THESIS

ASSESSING HIGHER-ORDER THINKING SKILLS IN READING COMPREHENSION

(*A Descriptive Research Design*)

SYAH IBI HAMMA

10507 11004 21

Submitted as partial fulfillment of the requirements for the degree of
Master of English Education

POSTGRADUATE PROGRAM

MASTER OF ENGLISH LANGUAGE EDUCATION

MUHAMMADIYAH UNIVERSITY OF MAKASSAR

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HALAMAN JUDUL

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HALAMAN PENGESAHAN THESIS

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Written and Submitted by

SYAH IBI HAMMA
NIM. 10507 11004 21

Has Been Defended in Front of the
ThesisExamination Committee
On August 31st 2023
and Fulfilled the Requirements

Approved by
Committee of
Supervisors

Advisor I	Advisor II
Erwin Akib, S.Pd., M.Pd., Ph.D.	Dr. Syamsiarna Nappu, M.Pd.
NBM. 860 934	NBM. 860 934

Director of Graduate Program Muhammadiayah University of Makassar	Head of Magister of English Language EducationStudy Program
Prof. Dr. H. Irwan Akib, M.Pd.	Dr. Radiah Hamid, M.Pd.
NBM. 616 949	NBM. 767 402

HALAMAN PENERIMAAN PENGUJI

Thesis Title	: Assessing Higher-Order Thinking Skills In Reading Comprehension
Name	: Syah Ibi Hamma
NIM	: 10507 11004 21
Study Program	: Magister Pendidikan Bahasa Inggris

This is to certify that the thesis entitled **"Assessing Higher-Order Thinking Skills In Reading Comprehension"** On August 31st, 2023 has been approved by the committee of examiners and fulfilled the requirements.

Makassar, 31 August 2023

Approved by :

Committee of Examiners

Dr. Andi Adam, M.Pd.
(Chair of Examiner) .....

Erwin Akib, S.Pd., M.Pd., Ph.D..
(Advisor I) .....

Dr. Syamsiarna Nappu, M.Pd.
(Advisor II) .....

Dr. Radiah Hamid, M.Pd.
(Member of Examiner) .....

Dr. Nunung Anugrawati, M.Pd.
(Member of Examiner) .....

PERNYATAAN KEASLIAN TESIS

Yang bertanda tangan dibawah ini :

Nama : Syah Ibi Hamma

NIM 1050711004 21

Program Studi : Magister Pendidikan Bahasa Inggris

Menyatakan dengan sebenarnya bahwa tesis yang saya tulis ini benar- benar merupakan hasil karya saya sendiri, bukan merupakan pengambil alihan tulisan atau pemikiran orang lain. Apabila dikemudian hari terbukti atau dapat dibuktikan bahwa sebagaian atau keseluruhan tesis ini hasil karya orang lain, saya bersedia menerima sanksi atas perbuatan tersebut.

Makassar, 31 Agustus 2022

Syah Ibi Hamma

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Syah Ibi Hamma

ABSTRACT

Syah Ibi Hamma, 2023. *Assessing Students' Higher-Order Thinking Skills In Reading Comprehension*. Guided by Erwin Akib and Syamsiarna Nappu.

This research aimed to find out the score of students' higher-order thinking Skills (HOTS) in Reading Comprehension and the challenges faced by the students when solving HOTS.

This research used a quantitative descriptive design. The data were obtained by using tests and questionnaires. The subjects of this research were 22 students who studied in the Twelfth Grade IPA 1 in SMA Pesantren IMMIM Makassar. By definition, Higher Order Thinking is divided into 3 Categories which were Higher Order Thinking As Transfer (C4), Higher Order Thinking as Critical Thinking (C5), and Higher Order Thinking as Problem Solving (C6). The students answered the test and the questions were at the HOTS level. In challenges, this research investigated the challenges faced by the students when solving HOTS by analyzing the questionnaire.

The findings of this research revealed that the score of students' HOTS was 64,54% which was considered Good, It shows that students scored Higher-Order Thinking as Transfer (C4) was 81,8%, while Higher-Order Thinking as Critical Thinking (C5) was 54,5% and Higher-Order Thinking as Problem Solving (C6) was 9.1%, and as for the challenges faced by students when solving HOTS was 16.63% students facing difficulties in understanding the Meaning of Word (C4), 27.72% facing difficulties in Making Inferences (C5) and 28.81% students facing difficulties in Determining the Main Idea (C6) when solving HOTS Questions.

It can be concluded that the student's Higher-Order Thinking as Transfer (C4) was Excellent, Higher-Order Thinking as Critical Thinking (C5) was good and Higher Order Thinking as Problem-Solving was Poor, and the challenges that the students faced when solving HOTS Questions were mostly determining the main idea and making inference.

Keywords: *Higher-Order Thinking Skills, Reading Comprehension, and Reading Assessment*

LIST OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

CHAPTER I

INTRODUCTION

A. Background of the Research

The only foreign language taught in the Indonesian K13 Revision curriculum is English. Reading, hearing, writing, and speaking are all important components of learning English as a foreign language, in accordance with Indonesian Education Ministry regulation No. 22 of 2006 governing elementary and middle school standards. Learning English is more difficult than most people realize, and Indonesians do not speak English natively. The pupils, especially those in senior high school, likely confront numerous challenges. It is expected of these students to accurately comprehend what they have read. It helps them finish their reading comprehension assignments and broadens their perspective on current global challenges or the 4.0 Industrial Era (Sanjaya & Hidayat, 2022)

According to Al Hashimi et al., (2022) The 4.0 Industrial Revolution was an era where humans depended too much on technology which gradually changed human activities from conventional to digital. From communication, sharing thoughts (thinking), absorbing information to even reading. In the scale of absorbing information, the fast-changing and easy-to-get information where everything seemed to be very open and vast, media is releasing massive information on digital platforms where everyone can access it easily, but the problem is many of us cannot even recognize or tell whether it is a fact or opinion without reading it critically which is why many of us ended up believe in hoaxes.

To avoid the negative of digital usage, it is important to understand the information as a whole by reading it very carefully and thoroughly, in other words, doing a reading comprehension. As a matter of fact, the Indonesian students' reading performance from the reading test released by PISA in 2018 was ranked 74 of 80 countries which means Indonesian students' reading skills are classified as very low and below average. This was a real challenge to teachers and lecturers, they had to find a way to improve or fix this matter (Jones, 2010)

According to Driana et al., (2021) All students are currently dealing with the 4.0 Industrial Revolution which is different from the previous year. Teachers play a crucial role in educating students and preparing them for that era. People who live in the 4.0 era will face competition from both humans and technology. To support the students' competence, the preparation must be very strong. High-level thinking skills, or what we commonly refer to as Higher-Order Thinking Skills (HOTS), are one of the qualities that can help their life.

On the other hand, one of many goals of education in the 21st century is to develop students' Higher-Order Thinking Skills which is an integrated ability between problem-solving and critical thinking abilities. HOTS has an important role for students in real-life situations or real-world contexts which is to make the students not only remember the material but also make it integrate between the knowledge, application and become skills to make decisions in their daily life.

There are three categories of assessment capabilities HOTS as the ability to transfer the concept to another concept, a high-level thinking skill as a form of knowledge that possesses the ability to connect with others who are not familiar with situations; critical thinking skills (critical thinking skills), is the ability to understand the problems of logic, reflective thinking skills, the ability to argue that

can be focused to take a decision or do something; and the ability of problem-solving which are the ability to find a new way, a solution that is not common, defining the problem creatively (Brookhart, 2011).

The assessment of HOTS is needed because one of the purposes of K13 is to develop students' critical thinking through a test that indicates C4's questions which can evoke students' ability to analyze, evaluate, and create. Many studies investigate assessing HOTS in the English Foreign Language context. First, the previous studies conducted by Johansson (2020) were about how HOTS was assessed in online EFL courses. The result shows that in assessing HOTS, the teachers need well-planned and designed e-assessment tasks to create both linguistically and cognitively beneficial outcomes. It proves that developing e-assessment tasks to assess HOTS can be done.

Second, Pratiwi (2019) researched the Reflection of HOTS in EFL Teachers' Summative Assessment. Her study is aimed at analyzing how summative assessments made by eleventh-grade English teachers reflect Higher-Order Thinking Skills (HOTS). The results of her study found that the percentage of HOTS-based teacher-made test items was 5.4% and was still limited to the cognitive level of Analyze (C4). From the results of the analysis, the cognitive levels of students measured were still in Lower Order Thinking Skills (LOTS)

Third, Nurul Amali et al (2022) study aimed to explain how teachers perceive, implement, and assess HOTS assessment in teaching reading comprehension. It employed an exploratory sequential design. Using the purposive sampling technique. The study reveals that the teachers had a good perception of HOTS assessment in terms of concept and implementation. They implemented

HOTS assessment using appropriate strategies and methods in teaching reading comprehension. In addition, the teachers designed the proper assessment using HOTS assessment in assessing reading comprehension. The students' achievement also achieved the required score in reading comprehension. Although the teachers had exemplary performance, they still met difficulties due to students' needs and motivation.

Fourth, Turidho (2021) explored teachers' knowledge of HOTS, teachers' understanding of HOTS assessment, teachers' assessment practices, and the barriers encountered in vocational senior secondary schools. The findings revealed that almost all chemistry teachers believed that providing students in vocational senior secondary schools with HOTS was essential. However, knowledge of HOTS among most teachers was still inadequate, contributing to their unpreparedness in assessing the skills. Misunderstanding about higher-order thinking was also revealed, such as associating higher-order thinking with item difficulties. The teachers in this study considered students' factors as barriers to cultivating HOTS in chemistry learning in vocational senior secondary schools, such as lack of motivation, low academic ability, and lack of reading habits.

Fifth, Abkary (2020) this study investigates EFL teachers' strategies in assessing students' HOTS and its challenges. The research used a qualitative method, particularly a descriptive study. the data about how teachers assess students' HOTS and its challenges was collected through questionnaires and an interview. The findings indicated that from 22 EFL teachers, the strategies used mostly are summative assessment and authentic assessment in assessing students' HOTS. Besides, the teachers never made HOTS questions because of a lack of

understanding of HOTS assessment. This implied that teachers faced challenges in assessing students' HOTS. The challenges are divided into two aspects; teachers' understanding of the concept of HOTS assessment and students' aspects.

Sixth Wiyaka (2020)conducted a Higher-Order Thinking Skills (HOTS)-based Formative Assessment which is aimed to fill the existing gap by providing a model of higher-order thinking skills (HOTS)-based formative assessments for English learning, especially in junior high schools, this research describes the validation of the assessment model. The proposed model of assessment may be used as a prototype for assessing language learning. This model of HOTS-based assessments has been proven workable as a teacher's guide in implementing formative assessments when they are to improve the quality of teaching and learning and, at the same time, develop students' thinking skills.

Seventh Retnawati (2018) The purpose of this research is to describe teachers' knowledge about higher-order thinking skills (HOTS). The research involves qualitative study with the phenomenological approach. The results indicate that teachers' knowledge about HOTS, and their ability to improve students' HOTS, solve HOTS-based problems, and measure students' HOTS is still low. There are facts, however, that teachers already understand the importance of HOTS and teaching it by using various innovative learning models. None of them conducted an assessment of Higher-Order Thinking as Transfer, Higher-Order Thinking as Critical Thinking, and Higher-Order Thinking as Problem Solving in Reading Comprehension.

A preliminary study of this research was done at SMA Pesantren IMMIM Makassar where he did an observation on the twelfth grade and found that the students in grade 12 IPA 1 was the favorite class, they used English as a language to communicate with each other in daily basis. As a matter of fact, Pesantren IMMIM Makassar had two major languages that were used every day in the school environment, they were English and Arabic.

Based on the preliminary data above this research assessed the average score of students' HOTS and portrayed the challenges that students faced when solving HOTS which was why this research conducted a research entitled "Assessing Students' Higher-Order Thinking Skills in Reading Comprehension." This research results are expected to give new information and alternative solutions that can improve students' ability when solve HOTS problems.

B. Research Question

This research formulated the research questions based on the background mentioned previously as follows:

1. What is the score of students' Higher-Order Thinking Skills in Reading Comprehension on the Twelfth Grade of SMA PESANTREN IMMIM Makassar?
2. What are the challenges faced by the students when solving HOTS questions?

C. Objectives of the Research

Based on the problem research question previously, the objectives of this research were:

1. To find out the score of students' Higher-Order Thinking Skills in Twelfth Grade of SMA Pesantren IMMIM Makassar
2. To find out the challenges faced by the students when solving HOTS Questions

D. Significances of the Research

This research was expected to contribute as a sample of making assessments in SMA Pesantren IMMIM Makassar. It had two significances, which were theoretical and practical significances. Theoretically, the results of this research were expected to be a piece of helpful information for the teachers who had been teaching English. Meanwhile, as practical, this study was supposed to be one of the techniques that can be implemented in classroom activities to assess students' higher-order thinking skills.

E. Scope of the Research

This research conducted the assessment in SMA Pesantren IMMIM Makassar. This research used a quantitative research method. The subjects in this research were the twelfth-grade (12A) IPA 1 of SMA Pesantren IMMIM Makassar students. The main selection criteria were students who studied in twelfth grade. This research focused on assessing students' higher-order thinking skills by giving students a test that indicates HOTS which was Higher-Order Thinking as Transfer (C4), Higher-Order Thinking as Critical Thinking (C5), and Higher-Order Thinking as Problem Solving (C6) and challenges that students face when solving HOTS questions.

F. Operational Definition

This research used the terms assessment, Reading Comprehension, and Higher-Order Thinking Skills which are described in detail below:

1. Assessment is the wide variety of methods or tools that educators use to evaluate, measure, and document the academic readiness, learning progress, skill acquisition, or educational needs of students.
2. Reading Comprehension means that a reader applies certain processes, models, questions, and theories that result in enhanced clarity and comprehension.
3. Higher-Order Thinking Skills are skills that go beyond memorizing information or regurgitating stories.

CHAPTER II

REVIEW OF RELATED LITERATURE

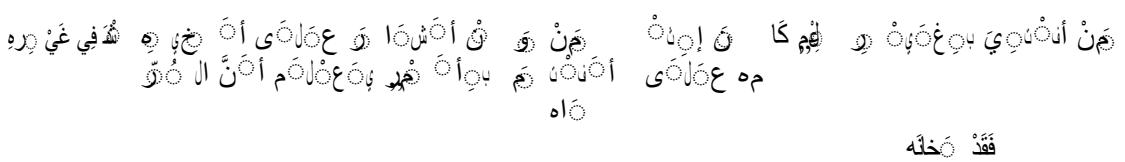
A. Verses of Al-Qur'an and Hadith

Reading is a very important point that is mentioned in the Quran. The most unique verse of the Quran that shows the importance of reading is, according to some Islamic scholars, the first verse of the Quran that was revealed to Prophet Muhammad S.A.W:

Read in the Name of your Lord who created; Created man from a clinging mass. Read, and your Lord is the most generous, who taught by the pen, taught man what he did not know." (96: 1-5)

The above few verses show how learning knowledge and wisdom is connected to writing and reading. It is by writing that human beings transfer their thoughts and learnings to others, and it is by reading those writings that people learn from others. It is by reading that people think, contemplate, and come up with new ideas which lead to more learning, wisdom, discovery and inventions.

In addition, a shahi hadith that narrated by Sunan Abī Dā wū d verse 3657 from Abu Huraira reported:



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Whoever is given an opinion not based on knowledge, his sin falls upon the one who gave him the opinion. Whoever directs his brother to a matter of which he knows good lies elsewhere, he has betrayed him.

B. Partinent Ideas

1. Reading Assessment

There are many uses for reading assessments, but they all start with a knowledge of the reading construct, awareness of how reading skills evolve, and an effort to reflect the construct in assessment tasks. For many teachers and managers, reading assessments can be intimidating and even overwhelming. As a result, the first objective of this chapter is to present a clear framework that classifies the various uses and purposes for assessment.

For many teachers and managers, reading assessments can be intimidating and even overwhelming. As a result, the first objective of this chapter is to present a clear framework that classifies the various uses and purposes for assessment. A reasonably straightforward yet comprehensive framework should enable readers to sort through their own assessment experiences in a manner that lends the framework interpretive force.

According to Nuttal (2000) in order for students to fully grasp a text, they need to be able to identify the main idea, locate specific information, draw conclusions, recognize references, and comprehend word meanings. These elements are viewed as challenges that the students face in understanding the book.

a. Determining Main Idea

A sentence that expresses the author's position on the subject is the primary idea. According to Cachia et al., (2018) the point of the passage, minus all the details, is the primary idea of a paragraph. Students are expected to identify the text's major idea when determining the main idea, so they should understand the subject matter of the text. The first sentence which is typically the primary idea can also be the middle or the final sentence. As a result, finding the main concept may become more challenging. The students might find it difficult to determine a passage's primary idea and where it is located.

b. Making Inference

Students are expected to understand the text in order to draw conclusions from the assertions in the text when drawing an inference. For instance, "What is the significance of the above statement?" This implies that the students must draw a conclusion from the remark. Kopitski (2007) added that in order to draw conclusions from the text's hints and prior information, readers must practice doing so. Because the statement's meaning is sometimes not stated in the text, it can be challenging for students to locate the text's end.

c. Understanding the Meaning of Word

In order to understand the meaning of a word, students must first understand the meaning of the phrase or text in which it appears, then they must determine the appropriate meaning of the word. Vocabulary is another crucial aspect of reading comprehension that language learners will struggle with, as noted by (Tajino et al., 2015). Therefore, before students read the material, it is

necessary to teach them unfamiliar vocabulary related to the text so that they can easily comprehend the material.

Many excellent books offer thorough explanations and discussions of the numerous choices mentioned for assessment practices. Assessment, according to Linse (2005), is the process of collecting data for a particular objective. Additionally, she stated that it's crucial to keep in mind that assessments should be used to gauge students' abilities and knowledge.

Assessments of reading comprehension serve three purposes, according to Vaughn & Klingner (1999). First, it assesses how well students understand concepts compared to peers in a norming straightforward. Another is to determine whether pupils have satisfied prerequisites for their grade level. By figuring out when students comprehend what they read and how effectively they use various comprehension strategies, a third goal is to guide teaching.

According to Jongsma (2005), comprehension is a process in which readers engage with text to make sense of it using a mix of their prior knowledge and 13 experiences, the information in the text, and their own opinions about the text. The goal of comprehending a text is to mentally reflect its meaning in conjunction with the reader's prior knowledge, as opposed to acquiring comprehension. What we learn and remember about the text we read is influenced by our prior information and personal experiences relating to its main ideas. Our understanding is influenced by word meaning and global information.

It is difficult to evaluate reading aptitude, and reading is much more complicated than is typically understood. Alderson et al., (2015) claim that evaluating L2 reading ability is even more difficult because it takes into account not only reading ability but also language expertise and proficiency in the second or foreign language (SFL). The purpose of reading assessments is to offer input on the abilities, procedures, and knowledge bases that correspond to reading comprehension of the text.

However, it's essential to keep in mind that various assessment methods might be based on various reading and reading development theories. Assessment in reading can enhance students' learning processes and make them happy. For students with poor grades, reading in a text will rise, and the teacher is aware of how much each student can read. Teaching and learning are both aided by reading assessments.

1.1. Goals for reading assessment

Although it is essential to note that different assessment practices may assume different theories of reading and reading development, reading assessments are intended to provide feedback on the skills, processes, and knowledge resources that reflect reading abilities. All assessment frameworks serve significant purposes, and there are numerous methods to categorize assessment in general. Assessments are frequently divided into four categories: proficiency, achievement, placement, and diagnostic evaluations. These categories include norm-reference and criteria on reference testing, formative

and summative evaluations, formal and informal (or alternative) evaluations, and norm-reference and criteria on reference testing. For the goals of this book, there are five fundamental assessment purposes that are used to organize and describe the reading assessment process. There are five goals for literacy evaluations:

1. Reading-proficiency assessment (standardized testing)
2. Assessment of classroom learning
3. Assessment for learning (supporting student learning is the purpose)
4. Assessment of curricular effectiveness
5. Assessment for research purposes

There is an inevitable overlap among specific test uses across these categories, but these categories, nonetheless, serve as a useful framework for organizing reading assessments.

a. Reading-proficiency assessment

It's critical to assess students' reading abilities in order to understand their general reading skills (based on an underlying reading construct) and assess whether they are adequately prepared for future learning and educational progress. Although regional organizations and researchers also create proficiency tests of various types, this form of assessment is frequently referred to as standardized testing. The majority of the time, proficiency assessments are high-stakes exams because choices are frequently made regarding students' future educational opportunities and objectives. Alternatively, this kind of evaluation may result in special education or reading-disability classifications,

which are difficult to remove from a student's file once they have been made. Reading proficiency assessment is also sometimes used for student placement, for policy decisions, for curriculum changes, or for program, teacher, or institutional evaluations.

b. Assessment of classroom learning

Summative or achievement testing is the term used to describe the measurement of skills and knowledge acquired over time in order to assess reading progress in classroom settings. Proficiency tests are occasionally used to track students' progress over time (as in a final exam), but this kind of reading test does not account for continuing improvements in students' reading abilities made in the classroom. Instead of measuring improvements in reading abilities based on what was taught in class, year-end testing actually tracks proficiency development over time. Assessment activities that are based on the knowledge and abilities learned in class are used much more frequently.

These tests are typically developed by teachers, teacher groups, curriculum groups, or textbook authors. It is up to them to determine what constitutes a measure of success and what actions should be taken in response to the results of the evaluation. Using common methods (such as end-of-unit tests, quizzes of various types, post-reading comprehension questions, etc.), teachers have numerous opportunities to evaluate student learning at various times throughout any semester. However, some alternatives for classroom assessment are less apparent.. Student observations, self-reporting measures, progress charts, engagement and group work, group outcomes assessment, and

interviews are just a few of the informal and alternative assessment options that are essential to the 16 effective assessment of learning methods. These methods typically provide converging evidence over time for the appropriate summative assessment at the end of the school year.

Learning assessments may be normative (looking at how pupils compare to one another) or criterion-based (how well students perform on curriculum standards and established learning goals). These two testing objectives ought to result in somewhat distinct tests and scoring. For the simplest illustration, normative testing would discourage all students from getting a "A," whereas criterion-based tests might allow this to happen.

c. Assessment for learning

In discussions of L2 assessment, assessment for learning includes a type of reading assessment that is not frequently discussed and is somewhat novel. The goal of this assessment is to encourage and support pupil learning, specifically the development of reading skills. The purpose is to give students instant feedback on their work and teach them how to learn more effectively, not to evaluate performance or keep a record of results. This method appears to overlap with classroom learning assessment in many ways, but only with regard to a large number of the reading assignments completed, not the follow-up feedback and interaction between the teacher and the students.

Students are involved in their own learning when assessments are used for learning, and when there are indications of no comprehension or poor performance, instruction is continuously improved and remedied. There are

two basic categories of "assessment for learning" practices: the first is the use of well-known classroom assessment activities to offer beneficial feedback for learning, and the second is the use of particular assessment for learning techniques to directly assist students in their day-to-day learning.

d. Assessment of curricular effectiveness

Although not specifically related to reading, program evaluation and assessment of curriculum success are important for the creation and/or review of reading curricula. Standardized testing, cumulative records over years that show gains or losses in student outcomes, interviews with teachers, students, and school administrators on summative test performance, feedback from institutions that receive graduates from the program or school, and innovative assessments that highlight particular school or program goals are all assessment outcomes that apply to the effectiveness of curricula (e.g., project work, motivation, extensive reading, writing skills, or collaboration and group work)..

A large-scale assessment of reading curricula as well as a programmatic needs analysis should both take these evaluations into account. They represent various types of evaluation goals and go beyond the immediate objectives of student assessment. This chapter won't go into further detail on the subject, but key concepts and resources regarding teacher and program evaluation are discussed in Lange & Brown (1996), Black & Lynch (1996), Rea-Dickins et al., (2014), and Richards (2001)

e. Assessment for research purposes

Although it is a subject that is rarely covered in assessment chapters, assessment for research purposes is crucial for understanding research findings and their consequences for reading instruction. Standardized assessment tools are occasionally used in research projects to gauge student achievement levels or learning outcomes. However, for a number of factors, researchers in other studies create their own reading assessment measures. Whatever the motivation, research-developed measures must adhere to anticipated standards for any appropriate and impartial evaluation practice.

The measures must be legitimate in the first place, which means they must be trustworthy, construct-relevant, beneficial, equitable, and responsible (with respect to consequences). Reading research can have a significant influence on instruction and pupil learning. All of these study conclusions include assessment measures, and they must be reliable. It is crucial to make sure tests are created and used properly because students are likely to perform somewhat differently even across various standardized measures (Cutting & Scarborough, 2006). It is important to emphasize the importance of using numerous measures in all research contexts.

1.2 **Expanded Purpose of Reading Comprehension Assessment**

When considering the goals of reading comprehension assessment, the assessment of children with known reading difficulties and tracking their development through intervention receive the most attention. But in recent years, the goals of understanding testing have grown. Nejad & Keshavarzi,

(2015) the assessment of reading comprehension in school settings has at least four essential purposes:

1. State and district evaluation and accountability of programs and curricula;
2. Identification of children at risk for problems;
3. Differential diagnosis of children with reading problems; and
4. Measurement of student progress/outcomes during the course of intervention.

The first goal, which is assessing educational programs and curricula, is not particularly novel. The part that this process' assessment of students' learning outcomes performs has changed. Recent years have seen the development of reading comprehension tests with distinctive characteristics, in addition to assessment becoming the de facto instrument for accountability.

2. Higher-Order Thinking Skill

High-order thinking skills are a series of important competencies individuals can utilize in order to improve learning progress and critical thinking. Those who employ high-order thinking skills understand how to analyze and evaluate complex information, categorize, manipulate, and connect facts, troubleshoot for solutions, understand concepts, connections, and big-picture thinking, problem solve, ideate, and develop insightful reasoning.

High-order thinking skills, also called high-order thinking or HOT, refer to skills that go beyond memorizing information or regurgitating stories skills at the bottom of the Bloom's Taxonomy hierarchy and emphasize the

development of analytical skills. High-order thinking skills are thought to be harder to teach and learn than mere facts but are ultimately more important for developing critical thinking and analytical faculties. Though essential at the university and college level, high-order thinking skills are thought to be increasingly important in early education.

According to Brookhart (2011) Definition of Higher-Order Thinking Skills is divided into three categories which are Higher-Order Thinking in terms of transfer, Higher-Order Thinking in terms of Critical Thinking, and Higher-Order Thinking in terms of Problem Solving. The definition is as follows:

a. Higher-Order Thinking as Transfer

The most general of the approaches to higher-order thinking is the Anderson et al., (2001) division of learning into learning for *recall* and learning for *transfer*. Learning for recall certainly requires a type of thinking, but it is learning for transfer that Anderson, Krathwohl, and their colleagues consider "meaningful learning." This approach has informed their construction of the Cognitive dimension of the revised Bloom's taxonomy.

For many teachers, operating with their state standards and curriculum documents, higher-order thinking is approached as the "top end" of Bloom's (or any other) taxonomy: Analyze, Evaluate, and Create, or, in the older language, Analysis, Synthesis, and Evaluation (Anderson et al., 2001).

The teaching goal behind any of the cognitive taxonomies is equipping students to be able to do a transfer. "Being able to think" means students can

apply the knowledge and skills they developed during their learning to new contexts. “New” here means applications that the student has not thought of before, not necessarily something universally new. Higher-order thinking is conceived as students being able to relate their learning to other elements beyond those they were taught to associate with it.

b. Higher-Order Thinking Skill as Critical Thinking

Critical thinking, in the sense of reasonable, reflective thinking focused on deciding what to believe or do Norris & Ennis (1989) is another general ability that is sometimes described as the goal of teaching. In this case, “being able to think” means students can apply wise judgment or produce a reasoned critique. An educated citizen is someone who can be counted on to understand civic, personal, and professional issues and exercise wisdom in deciding what to do about them. As we all learned in American history class, Thomas Jefferson argued this point explicitly. He believed that education was necessary for freedom, and that having a citizenry that could think and reason was necessary for a democratic government.

The goal of teaching here is seen as equipping students to be able to reason, reflect, and make sound decisions. Higher-order thinking means students can do this. One of the characteristics of “educated” people is that they reason, reflect, and make sound decisions on their own without prompting from teachers or assignments.

Wisdom and judgment are particularly important in higher-order think- ing tasks like judging the credibility of a source, always an important

skill but newly emphasized in the era of ever-expanding, electronically available information. Identifying assumptions, a classic skill, also is very relevant today. As schools and society become increasingly diverse, it is less likely that everyone's assumptions will be similar.

Examples of the importance of critical judgment occur in all disciplines. Literary criticism involves both analyzing works of literature and evaluating to what degree the piece of writing succeeds in accomplishing the author's purpose. Advertisers estimate the effect of various advertising strategies on different audiences. Closer to home, students estimate the effects various arguments might have in persuading their parents of their point of view. All of these involve critical judgment about purposes and assumptions and about the relative effectiveness of various strategies used to meet these purposes.

To help students learn to think by looking at works of art, Project Zero at Harvard University developed the "Artful Thinking Palette" (Barahal, 2008). Six thinking dispositions are listed around the image of a paint palette: exploring viewpoints, reasoning, questioning and investigating, observing and describing, comparing and connecting, and finding complexity. Although these dispositions were developed in the context of learning from visual art, they are good ways to approach other critical-thinking tasks as well. For example, try thinking about how these six approaches apply in the study of literature, history, or science.

c. Higher-Order Thinking Skills as Problem Solving

A problem is a goal that cannot be met with a memorized solution. The broad definition of problem-solving as the nonautomatic strategizing required to reach a goal Nitko & Brookhart (2011) can also be seen as a broad goal of education. Every academic discipline has problems. Some are closed problems, like a set of math problems designed to elicit repeated practice with a particular algorithm. But many problems are open-ended, could have many correct solutions or multiple paths to the same solution, or are genuine questions for which answers are not known. Economists, mathematicians, scientists, historians, and engineers all are looking for effective or efficient solutions to both practical and theoretical problems. Educators are, too. Teachers propose a solution strategy for a complex problem of how to effectively teach a particular learning target to particular students in a given amount of time and with the materials available every time they write a lesson plan. Many life problems are open-ended. For example, planning for and living within a budget is an open-ended problem most households deal with. People solve problems in many different ways, depending on the values and assumptions they bring to the task.

Bransford & Stein (1993) noted that problem-solving broadly conceived in a model they call the IDEAL problem solver is the mechanism behind learning for understanding. This is a similar position to Anderson et al., (2001) discussion of “meaningful learning.” Bransford and Stein also

point out that problem-solving is the general mechanism behind all thinking, even recall. This may seem ironic but think of it this way. To recall something, students have to identify it as a problem

In fact, Bransford and Stein say that in addition to driving both recall and learning, problem-solving is necessary for critical thinking, creative thinking, and effective communication. The role of problem-solving in critical thinking

The goal of teaching is to equip students to be able to identify and solve problems in their academic work and in life. This includes solving problems that are set for them (the kind of problem-solving we usually think of in school) and solving new problems that define themselves, creating something new as the solution. In this case, "being able to think" means students can solve problems and work creatively.

2.1 Principles for Assessing Higher-Order Thinking

According to Charles in Brookhart (2010) There are three principles when writing assessment items or tasks that will help to assess higher-order thinking which are using introductory material or allowing access to resource material, use novel material, and attending separately to cognitive complexity and difficulty.

2.1.1 Assessing Analysis

Questions or tasks must require students to locate or describe the parts of the information and determine how they relate in order to evaluate the caliber

of their reasoning as they break it down into its component parts and use that information to support their arguments. Students are given information (or asked to find information) in analysis-level questions, which are followed by questions or problems whose solutions necessitate differentiating or arranging the parts in a logical order. A common component of the analysis job is to explain the logic that was used to connect the components.

a. Focus on a Question or Main Idea

To assess how students focus on a question, give students a statement of a problem or policy, a political address or cartoon, or an experiment and results. Then ask students what the main issue or problem is. A teacher could also ask what criteria they would use to evaluate the quality, goodness, or truth of the argument or conclusions.

An essay version of this assessment item could also be used. One example of how to do this follows:

What is the main point of the passage above? State the main point in your own words, and then give evidence from the passage.

Criteria for feedback or rubrics

a. Clear, appropriate statement of the main point
b. Appropriateness of evidence.
c. Soundness of reasoning and clarity of explanation

These criteria should be the basis for feedback (with or without a score) if the assessment is used for formative purposes. These criteria could become the basis for scoring rubrics if the assessment is used for grading. A single holistic rubric could incorporate all three criteria, as in this example:

Does the student identify the main point and clearly support it with evidence from the text?

2 = Completely and clearly-Main point is clearly stated, and evidence from the passage supports it. Explanation clear

1 = Partially-Main point is stated, but not well supported with evidence from the passage. The explanation is not completely clear.

0 = Main point is not stated or is not correct. Evidence from the passage is missing

Table 2.1 Rubric Score
An analytic rubric for identifying the main idea

	2	1	0
Thesis (statement of the main point)	Thesis is clear, is complete and accurately reflects the main point	Thesis is clear and at least partially reflects the main point.	Thesis is not clear and/or does not reflect the main point.
Evidence	Evidence is accurate relevant, and complete	Evidence is mostly clear, relevant, and complete	Evidence is not clear, relevant, or complete.
Reasoning and clarity	The way in which the evidence supports the thesis is clear, logical, and well explained	The way in which the evidence supports the thesis is mostly clear and logical. Some explanation is given	The way in which the evidence supports the thesis is not clear is illogical, and/or is not explained

(adopted from Brookhart 2011)

b. Analyze Arguments or Theses

Once an author's main point, argument, or thesis is identified, it can be further analyzed. Identifying underlying assumptions, representing the logic or structure of the argument, finding irrelevancies if there are any, and judging the similarities or differences in two or more arguments are all analysis skills.

To assess how students analyze arguments, give students an argumenta text or a speech, for example. Then ask students one or more of the following questions:

d. What evidence does the author give that supports the argument(s)?

e. What evidence does the author give that contradicts the argument(s)?

f. What assumptions need to hold for the argument(s) to be valid?

g. Are any part(s) of the statement irrelevant to the argument(s)?

h. What is the logical structure of the argument(s)?

2.1.2 Assessing Evaluation

To assess evaluation, teachers need items or tasks that can assess how students judge the value of materials and methods for their intended purposes. Students can appraise the material against criteria. The criteria can be standard (for example, literary, historical, scientific) or criteria that the students invent themselves (in which case an element of creativity is involved as well). This kind of evaluation isn't a personal preference ("Chocolate is the best flavor of ice cream"), but a reasoned evaluation that can be stated as a thesis or a conclusion and supported with evidence and logic. To assess how well students can do an evaluation, give them some material and ask them to judge its value for some purpose.

Questions requiring literary criticism are an example of this type of evaluation. Literary criticism answers questions such as these: How effectively did the author use imagery? How compellingly did a situation grab a reader's attention or elicit an emotional response? In fact, most critiques of anything, music reviews critiques, restaurant reviews, and book reviews are evaluations. In both the natural and social sciences, reviews of literature that appraise how strong the evidence is for supporting a theory (for instance, the Big Bang theory

of the birth of the universe) are evaluated. A good current example of the importance of evaluation as a thinking skill is the reviews and articles appearing in both the scientific and popular press evaluating the evidence about global warming.

A rubric, feedback, or both could be used, depending on the purpose of teacher assessment. A holistic rubric based on these criteria might look like the following:

Does the student's evaluation identify uncontrolled aspects of the experiment and explain why they need to be controlled?

2 = Completely and clearly- Uncontrolled aspects of the experiment are clearly identified and evaluated as inadequate. Reasoning is explained and is related to the concept of experimental control. Explanation is clear

1 = Partially-Some uncontrolled aspects of the experiment are identified and evaluated as inadequate. Some reasoning may not be clearly explained or not entirely related to the concept of experimental control

0 = No-Uncontrolled aspects of the experiment are not identified, or no evaluation is given. Reasoning is missing or not related to the concept of experimental control. Explanation is not clear

2.1.3 Assessing Creation

To assess whether students can "create" in Bloom's taxonomy sense means assessing whether they can put unlike things together in a new way, or reorganize existing things to make something new. Present students with a task

to do or a problem to solve that includes generating multiple solutions, planning a procedure to accomplish a particular goal, or producing something new. The creation we are discussing here is what the old Bloom's taxonomy called "synthesis," and it overlaps with creativity in the broader sense. Here are examples of assessing synthetic, creative thinking about academic problems.

Table 2.2 Assessing Creation
How to Assess Students "Create" in Bloom's Taxonomy

To Assess How Well Students Can…	Provide This Kind of Material	And Ask Students To…
Focus on a question or identify the main idea	A text, speech, problem, policy, political cartoon, or experiment and results	Identify the main issue, the main idea, or the problem, and explain their reasoning
Analyze arguments	A text, speech, or experimental design	Identify what evicence the author gives that supports (or contradicts) the argument Identify assumptions that must be true to make the argument valid Explain the logical structure of the argument (including identifying irrelevancies, if they exist)
Compare and contrast	Two texts, events, scenarios, concepts, characters, or principles	Identify elements in each Organize the elements according to whether they are alike or different

Evaluate materials and methods for their intended purposes	A text, speech, policy, theory, experimental design, work of art	Identify the purpose the author or designer was trying to accomplish Identify elements in the work Judge the value of those elements for accomplishing the intended purposes Explain their reasoning
Put unlike things together in a new way	A complex task or problem	Generate multiple solutions or Plan a procedure Produce something new
Assess their own work (self-assess)	A set of clear and one or more examples of their own work	Identify elements in their own work Evaluate these elements against the criteria Devise a plan to improve
Make or evaluate a deductive conclusion	Statement or premises	Draw a logical conclusion and explain their reasoning or Select a logical conclusion from a set of choices or Identify a counter-example that renders the statement untrue

Make or evaluate an inductive conclusion	A statement or scenario and information in the form of a graph, table, chart, or list	Draw a logical conclusion explain their reasoning or Select a logical conclusion from a set of choices
Evaluate the credibility of a source	A scenario, speech, advertisement, web site or other source of information	Decide what portion of the information is believable, and explain their reasoning
Identify implicit assumptions	An argument, speech, or explanation that has some implicit assumptions	Explain what must be assumed (taken for granted) in order for the argument or explanation to make sense or Select an implicit assumption from a set of choices
Identify rhetorical and persuasive strategies	A speech, advertisement, editorial, or other persuasive communication	Identify elements of the communication that are intended to persuade, and explain why Identify any statements or strategies that are intentionally misleading, and explain why
Identify or define a problem	A scenario or problem description	Identify the problem that needs to be solved or Identify the question that needs to be answered
Identify irrelevancies to solving a problem	A scenario or problem description that	Identify the elements that are relevant and irrelevant to solving the problem, and

	may include some irrelevant material	explain their reasoning
Describe and evaluate multiple solution strategies	A scenario or problem description	Solve the problem in two or more ways Prioritize solutions and explain their reasoning
Model a problem	A scenario or problem description	Draw or diagram the problem situation
Identify obstacles to solving problem	A scenario or problem description	Explain why the problem is difficult Describe the obstacles to solving the problem Identify additional information needed for solving the problem
Reason with data	A text, cartoon, graph, data table, or chart and a problem that requires this information or its solution	Solve the problem and explain their reasoning
Use analogies	A scenario or problem description (and possibly a solution strategy)	Solve the problem and explain how the solution would apply to other scenarios or problems or Explain how the solution would apply to other scenarios or problems
Solve a problem backward	A scenario or problem description and a desired end state or solution	Plan a strategy to get to the end state from the problem statement or Describe how to reason backward

		from the solution to the question
Think creatively	A complex problem or task that requires either brainstorming new ideas or reorganizing existing ideas or a problem with no currently known solution	Produce something original or Organize existing material in new ways or Reframe a question or problem in a different way

(adopted from Brookhart 2011)

2.2 Strategies for Giving Feedback or Scoring Tasks That Assess Higher-Order Thinking

There are two types of strategies for giving feedback or scoring tasks when assessing higher order thinking skills which are

a. Formative Assessment of Higher-Order Thinking

Observing and discussing student reasoning directly can be a powerful way to assess higher-order thinking. Give students an assessment, and use it formatively. Have conversations with students about their reasoning, or give substantive written feedback. The conversations and feedback should be based on learning target and criteria.

Here is an example from Robert Danka, an 8th grade mathematics teacher at Kittanning High School in Pennsylvania. He was familiarizing his students with the kind of open-ended math problems that might appear on the Pennsylvania System of School Assessment (PSSA) test. Open-ended PSSA

students need first to be able to identify the problem. Here is one part of one of the sample problems Robert used:

> "The Gomez family is taking a trip from Kittanning [Pennsylvania] to Atlanta, Georgia. The trip is 744 miles. They are leaving at 6 a.m. and would like to arrive at 6 p.m. How fast would they have to drive in order to arrive on time? Show and explain your work. "

The major purpose for using this problem is to help students appraise the quality of their explanations of math problem solving, a formative purpose. These skills would help the students on the PSSA, a summative evaluation. This teacher gave students feedback on both the correctness of their answers and the quality of their explanations. Although it may seem automatic to the adults reading this chapter, identifying the problem as a distance problem that requires division is an important skill.

b. Summative Assessment of Higher-Order Thinking Skill

A complex task requiring higher-order thinking can be subverted by a scoring scheme that gives points only for facts reported. Conversely, scoring the quality of students' reasoning on even some very simple tasks can assess higher-order thinking. For summative assessment of how students use higher-order thinking for graded tests and projects a scoring scheme must be devised in such a way that higher-order thinking is required to score well. This requirement means that soundness of thinking must figure into the criteria from

which the rubric is developed. Some rubrics or other scoring schemes attend mainly to surface features or merely count the number of correct facts in students' responses. Such scoring schemes can turn an exercise in which students *did use* higher-order thinking into a score that *doesn't reflect* the thinking students did.

Multiple-choice questions**.** Multiple-choice questions would typically be scored with one point for a correct choice and no points for an incorrect choice. The "thinking" is encoded into the choosing. It is worth reminding readers here that for the resulting scores to mean that students use higher-order thinking, the questions have to be designed so that higher-order thinking really is required to answer.

Constructed-response and essay questions. For constructed-response answers to questions designed to tap various kinds of reasoning, often a rubric with a short scale will work well. Start with the criterion, the type of thinking which intended to assess. For example, ask, "Does the student weigh evidence before making decisions?" or "Does the student appropriately evaluate the credibility of the source?" Then use a scale that gives partial credit depending on the quality of the reasoning.

C. Conceptual Framework

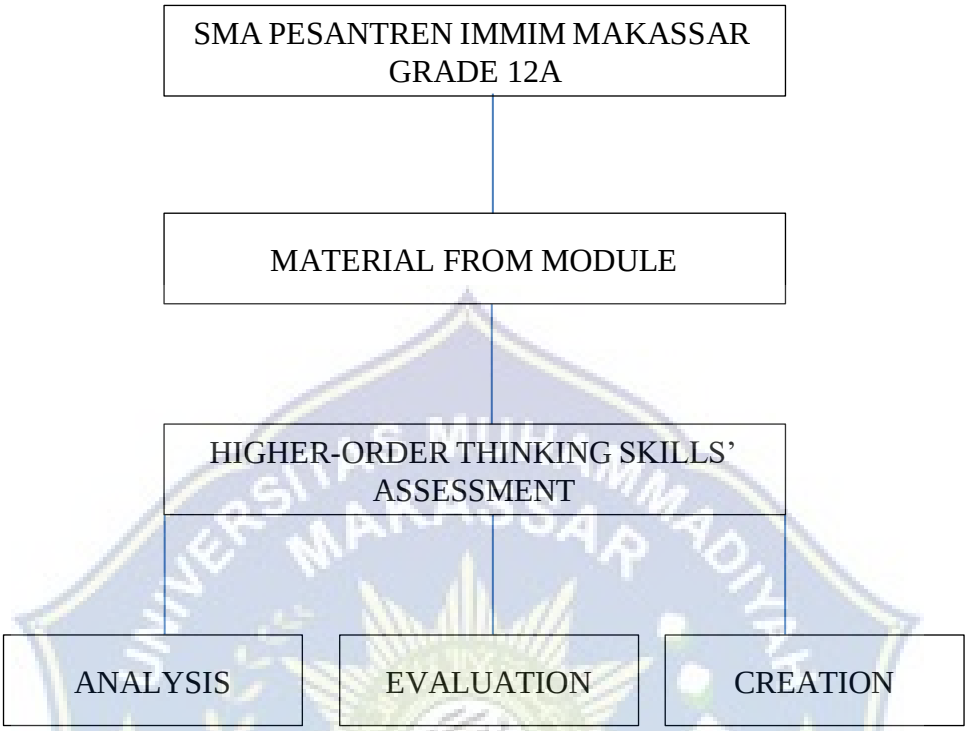

Figure 2.3 Conceptual Framework

From the conceptual framework above, the writer focused on the Higher-Order Thinking Skills assessment. The writer gave questions that indicate Higher-Order Thinking Skills which were Analysis, Evaluation, and Creation based on the material from the module of SMA PESANTREN IMMIM Makassar Grade 12A.

CHAPTER III

RESEARCH METHOD

A. Research Design

This study used a quantitative research methodology. According to Creswell (2018) quantitative research was a technique for examining the relationship between variables to evaluate objective hypotheses. These variables can be measured, frequently with the aid of instruments, to allow statistical analysis of numbered data. This research, it was used Higher-Order Thinking Skills questions as an instrument to determine and analyze the score of students' HOTS in Critical Reading Comprehension.

B. Population and Sample

This research utilized a descriptive research design and used quantitative data. The Population were 120 students of SMA Pesanren IMMIM Makassar. The sample was 22 students from Twelfth Grade IPA 1 of SMA Pesantren IMMIM Makassar. These students learn English as a foreign language and they are selected using Total sampling Technique.

C. Research Instrument

1. Test

The writer used the HOTS-Based Reading Literacy Assessment Instrument that gave learners' questions as instruments to collect data or gather information from learners. A HOTS-Based Reading Literacy Assessment Instrument was used to collect the data about students' HOTS scores, which were received from the test.

Table 3.1
HOTS-Based Reading Literacy Assessment Instrument

Aspect	Description
Indicators of Higher-Order Thinking Skills	Analysis, Evaluation, Creation, Logic, Reasoning, Judgment, Problem Solving, Creativity And Creative Thinking
Text type	News
Question types	Multiple choice and Essay Questions

adopted from Damaianti et al., (2020)

2. Questionnaire

The writer used a questionnaire that investigated the student's challenges when solving HOTS in Reading Comprehension questions.

2. Technique of Data Collection

In collecting data the writer applied the procedures as follows :

1. This research had the permission of SMA Pesantren IMMIM English Teacher for assessing students' HOTS scores.
2. The writer made a rubric score about students' HOTS score, which consists of three main scoring: Higher-Order Thinking as Transfer, Higher-Order Thinking as Critical Thinking, and Higher-Order Thinking as Problem Solving.

3. Data Analysis

The data in this research was analyzed through SPSS Version 25. Below were several data that were calculated:

1. Analyzed the percentage of students' HOTS
2. Calculated the mean of the students' HOTS score

Table 3.1
Category for assessing higher-order thinking skills

Score Interval	Level of students' higher order thinking
74-100	Excellent
47-73	Good
0-46	Poor

adapted from Akib & Ghafar (2015)

Table 3.2
Scoring Guidance and the Explanation of Criterion: Scoring Rubric of HOTS in Reading Comprehension

Item Analysis	Score	Criterion of Scoring
Higher-Order Thinking as Transfer	20 10 0	High : Evidence is clear, accurate and complete Mid. : Evidence is mostly clear, relevant and complete Low : Evidence is not clear, relevant and complete
Higher-Order Thinking as Critical Thinking	20 10 0	High : Evidence is clear, accurate and complete Mid. : Evidence is mostly clear, relevant and complete Low : Evidence is not clear, relevant and complete
Higher-Order Thinking as Problem Solving	41-60 21-40 0-20	High : Clear, appropriate identification of two Additional peces of information. Mid : Appropriateness of evidence Low : Soundess of reasoning and clarity of explanation
Total	100	

(adopted from Brookhart 2011)

Table 3.3
Interval Students' Challenge When Solving HOTS In Reading Comprehension Criteria

Criteria	Percentage
Strongly Agree	84% < Score <100%
Agree	68% < Score <83%
Neutral	52%< Score <67%
Disagree	36%< Score <52%
Strongly Disagree	35%<

adopted from (A. Al Roomy, 2022)

Table 3.4
Scoring Guidance and The explanation of Criterion: Scoring Questionnaire rubric

No.	Indicators	Aspect of Challenges	Layout				
			SD	D	N	A	SA
1	I cannot remember vocabulary technically	Understanding the meaning of word					
2	I cannot deduce the information from the questions.						
3	I cannot determine the relevant information in questions.	Making inference					
4	I cannot classified detailed information in questions.						
5	I cannot state the meaning of the terms that represents the questions.	Determining the main idea					
6	I cannot remember one or more necessary conditions for an object to be expressed in the term that represent the questions.						

adapted from Amalia Rakhmyta & Maulidiyah (2021)

CHAPTER IV

FINDINGS & DISCUSSION

A. Findings

In this section, the data presented were the result of data analysis from a test. The details of the findings were described as follows:

1. The Score of Students' Higher-Order Thinking Skills in Reading Comprehension

In this research, students' Higher-Order Thinking Skills in Reading Comprehension were analyzed and calculated quantitatively by using a test that included 6 questions which were 4 multiple choices and 2 open-ended questions. The multiple choices will be scored 10 per each if correct and 0 if incorrect, and the open-ended questions will be scored 0-30 each. In this section, the students' HOTS score was presented as follows:

Table 4.1
The Score of Students' HOTS in Reading Comprehension

Score Interval	Amount of Students	Level of students' higher order thinking
74-100	8	Excellent
47-73	11	Good
10-46	3	Poor

Table 4.1 showed the score of HOTS in Reading Comprehension answered by the students. The subjects of the test were students in Twelfth Grade IPA 1 of SMA Pesantren IMMIM Makassar. There were 22 students that tested which was 2 students scored 40, 2 students scored 50, 7 students scored 60, 2 students scored 70, 6 students scored 80, a student scored 90, with

the highest score was 100 (perfect score) while the lowest score was 10 and the average score was 64,54.

Table 4.2
The Category of Students' HOTS in Reading Comprehension

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	3	13.6	13.6	13.6
	Good	11	50.0	50.0	63.6
	Excellent	8	36.4	36.4	100.0
	Total	22	100.0	100.0	

Table 4.2 showed the category of students HOTS answered by the students. The data from the previous table was analyzed through SPSS to find which category of students' HOTS in Reading Comprehension and the results showed there were 3 students scored below average or (13.6%) in percentage which was categorized as Poor category, there were 11 students scored average or (50%) in percentage which was categorized as Good category and 8 students scored above average or (36.4%) in percentage which was categorized as Excellent category.

Table 4.2.1
Mean Scores of Students' Higher-Order Thinking

Types of Higher Order Thinking	N	Mean	Std. Deviation	Maximum
Higher-Order Thinking as Transfer (C4)	22	18.1818	3.94771	20
Higher-Order Thinking as Critical Thinking (C5)	21	17.6190	5.38958	20
Higher-Order Thinking as Problem solving (C6)	22	28.6364	15.82507	60

Table 4.2.1 showed the mean score of students' in Higher-Order Thinking as Transfer (C4) has the highest mean (Mean=18.1818; SD=3.94771) than the Higher-Order Thinking as Critical Thinking (C4) (Mean=17.6190; SD=5.38958) and Higher-Order Thinking as Problem Solving has the lowest compare to the maximum score that given (Mean=28.6364; SD;15.82507)

Table 4.3
The Score of Students' In Higher-Order Thinking as Transfer Questions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	0	0	0	0
	Good	4	18.2	18.2	18.2
	Excellent	18	81.8	81.8	100.0
	Total	22	100.0	100.0	

Table 4.3 showed the score of students in Higher-Order Thinking as Transfer that was answered by 22 students. the results showed there were

no students who scored below average or (0%) in percentage which was categorized as Poor category, there were 4 students who scored average or (18.2%) in percentage which was categorized as Good category and 18 students scored above average or (81.8%) in percentage which was categorized as Excellent category.

There were 2 multiple-choice questions that indicated Higher-Order Thinking as Transfer which were answered by the students. Higher-order thinking as transfer indicates meaningful learning. While retention requires students to remember what they have learned, transfer requires students to make sense of and be able to use what they have learned.

Table 4.4
The Score of Students' In Higher-Order Thinking as Critical Thinking Questions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	2	9.1	9.1	9.1
	Good	8	46.7	46.7	45.5
	Excellent	12	54.5	54.5	100.0
	Total	22	100.0	100.0	

Table 4.4 showed the score of students in Higher-Order Thinking as Critical Thinking which was answered by 22 students. the results showed there were 2 students who scored below average or (9.1%) in percentage which was categorized as Poor category, there were 8 students who scored average or (46.7%) in percentage which was categorized as Good category

and 12 students scored above average or (54.5%) in percentage which was categorized as Excellent category.

There are two multiple-choice questions that indicate higher-order thinking as Critical Thinking which were answered by the students. Higher-order thinking as Critical Thinking is reasonable, reflective thinking that is focused on deciding what to believe or do which includes reasoning, questioning and investigating, observing and describing, comparing and connecting, finding complexity, and exploring viewpoints.

Table 4.5
The Score of Students' In Higher-Order Thinking as Problem Solving Questions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	12	54.5	54.5	54.5
	Good	8	36.4	36.4	90.9
	Excellent	2	9.1	9.1	100.0
	Total	22	100.0	100.0	

Table 4.5 showed the score of students in Higher-Order Thinking as Problem-Solving that was answered by 22 students. the results showed there were 12 students scored below average or (54.5%) in percentage which was categorized as Poor category, there were 8 students scored average or (36.4%) in percentage which was categorized as Good category and 2 students scored above average or (9.1%) in percentage which was categorized as Excellent category

There were two open-ended questions that indicated Higher-Order Thinking as Problem Solving which was answered by the students. Higher-

Order Thinking as Problem-Solving when a student incurs a problem then the student wants to reach a specific outcome or goal but does not automatically recognize the proper path or solution to use to reach it. The problem to solve is how to reach the desired goal but many problems are open-ended, could have many correct solutions or multiple paths to the same solution, or are genuine questions for which answers are not known.

2. The Challenges Faced by the Students When Solving HOTS In Reading Comprehension

In this section, the challenges that students faced when solving Higher-Order Thinking Skills Questions in Reading Comprehension were analyzed and calculated quantitatively by using SPSS from the questionnaire that included 6 questions which were 2 questions for Understanding the Meaning of Word's challenge category, 2 questions for Making Inference's challenge category and 2 questions for Determining Main Idea's challenge category. The questions will be scored 1-5 per each, The challenges faced by the students when solving HOTS in Reading Comprehension score were presented as follows:

Table 4.6
Challenges in Understanding the meaning of Word

No.	Statements	Aspect of Challenge	Layout				
			SD	D	N	A	SA
1	I cannot remember vocabulary technically	Understanding the meaning of word	2 (9.09 %)	2 (9.09 %)	2 (9.09 %)	14 (63.63 %)	2 (9.09 %)
2	I cannot deduce the information from the questions.		2 (9.09 %)	2 (9.09 %)	4 (18.18%)	10 (45.45 %)	4 (18.18%)

Table 4.6 showed the statements from students that indicate Challenges in Understanding the meaning of Words when Solving Higher-Order Thinking questions in Reading Comprehension, on the Strongly Agree (SA) the first statement comprised of 2 (9.09%) students, the second statement comprised 4 (18.18%) students. On the Agree Scale (A) the first statement comprised of 14 (63.63%) students, the second statement comprised of 10 (45.45%) students. On the Neutral Scale (N) the first statement comprised of 2 (9.09%) students, the second statement comprised of 4 (18%) students. On the Disagree Scale (D) the first statement comprised of 2 (9.09%) students. The second statement comprised of 2 (9.09%) students. On the Strongly Disagree Scale (SD) the first statement comprised of 2 (9.09%) students, and the second statement comprised of 4 (9.09%) students.

The total score was 108 then divided into 660 (Total Score in the aspect of the challenge in Making Inference) 0.16363 then multiplied by 100 then the result is 23.63%. there is 16.63% of students found it

difficult to understand the meaning of words when solving HOTS questions.

Table 4.7
Challenges in Making Inference

No.	Statements	Aspect of Challenge	Layout				
			SD	D	N	A	SA
1	I cannot determine the relevant information in questions.	Making Inference	8 (36.36%)	11 (50%)	1 (4.54%)	1 (4.54%)	1 (4.54%)
2	I cannot classified detailed information in questions.		12 (54.5%)	6 (27.27%)	2 (9.09%)	1 (4.54%)	1 (4.54%)

Table 4.7 showed the statment from students that indicate Challenges in Making Inference when Solving Higher-Order Thinking questions in Reading Comprehension, on the Strongly Agree (SA) the first statement comprised of 1 (4.54) student, the second statement comprised of 1 (4.54%) student. On the Agree Scale (A) the first statement comprised of 1 (4.54%) students, the second statement comprised of 1 (4.54%) students. On the Neutral Scale (N) the first statement comprised of 1 (4.54%) student, the second statement comprised of 2 (9.09%) students. On the Disagree Scale (D) the first statement comprised of 11 (50%) student. The second statement comprised of 6 (27.27%) student. On the Strongly Agree Scale (SD) the first statement comprised of 8 (36.36%) students, the second statement comprised of 12 (54.5%) students.

The total score was 183 then divided into 660 (Total Score in aspect of challenge in Making Inference) 0.2772 then multipled by 100 then the result is 27.72%. there is 27.72% students that find it difficult in making inference when solving HOTS questions.

Table 4.8
Challenges in Determining the main idea

No.	Statements	Aspect of Challenge	Layout				
			SD	D	N	A	SA
1	I cannot state the meaning of the terms that represents the questions.	Determining the main Idea	7 (31.81 %)	11 (50%)	1 (4.54 %)	1 (4.54 %)	2 (9.09 %)
2	I cannot remember one or more necessary conditions for an object to be expressed in the term that represent the questions.		9 (40.90 %)	8 (36.36%)	2 (9.09 %)	2 (9.09 %)	1 (4.54 %)

Table 4.7 showed the answers from students that indicate Challenges in Determining the main idea when Solving Higher-Order Thinking questions in Reading Comprehension, on the Strongly Agree (SA) the first statement comprised of 2 (9.09%) students, the second statement comprised of 1 (4.54%) students. On the Agree Scale (A) the first statement comprised of 1 (4.54%) student, the second statement comprised of 2 (9.09.%) students. On the Neutral Scale (N) the first statement comprised of 1 (4.54%) student, the second statement comprised of 2 (9.09%) students. On the Disagree Scale (D) the first statement comprised of 11 (50%) student. The second statement

comprised of 8 (3.36%) students. On the Strongly Agree Scale (SD) the first statement comprised of 7 (31.81%) students, the second statement comprised of 9 (40.90%) students.

The total score was 186 then divided into 660 (Total Score in aspect of challenge in Making Inference) 0.2818 then multipled by 100 then the result is 28.18%. there is 28.81% students that find it difficult in determining the main idea when solving HOTS questions.

Table 4.9
Total Score of Challenges When Solving HOTS in Reading Comprehension

Indicator	SD	D	N	A	SA	Total
Understanding the meaning of Word	6	48	18	16	20	108
Making Inference	2	4	9	68	100	183
Determining the Main Idea	3	6	12	76	89	186

From Table 4.9 It can be concluded from the result of challenges that students' face when solving HOTS in Reading Comprehension above as follow.

a. students found it challenging in understanding the meaning of word were 108

b. students found it challenging in making inference were 183

c. students found it challenging in determining main idea were 186

Most dominant Challenges that students face in solving HOTS Reading Comprehension's section Based on figure 4.1, the challenges that

students' face when solving HOTS In Reading Comprehension are there are 28.81%, students facing difficulties in Determining the Main Idea (C6), there are 27.72% students facing difficulties in Making Inference (C5), and there are 16.63%. students facing difficulties in understanding the meaning of word (C1)

It can be concluded that determining the main idea is the most significant difficult that students face. As it is known, HOTS has Higher Order Thinking as Transfer (C4), Higher Order Thinking as Critical Thinking (C5), and Higher Order Thinking as Problem Solving (C6), where each aspect has its own criteria. The aspects of Higher Order Thinking as Transfer (C4) include analyzing, comparing, investigating, criticizing, and testing; Higher Order Thinking as Critical Thinking (C5) includes evaluating, assessing, opposing, deciding, choosing, and supporting; Higher Order Thinking as Problem Solving (C6) includes constructing, designing, creating, developing, writing, formulating. This extended analysis found that the dominant challenges that student faced is C6, which are constructing, designing, creating, developing, writing and formulating.

B. Discussion

This section discusses all the facts the writer found, their relationship with several related literatures provided in chapter II, and the expert opinions and suggestions.

1. The Score of Students' Higher-Order Thinking Skills

The results of students' Higher-Order Thinking Skills In Reading Comprehension were collected in this research to analyze the students' score of Higher-Order Thinking as Transfer (C4) Higher-Order Thinking as Critical Thinking (C5), and Higher-Order Thinking as Problem Solving (C6) revealed that all students achieved good score of HOTS. The result of Higher-Order Thinking as Transfer (C4) was Excellent, Higher-Order Thinking as Critical Thinking was Good and Higher-Order Thinking as Problem Solving was Poor This is in Line with Pratiwi (2019) it was revealed that the items categorized as HOTS and made by the teachers were limited to the cognitive process of Analyze (C4) which is why the student can only answer correctly the C4 questions whereas the items were mostly emphasized on the two low levels of Revised Bloom's taxonomy, namely Remember (C1) and Understand (C2).

Therefore, the eleventh-grade English teachers involved on her research were aware of HOTS which is important to prepare the students to face the challenges of the 21st century. However, their understanding was not fully equipped yet. It was supported by the dominant number of the HOTS-based items they made were limited to analysis in the form of multiple-choice and short-answer items. In addition, there was a misunderstanding about the

concept of HOTS in their minds. It indicated that there is a discrepancy between the teacher's knowledge and their actual performance on the assessment.

Moreover Aulia in (2020) Implementing higher-order thinking-based tests at the end of the semester exams needs the quality of existing assignments and formative assessments. A formative assessment based on a higher-order thinking level is expected to help students deal with the final exam questions later. The researchers chose to focus on reading comprehension of formative assessments. This is because reading is a complex skill among English language basic skills. After doing the content analysis by using the checklist table as an instrument for reading comprehension of formative assessments, the researchers conclude that the distribution of the higher-order thinking skill is lower than the distribution of the lower-order thinking skill. The analyze skill (C4) dominates the HOTS questions which reachs 13.2% of the questions. While, the evaluate skill needs to be improved because it only obtains 1% of the total questions.

As the first skill in the higher-order thinking level, the analyze skill was the highest number among the three skills in the higher order thinking level. The analyze skill obtains 12 questions out of 91 questions or 13%. It might the highest number among the three skills in the higher-order thinking level but when compared to the other six skills, it is still considered as the small distribution. It might happen because (Brookhart, 2010) points out that it is a must to create such questions that ask the students to describe and figure out

how one thing to others are related. Additionally, analyze skill does get the highest score than the three-skill of higher-order thinking level, but basically, this score is still lack when compared to the 6 other skills. The analyze skill obtains get 12 questions from 91 questions. But the question is still the same as the other questions. However, it can be inferred that the types of analysis are not too varied. (Chin & Osborne, 2008) claimed that the students need to improve their analysis skill by answering other kinds of analysis question rather than reasoning types of question such as classifying, differentiating, and outlining. Therefore, the types of analyze questions could be more varied with the types of question which ask students to connect conclusions with supporting statement or distinguish relevant from a different material.

Another similar research was conducted by Damanik and Zainil (2019), who found only 9.7% of HOTS questions in the reading comprehension questions in the textbook. The most frequently tested HOTS questions were the 'analyze' level (C4). The knowledge found in the questions was factual, conceptual knowledge, procedural knowledge, and metacognitive knowledge. This was similar to the result of the study conducted by Janah (2020), who showed that LOTS dominated the exercises with a percentage of 55.6%, and the 'remember' level (C1) had the highest percentage (37.7%). The findings were also in line with the findings of Fajri (2015).

In his study, Fajri investigated the levels of reading comprehension questions in the textbook and focused on analyzing the distribution of each

level of the questions using the revised Bloom's taxonomy. He found that there were only four out of six levels of questions, namely 'remember' (C1), 'understand' (C2), 'analyze' (C4), and 'evaluate' (C5). Meanwhile, the textbook did not use two other levels, namely 'apply' (C3) and 'create' (C6). In fact, the questions that most frequently appeared in the book were categorized as loworder thinking skills (LOTS). Similarly, another study conducted by Fitrawati et al. (2019) found that the textbooks were more inclined toward LOTS questions.

2. The Challenges Faced by the Students When Solving HOTS In Reading Comprehension

This research found out that there are 10% students' found it challenging in understanding the meaning of word of the question items, 44% students' found it challenging in in making inferences of the question items, 46% of student's found it challening in determining main idea of the question items.

The researcher concluded from students' scores classification that in SMAN Pesantren IMMIM Makassar, the students faced difficulty solving Higher-Order Thinking Skills (HOTS), especially in the reading comprehension section. In this research, the researcher tried to identify the kinds of challenges that students' face in solving HOTS reading comprehension questions based on the questionnaire given.

This is in line with Rakhmyta (2021) her research problem is finding out the students' difficulties in solving HOTS reading comprehension

questions. Those are students' difficulties understanding vocabulary, making inferences, detailed information, and determining the main idea. The second problem is to figure out the students' primary obstacles. There are students difficulties in the evaluation aspect (C5) where students feel difficulty making an inference. According to this result, the students' difficulties in solving the HOTS reading comprehension section at SMAN 1 Takengon are common. Several things must be addressed to improve the quality of learning and teaching. The primary students have to familiarize students with HOTS-based questions. In addition, the way teachers teach must also continue to be developed to adapt to the growth of the times and the latest methods.

CHAPTER V

CONCLUSION AND SUGGESTION

After analysing and discussing the findings in the previous chapter, this chapter came up with the conclusion and suggestion.

A. Conclusion

Based on the findings and discussion, the summary of the conclusions were as follow:

1. Based on the analysis of the test, it can be seen that the score of students' HOTS In Reading Comprehension was good, which were the score of Higher-Order Thinking as Transfer (C4) was Excellent , Higher-Order Thinking as Critical Thinking (C5) was Good and Higher-Order Thinking as Problem Solving (C6) was Poor and it could be concluded that the result of students HOTS In Reading Comprehension test were Excellent in Higher-Order Thinking as Transfer (C4) which means the students can analyzed questions thoroughly and has the ability to break down complex information into simpler parts and to understand the relationships among the parts, Good in Higher-Order Thinking as Critical Thinking (C5) which means the students has the average ability in creating some information that did not exist before by integrating information that had been learned at lower levels of the hierarchy and Poor in Higher-Order Thinking as Problem Solving (C6) which means the student find it difficult to make judgments based on previous levels

of learning to compare a product of some kind against a designated standard.

2. In terms to the challenges, it can be seen that the challenges that students face when solving HOTS in Reading Comprehension were 16.63% students facing difficulties in understanding the meaning of word (C4), 27.72% students facing difficulties in making inference (C5) and 28.81% students facing difficulties in determining the main idea (C6)

B. Suggestion

Based on the conclusion above, the following are some suggestions to be considered:

1. For the English Teachers

   Teachers are suggested to provide an assessment that can assess the students' Higher-Order Thinking Skills more frequently whether a formative or summative one to make the students more familiar with C4, C5, and C6 questions. This means the teacher should also know more about HOTS and provide the students with as much information as possible. Besides that, in assessing students' HOTS, the teachers are suggested to arrange the questions based on the class' module material, especially in Higher-Order Thinking Skills as Problem Solving because the students still lack in making judgments based on previous levels of learning to compare a product of some kind against a designated standard even though evaluation is concerned with the ability to judge

the value of material for a given purpose. The judgments are to be based on definite criteria.

2. For other researchers.

   This thesis is able to be used as an additional reference in investigating the Higher-Order Thinking Skills Assessment. It is also suggested to investigate further research on comparing HOTS assessment and other kinds of way to assess students' HOTS.

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CURRICULUM VITAE

The researcher, Syah Ibi Hamma was born in Majene 7th July 1997, he is the first son of a brother, from couple of his parents. He began his study at SD 2 International School Majene in 2003-2009. Then he joined Junior High School at SMP Negeri 3 Unggulan Majene in 2009-2012. afterwards he continued his study at SMA Negeri 1 Unggulan Majene in 2012-2015. He finished his study in State University of Makassar in 2015-2019 under the thesis title "The Main Character's Pscyhology Development by Zemmeckis". Then, in 2021, continues his study as post graduate students in Muhammadiyah University of Makassar and present the thesis title of "Assessing Higher-Order Thinking Skills In Reading Comprehension"

APPENDICES

APPENDIX 1
HOTS' Questions

Name :
Class :

Wildfires have ravaged nine countries in the Mediterranean region, causing the death of at least 40 people, with Algeria being the worst affected.

The northern mountainous region of Algeria reported 34 fatalities while neighboring Tunisia also battled wildfires. Italy experienced numerous wildfires in Sicily and Calabria during a severe heatwave, resulting in two deaths.

Firefighters in Turkey, Croatia, Syria, Gran Canaria, and Portugal also fought against the spreading fires. Scientist Izidine Pinto emphasized that the increasing frequency and intensity of these wildfires are directly linked to the human-induced climate emergency.

Jawablah pertanyaan dibawah ini (1-4) Pilihan Ganda & (5-6) Essay (Open-Ended Questions) dengan membaca berita diatas!

1. According to the passage, what is the most important purpose of Scientist Izidine Pinto's statement?
   a. To highlight the role of firefighters in combating wildfires.
   b. To explain the geographical distribution of wildfires in the Mediterranean region.
   c. To emphasize the connection between wildfires and human-induced climate change.
   d. To provide statistics on the number of fatalities caused by wildfires.

2. What is the primary cause of the increasing frequency and intensity of wildfires in the Mediterranean region, according to scientist Izidine Pinto?
   a. Natural climatic changes
   b. Inadequate firefighting measures
   c. Human-induced climate emergency
   d. Wildlife activities

3. Which of the following statements best summarizes the complex nature of these impacts?
   a. The wildfires will likely have limited socio-economic consequences since affected countries have robust disaster management systems in place.
   b. The socio-economic impacts of the wildfires are straightforward, primarily affecting agriculture and tourism in the region.

c. The wildfires can have cascading socio-economic effects, including damage to infrastructure, displacement of communities, and increased government spending on firefighting and recovery efforts.
d. Socio-economic impacts are insignificant as wildfires primarily affect rural areas with limited economic activity.

4. Which country in the Mediterranean region reported the highest number of fatalities due to wildfires in this incident?
   a. Tunisia
   b. Italy
   c. Algeria
   d. Turkey

Essay (Open-Ended Questions)

5. Imagine you are an environmental policymaker. What innovative strategies and policies would you propose to address both the short-term challenges of firefighting during wildfire outbreaks and the long-term mitigation of climate change's impact on wildfires?

6. Given the increasing frequency and intensity of wildfires in the Mediterranean region, what long-term strategies and international cooperation efforts can be implemented to mitigate the impact of wildfires and address their root causes, as emphasized by scientist Izidine Pinto?

Answer :

APPENDIX 2
Questionnaire of The Challenges that Students Face When Solving HOTS In Reading Comprehension

Ceklislah pernyataan dibawah ini berdasarkan pilihan jawaban berikut
Sangat Tidak Setuju = 5 Poin
Tidak Setuju = 4 Poin
Netral = 3 Poin
Setuju = 2 Poin
Sangat Setuju = 1 Poin

No.	Indikator	Pilihan				
		Sangat Tidak Setuju	Tidak Setuju	Netral	Setuju	Sangat Setuju
1	Saya tidak bisa mengingat kosa kata dalam Bahasa inggris secara teknis.					
2	Saya tidak bisa menyimpulkan informasi dari pertanyaan tersebut.					
3	Saya tidak dapat menentukan informasi yang relevan dalam pertanyaan tersebut.					
4	Saya tidak dapat mengklasifikasikan informasi detail dalam pertanyaan tersebut.					
5	Saya tidak dapat menyatakan makna dari istilah-istilah yang mewakili pertanyaan tersebut.					
6	Saya tidak dapat mengingat satu atau lebih kondisi yang diperlukan agar suatu objek dapat diungkapkan dalam istilah yang mewakili pertanyaan-pertanyaan					

APPENDIX 3
The Mean Score of Students' HOTS in Reading Comprehension

No	Initial	Aspects			Total Score	Category
		Analyze	Evaluation	Creation		
1	AMG	20	10	20	50	MID
2	AH	10	20	60	90	HIGH
3	IHB	20	20	40	80	HIGH
4	MR	20	20	40	80	HIGH
5	AFG	20	20	40	80	HIGH
6	AMR	20	20	40	80	HIGH
7	HMA	20	10	20	50	MID
8	MIF	20	20	20	60	MID
9	MBI	10	10	20	40	LOW
10	AZD	20	20	20	60	MID
11	MAH	20	20	20	60	MID
12	FAB	20	20	20	60	MID
13	YP	20	20	30	70	MID
14	MF	10	20	40	70	MID
15	ZAS	20	20	40	80	HIGH
16	FMA	20	20	60	100	HIGH
17	MAA	20	20	20	60	MID
18	AN	20	20	20	60	MID
19	MA	10	0	0	10	LOW

20	MUA	20	20	0	40	LOW
21	MD	20	20	40	80	HIGH
22	ASA	20	20	20	60	MID
Total					1420	
Average					64,54	
Highest					100	
Lowest					10	

APPENDIX 4
Documentation

Giving Letter of Permission to the Vice Principal.

Giving Instruction before test

Giving the students of Test

Students filled the Questionnaire

Photos of After Test

APPENDIX 5

Surat Izin Penelitian

UNIVERSITAS MUHAMMADIYAH MAKASSAR
PROGRAM PASCASARJANA

بسم الله الرحمن الرحيم

Nomor : 1322/C.5-II/VII/1445/2023 — 27 Muharram 1445 H.
Lamp. : -
H a l : **Permohonan Izin Penelitian** — 14 Agustus 2023 M.

Kepada Yth,
Kepala Sekolah SMA Pesantren IMMIM Makassar
di –
Tempat

Assalamu Alaikum Wr. Wb.

Dalam rangka penyusunan tesis mahasiswa Program Pascasarjana Universitas Muhammadiyah Makassar :

Nama	: Syah Ibi Hamma
NIM	: 105071100421
Program Studi	: Magister Pendidikan Bahasa Inggris
Judul Tesis	: Assessing Students' High Order Thinking Skills in SMA Pesantren IMMIM Makassar

Maka kami mohon kiranya mahasiswa tersebut dapat diberikan izin untuk melakukan penelitian dan diberi data yang diperlukan pada Sekolah yang Bapak/Ibu sedang pimpin.

Demikian permohonan kami, atas perhatian dan bantuannya diucapkan terima kasih.

Wassalamu Alaikum Wr. Wb.

An. Direktur,
Asisten direktur 1

Dr. Syamsia, S.P., M.Si.
NBM : 1132 7309 1063486

Alamat : Jl. Sultan Alauddin No. 259 Telp. : (0411) 866 972 – 5047085 Fax.: (0411) 865 588 Makassar 90221

APPENDIX 6

Surat Keterangan Bebas Plagiasi

MAJELIS PENDIDIKAN TINGGI PIMPINAN PUSAT MUHAMMADIYAH
UNIVERSITAS MUHAMMADIYAH MAKASSAR
UPT PERPUSTAKAAN DAN PENERBITAN
Alamat kantor: Jl.Sultan Alauddin N0.259 Makassar 90221 Tlp.(0411) 866972,881593, Fax.(0411) 865588

بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

SURAT KETERANGAN BEBAS PLAGIAT

UPT Perpustakaan dan Penerbitan Universitas Muhammadiyah Makassar,
Menerangkan bahwa mahasiswa yang tersebut namanya di bawah ini:

Nama : Syah Ibi Hamma
Nim : 105071100421
Program Studi : Magister Pendidikan Bahasa Inggris

Dengan nilai:

No	Bab	Nilai	Ambang Batas
1	Bab 1	4 %	10 %
2	Bab 2	11 %	25 %
3	Bab 3	9 %	10 %
4	Bab 4	10 %	10 %
5	Bab 5	3 %	5 %

Dinyatakan telah lulus cek plagiat yang diadakan oleh UPT- Perpustakaan dan Penerbitan Universitas Muhammadiyah Makassar Menggunakan Aplikasi Turnitin.

Demikian surat keterangan ini diberikan kepada yang bersangkutan untuk dipergunakan seperlunya.

Makassar, 30 Agustus 2023
Mengetahui

Kepala UPT- Perpustakaan dan Penerbitan,

[redacted], S.Hum.,M.I.P
NBM. 964 591

Jl. Sultan Alauddin no 259 makassar 90222
Telepon (0411)866972,881 593,fax (0411)865 588
Website: www.library.unismuh.ac.id
E-mail : perpustakaan@unismuh.ac.id