaning of "critical thinking". Critical thinking is thinking that focuses on decisions that must be made and that makes sense as stated by Robert Ennis in Fisher.[13] Critical thinking skills are moved by the teachers and should be educated to students in schools. This is firmly connected with the necessities of students in self-advancement, particularly character improvement.[14] HOTS are connected with the capacity to complete problems, critical thinking, and innovative reasoning. So, the Higher-Order Thinking Skills (HOTS) are critical in instructing and learning.

In accordance with Bloom's Taxonomy, the government enacted Regulation of Ministry of Education Number 22 of 2016 on the Standard Process of Elementary and Secondary Education. It is

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[11] Nanang Narwianta, Dwi Anggani Linggar Bharati, and Dwi Rukmini, "The Evaluation of Higher Order Thinking Skills in English School Nationally Standardized Examination at State Senior High School 6 Semarang," *English Education Journal (EEJ), Universitas Negeri Semarang*, Volume 9, Nomor 3 (2019), p. 317.

[12] Junitri Dian Syahdanis, Dedi Sofyan, and Wisma Yunita, "Analysis of HOTS in English Teacher-Made Test," *JURNAL BASIS*, Vol. 8, No. 2 (October 23, 2021): p. 125, https://doi.org/10.33884/basisupb.v8i2.4479.

[13] Clarry Sada, "Exploring Teaching Learning Process in Developing Higher Order Thinking Skill (HOTS) to Higher Secondary School (SMA) Students in Pontianak," *JETL (Journal of Education, Teaching and Learning)* Vol. 4, No. 1 (March 28, 2019): p. 229, https://doi.org/10.26737/jetl.v4i1.1020.

[14] Fauziyah, *Op. Cit*., p. 1.

explicitly stated that learning outcomes in the domain of knowledge follow Bloom's Taxonomy which has been revised by Lorin Anderson and David Krathwohl. This study is limited to the revised Bloom's Taxonomy of cognitive domains of Anderson and Krathwohl. The word cognitive domain is often abbreviated as *C* which comes from the word *Cognitive.*[15] Starting from remembering-C1, understanding-C2, applying-C3 called Lower-Order Thinking Skills (LOTS). While analyzing-C4, evaluating-C5, creating-C6 is called Higher Order Thinking Skill (HOTS).[16]

English is one of the disciplines for which HOTS is included in the 2013 curriculum. One of the goals of the HOTS application is to prepare students to response to the English assessment questions. However, students may also create, evaluate, and explore, which is referred to as the HOTS classification. Students must use HOTS in all parts of their education, particularly while evaluating, taking tests, and doing assignments.[17]

The part of the changes in curriculum 2013 is the assessment. Assesment is carried out to ensure whether the learning system has been running positively or not. Assesment is described as getting applicable information approximately learners, the studying procedure, the content, and the learning consequences which is supposed for creating a judgment of the studying process, the learners, the curriculum, and the educational targets.[18] An assessment is a three-step process, according to Widoyoko. Measurement, test, and evaluation are all examples. Taking a test is a way to get data about how well students are learning. The act of putting a numerical value on anything in accordance with a predetermined set of criteria is known as measurement. An evaluation is a method of determining

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[15] Yohana Lusia Arie Suyati and Antonius Totok Priyadi, "Analisis Soal Tipe HOTS Dalam Soal Ujian Mata Pelajaran Bahasa Indonesia SMP Kabupaten Sanggau," *JPPK (Jurnal Pendidikan dan Pembelajaran Khatulistiwa)* Vol. 10, No. 9 (2021) p. 2.

[16] Putra and Abdullah, *Loc. Cit.*, p. 179.

[17] Fauziyah, *Op.Cit*., p. 2.

[18] Mustika Auliyana, *"Higher Order Thinking Skills Analysis of the English National Standardized School Examination the Case of SMP Negeri 36 Semarang in the Academic Year of 2018/2019,"* (Thesis, Semarang: Semarang State University, 2019), p. 1-2.

whether or not a student has met their educational goals. Assessment, on the other hand, is the act of reporting the outcome of measurement based on a set of criteria.[19]

According to the Minister of National Education number 23 in the year 2016 regarding Educational Assessment Standards, in article 1 number 2, it is stated that assessment is the process of collecting and processing information to measure the achievement of student learning outcomes.[20] The assessment aims to provide feedback to students and teachers. It affects learners' motivation and mastering, the reason being that the teacher teaches their mastering subject. In carrying out the evaluation, the instrument of the test needs to embody cognitive, affective, and psychomotor components.

In educating, one of the essential variables is an evaluation. Evaluation is a significant part of the instruction framework to decide the advancement and level of accomplishment of learning results. It is done to ensure whether or not the learning system has been running admirably.[21] The ability that is mandatory for teachers is to create and develop evaluation tools from the end of student learning outcomes. A tool is needed in order for the evaluation to be carried out. The tools used in the evaluation activities are referred to as instruments. An evaluation instrument is a tool that can be used to determine the ability of students to understand the lessons delivered by the teacher. One of the evaluation instruments commonly used to determine student learning outcomes is the type of test instrument.[22] According to Brown, test is a way to measure a person's ability, knowledge or performance in a certain domain.[23] Based on Redhana and Lilisari in

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[19] Nihayatus Sa'adah, "The Analysis of English Mid-Term Test Items Based on the Criteria of a Good Test at the First Semester of the Eighth Grade Students of MTS Mathalibul Huda Mlonggo in the Academic Year of 2016/2017" *Jurnal Edulingua*, Vol. 4, No. 1 (2017): p. 46.

[20] "Peraturan Menteri Pendidikan dan Kebudayaan Republik Indonesia Nomor 23 Tahun 2016 Tentang Standar Penilaian Pendidikan," *Jakarta*, 2016, p. 2.

[21] Narwianta, Bharati, and Rukmini, *Loc. Cit.*, p. 317.

[22] Tari Wirandani and Ayu Cendra Kasih, "Analisis Butir Soal HOTS (High Order Thinking Skill) Pada Soal Ujian Sekolah Kelas XII Mata Pelajaran Bahasa Indonesia di SMK An-Nahl" *Parole (Jurnal Pendidikan Bahasa dan Sastra Indonesia)*, Vol. 2 No. 4 (Juli 2019): p. 485–486.

[23] Sa'adah, *Loc. Cit.*, p. 46.

Amalia and Susilaningsih said that a well-designed assessment according to the level of thinking ability can improve students' thinking power, especially critical thinking.[24]

One way to encourage the quality of students' English proficiency is a test that becomes part of the teaching-learning purpose to measure the potential of the students and recognize their progress in a teaching-learning manner. A test is designed for numerous functions. It is beneficial for the teacher doing the check and for the students who are administering the test. For the students, it could help them learn the language by enabling them to study harder and to measure their potential. The test is also useful for the teacher. The teacher will realize how far the students grasp the lesson and the difficulties they address. The test can help the teacher realize the effectiveness of their teaching and test the learning process. It means that a test makes it easier for the teacher to diagnose students' problems and improve their teaching process. The test designed by the teacher also must reflect the curriculum used. Teachers may be able to tell how useful the object is by how they make the questions about it.[25]

There are many tests given by the teacher. There are daily assignments, weekly assignments, mid-term tests, final semester tests, and national tests. Mid-term test is an examination held in the middle of a semester, before the semester examination. Conducted three months after students receive quarterly material in one semester. While the final exams are conducted after six months of the learning period. In general, the mid-term and final semester tests carried out in many schools in Indonesia are carried out by subject teachers and from the regional education office. But the important thing is to analyze the items questions to see the quality of each questions, especially the HOTS analysis. C. McCowan stated that item analysis is important because the results can enchance item and test quality. He further explained that statistics and expert judgment are used in item analysis to evaluate tests based on the quality of individual items, the entire set of items, and the relationship of each item to other items. In addition, Thompson and Levitov said that item analysis examines the

[24] Wirandani and Kasih, *Loc. Cit.*, p. 485–486.
[25] Auliyana, *Loc. Cit.*, p. 2.

performance of individual items both in terms of several external and internal relationship criteria.[26]

Ideally, teachers are required to prepare HOTS-based exam questions as a tool to assess students' abilities. This is stated in the 2013 curriculum, which is implemented by all schools from elementary to high school levels. The 2013 curriculum is designed with various improvements. First, on the standard of content, namely reducing irrelevant material and deepening relevant material, is enriched for critical and analytical thinking in accordance with international standards. Second, on assessment standards, by gradually adapting international standard assessment models. Assessment of learning outcomes is expected to help students improve their higher order thinking skills (HOTS), because higher order thinking skills can encourage students to think broadly and deeply about the subject matter.[27]

The 2013 curriculum is more directed at equipping students with a number of competencies needed to face the 21st century. Some of the most important skills needed in the 21st century, called 4C, they are: 1) *critical thinking*, which teaches students to solve real-world problems using critical and rational thinking; 2) *creativity*, which teaches students to be creative in finding different solutions, designing new strategies, or finding ways that have not been used before; 3) *collaboration*, which teaches students to be able to work in teams, be tolerant, and understand differences; and 4) *communication*, which teaches students to be able to work well with.[28]

An analysis of the questions is required to determine the quality of the questions on the written test. The criteria that can be used in the analysis of questions are the criteria for Higher Order Thinking Skills (HOTS) questions. Sani stated that the main criteria for the HOTS questions were contextual, included aspects of critical thinking, and presented a stimulus. In addition, Martono said that education that is

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[26] Sa'adah, *Op. Cit.,* p. 46-47.

[27] Purwadi Sutanto, et al., *Modul Penyusunan Soal Keterampilan Berpikir Tingkat Tinggi (Higher Order Thinking Skills) BAHASA INGGRIS* (Direktorat Jenderal Pendidikan Dasar dan Menengah Kementerian Pendidikan dan Kebudayaan, 2019), p. 1.

[28] *Ibid.,* p. 1.

able to develop the potential of students so that they can find solutions to problems in everyday life will become education that supports development in the future. HOTS questions are needed to measure the ability of students to master critical thinking to solve problems they encounter in everyday life.[29]

According to Barnett and Francis, as cited by Kusuma et al., higher-order thinking questions can encourage students to think deeply about the subject, allowing the higher-order thinking instrument to provide stimulus as an assessment for learning in order to improve students' higher-order thinking.[30] In fact, an analysis of the HOTS on the test items is important. In addition to showing the professionalism of the teacher, the results of the analysis of questions are needed as a basis for making decisions about the follow-up to improve the quality of learning.[31]

In addition to the need to measure and evaluate a student's competence using an exam, it is necessary to examine the test to determine the quality of each question. According to Ahiri and Hafid, the goal of the test item analysis is to increase the test's correctness by changing or deleting incorrect items, as well as to evaluate the methodological specifics and the student's comprehension of the studied information.[32]

Seeing the importance of HOTS on test items, English educators are required to be able to understand, master, and consider in preparing HOTS-based test items. Unfortunately, the ability of most English teachers to compile HOTS-based questions is still low and it can be concluded that teacher do not consider and do not categorize HOTS-based test items.

In assessing learning outcomes, teachers should arrange HOTS-oriented questions proportionally. Sudjana revealed that the ideal proportion of easy questions (C1, C2) is 30%, moderate questions (C3, C4) are 40%, and difficult questions (C5, C6) are 30% in learning assessments. Meanwhile, Jones et al. listed the proportions,

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[29] Suyati and Priyadi, *Loc. Cit.*, p. 2.
[30] Fauziyah, *Op. Cit.*, p. 6.
[31] Suyati and Priyadi, *Loc. Cit.*, p. 2.
[32] Fauziyah, *Op. Cit.*, p. 6.

respectively, of easy questions, medium questions, and difficult questions as 35%, 35%, and 30%.[33]

According to Helmawati, the HOTS-based learning assessment criteria using Bloom's taxonomy revised by Anderson include C1-C6 classified into three categories of thinking skills, namely 1) lower-order thinking skills (LOTS) with details consisting of C1 (remembering). 2) middle-order thinking skills (MOTS), which include C2 (understanding) and C3 (applying), and 3) higher-order thinking skills (HOTS), which include C4 (analyzing), C5 (evaluating), and C6 (creating). Then, for the percentage of learning assessments on cognitive aspects that should be distributed so that the assessment of learning outcomes is said to be proportional according to Helmawati, it is C1 as much as 5%, C2 as much as 10%, C3 as much as 45%, C4 as much as 25%, C5 as much as 10%, and C6 as much as 5%.[34]

The following briefly described the results of the preliminary research. This data is in the form of a softfile of a package of English exam questions sent via WhatsApp and obtained from the teacher's documentation when conducting preliminary research on March 11, 2022. The results of the preliminary research on the analysis of 40 questions, conducted by the researcher on the final semester exam questions (which are now called the *Penilaian Akhir Tahun*/PAT) in English subjects for class X for the 2020/2021 academic year used at MAN 1 Lampung Tengah, showed that 22.5% of the questions contain HOTS and 77.5% of the questions contain LOTS. Based on these results, it can be concluded that the number of HOTS questions is low and does not meet the requirements of the 2013 Curriculum Assessment. This preliminary research is intended to find out the existing problems. The results of this preliminary research are used as the basis for analyzing the HOTS on the test items for the mid-semester and final-semester exams in the following academic year.

There are also several previous research to support this research. The first research was conducted by Auliyana in her thesis entitled

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[33] Suyati and Priyadi, *Op. Cit.*, p. 7.

[34] Gito Supriadi, *Pengembangan Instrumen Penilaian Berbasis Higher Order Thinking Skill (HOTS)* (Aswaja Pressindo, 2020), p. 35.

"Higher Order Thinking Skills Analysis of the English National Standardized School Examination (The Case of SMP Negeri 36 Semarang in the Academic Year of 2018/2019)" which aims to analyze HOTS content in the English National Examination (ENE) at junior high school in Semarang in the 2018/2019 school year. The findings showed that LOTS was more prominent than HOTS.

The second previous research was conducted by Ilham et al. in their jounal entitled *"Analysis of Higher-Order Thinking Skills (HOTS) Items in Senior High School English National Examination 2019".* Which explained about English National Examination at the high school level, the results confirm that the HOTS items are quite good even though the distribution of cognitive competencies is still monotonous.

The third previous research conducted by Narwianta et al. entitled *"The Evaluation of Higher Order Thinking Skills in English School Nationally Standardized Examination at State Senior High School 6 Semarang".* This research describes the HOTS conclusions as reflected in the English National Examination conducted at senior high school. The results showed that HOTS was found in listening, reading, and writing questions. The result of HOTS meets the requirements of the BNSP which states that in the 2018/2019 academic year there are around 10-15% of HOTS questions.

The fourth similar study conducted by Putra and Abdullah in their journal entitled *"Higher-Order Thinking Skill (HOTS) Questions in English National Examination in Indonesia"*. This research is aimed to identify the use of HOTS-based questions and what particular skills appear in the HOTS category in the English National Examination. The fifth previous study written by Singh and Shaari entitled *"The Analysis of Higher-Order Thinking Skills in English Reading Comprehension Tests in Malaysia".* This study aimed to find out the use of HOTS items in certain English reading comprehension tests for standard 6 students in Malaysia.

The differences between this study and previous research are that in this study the researcher focused on analyzing the test items in the HOTS-based exam, considering that the HOTS-based questions that are tested on students are important. Then the researcher analyzed the test items in the mid-semester and final semester examination for

classes X and XI high school level at MAN 1 Lampung Tengah for the 2021–2022 academic year, where only a few previous studies examined HOTS-based questions compiled by the teacher. Therefore, the researcher intended to conduct a study entitled: **"The Analysis of Higher-Order Thinking Skills (HOTS) Based on Revised Bloom's Taxonomy in English Examination Test Items Used in Senior High School in Lampung Tengah".** The results of this study provide an overview of the descriptions and proportions of the mid-term and final-semester exam test items which are classified as HOTS-based questions.

C. Focus and Sub Focus of the Research

1. **Focus**

   In this study, the writer focused on analyzing the test items for the mid-term and final examination grades X and XI in the 2021/2022 academic year at the senior high school level of MAN 1 Lampung Tengah. So, those questions was analyzed primarily based on the Higher-Order Thinking Skills (HOTS) inside the cognitive area of the revised model of Bloom's Taxonomy.

2. **Sub-Focus**

   The sub-focus of this research was the cognitive aspects of the revised Bloom's taxonomy namely, HOTS (analyzing (C4), evaluating (C5), creating (C6)), and LOTS (remembering (C1), understanding (C2), and applying (C3)). HOTS-based question characteristics in terms of three characteristics, namely; critical thinking skills, creative thinking skills, and problem-solving skills were also analyzed by the researcher in this study.

D. Formulation of the Research.

The formulation of the problem in this study is as follows:

1. How many proportions and distribution on categorizing of HOTS-based questions on the test items of mid-term and final exams in the second semester for X and XI grades made by the teacher at MAN 1 Lampung Tengah in the academic year of 2021/2022?

2. How are HOTS-based questions implemented on the test items of mid-term and final exams in the second semester for X and XI grades made by the teacher at MAN 1 Lampung Tengah in the academic year of 2021/2022 in terms of three characteristics, namely; critical thinking skills, creative thinking skills, and problem-solving skills?

E. Objective of the Research

In objective of the research, the researcher wants to:

1. To know the proportions and distribution on categorizing of HOTS-based questions on the test items of mid-term and final exams in the second semester for X and XI grades made by the teacher at MAN 1 Lampung Tengah in the academic year of 2021/2022.
2. To know the HOTS-based questions implemented on the test items of mid-term and final exams in the second semester for X and XI grades made by the teacher at MAN 1 Lampung Tengah in the academic year of 2021/2022 in terms of three characteristics, namely: critical thinking skills, creative thinking skills, and problem-solving skills.

F. Significance of the Research

This research is expected to be useful for:

1. Theoretically

The benefit of this research for teachers and educators is that it serves as a reference and direction for making tests or exam questions containing HOTS in English subjects. Besides that, this research is useful for academics, students, or college students who are studying as a source of learning about HOTS. This thesis can also be used as a guide and reference for the author and some other researchers as teachers to make tests based on critical thinking skills in the future.

2. Practically

a. For Teachers

This study provided information about higher order thinking skills (HOTS) in the mid-term and final exams of english subjects, and english teachers are expected to design a test and implement it in their learning process.

b. For Students
This research is useful for sharpening critical thinking skills to solve problems in everyday life for students. And to train students to get used to dealing with HOTS-based questions.

c. For Researchers
This research provided new knowledge, experiences, and information about test items, how important HOTS are, and how mid-term and final exam test items and HOTS are related.

d. For Schools
This research can contribute in the form of research results which can later be used to improve the evaluation process each year.

G. Relevance Research

The researcher needs to investigate this subject matter as it was stimulated through previous research. The first previous research entitled *"Higher Order Thinking Skills Analysis of the English National Standardized School Examination (The Case of SMP Negeri 36 Semarang in the Academic Year of 2018/2019")* by Auliyana mentioned that the English national standardized school examination assesses higher-order thinking skills in the phrases of analyzing, evaluating, and creating and explains how the higher-order thinking skills are accomplished in the English national standardized school examination of SMP Negeri 36 Semarang in the academic year 2018/2019. To acquire the facts, the writer used two instruments. The first instrument depended on Bloom's Revised Taxonomy, which simply assessed the higher-order items. Any other instrument turned into analyzing the overall test items. The findings found that LOTS were more distinguished than HOTS.[35]

The second related study is entitled *"The Analysis of HOTS in English Test Items Used in Junior High Schools During the COVID-19 Pandemic: an Indonesian Context"* by Fauziyah. This study uses a descriptive design with a qualitative method and

[35] Auliyana, *Loc. Cit.*, p. vi

focuses on the HOTS-based test items percentage in the mid-term exam and final examination English exams at the 9th-grade level. The data is the mid-term and final examination English exams at the 9th-grade level that accumulated from the English teachers at SMPIT Imam Bukhari and SMP Al-Ma'soem. As a result, the maximum items appearing in the mid-term and final English exams are the LOTS, and the percentage of HOTS is lower than the LOTS.[36]

The third previous research written by Singh and Shaari is entitled *"The Analysis of Higher-Order Thinking Skills in English Reading Comprehension Tests in Malaysia"*. This study aims to discover the usage of HOTS items in selected English reading comprehension examinations for standard 6 students in Malaysia. These studies have been quantitatively analyzed using content material analysis based on the levels of cognitive indexing in Bloom's Taxonomy. Data analysis revealed that 80 reading comprehension items had been selected from numerous final exam papers dispensed in 8 specific states inside the country. The findings propose that most studying comprehension questions in the English examination papers need similar revisions as a way to collect the equal number of HOTS that have come to be a part of the new curriculum and national training insurance.[37]

The fourth previous study, entitled *"The Evaluation of Higher Order Thinking Skills in the English School Nationally Standardized Examination at State Senior High School 6 Semarang"*, was conducted by Narwianta et al. This study explained the conclusion of HOTS reflected in the English school nationally standardized examination at state senior high school 6 Semarang in the academic year of 2018/2019. The outcomes indicated that HOTS was found in listening, reading, and writing questions. The percentage of HOTS comprised 22,22% met the requirement from BNSP that said in the educational year 2018/2019 there are about 10-15% of HOTS test items.[38]

The fifth study conducted by Ilham et al., in their journal entitled *"Analysis of Higher-Order Thinking Skills (HOTS) Items in the Senior High School English National Examination 2019"*. This research aims to classify items that meet the ENE 2019 HOTS item metrics with particular dimensions of information kinds and

[36] Fauziyah, *Op. Cit.*, p. 1.

[37] Singh and Shaari, *Op. Cit.*, p. 1.

[38] Narwianta, Bharati, and Rukmini, *Op. Cit.*, p. 316.

cognitive process skill dimensions of HOTS objects. The outcome confirmed that there were enough HOTS items in ENE 2019. Out of 35 questions, 15 with a percentage of 42.86% were considered HOTS objects. The second finding turned into the dimension of cognitive skills in the extent of examining and creating. The second finding indicated that ENE 2019 already had a sufficient quantity of HOTS items, even though the distribution of the cognitive competencies remains monotonous.[39]

After reading and understanding the related research, the researcher found that compiling HOTS-based English test items remains a problem for test question makers. This motivates the researcher to conduct similar research by updating previous studies. The researcher focuses on analyzing the questions compiled by the teacher, namely at the mid-term and final semester examinations, and focuses more on HOTS, considering that HOTS is an important element in the exam questions. The researcher focused on the proportion and characteristics of HOTS question in the test items in the mid-term and final-semester examination grades X and XI used at MAN 1 Lampung Tengah for the 2021/2022 academic year because there was no research that discussed the analysis of test items at MAN 1 Lampung Tengah.

H. Research Methodology

This research discussed the research methodology in terms of how the researcher collects the data relating to this research. The detailed information is described below.

1. Research Method

Qualitative research is research that is used to examine the condition of natural objects where the researcher is the key instrument. And the results of qualitative research emphasize meaning rather than generalizations. According to Moleong, qualitative research is research that intends to understand phenomena that are experienced by research subjects holistically and utilizing description in the form of words and language, in a special context that is natural using various natural methods. In line with Moleong, Saryono said that

[39] Ilham, Jabu, and Korompot, *Op. Cit.*, p. 156.

qualitative research is research that is used to investigate, find, describe, and explain the quality or privilege of social influences that cannot be explained, measured, or described through a quantitative approach.[40]

According to Soegianto, the purpose of qualitative research is to explain a phenomenon as deeply as possible by collecting the deepest data, which shows the importance of the depth and detail of the data being studied. In qualitative research, the more in-depth, thorough, and unearthed the data obtained, the better the quality of the research can also be interpreted. Qualitative research prioritizes data depth, not data quantity.[41]

In qualitative research, it is known that there are two data analysis strategies, namely: 1) descriptive qualitative and 2) qualitative verification analysis. The two models are sometimes carried out separately or together. Based on the "content" of the data obtained, there are several qualitative data analysis techniques that are often applied by researchers. One of the data analysis techniques is content analysis.[42]

This research is conducted as descriptive qualitative research. Descriptive research is research that does not need to formulate hypotheses. The data that has been collected in the form of numbers is then calculated in the form of a percentage, which is intended to determine the status of something that is percentage and presented in the form of a percentage and then interpreted into qualitative sentences. The data is in the form of numbers just to make it easier to combine two or more variables. Then, after obtaining the final results, they re-qualified. This technique is called a "descriptive qualitative technique with percentages."

In this research, the researcher used descriptive qualitative research because the research data includes words in the document of google form, namely mid-term and final-

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[40] Nursapia Harahap, *PENELITIAN KUALITATIF*, Maret 2020 (Wal Ashri Publishing), p. 123.

[41] *Ibid.*, p. 125.

[42] *Ibid.*, p. 90.

semester examinations for X and XI grades used in MAN 1 Lampung Tengah. This data was analyzed and interpreted through the allocation of Higher Order Thinking Skills (HOTS) based on Bloom's Revised Taxonomy. And the results of the research were explained with descriptive sentences.

2. Research Design

The research design of this research used content analysis or document analysis. According to Weber, content analysis is a research method using a set of procedures to make valid inferences from texts.[43] Document analysis or content analysis research is research conducted systematically on records or documents as data sources. In other words, content or document analysis is intended to collect and analyze official documents whose validity and guarantee are both legal and policy documents as well as research results. Analysis can also be done on textbooks and papers, both theoretical and empirical. The analysis activity aims to know the meaning, position, and relationship between various concepts, policies, programs, activities, and events that exist or occur, in order to further find out the benefits, results, or impacts of these things.[44] This research analyzed the test items of the mid-term and final examinations for X and XI grades at the senior high school level that are used by MAN 1 Lampung Tengah as an official document.

3. Research Subject

Research subjects can be interpreted as research targets. This study places HOTS as targets in the English of test items on the mid-term and final examination grades X and XI in the 2021–2022 academic year at MAN 1 Lampung Tengah. The

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[43] Sidiq and Choiri, *"METODE PENELITIAN KUALITATIF DI BIDANG PENDIDIKAN,"* (CV. Nata Karya Ponorogo, 2019), p. 104.

[44] Hardani, et.al., *Metode Penelitian Kualitatif & Kuantitatif*, Cetakan I, Maret 2020 (CV. Pustaka Ilmu Group Yogyakarta), p. 72.

subject of this research is to find out the results of an analysis based primarily on the HOTS (C4, C5, and C6), even though the LOTS (C1, C2, and C3) were also analyzed at the cognitive level of the revised Bloom's taxonomy by Anderson and Krathwohl. In this study, the researcher also assessed HOTS-based question characteristics in terms of three characteristics: critical thinking abilities, creative thinking skills, and problem-solving skills.

4. Source of Data

There are two kinds of data sources that used by the researcher in this study. The data sources to obtained the results of the research analysis are:

a. Primary data is the type and source of research data obtained directly from the first source. The main sources for this study were the English test questions from the mid-term and final exam tests for grades X and XI at MAN 1 Lampung Tengah in the academic years 2021/2022.
b. Secondary data is data that obtained or collected by conducting research from existing sources. This data was obtained from the literature or previous research reports. Secondary data is an additional supporting source in the research process. Such as books, journals, e-books, and other references related to HOTS.

5. Population and Sample

a. Population

The population is the entire object under study, in the form of people, objects, events, values, and things that happen. According to Ary, the population is all members of a well-defined class of people, events, or objects. Based on Babbie, a population is a research element that lives together and theoretically becomes the target of research results.[45] So, the population is the whole object of research

[45] Sidiq and Choiri, *Op. Cit.*, p. 112.

with the same characteristics. The population of this study is the total questions number of English mid-term and final semester exams made by the teacher in one academic year, that is, the English mid-term and final semester exam bundles for classes X, and XI in the academic year 2021–2022. Details of the population are in the table below:

Table 1.1
Population of the Research

CLASS	TYPE OF TEST ITEMS	TOTAL ITEM QUESTIONS
X Class	PTS Ganjil	30
	PAS Ganjil	50
	PTS Genap	30
	PAT Genap	40
XI Class	PTS Ganjil	30
	PAS Ganjil	50
	PTS Genap	30
	PAT Genap	40
XII Class	PTS Ganjil	30
	PAS Ganjil	50
	Ujian Sekolah	
	Ujian Madrasah	
Total of Population		**380 Question Items**

Source: The population on English test items in the 2021–2022 academic year used at MAN 1 Lampung Tengah.

Based on the population described above, the population in this study consisted of 380 questions in the mid-term and final exams for English subjects in classes X and XI. As a result, the researcher restricts the sample that has been analyzed.

b. Sample

A sample is a part of the population to be investigated, or it can be said that the sample is a small population. Sampling is the method used to take samples and usually follows the technique or type of sampling used. A sampling technique is a way to determine the number of samples in accordance with the sample size that will be used as the actual data source, taking into account the characteristics and distribution of the population in order to obtain a representative sample.[46] The researcher used purposive sampling in this study. Based on Arikunto, purposive sampling is a sampling technique used by researchers if the researcher has certain considerations in taking the sample.[47] In line with that, Sugiyono said that purposive sampling is a technique of sampling data sources with certain considerations.[48]

In this case, the researcher used purposive sampling because of several considerations when collecting research data to be analyzed, namely: 1) All classes X and Xl completed the mid-term and final semester tests assigned by the teacher. 2) Except for class XII, which does not carry out the mid-term made by the teacher because the *Ujian Sekolah* and *Ujian Madrasah* exams have been held by the government. 3) In addition, based on suggestions from the English teacher in charge of class X, he can access and provide questions for the mid-semester and final-semester exams for grades X and Xl.

Thus, the sample in this study is the English test questions for classes X and XI used at MAN 1 Lampung Tengah for the academic year 2021–2022. According to Arikunto, there are two sample selection methods. First, if the population size is less than 100, the entire population

[46] Sidiq and Choiri, *Op. Cit.*, p. 113.

[47] Sidiq and Choiri, *Op. Cit.*, p. 114.

[48] Sugiyono, *METODE PENELITIAN KUANTITATIF, KUALITATIF DAN R & D* (ALFABETA, CV, 2013), p. 218–219.

can serve as a sample. Secondly, if the population exceeds 100, the researcher can select between 10-15% or 20-25% of the population.[49] According to Gay, Mills and Airasian regarding the descriptive research methods, a minimum of 10% of the population, for a relatively small population of at least 20%, while for correlation research a sample of 30 respondents is required.[50] Based on the theory above, the researcher took at least 20% of the samples analyzed from the population. So that the researchers used mid-term and final exam items for English subjects in the second semester, which, if calculated, would make the sample in this study more than 20% of the population.

The sample is the unit selected by the researcher to be studied. This sample unit is determined by the topic and research objectives. The purpose of this study was to find out the proportion and distribution of HOTS-based questions and the characteristics of HOTS questions in terms of the three characteristics in the mid-term and final exam questions for grades X and XI in the 2021–2022 academic year. Because the object being analyzed is a document in the form of exam questions that have been tested on students, the researcher chose exam questions from mid-term and final exams in the second semester of the 2021–2022 school year, on the grounds that these documents are the most recent.

So, the researcher took a portion of the population as a research sample that had been analyzed in the form of English exam questions in the mid-term and final exams in the second semester of the 2021–2022 academic year used at MAN 1 Lampung Tengah, with a total of 140 questions as a sample.

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[49] Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik*, (Jakarta: Rineka Cipta, 2006), p. 112.

[50] Idrus Alwi, "Kriteria Empirik dalam Menentukan Ukuran Sampel Pada Pengujian Hipotesis Statistika dan Analisis Butir," *Formatif: Jurnal Ilmiah Pendidikan MIPA* 2, no. 2 (August 5, 2015): 141, https://doi.org/10.30998/formatif.v2i2.95.

6. Data Collecting Technique

Qualitative data collection techniques are basically tentative because their use is determined by the context of the problem and the description of the data to be obtained. Therefore, in qualitative research the researcher is usually likened to a *bricoleur*. According to Denzin and Lincoln it means: *"The qualitative research as bricoleur uses the tools of historical or methodological trade, deploying whatever strategic, methods, or empirical materials as are at hand".*[51]

Data collection techniques in this study was used documentation techniques. Documentation is a data collection technique that is not directly related to the research subject. Documents studied can be in the form of official documents such as decision letters and instruction letters, or unofficial documents such as memorandums and personal letters that can provide supporting information about an event.[52]

Documentation studies involve gathering the documents and data needed to solve a research problem and then looking at them in detail to see how they support and add to the evidence of an event.[53]

Sugiyono stated that a document is a record of events that have passed in the form of writing, pictures, or monumental works of someone. According to GJ. Renier, in Fu'adz Al-Gharuty, explains the term "document" in three senses: first in a broad sense, which includes all sources (both written and oral), second in a narrow sense, which includes all written sources only, and third in a specific sense. That is, only official letters and state documents such as letters of agreement, laws, concessions, grants, and so on are included.[54]

The data that obtained from the English teacher at MAN 1 Lampung Tengah is in the form of google form link

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[51] Nursapia Harahap, *Op. Cit.*, p. 73.
[52] Sidiq and Choiri, *Op. Cit.*, p. 73.
[53] Sidiq and Choiri, *Op. Cit.*, p. 73–74.
[54] Sidiq and Choiri, *Op. Cit.*, p. 72.

documents for the mid-term and final-semester exams for grades X and XI for the 2021/2022 academic year. In total, there are eight bundles of questions to be analyzed, including mid-term and final-semester exams for class X as well as questions for mid-term and final-semester exams for class XI.

7. Research Instrument

The instrument of this research was the human instrument, namely the researcher herself and the analytical framework. Sugiyono said that, in qualitative research *"the researcher is the key instrument"*. So the researcher is a key instrument in qualitative research.[55] Researcher's knowledge, thoroughness, and criticality are indispensable for researcher in finding and digging up data that is appropriate to the research problems. Another research instrument is an analytical framework. The instrument in the form of an analytical framework in this study was prepared based on the theoretical basis of HOTS (Higher Order Thinking Skills) based on Anderson and Krathwohl. The researcher also used checklist tables and analysis card *(can be seen in the appendix)* as tools to help with the process of putting data into groups.

After filling out the categorization analysis sheet and finding the proportion of HOTS-based questions, then analyzing the criteria analysis sheet for the HOTS characteristics of critical thinking skills, creative thinking skills and problem solving skills on test items for mid-term and final semester exams for class X and XI. The following are the HOTS criteria for thinking skills, namely 1) Criteria for questions that are able to design critical thinking skills, 2) Criteria for questions that are able to design creative thinking skills, 3) Criteria for questions that are able to design problem solving abilities *(a table containing aspects and indicators of each HOTS characteristics can be seen in the appendix).* Then, the researcher analyzed the characteristics of the

[55] Sugiyono, *Op. Cit.*, p. 223.

HOTS-question using table analysis *(table can be seen in the appendix).*

8. Data Analysis

Qualitative data analysis techniques are carried out on data in the form of words and not numbers that can be collected through interviews, observations, or document digest. Without data analysis, the research conducted only obtains raw data whose validity is still in doubt. According to Miles and Huberman, the activities in data analysis are used in qualitative analysis, which consists of three stages, namely data condensation, data display, and conclusion drawing or verification.[56]

a. Data Condensation

Data condensation is a simplification process by sharpening and removing unnecessary things in the data, focusing on the most essential data, and throwing up the unnecessary ones. thus facilitating the process of drawing conclusions.[57] The activity is to analyzed the test items to find the HOTS questions in mid-term and final semester examinations used at MAN 1 Lampung Tengah in the academic year 2021/2022.

b. Data Display

A data display is a group of data that can be used to draw conclusions. A good form of presentation is very important to get a valid content analysis. The presentation of this data can be done in the form of tables, graphs, pie charts, pictograms, and the like. The presentation of the data of the HOTS analysis results in this study was in the form tables of narrative text, graph, or pie chart. The data interpreted analytically and critically.[58]

c. Drawing Conclusion or Verification

Drawing a conclusion is the last stage carried out by looking at the results of data condensation, which refers to the

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[56] Sugiyono, *Op. Cit.*, p. 246.

[57] M.B Miles and A.M Huberman, *Qualitative Data Analysis: A Method Sourcebook*, (California: Sage Publication, 2014), p. 8.

[58] *Ibid*., p. 11.

formulation of the problem and the goals to be achieved. The conclusions that emerged depend on the amount of data collected and the ability of the researcher to analyze the data.[59] The researcher drew a conclusion from the data results that were analyzed.

9. Research Procedure

The researcher analyzed the data after the data was collected. The data used in this research is the test items of mid-term and final-semester examinations of English subjects for X and XI grades senior high school levels at MAN 1 Lampung Tengah in the academic year of 2021/2022.

The writer was used the analysis card as a reference to decide what kind of cognitive domains to analyze. It is created by combining and collecting the understanding of six-levels of the cognitive domain from the revised edition of Bloom's taxonomy *(see appendix).* After that, all questions are distributed in checklist table form to categorize and compare the distribution of the HOTS and LOTS in the questions from the mid-term and final examination. The checklist table form consists of the lists of questions from the test and the columns for all cognitive skills, namely C1-C6 from the revised Bloom's Taxonomy.

The writer counted the total of every cognitive skill from the questions and compare it to every level to find out the exact amount of the distribution of the HOTS (Higher-Order Thinking Skill) in the test items of the mid-term and final-semester examinations. The writer focused on the distribution of the Higher-Order Thinking Skill (HOTS) even though it consists of all the cognitive skills in the revised edition of Bloom's Taxonomy. Finally, the writer explained the result of the data analysis by describing it qualitatively. Calculate the percentage using the following formula:[60]

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[59] *Ibid*., p. 11.

[60] Ig. Dodiet Aditya Setyawan, SKM., "DISTRIBUSI FREKUENSI," *Jurusan Akupunktur Poltekkes Kemenkes Surakarta*, 2013, p. 7.

$$P = \frac{F}{N} x100\%$$

Description: P = HOTS percentage
F = Frequency (achieved total value)
N = The total of all questions

After calculating the percentage, the HOTS questions on the English mid-term and final-semester test items classified into 5 categories as shown in the table below:

Table 1.2

Percentage Classifications

Percentage (%)	Description
81 % - 100 %	Very Good
61 % - 80 %	Good
41 % - 60 %	Enough
21 % - 40 %	Low
0 % - 20 %	Very Low

Source: modified from Arikunto (2001)[61]

After classifying the percentage of HOTS-based questions, the HOTS-based questions are explained descriptively based on three characteristics of HOTS questions, namely; critical thinking skills, creative thinking skills, and problem solving skills. So, the reason why the question can be said to be a HOTS-based question was described in sentences and conclusions were found in this study.

10. Trustworthiness of the Data

Qualitative research data can be accounted for by testing the validity of the data. According to Sugiyono, there are several techniques in testing the validity of the data, namely

[61] Suci Ulva, *Op Cit.*, p. 42.

the test of credibility, transferability, dependability, and confirmability.[62] In general, data analysis in qualitative research uses the triangulation method as a method that ensures the credibility of the data. Wiliam Wiersma said that *"Triangulation is qualitative cross-validation. It assesses the sufficiency of the data according to the convergence of multiple data sources or multiple data collection procedures".* Triangulation is defined as checking data from various sources in various ways, and at various times. There are three kinds of triangulation. There are source triangulation, technique triangulation, and time triangulation. [63]

a. **Source Triangulation.** Source triangulation to test the credibility of the data is done by checking the data that has been obtained through several sources. Some of these sources are documents, archives, observations, and several subjects or people (such as; lecturers, teachers, and colleagues) who are considered to have different points of view. For example, if use three subjects as data sources, Then the data from the three sources were described, categorized, looked at the differences and similarities, and searched for the most specific of the three data sources. The data that has been analyzed by the researcher so as to produce a conclusion is then asked for an agreement with the three data sources so that the results of the research can be said to be valid.[64]
b. **Technique Triangulation.** Technique triangulation which is done by checking data from the same source with different techniques. For example, data obtained by interviewing, then checked by observation, documentation, or questionnaires. The results of different checks can be discussed by the researcher with the sources to find the most correct results.[65]

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[62] Sugiyono, *Op. Cit.*, p. 270.
[63] Sugiyono, *Op. Cit.*, p. 273.
[64] Sugiyono, *Op. Cit.*, p. 274.
[65] Sugiyono, *Op. Cit.*, p. 274

c. **Time Triangulation.** Time triangulation is done by checking interviews, observations or other techniques in different times or situations.[66]

In this study, the researcher decided to use the source triangulation method as data validation by utilizing several subjects (such as lecturers who are experts in the field of HOTS, teachers, and colleagues) to ask for opinions and validate the validity of the results of the research data. Then, after the researcher knew the perspective of each subject on the research data, the researcher drew conclusions that produced valid data results. The data validation sheet was used as a data validation tool for the validator. In this study, the subject who checked after the analysis was carried out by the researcher and validated the results of the analysis in this study was Mrs. Nunun Indrasari, M.Pd. namely as a validator who is an expert in the field of revised Bloom's taxonomy on language testing.

I. Systematic Discussion

The systematics used in the discussion in this study is arranged based on chapters that are divided into three chapters.

Chapter I is an introduction that contains a confirmation of the title and background of this research, which is then continued with problem identification, focus and sub-focus of the research, problem formulations which are summarized from the description of the problem on the background of the problem, objectives and benefits of the research, research methods, previous research, and systematics of the research. This introduction is important for introducing readers to this study and constructing a research framework so that readers may comprehend this research.

Chapter II is the literature review which contains various theories that support and are used in this research. The literature review in this chapter is filled with theories regarding High Order Thinking Skills (HOTS), test, and requirement of a good test. These theories are obtained from various books and journals that support and contain explanations of the theory. The purpose of this section is to give the

[66] Sugiyono, *Op. Cit.*, p. 274

reader an overview of the theories used as a basis or reference in this research.

Chapter III contains a description of the object of research and the presentation of facts and data from the research. The object of this research is the cognitive level in the Revised Bloom Taxonomy, which consists of C1-C6, namely remembering, understanding, applying, analyzing, evaluating, and creating. However, the object of research only focuses on HOTS, namely C4-C6 (analyzing, evaluating, and creating). The presentation of facts and research data is filled with various data and facts that are found in the research process.

Chapter IV, The researcher was required to report the study's findings. On the basis of the analysis results, it was necessary to comprehend all of the research's findings in the actuality of the data. This chapter explains the result of HOTS analysis in the test items of the mid-term and final exams for grades X and XI in the 2021–2022 academic year to know the distribution and characteristics of the HOTS-based questions.

Chapter V, this chapter discusses information about the conclusions of the research objectives. Therefore, the researcher provides the results and research recommendations.

CHAPTER II
LITERATURE REVIEW

A. HIGHER ORDER THINKING SKILLS (HOTS)

1. Definition of HOTS

The government's way of improving the quality of education according to the development of 21st-century learning is by analyzing and revising the standard curriculum used, as stated by Apandi. The current curriculum established by the government is the amended 2013 curriculum. These endeavors might be carried out by a concerted effort on the part of students, instructional personnel, and educational institutions. Based on Harusilo, in accordance with the implementation of the applied curriculum, it is the task of the teacher to help the process of analyzing, thinking critically, and overcoming a problem, commonly called higher-order thinking, in students. Badjeber et al. said that HOTS teaches students how to think critically and creatively so that they can deal with the global problems of today and grow into good people.[1]

There are many definitions to define what HOTS is. Anderson and Krathwohl characterized HOTS as analyzing, evaluating, and creating. According to Thomas and Thorne, higher-order thinking skills are at a higher level of thinking than memorizing or reciting anything that has been shown to someone. Additionally, King, Goodson, and Rohani argue that higher-order thinking skills are the ability to think that involves more than just the ability to remember.[2]

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[1] Siti Fatimah and Triesninda Pahlevi, "Pengembangan Instrumen Penilaian Berbasis HOTS (Higher Order Thinking Skills) Pada Kompetensi Dasar Menerapkan Sistem Penyimpanan Arsip Sistem Abjad, Kronologis, Geografis, Nomor, dan Subjek di Jurusan OTKP SMKN 1 Bojonegoro," *Jurnal Pendidikan Administrasi Perkantoran (JPAP)* Volume 8, Nomor 2, 2020 8 (2020): p. 318–319.

[2] Nanang Narwianta, Dwi Anggani Linggar Bharati, and Dwi Rukmini, "The Evaluation of Higher Order Thinking Skills in English School Nationally Standardized Examination at State Senior High School 6 Semarang," *English Education Journal* Vol. 9 No. 3 http//journal.unnes.ac.id/sju/index.php/eej (2019), p. 317.

According to Moe, the definition of HOTS is the capability to use knowledge, skills, and values in interpreting and reflecting to resolve problems, make decisions, innovate and create something.[3] Higher-order thinking abilities, according to McDavitt, are those that correspond with the three highest phases of the cognitive domain, which comprise analysis, synthesis, and evaluation, and require mastery of lower-order thinking skills. [4]

Consistent with Haladyna, higher-order thinking abilities are defined as information, truth, thoughts, perceptions, and techniques that are necessary for pupils to answer questions in reading exercises.[5] Vijayaratnam states that higher-order thinking skills have become a main element in education. In the process of education, particularly English, students are expected to suppose critically.[6] Ciardiello's theory defines higher-order thinking skills (HOTS). He stated that readers with higher cognitive domains in thinking abilities display great distinctiveness in communication, various thoughts, and the application of critical and creative knowledge. In addition, King states that high-level cognitive processing includes inferring, making conclusions, synthesizing ideas, formulating hypotheses, comparing and distinguishing, analyzing, and assessing alternatives.[7]

It is similar to Brookhart that classified HOTS into three categories. Brookhart said that, *"Definitions that I find helpful fall into three categories: (1) those that define higher-order thinking in terms of the transfer, (2) those that define it in terms*

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[3] Suppiah Nachiappan et al., "Application of Higher Order Thinking Skills (HOTS) in Teaching and Learning through Communication Component and Spiritual, Attitudes and Values Component in Preschool," *International Journal of Early Childhood Education Care* Vol. 7 (October 8, 2018): p. 25, https://doi.org/10.37134/saecj.vol7.3.2018.

[4] Abiyyu Azhar, Muhammad, *"Readability Level and Higher Order of Thinking Skills in English Textbook Used by The Tenth Grade Students of SMAN 1 Indralaya,"* (Thesis, Palembang: Faculty of Teacher Training and Education Universitas Sriwijaya, 2021), p. 13.

[5] *Ibid.*, p. 13.

[6] *Ibid,*. p. 13.

[7] Nachiappan et al., *Op. Cit.*, p. 26.

of critical thinking, and (3) those that define it in terms of problem-solving"[8]

Brookhart agrees with the concept of higher-order thinking skills in Bloom's taxonomy revised by Anderson and Krathwohl. Practically, Brookhart uses three terms in defining higher order thinking skills (HOTS), namely:[9]

1) HOTS is a transfer process. HOTS as a transfer process in the context of learning is giving birth to meaningful learning, namely the ability of students to apply what has been learned into new situations without the direction or instructions of educators or others.
2) HOTS is critical thinking. HOTS as a critical thinking process in the context of learning is to form students who are able to think logically, reflectively, and make decisions independently.
3) HOTS is problem solving. HOTS as a problem solving process is to make students able to solve real problems in real life, which are generally unique so that the completion procedures are also unique and not routine.[10]

In other words, HOTS is a person's ability to think complexly which aims to convey or transfer knowledge in real life, the ability to think critically in understanding problems logically, and be able to solve problems with extraordinary solutions and find innovative ways.[11] HOTS has also become the main goal of education in high school and is one of the five variables that can realize for student progress, as stated by Sukmawijaya, Yunita, and Sofyan.[12]

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[8] Susan M. Brookhart, *How to Assess Higher-Order Thinking Skills in Your Classroom* (Alexandria, Va: ASCD, 2010), p. 3.

[9] Wiwik Setiawati et al., *"Buku Penilaian Berorientasi Higher Order Thinking Skills,"* Direktorat Jenderal Guru dan Tenaga Kependidikan Kementerian Pendidikan dan Kebudayaan, (2019), p. 37.

[10] *Ibid*,. p. 38.

[11] I Wayan Widana, "Higher Order Thinking Skills Assessment (HOTS)," *JISAE. Ikacana Publisher*. (Volume 3 Number 1 February 2017), p. 35.

[12] Syahdanis, Sofyan, and Yunita, "Analysis of HOTS in English Teacher-Made Test," *Journal BASIS*, Vol. 8 No. 2, (2 Oktober 2021), p. 127.

From the theories above, it can be concluded that the definition of HOTS is the ability that students can use to solve problems through critical and creative thinking skills to transfer knowledge in everyday life in innovative ways.

2. HOTS in Revised Bloom's Taxonomy

The history of Bloom's Taxonomy started in the early 1950s, at the American Psychologist Association Conference *(Konferensi Asosiasi Psikolog Amerika)*, Bloom and his colleagues said that the highest percentage of learning results evaluation items arranged in schools only asked students to express their memorization. This memorization is certainly the lowest level of thinking ability (reasoning or "thinking behaviors") even though there are different higher levels.[13]

a. Dimension of HOTS

After Bloom's Taxonomy was revised by Anderson and Krathwohl, where learning objectives were divided into two dimensions, namely cognitive processes and knowledge, it was necessary to adjust the HOTS dimensions. The HOTS cognitive process dimension includes analyzing, evaluating, and creating, while the HOTS knowledge dimension includes conceptual knowledge, procedural knowledge, and metacognitive knowledge.[14]

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[13] Retno Utari and Widyaiswara Madya, *"TAKSONOMI BLOOM Apa dan Bagaimana Menggunakannya?,"* Pusdiklat KNPK, n.d., p. 2.

[14] Sukma Nurlenisa, *"Keterampilan Berpikir Tingkat Tinggi dalam Mupel IPS Kelas 4 Sekolah Dasar (Komparasi Buku Teks Pemerintah dan Swasta),"* (Thesis, Solo: University of Muhammadiyah Surakarta, 2020), p. 18.

Table 2.1

Combination of Dimensions of Knowledge and Cognitive Processes[15]

		dimensions of cognitive processes					
		C1	C2	C3	C4	C5	C6
Knowledge Dimension	Factual						
	Conceptual						
	Procedural						
	Metacognitive						

Note : green = LOTS area, yellow = HOTS area

1) Knowledge Dimension

As previously said, they belong to Bloom's Taxonomy, which serves as an assessment of one's talents. Bloom's Taxonomy is mostly made up of one dimension, namely the knowledge dimension. Anderson and Krathwohl subsequently altered this dimension into two-dimensional structures, Knowledge Dimension and Cognitive Process, which are equal to the noun and verb. The verb, as part of the information dimension, requires students to recall or recognize the knowledge prior to the revision. This inconsistency is broken down into subsections, with the noun serving as the foundation for knowledge and the verb serving as the foundation for cognitive process. The dimensional characteristics of HOTS as defined by Bloom's Taxonomy and as amended by Anderson and Krathwohl are depicted in three tables below:[16]

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[15] Lorin W. Anderson and David R. Krathwohl, eds., *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*, Complete ed (New York: Longman, 2001), p. 28.

[16] Intan Agustiani, *"Higher Order Thinking Skill (HOTS) on Reading Comprehension Tasks of Diktat Bahasa Inggris Kelas X Seluruh Program Keahlian Used by SMK Negeri 2 Purwokerto"*, (Thesis, Purwokerto: IAIN Purwokerto, 2021), p. 24.

Table 2.2
Knowledge Dimensional Aspects of The Revised Bloom's Taxonomy[17]

The Revised Bloom's Taxonomy's Knowledge Dimension Structure	
Aspect	**Sub Categories**
A. Factual Knowledge	1) Terminology knowledge. 2) Knowledge of certain information and components
B. Conceptual Knowledge	1) Knowledge of categories and classifications. 2) Knowledge of generalizations and principles. 3) Knowledge in theories, plans, and constructions.
C. Procedural Knowledge	1) Knowledge in subject-specific skills and algorithms. 2) Knowledge in subject-specific approaches and methodologies. 3) Knowledge of specificity processes' criteria.
D. Metacognitive Knowledge	1) Strategic knowledge. 2) Knowledge of cognitive functions, including price contextual and conditional knowledge. 3) Self-awareness.

However, in order to align with the new educational system, Bloom's knowledge dimension was modified by dividing the category into the major subcategories. The metacognitive category was where both categories' differences were found. Knowledge of general cognition and self-awareness are both included in metacognition.

[17] Anderson and Krathwohl, *Loc. Cit.*, p. 29.

They (generic cognition and consciousness) play an important role in shaping the mentality of an individual (a student).[18]

The updated Bloom's Taxonomy changed not only the cognitive component but also the knowledge dimension, which the instructor may use to measure the student's learning process and amount of knowledge about by merging the cognitive and knowledge processes, the knowledge dimension is processed with management information to assess the student's outcomes.[19]

(1) Factual knowledge is the fundamental component of knowledge, and it includes what the learner must acquire. *(2) Conceptual knowledge* is the understanding of the relationships between one element and others, as well as which equal elements can work concurrently. *(3) Procedural knowledge* refers to how information, materials, or elements are used by or alongside others. It is about how the skills should be used. *(4) Metacognitive knowledge* is concerned with a student's awareness. How the learner comprehends the individual's learning challenge, the individual's weaknesses and strengths, and the problem-solving strategy they employ.[20]

2) Cognitive Dimension

The classification of learning outcomes according to Benjamin Bloom which includes three domains, namely the cognitive domain, affective domain, and psychomotor domain. There are three types of learning domains:

a. Cognitive domain: mental skills (knowledge). In the cognitive domain in Bloom's Taxonomy, it includes six broad categories from C1-C6, namely knowledge (C1), comprehension (C2), application (C3), analysis (C4), synthesis (C5), and evaluation (C6).

b. Affective domain: growing feelings in the emotional area (attitude of self). The affective domain involves growing feelings in the emotional area, such as receiving

[18] Agustiani, *Loc. Cit.*, p. 27.
[19] Agustiani, *Loc. Cit.*, p. 27.
[20] Agustiani, *Loc. Cit.*, p. 27.

phenomena, responding to phenomena, assessing, organizing, internalizing values.

c. Psychomotor domain: manual or physical skills. The psychomotor domain includes manual or physical skills. There are imitation, manipulation, precision, articulation and naturalization.[21]

In 1990, one of Bloom's students, named Lorin Anderson Krathwohl, and other cognitive psychologists, revised Bloom's taxonomy to suit the times. The results of these improvements were published in 2001 under the name Revised Bloom's Taxonomy. Revision is only done in the cognitive domain. The revision includes:[22]

1) Change keywords from nouns to verbs for each taxonomy level.
2) Changes occur in almost all hierarchical levels, but the order of levels is still the same, from lowest to highest. The fundamental changes lie at levels 5 and 6.

An important improvement that Anderson put forward was the change from nouns to verbs. This change is necessary because the taxonomy needs to reflect various forms or ways of thinking in an active process. Thus, the use of verbs is more appropriate than nouns.[23] These changes can be explained as follows:

1) At level 1, knowledge is changed to remembering.
2) At level 2, comprehension is defined as understanding.
3) At level 3, the application is changed to applying.
4) At level 4, analysis becomes analyzing.
5) At level 5, synthesis is raised to level 6 but with a fundamental change, namely evaluating.

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[21] *Ibid.*, p. 2.

[22] Mochamad Yogi Wasngadiredja, *"Revisi Taksonomi Bloom (Bloom Taxonomy Revised)"* (https://www.academia.edu/34928548/revisi_taksonomi_bloom_bloom_taxonomy_revised) (accessed on May 29, 2022, 11:48 AM), p. 1.

[23] Gito Supriadi, *Pengembangan Instrumen Penilaian Berbasis Higher Order Thinking Skill (HOTS)* (Aswaja Pressindo, 2020), p. 36.

6) At level 6, evaluation drops its position to level 5, which is called creating.[24]

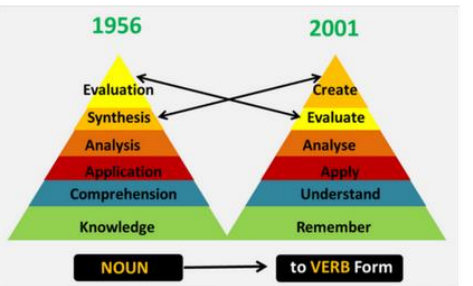

Figure 2.1 History of Bloom's Taxonomy Revision
(source : playxlpro.com)

Therefore, the revised Krathwohl's version of Bloom's Taxonomy in the cognitive domain consists of 6 levels: remembering, understanding, applying, analyzing, evaluating and creating. Krathwohl's revision is often used in formulating learning objectives which often know as C1 to C6. Same as before the revision, the first three levels (bottom) are Lower Order Thinking Skills (LOTS), while the next three levels are Higher Order Thinking Skills (HOTS). Therefore, in interpreting the pyramid below, the logic is as follows:

1) Before we understand a concept, we must remember it first.
2) Before we apply then we must understand it first.
3) Before we analyze then we have to apply it first.
4) Before we evaluate then we have to analyze first.
5) Before we create something, then we must remember, understand, apply, analyze and evaluate.[25]

[24] Mochamad Yogi Wasngadiredja, *Loc.Cit.*, p. 1.
[25] Mochamad Yogi Wasngadiredja, *Op. Cit.*, p. 2–3.

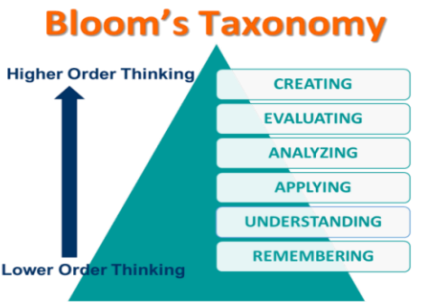

Figure 2.2 Bloom's Taxonomy Revision
(source: patimes.org)

One of the taxonomies of thought processes that is widely referred to is Bloom's taxonomy and has been revised by Anderson and Krathwohl in 2001. In Bloom's revised taxonomy, 6 levels of thinking processes are formulated, namely: C1 remembering, C2 understanding, C3 applying, C4 analyzing, C5 evaluating, C6 creating. And the following is a cognitive dimensional aspects of the revised bloom's taxonomy.

Remembering (C1) is the lowest level of the thought process. Because remembering is only recalling cognitions that are already in memory. In other words, remembering can be define as recall facts, words, fundamental ideas, and responses from previously taught information to demonstrate memory. According to Anderson and Krathwohl, remembering includes retrieving practical understanding from long-term recollections. The two associated cognitive techniques are spotting and recalling. The relevant understanding may be actual, conceptual, procedural, metacognitive, or a few aggregates of those.[26] In the lowest cognitive, namely remembering, there are sub-categories, namely ***recognizing,*** *identifying*, ***recalling***, *retrieving*.[27] Recognizing is locating knowledge in long-term memory that is

[26] Anderson, L. W. and Krathwohl, D. R, *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. (Allyn & Bacon., 2001), p. 66.

[27] Anderson, L. W. and Krathwohl, D. R, *Loc. Cit.*, p. 67.

consistent with presented material. Meanwhile, Retrieving or recalling is applicable expertise from long-term reminiscence.[28]

Understanding (C2) is one level higher than remembering. Someone who understands something will be able to use his memory to make a description, explain, or give examples related to something. Anderson and Krathwohl said that understanding is construct meaning from instructional messages, including oral, written, and graphic communication. There are sub categories for this level, namely: ***interpreting*** consists of *clarifying, paraphrasing, representing, translating*. ***Exemplifying*** consists of *illustrating, instantiating*. ***Classifying*** consists of *categorizing, subsuming.* ***Summarizing*** consists of *abstracting, generalizing*. ***Inferring*** consists of *conduding, extrapolating, interpolating, predicting*. ***Comparing*** consists of *contrasting, mapping, matching.* ***Explaining*** consists of *constructing models.*[29] Interpreting can be defined changing from one type of representation to another. Exemplifying is locating a specific illustration or example of an idea or principle. The definition of classifying is determining whether or not something belongs in a category. Summarizing is taking a broad subject or significant ideas and distilling them. Inferring can be defined as drawing a logical condusion from presented information. Comparing is identifying correspondences between two concepts, things, or other entities. Explaining definition is creating a system's cause-and-effect model.[30]

If someone who has learned anything is able to repeat what he has learned in a new or different circumstance, that person has attained level C3 (applying). People with the capacity to apply are not always able to solve difficulties (problem-solving). The capacity to apply still tends to just replicate previously completed procedures (routinely), whereas issues are always unique and cannot be handled in the same way (non-routine). Problem-solving is really associated with non-routine issues. As a result, problem-solving necessitates a higher degree of thought than memorizing, comprehending, and implementing. This is referred to as higher-order thinking. **Applying**

[28] Anderson, L. W. and Krathwohl, D. R, *Loc. Cit.*, p. 67.
[29] Anderson, L. W. and Krathwohl, D. R, *Loc. Cit.*, p. 67.
[30] Anderson, L. W. and Krathwohl, D. R, *Loc. Cit.*, p. 67.

(C3) is the ability that can be able to apply knowledge or skills to new situations. Utilizing is carry out or employ a procedure in a certain context as stated by Anderson and Krathwohl.[31] This level is to use information and knowledge to solve a problem, answer a question, or perform another task. ***Executing*** is a subcategory of level C3 (applying); executing is the application of a procedure to a familiar task. An example of the verb is *"carry out."* The second is ***implementation,*** namely applying a procedure to an unfamiliar task; for example, the verb is *"using*."[32] For another example of verbs in C3 are; *add, allocate, alter, apply, calculate, change, choose, complete, compute, conduct, coordinate, demonstrate. applies, changes, computes, constructs, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses.*[33]

Anderson and Krathwohl categorized the process of analyzing (C4), evaluating (C5), and creating (C6) including Higher Order Thinking Skill. **Analyzing (C4)** is the ability to decompose something into smaller parts so that a deeper meaning is obtained. Anderson and Krathwohl argue that analyzing (C4) is divide a substance into its basic elements and establish how the parts relate to one another as well as to a larger structure or purpose.[34] In other words, analyzing is the ability that can be able to break down knowledge into parts and show and explain the relationships among the parts. Analyzing in Bloom's revised taxonomy also includes the ability to organize and link between sections so that a more comprehensive meaning is obtained. This level's subcategory is ***"differentiating,"*** which is the distinction between relevant from irrelevant or important from unimportant parts of the presented material. Examples of verbs are *discriminating, distinguishing, focusing,* and *selecting.* The second subcategory is ***"organizing,"*** which is determining how elements fit or function within a structure. Examples of verbs are *finding coherence, integrating, outlining, parsing,* and *structuring.* The next subcategory is ***"attributing."*** Attributing is determining a point of

[31] Anderson, L. W. and Krathwohl, D. R, *Loc. Cit.*,p. 67.
[32] Anderson, L. W. and Krathwohl, D. R, *Loc. Cit., p.* 67.
[33] Anderson, *Loc. Cit.*, p. 1.
[34] Anderson, *Loc. Cit., p.* 68.

view, bias, values, or intent underlying the presented material. An example of the verb is *"deconstruct*."[35] Another example verbs of analyzing are; *analyzes, breaks down, compares, contrasts, diagrams, deconstructs, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, relates, selects, separates.*[36]

If the analytical ability leads to a critical thinking process so that a person is able to make the right decisions, that person has reached the level of **evaluating (C5)** thinking. The definition of evaluating is make judgments based on criteria and standards. ***"checking"*** and ***"critiquing"*** are subcategories of level 5 (evaluating). Checking includes discovering inconsistencies or flaws in a process or product, establishing whether a process or product has internal consistency, and assessing the efficacy of a method as it is performed. Verbs include *coordinating, detecting, monitoring,* and *testing.* Meanwhile, criticizing is defined as discovering discrepancies between a product and external standards, deciding whether a product has external consistency, and determining whether a process is acceptable for a specific challenge. *"Judge"* is an example of a verb.[37]

In evaluating the students can be able to judge or assess the value of material and methods for a given purpose, such as *categorizes, combines, compiles, composes, creates, devises, designs, explains, generates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, tells, writes.*[38] From evaluation activities, one is able to find strengths and weaknesses. Based on these advantages and disadvantages, new ideas are finally generated or different from those that already exist.

When a person is able to generate new or different ideas, that level of thinking is called the level of creative thinking (C6). Someone who is sharp in analysis, able to evaluate and make decisions appropriately, and always gives birth to new ideas. Therefore, the person has a great opportunity to be able to solve every problem him/her faces.[39] The

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[35] Anderson, L. W. and Krathwohl, D. R, *Loc. Cit.*, p. 68.
[36] Anderson, *Loc. Cit.*, p. 1.
[37] Anderson, L. W. and Krathwohl, D. R, *Loc. Cit.*, p. 68.
[38] Anderson, *Loc. Cit.*, p. 1.
[39] Setiawati et al., *Loc. Cit.*, p. 37.

definition of **Create (C6)** is combine pieces to create a cohesive or functioning whole; reorder elements to create a new pattern or structure. Subcategory of the final level (creating) is ***"generating,"*** or "coming up with alternative hypotheses based on criteria." the verb is *"hypothesizing."* the second subcategory is ***"planning"***: devising a procedure for accomplishing some tasks. The verb is *"designing."* ***"producing"***: invent a product. The verb is *"constructing."*[40]

Another notion of creating is a skill that can be able to pull together parts of knowledge to form a new whole and build relationships for new situations. The ability to create may be characterized as compiling knowledge in a new way by integrating parts in a new pattern or providing alternative solutions.[41] The examples of verb of C6 are *assemble, assimilate, categorize, collect, combine, compile, compose, condense, construct, create, design, derive, develop, devise, elaborate, expand, generate, guide, hypothesize, integrate, invent, manage, modify, organize, plan, prepare, prescribe, produce, propose, rearrange, reconstruct, reorganize, rework, set up, synthesize, theorize, transform, write.*[42]

3. Characteristics of HOTS Test Questions

HOTS questions are measurement tools used to measure higher-order thinking skills, namely thinking skills that are not just remembering, restating, or referring without processing.[43] The dimensions of the thinking process in Bloom's Taxonomy as revised by Anderson and Krathwohl, consist of the following abilities: remembering-C1, understanding-C2, applying-C3, analyzing-C4, evaluating-C5, and creating-C6. HOTS questions generally measure abilities in the C4 to C6 domains. There are analyzing-C4, evaluating-C5, creating-C6.

In the preparation of HOTS questions, a stimulus is generally used. Stimulus is the basis for making questions. In the context of

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[40] Anderson, L. W. and Krathwohl, D. R, *Loc. Cit.*, p. 68.

[41] Putra and Abdullah, *Loc. Cit.*, p. 181.

[42] Lorin Anderson, *Loc. Cit.*, n.d., p. 1.

[43] I Wayan Widana et al., *Modul Penyusunan Soal Higher Order Thinking Skill (HOTS)* (Direktorat Pembinaan SMA Direktorat Jenderal Pendidikan Dasar dan Menengah Departemen Pendidikan dan Kebudayaan, 2017), p. 3.

HOTS, the stimulus presented should be contextual and attractive. A stimulus can be found from global issues such as issues of information technology, science, economics, health, education, and infrastructure. A stimulus can also be raised from problems that exist in the environment around the education unit such as culture, customs, cases in the region, or various advantages found in certain areas. The creativity of a teacher greatly affects the quality and variety of stimuli used in writing HOTS questions.[44]

HOTS questions are particularly recommended for use in numerous kinds of classroom evaluation and school exams. To encourage teachers to prepare HOTS questions at the education unit degree, the following describes the characteristics of HOTS questions.[45] We can find the characteristics of HOTS-based questions by looking at their characteristics. Questions that are included in Higher Order Thinking Skill (HOTS) have the following characteristics: (1) Transfer of one concept to another (2) Process and apply information (3) Looking for links from different kinds of information (4) Use information to solve problems (5) Critically examine ideas and information.[46] The following is an explanation of characteristics in HOTS-based questions :

a. Measuring Higher-Order Thinking Skills

The capacity to think at a higher level is one of the most crucial abilities in the current world of the 21st century, and every student must possess it. Higher-order cognitive abilities do not include the ability to recall, comprehend, or repeat. Higher-order thinking skills, according to the Australian Council for Educational Research (ACER), is an activities that include analyzing, evaluating, presenting arguments (reasons), applying concepts to new contexts, assembling, and producing. Thus, the answers to the HOTS questions are implied and not explicitly stated in the

[44] *Ibid.*, p. 3.
[45] *Ibid*., p. 3.
[46] Setiawati et al., *Op. Cit.*, p. 39.

stimulus. Higher-order thinking skills include the ability to solve problems, critical thinking skills, creative thinking, reasoning skills, and decision-making abilities. Creativity in solving problems in HOTS, consists of :

1) The ability to solve unfamiliar problems;
2) The ability to evaluate strategies used to solve problems from different perspectives;
3) Find new innovations such as method or strategies that are different from previous ways.[47]

According to Widana, Measuring high-level ability include the capacity to solve issues (problem-solving), critical thinking skills, creative thinking, argumentative ability (reasoning), and decision-making ability (decision making). According to Bloom's Taxonomy, the ability to analyze (C4), evaluate (C5), and create (C6) called high order thinking skill.[48]

b. Divergent

The HOTS assessment instrument must be divergent, meaning that it allows students to provide different answers according to their thinking processes and perspectives which measure analytical, critical, and creative thinking processes which tend to be unique or have different responses for each individual.[49]

Because it is divergent, the HOTS assessment instrument is easier to design in the format of assignments or open-ended questions, such as essay questions/descriptions and performance assignments. Essay questions can be used to measure HOTS on the condition that the thought process to answer the choice questions is not just memorizing or repeating. On the other hand, each description question is

[47] I Wayan Widana et al., *Op. Cit*., p. 3-4.

[48] I Wayan Widana, "Higher Order Thinking Skills Assessment (HOTS)," *JISAE. Ikacana Publisher*. (Volume 3 Number 1 February 2017), p. 36.

[49] Setiawati et al., *Op. Cit.*, p. 40.

also not necessarily HOTS if to answer it does not require reasoning.[50]

c. Using Multirepresentation

According to Setiawati et al., it is recommended that the HOTS assessment instrument (which generally does not present all information explicitly) uses various representations, including:

1) Verbal (in the form of sentences),
2) Visual (images, charts, graphs, tables, including videos),
3) Symbolic (symbols, icons, initials, signals),
4) Mathematical (numbers, formulas, equations).

Questions that use multiple representations can force students to explore implied information on their own, even in the big data era like today, namely the ease of getting data and information via the internet.[51]

d. Based on Contextual Problems

According to the Ministry of Education and Culture, 2017. HOTS questions are assessments based on real situations in everyday life so that students are expected to be able to apply learning concepts in class to solve problems. In this sense, it also includes the skills of students to connect, interpret, apply, and integrate knowledge in classroom learning to solve problems in real contexts. For example global issues such as the issue of information technology, science, economics, health, education, character, and infrastructure. The following is an explanation of the characteristics of contextual problem-based questions, abbreviated as REACT.

1) Relating, questions are directly related to the context of real-life experiences.
2) Experiencing, questions that emphasize exploration, discovery, and creation.

[50] Setiawati et al., *Op. Cit.*, p 41.
[51] Setiawati et al., *Op. Cit.*, p 41.

3) Applying, questions that require the ability of students to apply the knowledge gained in the classroom to solve real problems.
4) Communicating, questions that require the ability of students can be able to communicate the conclusions of the model to the conclusion of the problem context.
5) Transfering, a question that demands the ability of students to transform knowledge concepts in the classroom into new situations or contexts.[52]

e. Using Various Forms of Questions

The various forms of HOTS questions, as used in PISA, aim to provide more detailed and comprehensive information about the test takers' abilities. There are several alternative question forms that can be used to write HOTS items (which are used in the PISA test model), as follows.[53]

1) Complex Multiple-Choice Questions

Complex multiple-choice questions aim to test students' understanding of a comprehensive problem related to one statement to another. HOTS questions in the form of complex multiple-choice contain stimuli sourced from contextual situations. Students are given several statements related to the stimulus/text, then students are asked to choose true/false or yes/no. The statements given are related to one another. The arrangement of true statements and false statements should be randomized, not systematically following a certain pattern. A systematic patterned arrangement can give clues to the correct answer. If students answer correctly to all the statements given, they are given a score of 1 or if there is an error in one of the statements, they are given a score of 0.[54]

2) Essay

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[52] I Wayan Widana et al., *Op. Cit.*, p. 4.
[53] Setiawati et al., *Op. Cit.*, p. 43.
[54] Setiawati et al., *Op. Cit.*, p. 43.

The form of an essay is a question whose answer requires students to organize the ideas or things they have learned by expressing these ideas using their sentences in written form.[55]

3) Short or Complete Questions

A short or complementary question that requires test takers to fill in short answers by filling in words, phrases, numbers, or symbols. The characteristics of short or complete questions are as follows.

a) 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.
b) The answers required by the questions must be short and definite in the form of words, phrases, numbers, symbols, places, or times.[56]

4) Short Answer Questions

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

a) Using direct question sentences or imperative sentences.
b) Questions or orders must be clear to get a short answer.
c) The length of words or sentences that must be answered by students on all questions is attempted to be relatively the same.
d) Avoid using words, sentences, or phrases taken directly from the textbook because it will encourage students to simply remember or memorize what is written in the book.[57]

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[55] Setiawati et al., *Op. Cit.,* p. 44.
[56] I Wayan Widana et al., *Op. Cit,*. p. 6.
[57] I Wayan Widana et al., *Op. Cit,*. p. 6.

According to Widana et al. cited in Yani, HOTS questions need higher-order thinking abilities. The ability to solve problems, critical thinking, creative thinking, reasoning, and decision-making are examples of higher-order thinking skills.[58] According to Saputra, the main purpose of higher-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 complex situations. The following criteria for HOTS (higher-order thinking skills) based on Widana are as follows:[59]

a. Critical Thinking

According to Halpern in Sani, critical thinking is related to the use of cognitive thinking skills or strategies that increase the likelihood of obtaining the desired impact. Critical-thinking processes are needed in solving problems (problem-solving) and making decisions. Halpern's theory of critical thinking includes memory, thinking and language, deductive reasoning, argument analysis, hypothesis testing, similarity and uncertainty, decision-making, problem-solving, and creative thinking.[60] The definition proposed by Facione is backed by the statement of Norris in Sani, which argues that critical thinking must be focused on efforts to uncover explanations, seek to obtain the necessary knowledge, explore alternatives, and consider the perspectives of others before acting. A person who can think critically must also be able to provide logical arguments or critiques of the issues at hand. Critical thinkers are reasonable individuals who are capable of reflective thought and decision-making based on careful consideration.[61]

Watson and Glaser propose four skills related to critical thinking, namely: 1) the ability to define problems; 2) the ability to choose relevant information to solve problems; 3) the ability to develop and select relevant hypotheses; and 4)

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[58] Suci Ulva, *Op. Cit.*, p. 22.
[59] Suci Ulva, *Op. Cit.*, p. 22-23.
[60] Suci Ulva, *Op. Cit.*, p. 23.
[61] Suci Ulva, *Op. Cit.*, p. 23.

the ability to legitimize conclusions and evaluate inferences. So, someone will be able to think critically if they master general skills in solving problems and are able to use knowledge in new conditions. The five criteria for critical thinking, according to Watson and Glaser, are described as follows:[62]

Table 2.3

Questions That Can Support Critical Thinking Skills According to Watson and Glaser

ASPECT	INDICATOR
Inference	Questions that give rise to reasons involved in supporting logical judgments based on circumstantial evidence rather than on the basis of direct observation.
Assumption	Questions that support statements that are considered true and can be drawn conclusions by students
Deduction	Questions that support students to be able to conclude something (deduced or forced or implied) or reasons from the general to the specific (or from cause to effect).
Interpretation	Questions provide clarity about something so that it can support students to be able to represent without doubt.
Argument Evaluation	The question conveys an argument so that it causes students to judge whether the argument is correct or not.

[62] Suci Ulva, *Op. Cit.*, p. 23.

Source: (Sani r. a., 2019, p. 15).[63]

b. Creative Thinking

Creativity can be defined as the process of producing something new from existing elements by rearranging these elements. The creative thinking of each person will be different and related to the way they think about approaching the problem. The ability of students to propose creative ideas should be developed by asking them to think of ideas or opinions that are different from those proposed by their friends. Creative thinking is also related to the knowledge someone has that is relevant to the idea or creative effort being proposed.[64]

There are two types of knowledge needed to produce creativity, namely: 1) experience of and focus on a particular study that makes a person an expert, 2) the ability to combine elements in new ways. So, someone who is creative must have extensive knowledge (several fields of knowledge) and collect one or two fields as a whole (experts).[65]

Batey and Furnham in Sani stated that there are three main domains of creative claims, namely: artistic creativity, scientific creativity, and everyday creativity. Lubart et al. developed a creativity test based on divergent evaluation thinking processes (developing multiple responses to challenges) and convergent integrative thinking processes (developing the most creative single response). Meanwhile, Hu and Adey quoted in Sani stated that developing creativity tests is based on students' ability to think divergently and imagine to produce scientific products.[66] The criteria for creativity, according to Torrance, are:

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[63] Suci Ulva, *Op. Cit.*, p. 24.
[64] Suci Ulva, *Op. Cit.*, p. 24.
[65] Suci Ulva, *Op. Cit.*, p. 25.
[66] Suci Ulva, *Op. Cit.*, p. 25.

Table 2.4
Questions That Can Support Creative Thinking Skills According to Torrance

ASPECT	INDICATOR
Fluency	Questions that support students to answer based on statements on relevant questions so that they are answered with the number of relevant responses.
Originality	Questions that support students to produce an idea that is not common, but cannot be separated from the concept of knowledge.
Flexibility	Questions that support students to generate varied ideas that can be developed.
Elaboration	Questions that support students to generate more detailed ideas in a problem.

c. Problem Solving

Basic problem solving skills often overlap with basic critical thinking skills. Therefore, problem solving is often interchanged with critical thinking. This is because the process of solving a problem (problem solving) includes a critical thinking process. However, to be able to solve complex problems, thinkers must be able to carry out analysis and synthesis, which are higher-order thinking abilities, according to Bloom. Synthetic thinking is creative thinking. If the problem given to students is something that is well known so that they can solve it without using problem-solving skills, then the problem is not a problem for students. In Sani, Garofalo and Lester said that solving a problem is a process that includes visualizing, associating, abstracting, understanding, manipulating, reasoning, analyzing,

synthesizing, and generalizing. Each of these steps must be controlled and coordinated.[67]

In general, to solve a problem, people must think critically before determining a solution to the problem. In general, problem solving can be categorized into simple problem solving and complex problem solving. Complex problem solving involves the ability to think critically, think creatively, and make the right decisions.[68] According to Polya in Sani, problem solving is an attempt to find a way out of a difficulty in order to achieve a goal that is not so easy to achieve immediately. The steps for solving the problem according to Polya are as follows:[69]

Table 2.5

Questions That are able to Design Problem Solving Abilities According to Polya

ASPECT	INDICATOR
Understanding the problem	Questions such as mentioning what is known and asked can support students in presenting information
Planning the problem	The problem describes a problem that supports students to be able to simplify a problem and be able to develop a model
Execute the problem	The problem describes a problem that supports students to be able to create a strategy by adjusting the various problems that have been described in the problem
Crosscheck	Re-check all important

[67] Suci Ulva, *Op. Cit.*, p. 26.
[68] Suci Ulva, *Op. Cit.*, p. 26.
[69] Suci Ulva, *Op. Cit.*, p. 26.

	information that has been identified in the questions

Source: (Nurhasanah, 2018, p. 8).[70]

d. Make a Decision

Everyone needs to make a number of decisions in everyday life. This causes people who use simple strategies to make decisions, because it is considered impractical to use in-depth analysis. Decision-making strategies using rules.[71] The decision-making process generally starts with goal setting. Then the collection of information is carried out, followed by the generation of alternative solutions or feasible options. Decision-making is done by comparing alternatives that have been developed. The stages of decision making, analytically or classically, are: 1) clearly determining or setting goals; 2) obtaining or seeking information; 3) comparing alternatives to determine the preferred option; 4) Choosing the next step by carrying out the chosen activity or something.[72]

4. The Purpose of HOTS Test Question

The HOTS questions aim to measure higher order thinking skills. In conducting the assessment, the teacher can insert several HOTS questions. The following describes some of the roles of HOTS questions in improving the quality of the assessment based on Widana:

a. Organizing the Competence of Students to Meet the 21st Century

In general, there are 3 groups of competencies needed in the 21st century, namely:

1) Have good character (faith and piety, curiosity, never give up, social and cultural sensitivity, able to adapt, and have high competitiveness).

[70] Suci Ulva, *Op. Cit.*, p. 27.
[71] Suci Ulva, *Op. Cit.*, p. 27.
[72] Suci Ulva, *Op. Cit.*, p. 27-28.

2) Have a number of competencies (critical and creative thinking, problem solving, collaboration, and communication).
3) Mastering literacy includes thinking skills using knowledge sources in the form of print, visual, digital, and auditory. The presentation of HOTS questions in the assessment can train students to hone their abilities and skills in accordance with the demands of the 21st century competencies above. Through an assessment based on HOTS questions, critical thinking skills (creative thinking and doing), creativity and self-confidence (learning self-reliance), will be built through practice activities to solve real problems in everyday life (problem-solving).[73]

b. Cultivate a Sense of Love and Concern for Regional Progress

In the assessment, teachers are expected to be able to develop HOTS questions creatively in accordance with the situation and conditions in their respective regions. Teacher creativity in terms of selecting stimulus based on regional problems in the education unit is very important. Various problems that occur in the area can be raised as contextual stimuli. Thus, the stimulus chosen by the teacher in HOTS questions becomes very interesting because it can be seen and felt directly by students. In addition, presenting HOTS questions in school exams can increase a sense of belonging and love for existing potentials. so that students feel called to take part in solving various problems that arise in their area.[74]

c. Increase Students' Learning Motivation

The challenges that occur in the community can be used as contextual and interesting stimuli in the

[73] I Wayan Widana et al., *Op. Cit.*, p. 18.
[74] I Wayan Widana et al., *Op. Cit.*, p. 18.

assessment, so that the emergence of questions based on HOTS questions, which are expected to increase students' learning motivation.[75] The students will feel challenged by answering and solving problems in each HOTS-based question item so that this can improve critical thinking skills and student motivation to keep learning.

d. Improving the Quality of Assessment

Quality assessment will be able to improve the quality of education. By getting used to training students to answer HOTS questions, it is hoped that students can think critically and creatively.[76] The quality of assessment can be improved by starting from teachers who are able and understand to design quality questions.

5. Step to Design HOTS Questions

To write HOTS items, the teacher first determines the behavior to be measured and formulates the material that will be used as the basis for the question (stimulus) in a certain context according to the expected behavior. Selecting the material to be asked requires high reasoning. It may not always be available in textbooks. Therefore, in writing HOTS questions, mastery of teaching materials are needed, skills in writing questions, and teacher creativity in choosing interesting and contextual question stimuli. The following describes the steps for preparing HOTS questions.[77]

a. Analyzing KD that can be Converted into HOTS Questions

First, the teachers choose KD, which can be made into HOTS questions. Not all KD models can be made into

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[75] I Wayan Widana et al., *Op. Cit.*, p. 19.

[76] I Wayan Widana et al., *Op. Cit.*, p. 19.

[77] Purwadi Sutanto, et al., *Modul Penyusunan Soal Keterampilan Berpikir Tingkat Tinggi (Higher Order Thinking Skills) BAHASA INGGRIS* (Direktorat Jenderal Pendidikan Dasar dan Menengah Kementerian Pendidikan dan Kebudayaan, 2019), p. 13-14.

HOTS questions. Choose a KD that contains KKOs in the C4, C5, or C6 domains. Teachers independently or through the MGMP forum can analyze KD, which can be made into HOTS questions.[78]

b. Arrange a Grid of Questions

The HOTS question writing grid aims to help teachers write HOTS questions. These grids are needed to guide teachers in: 1) determining the minimum skills required for KD that can be made into HOTS questions; 2) choosing basic materials related to KD to be tested; 3) formulating question indicators; and 4) determining the cognitive level.[79]

c. Create Intriguing and Contextual Stimuli

The stimulus used must be interesting, meaning that the stimulus must be able to encourage students to read the stimulus. Attractive stimuli are generally new, have not been read by students, or issues that are currently surfacing. Contextual stimulus means a stimulus that is in accordance with the reality of everyday life, encouraging students to read. Several things need to be considered in preparing the HOTS question stimulus: 1) Choose relevant and interesting (current) cases or problems that will encourage students to read (with the exception of Language and History, which may not be relevant); and 2) Choose cases or problems that are directly related to the question and how they work.[80]

d. Write the Question Items According to the Question Grid

The questions are written in accordance with the rules for writing HOTS items. The rules for writing HOTS items are basically almost the same as the rules for writing items in general. The difference lies in the material aspect (which must be adjusted to the characteristics of the HOTS

[78] *Ibid*., p. 14.
[79] *Ibid*., p. 14.
[80] *Ibid*., p. 14.

questions above), while the construction and language aspects are relatively the same. Each question item is written on a question card according to the attached format.[81]

e. Create Scoring Guidelines (Rubrics) or Answer Keys

Each HOTS item must be accompanied by a scoring guide or answer key. Scoring guidelines are made for the form of essay questions. In contrast, the answer key comprises multiple-choice questions and short entries.[82] If the teacher follows the steps in making HOTS-based questions as above, it is hoped that the HOTS test items will be created more easily.

B. TEST

1. Definition of Test

Testing as part of teaching and learning is one technique to increase the quality of students' English proficiency. Testing is used to assess students' abilities and to track students' progress in the learning process. A test is intended to serve various functions. It is beneficial to both the students taking the test and the teacher conducting the test. It can assist pupils to learn the language by permitting them to study harder and assess their aptitude. The test also informs students where they need to improve, and it will boost their learning and knowledge of the study's objectives. If they are given a test, it signifies that the test might inspire them to study more and demonstrate their understanding of the subject.[83]

A test is also beneficial to the teacher. The teacher will be aware of how far the pupils have progressed with the lesson and the obstacles they face. The test can assist the teacher in determining the efficacy of their instruction as well as testing the learning process. It indicates that a test makes it easier for

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[81] *Ibid*., p. 14.

[82] *Ibid*., p. 14.

[83] Mustika Auliyana, *"Higher Order Thinking Skills Analysis of The English National Standardized School Examination The Case of SMP Negeri 36 Semarang in The Academic Year of 2018/2019,"* (Thesis, Semarang: Semarang State University, 2019), p. 2.

teachers to diagnose students' problems and enhance their teaching methods. The teacher-created test must also refer to the curriculum. The quality of the item can be determined by the teachers' involvement in the formulation of the item questions.[84]

There are so many meanings of the word "test" from experts. According to Linn, one of the most common assessment strategies in education is the provision of tests. Tests, in addition to being an instrument, can be viewed as standard strategies for systematically measuring a sample of behavior by posing a series of questions.[85] Tests are meant to assess if a certain quality, capability, skill, or expertise is generally acceptable or not. A test is a tool used in educational practice to measure a student's ability to execute certain activities or demonstrate mastery of specific skills or information.[86]

According to Brown, the test can be defined simply as a method used to measure a person's ability which includes knowledge and performance in a particular area.[87] Based on Tritschler, revealed that the test means a tool used to carry out procedures so that student responses are collected as information, which provides a basis for making assessments or evaluations regarding several characteristics such as skills, knowledge, and values.[88]

Three types of tests have been identified by Skinner, namely standardized tests, diagnostic tests, and teacher-made tests. That can be used in determining student progress towards the goals set. Diagnostic tests or analytic tests are tests used by teachers to obtain detailed evidence of the progress of students about a given

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[84] *Ibid*., p. 2.

[85] Dickson Adom, Jephtar Adu-Mensah, and Dennis Atsu Dake, "Test, Measurement, and Evaluation: Understanding and Use of the Concepts in Education," *International Journal of Evaluation and Research in Education (IJERE)* vol. 9, no. 1 (March 1, 2020): p. 110, https://doi.org/10.11591/ijere.v9i1.20457.

[86] Adom, Adu-Mensah, and Dake, *Op. Cit.*, p. 110–111.

[87] H. Douglas Brown, *LANGUAGE ASSESMENT Principle and Classroom Practices*, 3 (Longman, 2003), p. 3.

[88] Adom, Adu-Mensah, and Dake, *Op. Cit.*, p. 111.

subject. To do this, the teacher takes this approach during the learning process by breaking down the subjects into units.[89]

The test is an assessment method designed and carried out by students at a certain time and place with certain clear conditions. In other words, The test is some questions that must be given to the test taker so that the results of the test are useful for measuring the level of ability or revealing certain aspects of the test taker. Tests are generally used to assess student learning outcomes, especially cognitive learning outcomes concerning the mastery of teaching materials by educational and teaching objectives. Braun et al. define testing as the act of assessing a single or several ideas under a specified set of conditions. They are used to assess pupils' learning levels.[90]

According to Fadhil, testing is a systematic collection of information about what students understand, recognize, and are able to do in relation to the achievement of students' specific learning objectives. Similarly, Bachman states that the test have to measure the ability which may be described because the process of quantifying the performance of test-takers according to specific strategies or policies. That is, the test must measure what it is supposed to measure and the test outcomes must measure the level of language potential of the test taker.[91]

Based on the above theories, the author can conclude that the notion of a test is a method used to assess and obtain information about the abilities of students from the implementation of the test in the form of providing a number of questions that must be answered by test participants.

2. Purpose and Function of Test

The purpose of language testing according to Carroll is to provide useful information for making wise decisions about

[89] Adom, Adu-Mensah, and Dake, *Op. Cit.*, p. 111.

[90] Adom, Adu-Mensah, and Dake, *Op. Cit.*, p. 111.

[91] Ridwan Fadhil, *Problems Faced By Student Teachers in Constructing Tests* (English Teaching Department Tarbiyah and Teacher Training Faculty State Institute for Islamic Studies (IAIN) Batusangkar, 2021), p. 9.

possible actions to be taken.[92] A test or evaluation has several purposes. The following suggests six different objectives in assessing students' abilities or potential consistent with Harrys and Vallete.

a. To set up readiness for academic programs
b. To classify individuals in suitable language classes.
c. To perceive personal specific strengths and weaknesses in students.
d. Evaluating studying competencies
e. Evaluating the quantity to which student learning results are associated with learning goals
f. Measuring the effectiveness of learning.[93]

3. Type of Test

The test can be divided into two, namely profiency test and achievement test. Proficiency test consists of placement test and diagnostic test. The achievement test consists of a summative test and a formative test.

a. Proficiency Test

1) Placement Test

The placement test is a test to measure the basic abilities possessed by students; This ability can be used to predict the ability of students in the future, so that they can be guided, directed or placed in a department that is in accordance with their basic abilities.[94] According to Brown, a placement exam is used to place a student at a specific level of a language program or school, and it offers a sample of the material that will be covered in the next courses in a curriculum. Additionally, Hughes stated that this test is designed to provide information that will help to

[92] Glenn Fulcher, *Practical Language Testing* (London: Hodder Education, 2010), p. 1.
[93] Mustika Auliyana, *Op. Cit.*, p. 20.
[94] Ridwan Fadhil, *Op. Cit.*, p. 10.

place test-takers at the particular level of the teaching program most suitable to their abilities.[95]

2) **Diagnostic Test**

Brown states that a diagnostic test is designed to target certain features of a language. A diagnostic exam is used to identify pupils' strengths and weaknesses, with the primary goal of ensuring what learning still needs to take place. Diagnostic tests are used to assess the specific sorts of issues that students have in a certain course. Knowing the variety of obstacles that students confront enables for more effort and the pursuit of appropriate solutions. In other words, a diagnostic test is designed to detect learners' weaknesses since they are having difficulty absorbing the learning content because they did not pass the last test. It will, indeed, assist teachers in achieving the learning purpose.[96]

b. Achievement Test

The achievement test must be qualified as one of the tests. A certified exam will be able to provide accurate information regarding instruction. According to Harris and Vallete, the achievement test assesses how much the learner has learnt throughout the duration of second language education. Hughes claimed that achievement tests are directly related to language lessons, with the goal of determining how effective individual students, groups of learners, or courses themselves have been in achieving goals. In line with that, Brown stated an achievement test is intimately tied to classroom subjects, units, or even the whole curriculum.[97] Achievement test is divided into two, namely formative test and summative test. Formative and summative evaluations are distincts measures which have long been used within the

[95] Auliyana, *Op. Cit.*, p. 24.
[96] Auliyana, *Op. Cit.*, p. 24.
[97] Auliyana, *Op. Cit.*, p. 25.

evaluation enterprise. According to Brown, there are two kinds of evaluation particularly formative and summative assessment.

1) Formative Test

According to Brown, formative testing analyzes learners as they build their skills and abilities with the goal of assisting them in continuing that growth process.[98] Bloom et al., defined formative testing as *"the use of systematic assessment in the processes of curriculum creation, teaching, and learning for the purpose of enhancing one of the 3 strategies".* It means to increase a course, curriculum, or program as a whole through a continuous evaluation process. In line with that Bachman and Palmer said that it refers to the procedure of collecting information and facts that contribute to creating useful "decisions about this system under improvement". Then, Bailey defines that formative evaluation is a form of assessment that provides feedback for program improvement. Mohr said this can help stakeholders obtain useful periodical guidance for them to "customize their activities".[99] Formative test is a test that aims to find out how far students understand a lesson that they have followed in the learning process within a certain period of time. Formative tests also aim to seek feedback, which then the results of the assessment can be used to improve the teaching and learning process that is being or has been implemented.

2) Summative Test

According to Brown, a summative exam tries to quantify or summarize what a student has learned and is often administered at the conclusion of a course or instructional unit. Typically, a summative examination is performed at the conclusion of the academic semester. It

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[98] Auliyana, *Op. Cit.*, p. 26.

[99] Adnan Alobaid, *"Testing, Assessment, and Evaluation in Language Programs,"* (A Dissertation: Arizona, The University of Arizona, 2016), p. 96.

could be made and run by education ministers, government test boards, or members of a teaching institution.[100] According to Anthony and Susan, summative assessment is to conducted to evaluate student learning and teachers teaching after a teaching period. A summative test is a test conducted to obtain data or information to what extent the mastery or achievement of student learning on the subject matter that has been studied. This test measures the learning success of students as a whole, the material tested is all the subjects and teaching objectives in an annual or semester program, each subject is represented in the items tested.[101]

4. Type of Test Items

The test is categorized into two groups according to scoring. There are subjective test and objective test. And both them are great for classroom test.

a. Subjective Test

Subjective tests, which are generally in the form of essays (descriptions). The essay form test is a kind of learning progress test that requires answers that are discussion or description of words. These essay questions require students to be able to organize, interpret, and relate the understanding they already have. In addition, it also requires students to be able to remember and recognize again so that they have high creativity. Subjective test is a kind of student learning progress test that requires answers that are discussion or description of words. The characteristics of the question are preceded by words such as: describe, explain, why, how, conclude, and so on.[102]

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[100] Auliyana, *Op. Cit.,* p. 25.

[101] Fitriani, "The Realization of HOTS on Summative Test Items Designed by English Teacher Group Discussion" *English Focus* Vol. 2, No. 2, (2019) p. 134"

[102] Kemala, *"Analisis HOTS (High Order Thinking Skills) Pada Soal Subjektif Tes Dalam Mata Pelajaran Bahasa Indonesia Pada Kelas V SD Negeri 24 Kota Bengkulu,"* (Thesis, Bengkulu: Institut Agama Islam Negeri (IAIN) Bengkulu, 2021), p. 19–20.

b. Objective Test

Objective tests are examination questions that can be answered objectively. True-false, multiple-choice, and matching are examples of objective tests.[103] In the use of this objective test, the number of questions asked is far more than the essay test. Objective tests consist of questions (items) that can be answered, by the testee by choosing one (or more) among several possible answers that have been paired with each item by writing (filling in) the answer in the form of certain words or symbols on the space or space provided for each. The item in question. In this study, the researcher only focused on the objective test related to the analysis of multiple choice items.

Multiple-choice questions require students to choose the right response from a list of possibilities, according to Brown and Hudson. Multiple-choice assessments have smaller guessing factors than true-false tests, and they may also be used to measure a broad range of specific learning points.[104] Brown explained the multiple choice item consist of a stem and a number of distractors (usually four), from which the student has to choose the appropriate one.[105]

A test with only one right answer is called a multiple-choice test. The multiple-choice question has the following parts: 1) *Stem*, the problem's main idea, question, or statement. 2) *Option*, some choices as an alternative answer. 3) *Key*, the right answer. 4) *Destructor*, all the answers except the right one.[106]

A typical multiple-choice exam question consists of two fundamental components: a problem (stem) and a list of

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[103] Nurul Ainun Islamia, *"The Standardization of English Teachers-Made Objective Test at SMAN 3 Palopo (A Case Study in Even Semester of First and Second Year SMAN 3 Palopo)*," English Language Studies Program of S1 Tarbiyah and Teaching Science Faculty of Institute for Islamic Studies of Palopo., (2018), p. 14.

[104] *Ibid.*, p. 15.

[105] Auliyana, *Op. Cit.*, p. 26.

[106] Nurul Ainun Islamia, *Op. Cit.*, p. 14.

possible answers (alternatives). The stem may be a question or an incomplete statement, and the list of alternatives includes one correct or best alternative (an answer) and several incorrect or inferior alternatives (distracters). The goal of the distracters is to seem like feasible solutions to the issue for pupils who have not met the test item's objective. In contrast, the distractions must look improbable to pupils who have accomplished the aim. These pupils should only accept the response as reasonable.[107]

C. REQUIREMENT OF A GOOD TEST

A good exam should be effective. Brown suggests using practicality, reliability, validity, authenticity, and positive washback to determine whether a test is excellent and successful. Below are the test characteristics.[108]

1. Practicality

According to Brown, practicality relates to cost, time allocation, test management, human resources, test development, and test scoring, in addition to its simplicity of implementation. The cost of a reliable test should be reasonable. Examinees and students should be able to afford it. Seek out a test that is reasonably priced without sacrificing quality. In Indonesia, for instance, the TOEFL test costs over $100 per student. This is unfair to Indonesian parents who are already financially suffering. This strategy is impracticable, distracts students, and makes it hard for them to examine the previous questions.[109]

Another factor to consider is the time allotted for the exam. Students in high school get sixty to ninety minutes to answer fifty questions. A five-hour exam would be too lengthy and a waste of time for pupils. Effective examinations are simple to conduct. Exam administration should be made as

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[107] Nurul Ainun Islamia, *Op. Cit.*, p. 15.

[108] Fachrurrazy, *Definitions and Principles of Language Assessment*, 1st ed., n.d., p. 25.

[109] *Ibid.*, p. 25.

straightforward as feasible, for instance, by using standard classrooms and readily accessible amenities.

Human resources should also be considered. Test administrators must be capable of preparing and administering exams. The test administrator must be capable of managing the examination; otherwise, the continuity of the examination will be compromised. Widespread usage of internet-based assessments necessitates that test supervisors have experience in the area of technology.

It is evident from the number of test participants that the exam is practical. If the number of participants reaches 300, it is preferable to create multiple-choice questions since they are simple to grade but time-consuming to prepare. If there are less than 50 test-takers, it is preferable to utilize the essay exam since the creation of questions is simple and the assessment may still be organized. The final consideration for practicality is scoring. Do the assessment method in an easy and practical way, not burdensome and not spending a lot of time. It is better to use a machine or an automatic correction tool such as a scanner etc.[110]

2. Reliability

Brown stated that reliability means consistency and dependability. If you give the same test to the same student or matched students on two different occasions, the test should yield similar results. The factors that test should yield similar results. The factors that contribute to the reliability or unreliability are:

a. Student-related reliability: The learner-related reliability is caused by temporary illness, fatigue, a bad day, anxiety, other physical or psychological factors.[111]
b. Inter rater reliability is caused by lack of attention to: scoring, criteria, inexperience, preconceived biases.[112]

[110] *Ibid,*. p. 26.
[111] *Ibid,*. p. 26.
[112] *Ibid,*. p. 28.

c. Intra rater reliability is caused by unclear scoring criteria, fatigue, carelessness, preconceived biases.[113]

3. Validity

Validity is basically defined as a test or assessment that is used to measure what is supposed to be measured. According to Brown, there are some aspects of validity, namely content-related validity, criterion-related validity, construct-related validity, consequential validity, and face validity.

a. Content-related validity refers to the validity of the content of a test in relation to its objective.
b. Criterion-related validity deals with whether a test reaches certain criteria.
c. Next is constructing validity, which means that a test should be valid in its construct. A construct refers to a theory, hypothesis, or model of something.
d. Consequential validity refers to the impact of a test on the test-takers.
e. Face validity is that which concerns the appearance of the test.[114]

4. Authenticity

According to Bachman and Palmer, authenticity might refer to the degree to which test tasks resemble real-world activities in the target language. Authentic evaluation, according to Brown and Abeywickrama, has the following characteristics:

a. Language that is as natural as feasible.
b. Contains contextualized rather than isolated elements.
c. Include significant, relevant, and engaging themes.
d. Includes meaningful, relevant, interesting topics.
e. Provides some thematic organization to items, such as through a story line or episode.

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[113] *Ibid,*. p. 26–27.
[114] *Ibid,*. p. 31–34.

f. Offers tasks that replicate real-world tasks.[115]

5. Washback

It is possible to define "washback" as the influence of a test or assessment on teaching, learning, the learner, or even on government and society. Washback may have a beneficial or a negative effect.[116] Alderson and Wall concur that washback occurs when "teachers and students do things they would not necessarily do because of the test." Alderson and Wall added that the effects of washback might be both favorable and unfavorable, building on the work of Vernon and Morris. According to Alderson and Wall, washback is already a complex occurrence. However, other aspects of the educational system, such as instructors' varying perspectives on successful teaching, could make the washback effect even more complex.[117]

According to Weigle and Jensen Positive washback is seen when test activities "demand the same authentic, participatory language use emphasized in the classroom such that there is a match between what is taught and what is tested". If a test has a positive washback, "there is no difference between teaching the curriculum and teaching to the test". To offer a basic example, if we wish to teach speaking skills, we should test speaking skills and vice versa. Another example of positive washback is if assessments need authentic writing, then sourcebooks include authentic writing assignments.[118] Negative washback, on the other hand, happens when there is a misalignment between the goals of instruction (as specified in the syllabus or curriculum) and the focus of testing. This frequently leads to these objectives being overlooked in favor

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[115] *Ibid,*. p. 34.

[116] *Ibid,*. p. 36.

[117] Qi Kuang, "A Review of the Washback of English Language Tests on Classroom Teaching," *English Language Teaching* 13, no. 9 (August 7, 2020): 10, https://doi.org/10.5539/elt.v13n9p10.

[118] Dina Tsagari, *Handbook of Assessment for Language Teachers* (Project Coordinator and Partners TALE Project, 2018), p. 191.

of test preparation (i.e., teaching to the test). A test consisting solely of controlled writing is an example of negative washback (e.g., a dictation exercise or filling in blanks in a given paragraph). This would promote linguistic accuracy rather than actual language learning/teaching.[119] It can be concluded that a positive washback is between the material being taught and the tests tested in class which lead to conformity. Meanwhile, negative washback is between the material being taught and the tests being tested which do not lead to conformity.

[119] Dina Tsagari, p. 192.

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