THE EFFECTIVENESS OF PROBLEM-BASED LEARNING ON THE READING COMPREHENSION OF THE ELEVENTH-GRADE SCIENCE STUDENTS AT SMAN 1 SAMBIT PONOROGO

THESIS

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ABSTRACT

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Reading is one of the most important basic skills in English language learning for students to learn. Reading is the comprehension of written text which is a complex activity involving perception and thinking which consists of two processes related to word recognition and comprehension. Comprehension is the process of making sense of interconnected words, sentences, and texts. In reading activities, students must understand the text and the information contained in the text. After that, comprehension of the reading text is required. Therefore, reading cannot be separated from comprehension.

The aim of this study is to proves whether there is a significant different between students who are taught by using problem-based learning have better reading comprehension than students who are not taught by using problem-based learning.

Researchers applied a quantitative research approach with a quasi-experimental design. This study used two classes that were used as research, namely experimental group and control group. The population in this study were all XI Science students at SMAN 1 Sambit, totaling 87 students. The sample in this study was the experimental class which amounted to 29 students and the control class which amounted to 29 students. Data collection procedures through tests and documentation. Researchers use pre-test and post-test to help researchers to collect data. The data were collected through tests and then analyzed using t-test formulas such as Independent Sample T-Test.

The results showed that the mean of pre-test score in the experimental class was 66.96 and the mean of post-test score in the experimental class increased to 89.82, while the mean of pre-test score in the control class was 66.13 and the mean of post-test score in the control class increased to 80.93. From two values, it can be said that there is a different in the mean of value between the two classes and two class experienced an increased in reading comprehension. The t-test result shows that the significance value of 0.00 is smaller than 0.05 which indicates that there is a significant different between the improvement of reading comprehension in students who are taught by using problem-based learning and students who are not taught by using problem-based learning. Based on the data, it can be concluded that H_0 is accepted which means that there is a significant different between the reading comprehension of students who are taught by using problem-based learning than students who are not taught by using problem-based learning. Therefore, the use of problem-based learning is effective to improve students' reading comprehension.

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I, hereby declare that the submitted thesis is entirely my original work.

Any assistance and sources used in the preparation of this thesis have been acknowledged and appropriately cited.

I confirm that this thesis, in whole or in part, has not been submitted for assessment, to any other degree or diploma in any other institution or university. Furthermore, I declare that this work has not been published or submitted for publication elsewhere.

I fully understand the gravity of the consequences of any form of academic dishonesty, plagiarism and I take full responsibility for the authenticity and originality of this thesis. I certify that all information presented in this work is accurate and based on research conducted by me.

Thank you for your attention to this matter.

Ponorogo, 25th October 2024

Sincerely,

Intan Muhsyanura

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION

A. Background of the Study

Language is one of the important aspects of life. Everyone certainly use language for social interaction because it has a function to connect themselves with people around in daily activities such as interacting, communicating, socializing with the surrounding environment to obtain information through thoughts, ideas, and feelings.[1] On average, the most widely used language by people around the world is English.[2] English is a foreign language that is often used as a language learning because English is the determining thing of all language skills. There are four basic skills in learning English.[3] The four skills include: Listening, speaking, reading, and writing.[4]

Good English language skills students' develop themselves intellectually, socially and emotionally. One of the demands faced by students in education in a school today is the ability to use English as a language of communication in oral and written contexts.[5] The majority of students at Senior High School are not ready to learn more deeply related to English texts, both in oral and written

[1] Eka Prabawati Ode Wani, Nur Devi Bte Abdul, "THE USE OF MIND MAPPING TECHNIQUE TO DEVELOP THE STUDENTS SPEAKING ABILITY," *Jurnal Keguruan Dan Ilmu Pendidikan (JKIP)* 6, no. 2 (2009).

[2] Aisyah Pratiwi, "Communication and International Language : An Overview on the Importance of English International Language (EIL) in Global Communication and Broadcasting," *Journal of Islamic Communication & Broadcasting* 1, no. 1 (2021): 1.

[3] Ms Chitra Sharma and Dr. shaifali Rachna puri, "The Importance of Four Basic Skills in Learning English," *The Genesis* 7, no. 4 (2020): 33.

[4] Sharma and puri. 2020:1.

[5] Gabriel Fredi Daar, *Problems of English Laguage Learning in Context (Based on Some Studies in Manggarai)*, Edisi Pert (Sambi Poleng, 2020), 1.

form.[6] The teacher plays a crucial role in enhancing the learning process.[7] In the learning process the teacher does not have to deliver the material only, but also must carry out various efforts so that the learning process can run well, be fun and be able to motivate students to improve English language capacity, especially in student reading.

Reading is one of the most important basic skills in language learning for students to learn.[8] According to the researcher, reading is the activity of looking at the text and understanding the content of the text silently or aloud.[9] Reading is the act of deriving meaning from written text, requiring students to engage with the material to gather information that enhances their thoughts and helps them produce ideas from the text they have read.[10] According to Pang states that Reading is the process of comprehending written text, a complex activity that engages both perception and thinking. It is composed of two interconnected processes: word recognition and comprehension.[11] Word recognition leads to the ability to perceive how written symbols correspond to spoken language.[12] Comprehension involves making sense of interconnected words, sentences, and

[6] Dina Fitriana et al., "Fun English: Pelatihan Kemampuan Komunikasi Berbahasa Inggris Bagi Siswa SMK," *Aksararaga* 5, no. 1 (2023): 1.

[7] Muhammad Solih et al., "Teacher's Professional Role In Improving The Learning Process," *Edumaspul: Jurnal Pendidikan* 6, no. 2 (2022): 2.

[8] Zuraidah Nasution, "Warming-Up for Reading As a Strategy for Efl Classrooms," *Journal Language League* XII, no. 2 (2022): 1.

[9] Intan Muhsyanura, "The Effectiveness of Problem-Based Learning on the Reading Comprehension of the Eleventh-Grade Science Students at SMAN 1 Sambit Ponorogo" (IAIN Ponorogo, 2024).

[10] Ananta Pramayshela et al., "Upaya Meningkatkan Minat Membaca Pada Anak Kelas 4 Sd," *Jurnal Bintang Pendidikan Indonesia* 1, no. 3 (2023): 1.

[11] Elizabeth S. Pang et al., *Teaching Reading, The International Academy of Education, IAE* (New York, 2003), 6.

[12] Miranti Eka Putri, "Creative Comprehension on Literacy: Technology and Visual," no. ICoSEEH 2019 (2020): 324–28, https://doi.org/10.5220/0009144003240328.

texts.[13] Reading is an interactive process between the reader and the text, focused on understanding the author's message.[14] During reading, it's essential to grasp both the meaning of the text and the information it conveys.[15] After extracting information from the text, full comprehension is still required. Thus, reading and comprehension are inseparable.[16]

Reading comprehension is the ability to understand what the meaning of the reading.[17] According to Brassell and Rasinski, reading comprehension is the ability to extract information from written text and then apply that knowledge or demonstrate an understanding of the information obtained.[18] In reading it is not just reading sentences, but they also have to understand the content contained in the text.[19] In this reading comprehension, readers are expected to be able to identify the main idea in the paragraph, obtain information from the text, conclude the reading text correctly, and also have to find what the purpose of the text.[20] Reading comprehension is usually difficult to master if students do not know what the sentence means and understand the reading. According to Tiwery (2024), usually what often happens to students when learning reading

[13] Dwi Larasati, "An Analysis of Difficulties in Comprehending English Reading Text at The Eleventh Grade Students of MA Labuin Medan" (UIN Sumatera Utara Medan, 2019). 10.

[14] Etika Peter et al., "EXPLORING STUDENTS ' LEARNING STRATEGIES IN READING" 12, no. 1 (2023): 46.

[15] Nurul Shofiah, "Pertimbangan Pemilihan Teks Bacaan Dalam Pengajaran Dan Pembelajaran Membaca," *Senasbasa*, no. 1 (2017): 285.

[16] Ardhy Meylana, "Students' Reading Comprehension Ability and Problems in an Advanced Reading Comprehension Class" (Universitas Negeri Semarang, 2019). 12.

[17] Muhsyanura, "The Effectiveness of Problem-Based Learning on the Reading Comprehension of the Eleventh-Grade Science Students at SMAN 1 Sambit Ponorogo."

[18] T Brassell, D & Rasinski, *Comprehension That Works*, 2008. 18.

[19] Puput Zuli Ekorini, "Analysis on Students' Difficulties of Finding Main Idea of a Passage," *Jurnal Dharma Pendidikan* 15, no. 2 (2020): 73.

[20] Noli Ardini and Ardisal, "Metode Explore Ask Read Tell Harvest (Earth) Untuk Meningkatkan Kemampuan Membaca Pemahaman Bagi Siswa Berkesulitan …," *Jurnal Inspiratif Pendidikan* X (2021): 173-174.

comprehension is difficulty understanding text.[21] In addition, students also have difficulty spelling in a sentence, lack of vocabulary and extensive reading memory.[22]

Based on the observation conducted in class XI Science SMAN 1 Sambit, many students in class XI Science have various problems or difficulties when understanding texts in English. In that class usually the students who most often make mistakes when learning English in class are students who do not know what the components of the text are such as when asked to identify in general the reading, interpret the text reading even when also asked to answer a question, of course students have difficulty, because students only read without understanding what they read.

The curriculum is a set of subject concepts organized by the teacher during the teaching and learning process to achieve educational objectives.[23] The term "curriculum" refers to the comprehensive plan or design of a course, outlining how it is implemented through teaching and learning to ensure the achievement of the desired learning outcomes.[24] If Indonesia does not have a curriculum as a plan, then in Indonesia the learning process will not be effective in achieving educational goals.[25]

[21] Dian Sartin Tiwery and Yulina Tiwery, "An Analysis of Students' Difficulties in Reading Comprehension At SMA Negeri 13 Maluku Barat Daya," *E-Link Journal* 7, no. 1 (2020): 279.

[22] Sarah Alfiah Humairoh, "Exploring Students' Difficulties in Writing (A Case Study at the Department of English Education UIN Syarif Hidayatullah Jakarta)" (UIN Syarif Hidayatullah Jakarta, 2021), 36.

[23] A Sa'dullah, "The Importance of The Role of An Approrpriate Curriculum in Education," *International Conference on Education, Society, and Humanity* 01, no. 01 (2023): 413.

[24] Amalil Umam, "The Importance of Needs Analysis in Curriculum Development for ESL/EFL Classroom," *English Journal* 19, no. 2 (2016): 17.

[25] Atep Iman, "Kurikulum Sebagai Pedoman Program Dan Proses Pembelajaran," 2018:18, https://jurnal.untirta.ac.id/index.php./psnp/article/download/5266/3760.

One of the important things that is influential in developing the potential of students in Indonesia itself is the curriculum which guides the criteria or practitioners in education. The current education system in Indonesia is a frequent change in curriculum ranging from the use of KTSP, the 2013 curriculum, to the latest at this time is the independent curriculum (Almost all schools have implemented this independent curriculum).[26] The 2013 curriculum is designed to strengthen the competence of students in terms of knowledge, skills, and attitudes as a whole.[27] This integrity is the basis when formulating basic competencies in each subject, so that in each subject the basic competencies include group basic competencies, attitudes, knowledge group basic competencies, and skill group basic competencies. The development of the 2013 Curriculum builds on the Competency-Based Curriculum that began in 2004 and the 2006 KTSP. This curriculum provides an integrated competency in three main areas: attitude, skills, and knowledge.[28] In accordance with these curriculum changes, in the learning process in Curriculum 2013, educators use a scientific approach.

Based on the curriculum that has been set on the competency standards and basic competencies for English subjects at the high school level are competencies that must be possessed by students as a result when studying English at school, for the category consists of listening, speaking, reading and

[26] Badrul Munir Marzuqi and Nur Ahid, "Perkembangan Kurikulum Pendidikan Di Indonesia: Prinsip Dan Faktor Yang Mempengaruhi," *JoIEM (Journal of Islamic Education Management)* 4, no. 2 (2023): 99, https://doi.org/10.30762/joiem.v4i2.1284.

[27] Fine Reffiane et al., "Pelatihan Implementasi Kurikulum 2013 Bagi Guru Sd Di Kota Semarang," *E-Dimas* 5, no. 2 (2015): 1, https://doi.org/10.26877/e-dimas.v5i2.693.

[28] M Masruhin, "Pendahuluan Dalam Proses Pembelajaran Pendidik Dan Peserta Didik Harus Mampu Mengkomunikasikan Dengan Baik Yang Terangkum Dalam," *Edification Journal* 3, no. 1 (2020): 85–109.

writing.[29] The curriculum used in class XI at SMAN 1 Sambit is Curriculum 2013.

Curriculum 2013 has four learning types contained in the scientific approach. The four learning types include: Problem Based Learning, Project Based Learning, Inquiry Learning, and Discovery Learning.[30]

Education in Indonesia, there are still teachers who do not understand the concept of teaching and learning.[31] Teachers today still use the old way of teaching because the old way gives better results.[32] Actually they still cannot leave the old learning models that teachers have mastered, teachers are still not sure that the new learning models are better.[33] So in theory, the curriculum is rarely used properly.

Based on this, teachers must use appropriate learning models, as the success of student learning relies on their ability to comprehend what they read.[34] If students have poor reading comprehension, they struggle to achieve learning goals and may face failure. Conversely, if students possess strong reading comprehension skills, they have a greater chance of succeeding in their learning.

[29] Besral, "The Development of English Language Teaching (ELT) Competency-Based Syllabus in Senior High School," *Al-Ta Lim Journal* 19, no. 2 (2012): 106-107.

[30] Mardhatillah and Riski Syahwal Usm, "Discovery Learning Learning Analysis in the 2013 Curriculum in Private Vocational School of Suak Pandan State School, Kecamatan Samatiga, West Aceh District," *Jurnal Ilmiah Teunuleh* 1, no. 1 (2020): 58.

[31] Indah Fajar Friani, Sulaiman, and Mislinawati, "Kendala Guru Dalam Menerapkan Model Pembelajaran Pada Pembelajaran Tematik Berdasarkan Kurikulum 2013 Di SD Negeri 2 Kota Banda Aceh," *Jurnal Ilmiah Pendidikan Guru Sekolah Dasar FKIP Unsyiah* 2, no. 1 (2017): 89.

[32] Adrian Yanuar Prameswara and Intansakti Pius X, "Upaya Meningkatkan Keaktifan Dan Hasil Belajar Siswa Kelas 4 SDK Wignya Mandala Melalui Pembelajaran Kooperatif," *SAPA - Jurnal Kateketik Dan Pastoral* 8, no. 1 (2023): 1.

[33] Mislinawati. and Nurmasyitah Nurmasyitah., "Kendala Guru Dalam Menerapkan Model-Model Pembelajaran Berdasarkan Kurikulum 2013 Pada Sd Negeri 62 Banda Aceh.," *Jurnal Pesona Dasar* 6, no. 2 (2018): 22–32, https://doi.org/10.24815/pear.v6i2.12194.

[34] Faidia Dewantara Hasibuan and Siti Quratul Ain, "Strategi Guru Dalam Menumbuhkan Minat Baca Pada Siswa Kelas IV Di SDN 10 Kecamatan Kandis," *Didaktika: Jurnal Kependidikan* 13, no. 2 (2024): 8.

Seeing the existing problems, teachers need to use a variety of learning models in accordance with the demands of the basic competencies in the curriculum content standards.[35] In addition, teachers also need to plan learning that can build students' potential in using their thinking skills to solve problems. One of these learning models is Problem-Based Learning.

The problem-based learning model is one of the learning models that shows a good influence on the learning process of students.[36] This is evidenced by the problem-based learning model which is proven to be able to improve students' critical thinking skills and problem solving skills in learning reading comprehension.[37] The use of problem-based learning in reading can help teachers to develop the expected learning model, so as to improve critical thinking skills, foster curiosity in students at work, foster motivation in themselves when learning, and foster interpersonal relationships when working in groups.[38] In teaching English, teachers must focus on developing students' comprehension and knowledge. The material provided must be clearly understood by the students. The significance of reading comprehension skills has been emphasized in the Competency-Based English Curriculum at the Senior High School level.

Teachers need to modify the learning model by using learning methods so that students when learning in class do not neglect the ability to give opinions

[35] Astria, "Implementasi Model PBL (Problem Based Learning) Untuk Meningkatkan Keterampilan Membaca Siswa Kelas IV SD Insan Teladan Parung Bogor," (UIN Syarif Hidayatullah Jakarta, 2016).

[36] T.R Cahyani et al., "The Effect of Problem Based Learning (PBL) Model on Students' Critical Thinking Ability in Sound Wave Material," *Studies in Philosophy of Science and Education* Vol. 4, No (2023), 113.

[37] Cahyani et al, 113.

[38] Astria, "Implementasi Model PBL (Problem Based Learning) Untuk Meningkatkan Keterampilan Membaca Siswa Kelas IV SD Insan Teladan Parung Bogor.", 3.

to others. Some learning models that can be used to improve students' understanding at the high school level are problem-based learning, project-based learning, inquiry learning, discovery learning, cooperative learning and others. While learning methods that can be used by teachers when teaching in class include group discussion methods, question and answer, role play, and others. In this study, the researcher used problem-based learning model in English language learning of XI Science class at SMAN 1 Sambit.

In reading comprehension, vocabulary is an important thing to master.[39] Students have a low vocabulary so it is hard to string the meaning of words into a sentence, so students' reading comprehension is lacking.[40] Even though in primary to secondary education students are equipped with knowledge of English, students are still not able to master reading comprehension well. Students still have difficulties when reading and answering sentences in English, for example, they are still confused to interpret the right words to use so that students become hesitant or have difficulty when understanding English texts.

Previous researchers have studied variables related to reading comprehension and problem-based learning in English language learning. According to Intan Permatasari in her thesis entitled "The Effect of Problem Based Learning toward Students' Vocabulary Size and Students' Reading

[39] Evi Agustin and Syahfitri Purnama, "The Effect of Vocabulary Mastery and Reading Interest Towards the Ability To Comprehend Recount Text," *INFERENCE: Journal of English Language Teaching* 3, no. 3 (2020): 172.

[40] Dian Ayuningtyas, "Improving Students' Vocabulary Mastery Though Extensive Reading Activities at Grade XI IPA 2 of SMA N 1 Pleret Bantul," *Faculty of Languages and Arts State University of Yogyakarta.*, 2011, 3.

Comprehension", states that the use of problem based learning can improve students' reading comprehension.[41]

Student knowledge has a very important role in improving students' reading comprehension.[42] If students have a lot of vocabulary mastery in English, students will be more confident when carrying out learning in the classroom. An effective way to improve vocabulary, students must read more, search for and memorize new vocabulary, as well as obtain the latest information and enrich vocabulary. From these things, students are able to produce good understanding when reading material in English.[43]

Teaching using problem-based learning make students more challenged being active in learning, independent, and collaborating with fellow students.[44] The benefit for teachers when teaching using the problem-based learning model is teachers can be more prepared Learning Implementation Plans (RPP). Learning Implementation Plan is a good first step when teachers prepare learning before the learning takes place. Through the stages contained in the Learning Implementation Plan, the teacher participates in preparing the learning plan by guiding, directing students, and providing solutions when solving a problem faced by students during learning.[45]

[41] Intan Permata Sari, "The Effect of Problem Based Learning Toward Students ' Vocabulary Size and Students ' Reading Comprehension Thesis By Intan Permata Sari State Islamic Institute of Palangka Raya Faculty of Teacher Training and Education Department of Language Education St," *State Islamic Institute of Palangka Raya*, 2020, x.

[42] Sarah Adelheit Frans, Yubali Ani, and Yesaya Adhi Wijaya, "Kemampuan Membaca Pemahaman Siswa Sekolah Dasar [Reading Comprehension Skills of Elementary School Students]," *Diligentia: Journal of Theology and Christian Education* 5, no. 1 (2023): 54.

[43] Frans, Ani, and Wijaya. 54.

[44] Umarah Muhadharah, "Pengaruh Model Problem Based Learning (Pbl) Melalui Media Gambar Seri Dalam Meningkatkan Keterampilan Berbicara Ditinjau Dari Gaya Belajar Siswa Pada Mata Pelajaran Bahasa Inggris Kelas Xi Di Sma N 1 Sumber Cirebon," 2019, 10.

[45] Muhadharah, 11.

Researchers conducted research in class XI Science where there is an experimental group and control group that used in this research. In the experimental group, namely class XI Science 1, researchers used the problem-based learning model for classes that were given treatment. As for class XI Science 2, researchers did not use the problem-based learning model.

Based on the background explanation above, researchers are interested in conducting research entitled "The Effectiveness of Problem-Based Learning on the Reading Comprehension of the Eleventh-Grade Science Students at SMAN 1 Sambit Ponorogo".

B. Identification of the Problems

Based on the research conducted by researchers in class XI Science SMAN 1 Sambit, researchers found several problems that can be researched. Some of these problems include:

1. Students have difficulty interpreting the meaning of what they read so students often ask questions to the teacher.
2. Most students cannot find the right answer from the reading when students are instructed to look for information in the reading text.
3. Most students read in a low voice because they are afraid of making mistakes if students are instructed to read explanation text.
4. There is still a lack of students' knowledge of vocabulary mastery, so that it can make students feel difficult when interpreting and understanding the reading of explanation texts in English learning.
5. Lack of reading English materials, so students have difficulty when answering explanation text questions in English learning in class.

C. Limitation of the Study

This research focuses on "The Effectiveness of Problem-Based Learning on the Reading Comprehension of the Eleventh-Grade Science Students at SMAN 1 Sambit Ponorogo". In this research, there are several limitations when carrying out research, including:

1. The research subjects used by the researcher when carrying out the research were students in class XI Science 1 and XI Science 2 at SMAN 1 Sambit.
2. The research object used by researchers when carrying out research is teaching reading comprehension by applying problem-based learning for the experiment class (XI Science 1), and the control class (XI Science 2) teaches reading comprehension without using problem-based learning.
3. The variable contained in this research, namely Variable X, is "Problem-Based Learning". Meanwhile, the Y variable is "Reading Comprehension".
4. The population of this research is all students in class XI at SMAN 1 Sambit in the 2023/2024 academic year. Meanwhile, the samples used as research objects when carrying out research were 2 classes. The two classes are class XI Science 1 with 29 students and class XI Science 2 with 29 students.

D. Statement of the Problems

Based on the problems above, the researcher put forward the problem formulation when carrying out this research, namely: “Do students who are taught by using Problem-Based Learning have better reading comprehension that those who are not taught by using Problem-Based Learning?”

E. Objectives of the Study

According on the statement of problem formulation that has been explained, the objective of this research is that the researcher tries to find out whether there is a significant difference between students who are taught by using problem-based learning who have better reading comprehension than students who are not taught by using problem-based learning in class XI Science SMAN 1 Sambit.

F. Significances of the Study

There are several benefits that can be taken from this research. Significances of the study provides information to readers about how important research is because it has several solutions and suggestions for everyone. The following are some of the benefits of the significances of the study:

1. Theoretical Significance

a. It is hoped that the findings of this research will serve as a reference for other researchers, enhancing previous studies related to students' reading comprehension.

b. When carrying out learning in class, it is hoped that the findings of this research will provide teachers with supportive participation or roles related to English language learning activities, especially in reading comprehension for students. Apart from that, it is hoped that these findings can also encourage teachers to further develop other methods or approaches when teaching reading during class.

2. Practical Significance

a. For the English Foreign Language

From the research findings above, it is expected that the use of problem-based learning model can make EFL active when implementing reading learning. Because teaching using problem-based learning, EFL can find their problems and motivate EFL to solve their problems, so that learning using problem-based learning models can improve reading comprehension for EFL

b. Fot the Students

From the findings of the research, by teaching explanation text material in class XI using the problem-based learning model, it is hoped that students can improve their reading comprehension in learning English in class XI Science at SMA Negeri 1 Sambit..

c. For the Teachers

It is hopeful that this study can be beneficial for grade XI English teachers, showing that using problem-based learning models can facilitate the improvement of students' reading comprehension.

d. For the Future Researchers

From the research results that have been found by, it is hoped that the findings of this research can be beneficial for future researchers and other future researchers as a reference for conducting further study research related to problem-based learning models and reading comprehension in students.

e. For the Readers

From the findings of this research, it is hoped that readers can gain new knowledge related to teaching by using problem-based learning which can improve students' reading comprehension.

G. Organization of the Thesis

The organization of the thesis is the entire content of the thesis and its discussion. The organization of the thesis is described in a sequential thesis writing system. The organization of the thesis contains the order of writing of each chapter, where each part of the chapter has the sequence found in chapter I, such as introduction to chapter V, namely conclusion and suggestion. The following are the chapters and sub-chapters contained in the organization of the thesis:

Chapter 1	Introduction: Background of the study, identification of the problem, limitation of the problem, statement of problem, objective of the study, significance of the study, and organization of the thesis.
Chapter 2	Theoretical framework, previous research, conceptual framework, and research hypothesis.
Chapter 3	Research Methodology: Research Design, place and time of the study, population and sample, operational definition of research variable, technique and instrument of data collction, validity and reliability, and data analysis.

Chapter 4 Finding and Discussion: Statistic description, statistic inferential, and discussion of result data.

Chapter 5 Conclusion and Suggestion

CHAPTER II

LITERATURE REVIEW

A. Theoretical Background

1. Constructivism and Social Constructivism Theory

Learning theory is a description of how students process, absorb and store knowledge in the teaching and learning process. In constructivism, learning becomes significant when learners participate in actively building or creating their own basic knowledge through investigation and discovery.[46]

Constructivism theory was proposed by Jean Piaget in 1964 and Jerome Bruner in 1966. According to Jean Piaget, constructivism theory is based on the idea that individuals actively construct their own knowledge and understanding of the world through their experiences and interactions with the environment.[47] Piaget believed that children are not passive learners, but rather construct active meaning and understanding.[48] Meanwhile, according to Jerome Bruner, constructivism theory states that people build their own understanding and knowledge of the world, through experience and reflection of these experiences. This constructivism theory is based on the principles of cognitive theory. In the classroom, a constructivist view of learning can be used to encourage students to use practical approaches to create more knowledge, reflect and talk about what

[46] Vera Idaresit Akpan et al., "Social Constructivism: Implications on Teaching and Learning," *British Journal of Education* 8, no. 8 (2020): 49.

[47] Reshu, Sharma and C. S. Shukla, "Constructivist Approach in Education: Projecting the Insights of Piaget and Vigotsky into Future," *International Journal of Research Cultures Society* 7, no. 3 (2023): 80.

[48] Sharma and Shukla, 80.

students are doing. Constructivism theory emphasizes that learners create their own definitions, meaning and understanding through discovery. In addition, students achieve this when students work together with their peers. This brings students to the social aspect of constructivism.[49]

Social constructivism is a form of collaborative learning based on interaction, discussion and knowledge sharing between students. The teacher's role is to use student-centered and collaborative teaching methods. The underlying factor is that learners work together in groups to share ideas, find answers to problems or simply create something new to add to existing knowledge. Social constructivism learning theory does not emphasize the monotone attitude of the teacher in the classroom, but encourages students to actively interact with the teacher. It also means that the implementation of learning and knowledge is able to make students remember facts that students discover and build themselves rather than being told by the teacher.[50] Social constructivism focuses on interaction, collaboration and group work to create effective learning.[51]

Social constructivism is a learning theory proposed by Lev Vygotsky in 1968. The social constructivism theory states that language and culture are the framework in which humans experience, communicate and understand reality. According to Lev Vygotsky, language and culture play an important role both in human intellectual development and in the way humans perceive the world. This means that learning concepts are conveyed

[49] Idaresit Akpan et al., "Social Constructivism: Implications on Teaching and Learning", 50.

[50] Idaresit Akpan et al, 50.

[51] Idaresit Akpan et al, 49.

through language, interpreted and understood through experience and interaction in a cultural environment. Because it takes a group of people who have language and culture to build cognitive structures, knowledge is not only socially constructed, but also co-constructed. The link here is that if constructivists see knowledge as what students build themselves based on the experiences they gather from their environment, then social constructivists see knowledge as what students do in collaboration with other students, teachers and peers. Social constructivism is a variety of cognitive constructivism that emphasizes the collaborative nature of learning under the guidance of a facilitator or in collaboration with other students.[52]

In social constructivism, children's understanding is formed not only through adaptive encounters with the physical world, but through interactions between people in relation to a world that is not only physical and understood by the senses, but cultural and carried out by language. The level of potential development (academic achievement) is the level of development that learners are able to achieve under the guidance of teachers or in collaboration with peers. Learning as a social activity that relates to other humans such as peers, family members, and casual acquaintances, including pre-existing people. Social Constructivism recognizes the social aspect of learning and the use of conversation, interaction with others, and application of knowledge as important aspects of learning and means to achieve learning goals.[53]

[52] Idaresit Akpan et al, 50.
[53] Idaresit Akpan et al, 51.

Vygotsky believed that the lifelong developmental process relies on social interaction and social learning which actually leads to cognitive development. All learning tasks (regardless of difficulty), can be performed by students under adult guidance or in collaboration with peers. This theory helps provide a foundation for creating opportunities for students to collaborate with teachers and peers in constructing knowledge and understanding. The social construction of knowledge occurs in different ways and in different locations. This can be achieved through group discussions, teamwork or any instructional interaction in educational or training institutions, social media forums, religious places and markets. As students interact with people, material and immaterial environments, students gain understanding and accumulate experiences necessary to lead successful and functional lives.[54]

Social constructivism is also called collaborative learning because it is based on interaction, discussion and sharing between students. This teaching strategy allows for a range of grouping and interactive methods. These can include whole class discussions, small group discussions or students working in pairs on a specific project or task. The underlying factor of this theory is that students work together in groups to share ideas, brainstorm to try to find cause and effect, answers to problems or simply create something new to add to existing knowledge.[55]

Social constructivism upholds that knowledge develops as a result of social interaction and is not an individual property but a shared

[54] Idaresit Akpan et al, 51.
[55] Idaresit Akpan et al, 51.

experience. Social constructivism can be applied in the classroom by using learning such as case studies, research projects, problem-based learning, brainstorming, collaborative learning or group work, guided discovery learning, simulations, and others. Teachers can divide the class into groups or pairs of students and then guide by encouraging, questioning and directing the groups or pairs to discover concepts or gather learning experiences according to the intended objectives.[56]

Based on the statement above, the theory that underlies the development of the problem-based learning (PBL) model is constructivism theory with social constructivism theory.

2. Problem Based Learning

a. Definition of Problem Based Learning Method

The learning system at school has teachers and students together in the learning process towards a common goal, namely success in achieving the material set according to curriculum guidelines.[57] The learning process is inseparable from learning models.[58] Because learning models greatly affect the success of students when understanding the material.[59] Teachers as teaching staff and educators must always improve the quality of professionalism by providing learning opportunities for students by involving students effectively in

[56] Idaresit Akpan et al, 51-52.

[57] Indah Mei Diastuti, *Metode PBL Melalui Media Marquee Berbasis Hots*, Edisi Pert, 2021, 2.

[58] Abidin. Andi Mustika, "Kreativitas Guru Menggunakan Model Pembelajaran Dalam Meningkatkan Hasil Belajar Siswa," Didaktika 11, no. 2 (2017): 227.

[59] Ismail Amara, "Pengaruh Penggunaan Model Problem Based Learning (PBL) Terhadap Kemampuan Berbicara Siswa Di Kelas V SDN 1 Anggrek," *Pascasarjana Universitas Negeri Gorontalo Prosiding Seminar Nasional Pendidikan Dasar*, no. 25 (2021): 106.

the learning process.[60] With creative, professional teachers, adequate teaching materials, attractive media, and adequate learning models and resources, it will certainly support the achievement of the desired learning objectives.[61]

Models are very important to support learning. There are so many models in learning that can be used in the teaching and learning process, and one of the learning models that can direct students to think about solving problems that have been given by educators is the Problem-based learning model.[62] Learning models are one of the most important components in the learning process, because currently there are many learning models that are fun, active, creative and innovative.[63]

The problem based learning model is one of the many learning methods used by educators to facilitate the teaching and learning process.[64] In its application, students group and collaborate together to find answers with concepts that each student comprehension.[65] The opening question or problem that is shared must be related to competence and get students involved so that their thinking is visible.[66] Thus, the problem focuses on the content of the skills that built when

[60] Diastuti, 2.
[61] Diastuti, 2.
[62] Andi Kaharuddin, "Effect of Problem Based Learning Model on Mathematical Learning Outcomes of 6th Grade Students of Elementary School Accredited B in Kendari City," *International Journal of Trends in Mathematics Education Research* 1, no. 2 (2019): 43.
[63] Nadia Nauli, Oktaviana Imroatun Cahyati, and Gusmaneli Gusmaneli, "Penerapan Pembelajaran Aktif, Inovatif, Efektif, Kreatif, Menyenangkan, Dan Islami (PAIKEMI)," *PUSTAKA: Jurnal Bahasa Dan Pendidikan* 4, no. 2 (2024): 202-203.
[64] Diastuti, 3.
[65] Diastuti, 3.
[66] Diastuti, 4.

facing problems and can reapply when students face problems.[67] In addition, the problem-based learning model is a learning approach that presents contextual problems so that it stimulates students to learn.[68] Problem-based learning model is a learning model that involves students to solve a problem through the stages of a scientific approach so that students can learn knowledge related to the problem and at the same time have the skills to solve a problem.[69] The goal is to teach basic knowledge and skills to solve problems.[70]

The problem-based learning model is formed on the basis of very innovative learning theories, such as the theory of constructivism where students are encouraged to develop their own knowledge.[71] Problem-based learning is also learning that challenges students to "Learn how to learn" by working in groups to find solutions to real-world problems.[72] According to Oon-Seng Tan states that the learning curriculum using problem-based learning can help encourage the development of students' lifelong learning skills, such as open-minded, reflective, critical, and active learning.[73] In addition, the learning curriculum using

[67] Diastuti, 4.

[68] Wulan Purnama Sari Simatupang and Fajar Utama Ritonga, "Penerapan Model Problem Based Learning Dalam Pembelajaran Matematika Di UPT SDN 06752," *MITRA ABDIMAS: Jurnal Pengabdian Kepada Masyarakat.* Vol.3,No.1 (2023), 9.

[69] M A P Nugraha et al., "Conceptual Analysis of Problem-Based Learning Model in Improving Students Critical Thinking Skill," *Journal of Education …* 4, no. 1 (2023): 466.

[70] Diastuti, *Metode PBL Melalui Media Marquee Berbasis Hots, 5*.

[71] Shovia Wahyu Purwati, "Metode Pembelajaran Model Problem Based Learning Dalam Meningkatkan Keterampilan Abad Ke-21 Siswa SMPN 1 Kedungpring Lamongan," *Journal of Social Science and Education* 3, no. 2 (2022): 164.

[72] Syef Harapit, "Peranan Problem Based Learning (Pbl) Terhadap Kemampuan Pemecahan Masalah Dan Motivasi Belajar Peserta Didik," *Jurnal Pendidikan Tambusai* 2, no. 4 (2018): 913.

[73] Oon-Seng Tan, *Problem Based Learning Innovation Using Problems to Power Learning in the 21st Century* (Singapore, 2003), 12.

problem-based learning, students can get more facilities on how to solve a problem, communicate, teamwork, and students' interpersonal skills.[74]

The questions contained in problem-based learning must be in accordance with the concepts and principles you want to learn. The problems presented in learning using problem-based learning are real problems, which means that the real problems are related to students' daily lives.[75]

The application of problem-based learning in English subjects can be an opportunity for students to develop critical thinking, collaboration and communication skills amidst the challenges faced by students and teachers. By designing learning that is responsive and relevant, the learning experience using problem-based learning can become more meaningful and effective.

From the explanation above, it can be said that problem-based learning applied to the teaching and learning process in the classroom is able to make students more prepared when understanding the text that given by the teacher. Therefore, students' knowledge regarding the use of problem-based learning models in learning English can increase students' comprehension.

[74] Tan, 12.

[75] Sari, "The Effect of Problem Based Learning Toward Students ' Vocabulary Size and Students ' Reading Comprehension Thesis By Intan Permata Sari State Islamic Institute of Palangka Raya Faculty of Teacher Training and Education Department of Language Education St.", 15.

b. Characteristic of Problem Based Learning

Characteristics are characteristics that something has that differentiate it from others. The characteristic in question is something that is unique or not shared by others. The characteristics of problem based learning have their own characteristics that are not found in other learning models, such as the problems raised in problem-based learning, namely problems in students' lives, where the teacher guide students to solve these problems. Apart from that, this problem-based learning model can also foster critical thinking skills in students. Problem-based learning usually uses groupings in learning with members consisting of various characters, abilities and gender.[76] According to Oon-Seng Tan, the following are the characteristics of problem-based learning found in a curriculum:[77]

1) Problems are the starting point in classroom learning.
2) The problems raised are problems that exist in the unstructured real world.
3) The problems found in problem-based learning require various perspectives.
4) The problems found in problem-based learning challenge students' current knowledge, attitudes and competencies, so that these problems require the identification of learning needs and new learning areas.

[76] Diastuti, *Metode PBL Melalui Media Marquee Berbasis Hots, 12-13*.
[77] Tan, *Problem Based Learning Innovation Using Problems to Power Learning in the 21st Century, 30-31*.

5) Independent learning is the most important thing in problem based-learning. Because in problem based learning, students have a big responsibility to obtain information and knowledge.
6) Learning in problem based learning is collaborative, communicative and cooperative.
7) Develop skills by investigating and solving a problem. It is as important as gaining content knowledge to solve a problem. In learning using problem-based learning, the teacher facilitates and trains students by asking questions and cognitive coaching.
8) The end of the problem-based learning process includes synthesis and integration of learning.
9) In problem-based learning, learning ends with an evaluation and review of student experiences, as well as the student learning process.

Meanwhile, according to Indah Mei Diastuti, the characteristics found in problem-based learning are:[78]

1) Learning is student-centered.

   The learning process contained in problem-based learning focuses on students as people who are learning. Therefore, problem-based learning is supported by constructivism theory where students are encouraged to develop their own knowledge.

2) Authentic problems from the organizing focus for learning.

[78] Diastuti, *Metode PBL Melalui Media Marquee Berbasis Hots, 14-16.*

The problems presented to students are authentic problems so that students are able to understand these problems easily, and students can apply these problems in their professional lives later.

3) New information is acquired through self-directed learning.

In the problem solving process, students may not know and understand all the prerequisite knowledge, so students try to find it themselves by using various sources of knowledge, whether from books or by using other information.

4) Learning occurs in small group.

Problem-based learning is implemented through small groups, where in the group, in order for the group to interact scientifically and exchange ideas to develop knowledge collaboratively. The group is created to demand the division of tasks and the implementation of clear objectives in classroom learning.

5) Teachers act as facilitators.

The teacher only acts as a student facilitator in implementing problem-based learning in the classroom. Apart from that, teachers must also monitor the progress of student activities and encourage students to achieve the targets that students want to achieve.

From several characteristics put forward by several experts above, it can be concluded that the characteristics of learning using problem-based learning begin with the existence of a problem so that it can be raised by students and teachers, then students discover knowledge related to what students already know and what they need to know by

students to solve a problem. Apart from that, what is characteristic of problem-based learning is that students can choose problems that are considered interesting to solve so that students are encouraged to play an active role in learning in class.[79]

c. Purpose of Problem Based Learning

Each learning model certainly has a main goal to be achieved by students. The objectives contained in the problem-based learning are as follows:

1) Helping students to obtain learning content.[80]
2) Helping students to obtain learning heuristics.[81]
3) Improving process skills and problem solving skills in students.[82]
4) The purposes of problem-based learning also include information gathering skills, collaborative and team learning, as well as reflective and evaluative skills in students' thinking abilities.[83]
5) Increase the exchange of knowledge and student effort in classroom learning.[84]
6) Teaching students to think critically in finding problems and solving problems that have been found by discussing, the problems given are related to everyday life so that students can solve problems by relating their experiences.[85]

[79] Diastuti, 64.
[80] Tan, *Problem Based Learning Innovation Using Problems to Power Learning in the 21st Century*.
[81] Tan, 31.
[82] Tan, 31.
[83] Tan, 31.
[84] Tan, 25.
[85] Diastuti, *Metode PBL Melalui Media Marquee Berbasis Hots*, 9.

d. Indicator of Problem Based Learning

The following are indicators of learning in problem-based learning[86]:

2.1. Table Indicator Problem Based Learning

No	Learning Indicator	Behavior	
		Teacher	Student
1.	Orientation of Students to Problems	Explaining learning objectives, providing learning materials, presenting problems and motivating students to be involved in the problem solving activities provided.	Students listen to the objectives and learning materials from the teacher. Students answer the problems given by the teacher.
2.	Organize Students to Learn	Helping students to define and organize learning tasks with the problems given in class learning.	Students start in groups determined by the teacher and students receive assignments given by the teacher to be done in groups.
3.	Guiding Individual and Group Investigations	Encourage students to collect appropriate information and carry out experiments to obtain the explanations needed to complete a problem solution.	Students are required to be active to become active investigators.
4.	Develop and Present the Work	Help students when planning and preparing appropriate work such as reports, and help students to share assignments with their group friends.	Students share assignments and prepare report assignments that will be reported as the results of problem solving in class learning.

[86] Diastuti, 18-21.

No	Learning Indicator	Behavior	
		Teacher	Student
5.	Analyze and Evaluate the Problem-Solving Process	Helping students to reflect or evaluate the investigations and processes used by students.	Students together with the teacher reflect and evaluate learning in class.

d. Syntax of Problem Based Learning

The problem-based learning has several steps that students must go through in implementing the learning process. With the learning steps, the learning process runs orderly and in accordance with the desired expectations.

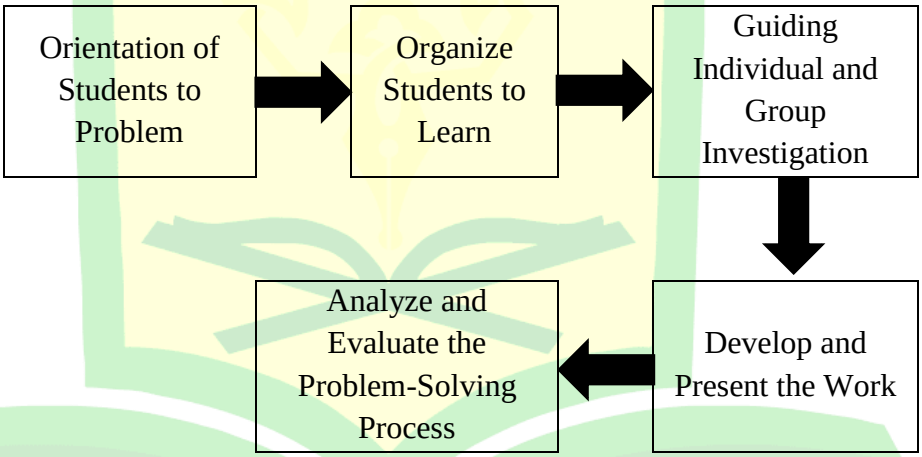

Figure 2.1 Syntax of Problem-Based Learning

The following are the 5 steps of implementing problem-based learning in the classroom:

1) Orientation of Students to Problems

At this step, the teacher provides an explanation to students about the learning objectives and learning process so that students can be motivated to be involved in problem solving activities in class learning.

2) Organize Students to Learn

At this step, the teacher organizes the tasks that given to students, such as determining topics, task procedures, and so on related to the problem.

3) Guiding Individual and Group Investigations

At this step, the teacher encourages students to gather with group friends, solve problems in the worksheet (LKPD) in groups, gather information appropriately, encourage students to reason and carry out investigations to find explanations and problem solving, monitor students in discussions and ask students to stop working when the time is up. In addition, the teacher also guides students so that students can obtain sources or references that are in accordance with the problems given.

4) Develop and Present the Work

At this step the teacher helps students to divide tasks and prepare reports that reported as a form of problem solving results in the form of reports, the teacher asks one of the students in the group to submit the results of the discussion, the teacher asks other groups to respond to the results of their work.

5) Analyze and Evaluate the Problem-Solving Process

At this step the teacher asks students to reflect and evaluate the results of the work and material obtained regarding the problem solving process carried out together to improve thinking skills in students.

e. Advantages and Disadvantages of the Problem Based Learning

In the world of education, various learning models continue to be developed to increase the effectiveness of learning for students. One model that has received attention is the problem-based learning. This model places students at the center of learning by providing challenges in the form of problems that students need to solve. Problem-based learning is the same as other learning which have several advantages and disadvantages. The following are the advantages and disadvantages of problem-based learning:

1) Advantages of Problem Based Learning

Teachers using learning models when delivering learning material in class. This aims to improve students' learning abilities. One of the models used by teachers when teaching is problem-based learning. Through learning using problem-based learning, many advantages and benefits are discovered for students. Because problem-based learning is an effective learning model for students. The following are the advantages of problem-based learning:[87]

a) Problem-based learning can help students when building students' critical thinking, problem-solving, intellectual abilities, and develop students' ability to complete with new knowledge.

b) Problem solving is a good technique to understand the content of the lesson, it can increase students' learning activities.

[87] Diastuti, *Metode PBL Melalui Media Marquee Berbasis Hots, 22*.

c) Helping students develop their new knowledge and take responsibility for their own learning, it can also encourage them to self-evaluate both the results and the learning process.

d) Through problem-based learning can show students that every subject is basically a way of thinking, and something that students must understand, not just learning from teachers or from books.

The problem based learning model is able to make students think critically, collaborate well, students are able to develop their thinking based on problems that are related to their experience, student activity becomes more visible and learning focuses on students.[88]

2) Disadvantages of Problem Based Learning

Besides having advantages, this model has disadvantages. The following are the disadvantages of using the problem-based learning in classroom learning:[89]

a) Problem-based learning cannot be applied to every subject matter, there is a part where the teacher plays an active role when presenting the material. Problem-based learning is more suitable for learning that requires certain skills related to problem solving.

b) In a class that has a high level of student diversity, there are difficulties in assigning tasks.

[88] Diastuti, 24.
[89] Diastuti, 23-24.

c) If students do not have an interest or do not believe that the problem being studied is difficult to solve, then students feel reluctant to try.

d) The success of problem-based learning strategy requires enough time for preparation.

e) Without understanding why they are trying to solve the problem being studied, they are not learn what they want to learn.

This problem-based learning model requires a lot of time, learning with this model requires interest from students to solve problems, if students do not have this interest, students tend to be reluctant to try, and this learning model is suitable for learning that requires problem solving skills.[90]

3. Reading Comprehension

a. Definition of Reading

Reading is one of the skills that students must master, because by reading, students obtain a lot of information from various sources.[91] One of the learning activities that can improve students' knowledge and skills is reading, so it is very important for students to read more, especially reading English books.[92] Reading cannot be separated from the learning and teaching process.

According to Harmer, reading is useful for acquiring language proficiency, as long as students more or less understand what they

[90] Diastuti, 25.

[91] Gina Larasaty and Ayu Sulastri, "Improving Students' Reading Comprehension Using Learning Cell Technique," *Journal of Eng-Lish Language Learning (JELL* 11, no. 1 (2019): 1.

[92] Larasaty and Sulastri.

read.[93] Because the more students read, the better students' comprehension the reading. Reading is a process of combining reading information from a text and their own background knowledge to build meaning.[94] The meaning of this statement is that the reading process is not just reading written text, but students also need to combine reading experiences to capture ideas related to what the author uses and the purpose of reading itself is absolute understanding. Besides that, reading is a process of deciphering symbols to obtain meaning from a reading. In the reading process, students need to practice continuously, perfecting their development until they obtain a reading in the form of narrative text, descriptive text, explanation text, etc. Reading requires competence to understand the purpose of reading. Reading in English language learning gets special focus.[95]

b. Definition of Reading Comprehension

English is an international language used to communicate with people from different backgrounds. English is the main language of instruction in every educational institution. Most people use English as their main language, and English is taught as a subject at school.[96] The English skills that students must master are speaking, reading and

[93] Jeremy Harmer, *How to Teach English*, New Editio (Oxford: Ocelot Publishing, 2007), 99.

[94] Ifna Nifriza and Sri Mures Walef, "The Application of RCRR (Read, Cover, Remember, Retell) Technique in Teaching Reading at Junior High School," *EDULIA: English Education, Linguistic and Art Journal* 3, no. 2 (2023): 94.

[95] Jack C. Richards and Willy A. Renandya, *Methodology Language Teaching: An Anthology of Current Practice*, First Edit (New York: Cambridge University Press, 2002), 273.

[96] Erlidawati, "S

tudents' Topic Interest in Learning Reading Comprehension," *Pedagogika: Jurnal Ilmu-Ilmu Kependidikan* 3, no. 1 (2023): 97.

writing. One of these abilities is the ability to read. Reading comprehension is an important component in language learning, when studying English as a foreign language.[97] Reading can make readers focus their knowledge on a particular subject.[98]

Many experts define the meaning of reading. Reading comprehension is the ability to read text, process and understand its meaning.[99] A person's ability to understand a text is influenced by traits and skills. If word recognition is difficult, students use too much of their processing capacity to read individual words, which impacts the student's comprehension to understand what is read.[100]

Reading comprehension is the ability to understand and interpret reading texts using one's own language.[101] According to Joanne Schudt Caldwell said that reading comprehension is the process of simultaneously extracting and constructing meaning through interaction and involvement with written language. The meaning of this sentence is that reading comprehension is an achievement where the reader succeeds in extracting useful knowledge from a text and constructing it into a new understanding.[102] Comprehension is not a single total process. Reader activity includes multiple simultaneous processes.

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[97] Erlidawati, 97.
[98] Erlidawati, 97.
[99] Riska Damayanti, "Improving Students' Reading Comprehension in Explanation Text through DRTA (Direct Reading Thinking Activity) Strategy at the Eleventh Grade of SMA Negeri 4 Palopo" (IAIN Palopo, 2019).
[100] Damayanti.
[101] Muhsyanura, "The Effectiveness of Problem-Based Learning on the Reading Comprehension of the Eleventh-Grade Science Students at SMAN 1 Sambit Ponorogo."
[102] JoAnne Schudt Caldwell, *Comprehension Assessment: A Classroom Guide* (New York: A Division of Guilford Publication, Inc, 2008), 4.

Reading comprehension is the process of building relationships between what the reader knows and what the reader does not know, between the new and the old.[103]

According to Maharani Dyah Ayu Setiawati and Budiasih, reading comprehension is a complex collaborative process between readers, their interest in reading the text, what they think about the text, the knowledge they gain from previous texts and understanding of the type of text. Reading comprehension can be explained as a student's ability to understand the entire reading text, including understanding implied and implied meaning, type of reading text, information or knowledge contained in the text, purpose of reading, as well as students' ability to use reading comprehension strategies.[104]

The main purpose of reading is understanding the text.[105] Reading is an important part when analyzing a text, because reading is a thinking process.[106]

This can enable students to use what they may already know, help students when analyzing what type of reading texts students read, students get information from the reading itself, and whether students also feel interested in the text that students want to read.[107] So with this, students try to read effectively and efficiently.[108]

[103] Caldwell, 4.
[104] Maharani Dyah Ayu Setiawati and Budiasih Budiasih, "Strategies on Teaching Reading Comprehension for the Junior High School Students During the Covid-19 Pandemic," *International Journal of Research on English Teaching and Applied Linguistics* 2, no. 2 (2022): 16.
[105] Erlidawati, "Students' Topic Interest in Learning Reading Comprehension.", 97.
[106] Erlidawati, 97.
[107] Erlidawati, 97.
[108] Erlidawati, 97.

Reading is an active skill. Reading involves guessing, prediqing, checking and asking oneself questions. Therefore, this should be taken into consideration when designing reading comprehension exercises.[109] For example, teachers can develop students' powers of inference through systematic exercises, or introduce questions that encourage students to anticipate the content of the text from its title and illustrations or the ending of the story from the previous paragraph. In addition, teachers can also introduce exercises for which there is no one straightforward answer. This type of exercise can expand the range of exercises to include other reading skills to produce better results.[110] Comprehension is an ability where a person can go beyond words, understand some ideas of a paragraph and know the relationship of each idea in a text. Comprehension refers to the process of understanding a word, sentence, and connected text.[111] Comprehension as an ability aims to know and grasp a text, identify implicit and explicit information in a text, and connect interpretations between what the author says and what the reader thinks. An example is when students can understand textual information, find information related to the text, and identify important information available in the text.[112] Reading involves guessing, prediqing, checking and asking oneself questions. Therefore, this should

[109] Françoise Grellet, *Developing Reading Skills: A Practical Guide to Reading Comprehension Exercises.* (New York: Cambridge University Press, 1981), 8.

[110] Grellet, 8.

[111] Setiawati and Budiasih, "Strategies on Teaching Reading Comprehension for the Junior High School Students During the Covid-19 Pandemic.", 16.

[112] Steve Mckee, "Reading Comprehension, What We Know: A Review of Research 1995 to 2011," *Language Testing in Asia* 2, no. 1 (2012): 45–58.

be taken into consideration when designing reading comprehension exercises.[113]

Reading comprehension cannot be separated from other skills. There are cases in real life when we do not talk or write about what we have read or when we do not connect what we read with something we might hear. It is therefore important to connect various skills through selected reading activities.[114] In reading, when exercises should be meaningful and as often as possible in accordance with what is expected by the teacher where the exercise is done with the text.[115]

Another important thing when designing reading comprehension exercises is that the activities should be flexible and varied. Reading comprehension activities should be tailored to the text and the reason one is reading it. It is important to consider the author's point of view, intent and tone to fully understand the text. Examples of questions found in reading can be open questions, multiple-choice questions, right or wrong questions, short-answer test questions, etc.[116]

In classroom reading comprehension, students are taught how to approach and consider texts in order to become independent and efficient readers. Meaning in English language learning is not attached to the text alone, but each reader brings his own meaning to what he reads based on what he expects from the text and his prior knowledge.

[113] Grellet, *Developing Reading Skills: A Practical Guide to Reading Comprehension Exercises, 8.*
[114] Grellet, 8.
[115] Grellet, 9.
[116] Grellet, 9.

This shows how difficult it is to test reading comprehension competence and how great the temptation is to impose one's own interpretation on learners.[117]

Therefore, readers must first understand what they already know before reading new material. A good reader can quickly grasp the main ideas contained in the information without getting bogged down in specifics.

c. Purpose of Reading Comprehension

Reading is one of the basic skills of language learning that cannot be separated from other language skills.[118] The purpose of reading comprehension is to help students understand written language. Students who understand well monitor their understanding when students read and use strategies or techniques to understand the meaning, then students can understand what the content of the text is, and in the end students can make conclusions about what has been read to show students' comprehension after the reading activity is complete.[119]

d. Type of Reading

According to Brown, in the case of reading, more variation in reading comes from the many types of texts. When considering assessment procedures, several types of reading performance are usually

[117] Grellet, 9.

[118] Fitri Nurdianingsih, "Teachers' Strategies in Teaching Reading Comprehension," *PROJECT (Professional Journal of English Education)* 4, no. 2 (2021): 285.

[119] Nurdianingsih, 285.

identified, and these serve as organizers for various assessment tasks. The following are the 4 types found in reading:[120]

1) Perceptive

Perceptive reading tasks involve paying attention to broader discourse components such as: Letters, words, punctuation, and other graphemic symbols. Bottom-up processing is implied.

2) Selective

Selective in reading, largely an artifact of the assessment format. Certain specialized tasks are used to ascertain one's reading familiarity with the lexical, grammatical, or discourse features of a language within a very short span of language.

Examples of tasks found in selective include: Picture-cued tasks, matching, true/false, multiple-choice, and others. Selective stimuli include sentences, brief paragraphs, simple charts, and graphics. Brief responses are also included. A combination of bottom-up and top-down processing can be used in selective reading.

3) Interactive

Interactive reading type is the exposure of the language of several paragraphs into one or more pages in which the reader has to interact with the text (In psycholinguistic sense). The point of the statement is that reading is a process of negotiating meaning, then

[120] H. Douglas Brown and Priyanvada Abeywickrama, "Language Assessment: Principles and Classroom Practices," in *Brown, H. Douglas*, Third Edit, 2019, 199-201.

the reader brings to the text a set of schemas to understand it, and intake is the product of that interaction.

Common genres suitable for interactive reading are anecdotal texts, short narrative texts, and short descriptive texts, excerpts from longer texts, questionnaires, memos, announcements, directions, recipes, and so on.

Interactive tasks focus on identifying relevant features (lexical, symbolic, grammatical, and discourse) in texts of fairly short length, with the aim of retaining processed information. Top-down processing is typical of such tasks, although some instances of bottom-up performance may be required.

4) Extensive

Extensive reading, is reading that applies to texts that are more than one page. Examples of extensive reading include: Professional articles, essays, technical reports, short stories, and books. Typically, the purpose of assessment is to capitalize on students' unfamiliarity with a text, rather than asking test takers to “zoom in” to small details. Top-down processing is assumed for most extensive tasks.

Most classroom time is devoted to building reading skills by integrating speaking or writing in the form of learner-centered exercises, responses, and interactions. A number of common item formats used to assess reading can be done without the use of listening, speaking, or writing. Teachers can test extensive reading

using multiple-choice, matching, pointing, picture-cued, and other nonverbal response modes so that extensive reading can utilize the unique ability to assess reading independently of the other three skills.

e. Levels of Reading Comprehension

Reading comprehension is thought to occur at four levels of complexity. This levels are often referred to as literal level, inferential level, critical level and creative level.[121] The following is a material description of the four levels, namely:

a) Literal Level

Literal level in reading comprehension is an understanding of information and facts stated directly in the text.[122] Literal level skills are considered the first and most basic level when comprehending texts. Readers can use literal comprehension skills such as finding keywords, skimming, and scanning to find information more efficiently.[123]

Literal comprehension is considered as the ability to understand the ideas directly expressed in written text, recognize details and sequences, and understand cause-and-effect relationships. Although literal reading comprehension is a low-level

[121] Peter Westwood, *Reading and Learning Difficulties: Approaches to Teaching and Assessment*, First Publ (Australian: The Australian Council for Educational Research Ltd, 2001), 21.

[122] Agus Setia Budi and Cholimatus Zuhro, "Literal Reading Comprehension Ability of English Study Program Students of Politeknik Negeri Jember," *Journal of English in Academic and Professional Communication* 9, no. 1 (2023): 29.

[123] Budi and Zuhro, 29.

skill in reading, it is very important for teachers to develop students' literal comprehension skills, because literal level is the basic skill of students before students master other reading skills.[124]

Based on the above statement, it can be concluded that in reading comprehension, the literal level is the basic facts that are easy to understand.[125]

b) Inferential Level

Inferential level in reading comprehension is the ability to realize hidden concepts and unstated relationships between lines in a text.[126] Skills at this inferential level are evaluated through items that ask about the main topic, cause-effect relationships, and drawing conclusions on standardized reading tests.[127] Items measuring inferential skills have been shown to be more cognitively demanding and require test takers to use several skills simultaneously. Skills found at the inferential level include the ability to understand difficult vocabulary and structures and bring together background knowledge to create meaning.[128]

Based on the above statement, it can be concluded that in reading comprehension, the inferential level is able to make readers

[124] Budi and Zuhro, 29.

[125] Westwood, *Reading and Learning Difficulties: Approaches to Teaching and Assessment, 21*.

[126] Fatemeh Samiei and Saman Ebadi, "Exploring EFL Learners' Inferential Reading Comprehension Skills through a Flipped Classroom," *Research and Practice in Technology Enhanced Learning* 16, no. 1 (2021), 2.

[127] Samiei and Ebadi, 2.

[128] Samiei and Ebadi, 2.

go beyond what is written on the page, add meaning, or draw conclusions.[129]

c) Critical Level

Critical level in reading comprehension is a communicative interaction with the text, the ability to comment, and evaluate the text. In the critical level in reading comprehension, readers can reflect on the content and. In addition, students' ability to remember what they have read over a long period of time can only be achieved by critical reading.[130]

Critical level will not only help students know how to read the text, but also help students be more successful when understanding the text, because students will absorb information there. Reading comprehension at the critical level requires a higher level of skill development and perception. It is understood as a passing judgment on the quality, value, and accuracy of the truth of a reading. At the critical level, students find several types of learning texts. Examples such as: Descriptive, narrative, and recount.[131]

Based on the above statement, it can be concluded that at the critical level in reading comprehension, the reader feels good

[129] Westwood, *Reading and Learning Difficulties: Approaches to Teaching and Assessment, 21*.

[130] Marlinda Hanum, Sri Wahyuni, and Maulizan ZA, "A Descriptive of Students Critical Reading Skills in Narrative Texts," *Jurnal Ilmiah Mahasiswa Pendidikan* 1, no. 1 (2020), 2.

[131] Hanum, Wahyuni, and ZA.

judgment regarding what he is reading, its clarity, accuracy, and any excessive statements or prejudices.[132]

d) Creative Level

Creative level in reading comprehension is the highest level of reading comprehension. Readers at the creative level must think critically and use their imagination. In the creative level, students utilize reading results to develop their intellectual and emotional abilities. This ability will be able to enrich knowledge, experience, and increase the sharpness of reasoning power so that readers can come up with new ideas. This creative reading process starts from reading literally then interpreting and reacting in the form of an assessment of what the author conveys, then continues by developing his own thoughts so as to form new ideas, insights, approaches, and mindsets.[133]

Based on the above statement, it can be concluded that at the creative level in reading comprehension, readers can take information or ideas from what has been read, and develop new ideas from it. Creative level stimulates readers to think new and original.[134]

[132] Westwood, *Reading and Learning Difficulties: Approaches to Teaching and Assessment,* 21.

[133] Putri, "Creative Comprehension on Literacy: Technology and Visual.", 325.

[134] Westwood, *Reading and Learning Difficulties: Approaches to Teaching and Assessment, 22*.

f. Assessment of Reading Comprehension

Assessment is a way of judging or estimating the level or magnitude of some attribute of a person. In educational practice, assessment is an ongoing process that includes a variety of methodological techniques. Every time a student responds to a question, makes a comment, or tries a new word or structure, the teacher unconsciously assesses the student's performance.[135] Type of assessment used in this study is a short-answer task, which is one of the assessments found in reading. The following is an assessment on reading:

Table 2.2 Criteria Assessment of Reading

Aspect	Point	Criteria
Main Idea	8-10 (Good)	Identifies the main idea as well as supporting details.
	5-7 (Fair)	Identifies the main idea, but cannot identify supporting details.
	0-4 (Poor)	Misidentifies the main idea, or fails to identify the main idea.
Vocabulary	8-10 (Good)	Interpret the meanings of unfamiliar words.
	5-7 (Fair)	Decodes unfamiliar word, but is not always able to interpret meaning from context.
	0-4 (Poor)	Attempts to decode unfamiliar word in the text, but does not independently interpret meaning.
Context	8-10 (Good)	Identifies most contextual references to interpret meaning.
	5-7 (Fair)	Identifies minimal contextual references to interpret meaning.
	0-4 (Poor)	Cannot identify Contextual references to Interpret meaning.
Sequence	8-10 (Good)	Exhibits the ability to identify sequentially elements as well as the ability to recognize the elements into a sequential order.

[135] Brown and Abeywickrama, "Language Assessment: Principles and Classroom Practices", 3.

Aspect	Point	Criteria
	5-7 (Fair)	Identifies sequential elements of massage, but has trouble with the reorganization of the sequential elements.
	0-4 (Poor)	Cannot identify keywords or sequential textual passages.
Inference	8-10 (Good)	Can identify when the message is inferred and can conclude.
	5-7 (Fair)	Identifies limited inferred messages, or recognize, but misinterprets the inference.
	0-4 (Poor)	Cannot conclude inferred messages nor identify prose inferred messages.

4. Teaching Problem-Based Learning as a Model to Improve Students' Reading Comprehension in English

Learning is an important factor in the development and education of each individual.[136] Education is the main pillar of the nation to achieve development and progress.[137] Indonesia's education system in the current era, teachers must be able to keep up with new technological developments, must always be updated on new theories that are developing and used today so that teachers are able to implement creative and innovative learning in the classroom.[138]

In addition, reading comprehension skills are important in English education in Indonesia today, because reading is not only about understanding text, but also acquiring knowledge and information.[139] Therefore, understanding and mastering reading comprehension skills is the

[136] Husnur Rosyidah Aulia, Anita Fatimatul Laeli, and Siti Ulwiyah, "Problem Based Learning As a Method To Improve Senior High School Student'S Reading Comprehension in English," *ELTR Journal* 7, no. 2 (2023): 77.
[137] Aulia, Laeli, and Ulwiyah, 77.
[138] Aulia, Laeli, and Ulwiyah, 78.
[139] Aulia, Laeli, and Ulwiyah, 78.

key to success in the learning process.[140] The current education system in Indonesia requires the application of effective models and approaches to classroom teaching to improve the quality of learning.[141] One of the approaches that received attention and strengthened in Curriculum 2013 is Problem-Based Learning. Problem-Based Learning is one of the learning models that can be applied when implementing problem-based learning.

Teaching materials and teaching models cannot be separated, this aims to achieve learning objectives.[142] Therefore, teachers must prepare teaching materials well, so that teachers can succeed when implementing learning by using problem-based learning models in teaching English.[143]

Problem-Based Learning is a relevant learning model to improve students' reading comprehension skill.[144] In the problem-based learning, students are given real problems or situations that require students to analyze and discover new knowledge.[145] Through these problems, students are actively involved in reading and understanding relevant information to solve problems.[146] This process allows students to develop deeper reading comprehension skills.[147] In addition, problem-based learning also encourages students to use effective reading strategies.[148] Because when

[140] Aulia, Laeli, and Ulwiyah, 78.
[141] Abdullah, "Pendekatan Dan Model Pembelajaran Yang Mengaktifkan Siswa," *Edureligia* 1, no. 1 (2017): 47.
[142] Isrokijah, "Problem Based Learning: A Model in Teaching English at Junior High School," *Journal of Research on English and Language Learning (J-REaLL)* 1, no. 2 (2020): 133.
[143] Isrokijah, 133.
[144] Iskandar Rosyidin, Nurrudin Nurrudin, and Ratna Dewanti, "The Effect of Problem-Based Learning Model Towards Students' Comprehension of the English Reading Text," *English Review: Journal of English Education* 10, no. 2 (2022).
[145] Aulia, Laeli, and Ulwiyah, 78.
[146] Aulia, Laeli, and Ulwiyah, 78.
[147] Aulia, Laeli, and Ulwiyah, 78.
[148] Aulia, Laeli, and Ulwiyah, 78.

facing complex problems, students need to understand the text thoroughly, identify the main idea, distinguish supporting details, or summarize relevant information.[149]

Problem-based learning provides opportunities for students to practice and improve their reading skills in a meaningful and contextualized way.[150] In the reading learning system in the classroom, there are a variety of different types of student learning.[151] In reading learning there are students who are fast learners and students who are slow learners.[152] This can make the teaching and learning process in the classroom quite challenging for teachers, because teachers not only focus on students who learn quickly, but also have to help slow students when learning.[153]

In addition, many students in the class also still experience problems with reading comprehension.[154] The obstacles are such as: 1. Students still have difficulty answering questions based on the text that has been provided. 2. Students have difficulty interpreting the meaning of what they read and often ask questions to the teacher.[155] This can cause most students to be unable to analyze the information contained in a text.[156] This condition shows that students' reading ability still needs to be improved.[157]

[149] Aulia, Laeli, and Ulwiyah, 78.
[150] Aulia, Laeli, and Ulwiyah, 78.
[151] Aulia, Laeli, and Ulwiyah, 78.
[152] Aulia, Laeli, and Ulwiyah, 78.
[153] Aulia, Laeli, and Ulwiyah, 78.
[154] Aulia, Laeli, and Ulwiyah, 78.
[155] Aulia, Laeli, and Ulwiyah, 78.
[156] Aulia, Laeli, and Ulwiyah, 78.
[157] Aulia, Laeli, and Ulwiyah, 78.

The next problem is that students have different characteristics. In classroom learning, many students prefer to walk around, so that it can cause the learning process in the classroom to be less effective because attention to other students is disturbed.[158]

The application of Problem-Based Learning in classroom learning can overcome students' reading comprehension problems.[159] Problem-based learning is a student-centered learning. In the application of problem-based learning, students are directly involved and play an active role in the learning process.[160] Students are also encouraged to present conclusions from their problem-solving process. In this approach, the teacher is a facilitator where the teacher does not only convey knowledge to students.[161]

The application of problem-based learning teaches about contextual where students are faced with a problem or scenario, then the teacher encourages and guides students to find a solution.[162] In implementing problem-based learning in the classroom, teachers must be creative when designing class activity scenarios.[163] Because the student textbook only presents simple and minimal material. Teachers need to support students to use any learning resources. The process of implementing problem-based learning in the classroom can help if teachers prepare worksheets for students (LKPD). Student worksheets are developed to support textbooks or

[158] Aulia, Laeli, and Ulwiyah, 78.
[159] Greselia Kaganang, "The Use of Problem-Based Learning to Improve Students' Reading Comprehension at the First Grade Students of Senior High School 1 of Middle Halmahera," *Langua: Journal of Linguistics, Literature, and Language Education* 2, no. 1 (2019): 46.
[160] Aulia, Laeli, and Ulwiyah, 79.
[161] Aulia, Laeli, and Ulwiyah, 79.
[162] Aulia, Laeli, and Ulwiyah, 80.
[163] Isrokijah, "Problem Based Learning: A Model in Teaching English at Junior High School", 135.

subjects that function to provide exercises for mastery of certain skills or content.[164]

Problem solving is a prominent classroom activity in learning by using problem-based learning. Problem-based learning is geared towards highlighting students' higher order thinking skills. So, students play the main role as speakers and listeners, or writers and readers. Students listen attentively and respond whenever they need to.[165] The purpose of applying the problem-based learning can encourage students to be active in learning process activities, allow students to engage in learning research, integrate concept theory, and students can apply knowledge and skills to develop solutions to problems.[166]

The concept of problem-based learning involves incorporating real-world problems into the learning process to enhance the development of students' critical thinking and problem-solving skills, as well as acquiring students' knowledge. The application of problem-based learning presents authentic problems to students, collaborates in small groups to find solutions, and conveys solutions or results of their discussions to others. Some principles contained in problem-based learning such as emphasizing students to be independent and learning independently, the occurrence of a group setting where the teacher only acts as a facilitator, students actively

[164] Isrokijah, 135.
[165] Isrokijah, 135.
[166] Aulia, Laeli, and Ulwiyah, "Problem Based Learning As a Method To Improve Senior High School Student'S Reading Comprehension in English", 80.

participate in all group members, and use various sources to solve the problems presented.[167]

The process of implementing problem-based learning in the classroom can foster students' essential skills, such as students' skills in investigating and solving a problem, students' skills when obtaining the information needed, students collaborating effectively with their peers, and students' skills in building innovative ideas. The application of problem-based learning in the teaching and learning process in class has advantages such as increasing student understanding, fostering student independence, developing higher order thinking skills in students, increasing student motivation, and increasing student ability when working in teams.[168]

The application of problem-based learning model in class is implemented by using syntax. The following is the syntax contained in the application of the problem-based learning model: 1). Process of proposing problems, 2). Group organization, 3). Information search, 4). Group discussion, 5). Solution development, 6). Solution presentation, 7). Reflection, 8). Improving thinking ability.

5. The Concept of Explanation Text

The curriculum in education in Indonesia for now often undergoes changes. English subjects studied in the 2013 curriculum syllabus at the Senior High School (SMA) level include explanation text, procedure text, narrative text, etc. The learning material contained in the syllabus certainly

[167] Aulia, Laeli, and Ulwiyah, 80.
[168] Aulia, Laeli, and Ulwiyah, 80.

requires students to be involved creatively and actively in English learning activities in class. Learning that involves creativity is learning that can improve skills in solving problems that occur around you which are needed in the future.[169] The 2013 curriculum, one of the reading lessons found in English is explanation text. Explanation text learning material needs to be taught by students at the Senior High School level in accordance with the 2013 curriculum.[170] The following is the content of the material taught in explanation text at the high school level:

a. Definition of Explanation Text

Explanation text is a text which tells processes relating to forming of natural, social, scientific, and cultural phenomena. Explanation text is to say "Why" and "How" of the forming of the phenomena. It is often found in science geography and history text books.[171] According to Jumainah, explanation text is a type of text that is often found in audio, video, or writing that explains the causes or processes of natural phenomena, such as the causes or processes of earthquakes, volcanic eruptions, landslides, water cycles, tsunami, flood, or other natural phenomena.[172]

Explanation text can also be used to explain social phenomena, although usually people tend to discuss a social phenomenon in terms of the good side, the bad side, or their opinions, not in terms of the

[169] Suhud Aryana, "The Effect of Problem Based Learning Model in Writing Explanation Text," *JDIL Journal of Diversity in Learning* 2, no. 1 (2022): 185.
[170] Aryana, 185.
[171] Suwartono, "English for Academic Context," *Modul Belajar Mandiri*, 2021, 20.
[172] Jumainah, *Modul Pembelajaran: Explanation Text*, 2020, 1.

process or causes. However, it is very important to discuss natural phenomena or social phenomena in terms of causes or processes, so that people also know the causes or processes so that they can harmonize them with everyday life.[173]

b. Generic Structure of Explanation Text

The following is the text structure of the explanation text:

1) General Statement

General statement states a phenomenon that you want to explain, for example by stating the name of the phenomenon and what aspects will be explained, both from the process and the cause.[174]

2) Sequence of Explanation

Sequence of explanation consists of several sequential explanations regarding the process of how the phenomenon occurs or the reasons why it occurs. In the sequence of explanation there are several conjunctions such as firstly, secondly, after that, next, then, finally, and so on.[175]

3) Closing / Conclusion (Optional)

Closing or conclusion is a paragraph that summarizes the entire content of the text. The closing or conclusion section is optional, that is, the writer can use it or not.

c. Language Features of Explanation Text

[173] Jumainah, 1.
[174] Jumainah, 1.
[175] Jumainah, 1.

The following are the language features found in the explanation text, namely:

1) Using Simple Present Tense

Simple present tense is used for events or situations that always exist, usually, or commonly occur in the past, present, and future.[176]

Formula:

- Subject + Verb 1 + Object
- Subject + Verb 1 + s/es + Object

Example:

- From the mouth, food **passes** through the esophagus.

2) Using Passive Voice

Passive voice in explanation text is a sentence that emphasizes a word or phenomenon. Passive voice is used in the present tense. The passive voice begins with the affix "In".

Passive sentences are more related to events (what happened). The object of the active sentence becomes the passive sentence. The subject of the active sentence is the object of the "By phrase" in the passive sentence.

Formula:

- Subject + To be (is/am/are) + Past Participle/Verb 3

3) Using Chronological Connectors

[176] Damayanti, "Improving Students' Reading Comprehension in Explanation Text through DRTA (Direct Reading Thinking Activity) Strategy at the Eleventh Grade of SMA Negeri 4 Palopo."

Chronological connectors are conjunctions used to express the sequence in which an event occurs.

a) Conjunction of Time

Conjunctions of time are used to show chronological order. Words found in conjunctions of time such as first, then, after, next, finally, etc.

Example:

- **Then** the food enters the small intestine.

b) Cause and Effect Relationship

Cause and effect relationship is used to explain the cause and effect of an event. Words commonly used in causes and relationships such as because, since, as, because of, due to, so, etc.

4) Example of explanation Text

Human body is made up of countless millions of cells. Food is needed to built up new cells and replace the worn out cells. However, the food that we take must be changed into substances that can be carried in the blood to the places where they are needed. This process is called digestion.

The first digestive process takes place in the mouth. The food we eat is broken up into small pieces by the action of teeth, mixed with saliva, a juice secreted by glands in the mouth. Saliva contains digestive juice which moisten the food, so it can be swallowed easily.

From the mouth, food passes through the esophagus (the food passage) into the stomach. Here, the food is mixed with the juices secreted by the cells in the stomach for several hours. Then the food enters the small intestine. All the time the muscular walls of the intestine are squeezing, mixing, and moving the food onwards.

In a few hours, the food changes into acids. These are soon absorbed by the villi (microscopic branch projections from the intestine walls) and passed into the bloodstream.

a) Generic Structure

1. General Statement
   - This process is called digestion. (Paragraph 1)
2. Sequence of Explanation
   - The first digestive process takes place in the mouth. (Paragraph 2)
   - From the mouth, food passes through the esophagus. (Paragraph 3)
   - In a few hours, the food changes into acids. (Paragraph 4)

b) Language Features

1. Using Simple Present Tense
   - From the mouth, food **passes** through the esophagus (the food passage) into the stomach. (Paragraph 3)
2. Using Passive Voice

- Human body is **made up** of countless millions of cells. (Paragraph 1)
- Food is **needed** to built up new cells and replace the worn out cells. (Paragraph 1)
- However, the food that we take must be changed into substances that can be carried in the blood to the places where they **are needed**. (Paragraph 1)
- This process **is called** digestion. (Paragraph 2)
- The food we eat **is broken** up into small pieces by the action of teeth, mixed with saliva, a juice secreted by glands in the mouth. (Paragraph 2)
- Saliva contains digestive juice which moisten the food, so it **can be swallowed** easily. (Paragraph 2)
- Here, the food **is mixed** with the juices secreted by the cells in the stomach for several hours. (Paragraph 3)

3. Using Chronological Connectors

- Then the food enters the small intestine. (Paragraph 3)

B. Previous Research Findings

Previous research findings are researchers' efforts to find comparisons with other researchers to find out whether there is the same research or not. Researchers take reference from previous findings for research. The following is some previous research related to "The Effectiveness of Problem-Based Learning on the Reading Comprehension of the Eleventh-Grade Science Students at SMAN 1 Sambit" including:

First, a study conducted by Intan Permatasari entitled “The Effect of Problem Based Learning toward Students’ Vocabulary Size and Students’ Reading Comprehension”.[177]

Intan Permatasari's research, this study used the Problem-Based Learning model. The model requires students to solve a problem in the form of descriptive text so that students' thinking skills increase. This study aims to investigate: Measuring the effect of Problem-Based Learning on students' vocabulary size, measuring the effect of Problem-Based Learning on students' reading comprehension, and measuring the effect of Problem-Based Learning on students' vocabulary size and students' reading comprehension. The research design used by researcher Intan Permatasari is quantitative with the type of research is experimental. The researcher used one-way ANOVA SPSS calculation to analyze the data and the results showed that there were significant differences between groups after treatment. The results of Intan Permatasari's research showed that there was a significant effect of using Problem-Based Learning on reading comprehension and vocabulary size.

The research used by the current researcher is also almost the same as the previous research found in Intan Permatasari's research, namely using the problem-based learning. The difference between the previous research and the current research is that the current research uses a model that requires students to solve a problem in the form of an explanation text so that students' reading comprehension skills increase. The purpose of the current research is to find out

[177] Sari, “The Effect of Problem Based Learning Toward Students ’ Vocabulary Size and Students ’ Reading Comprehension Thesis By Intan Permata Sari State Islamic Institute of Palangka Raya Faculty of Teacher Training and Education Department of Language Education St.”

whether there is a significant difference between students who are taught by using problem-based learning have better reading comprehension than students who are not taught by using problem-based learning in class XI Science SMAN 1 Sambit. In addition, researchers used quantitative research design with experimental design. If the previous research used one-way ANOVA SPSS calculation to analyze the data, then the current research uses SPSS calculation using T-Test to analyze the data.

Second, research conducted by Monica Sheryn Dwi Cahya, Adenan Damiri, Febriyanti entitled "The use of Problem Based Learning for Improving Students' Reading Ability".[178]

The research of Monica Sheryn Dwi Cahya, Adenan Damiri, Febriyanti used problem-based learning. This study aims to improve the reading comprehension of grade X students through the use of Problem-Based Learning strategies. The research design used by researchers Monica Sheryn Dwi Cahya, et al. is to use class action research (PTK). The subjects of this study were X grade students of SMA Negeri 15 Bandar Lampung in the 2021/2022 school year. Data analysis used descriptive statistics and quantitative data analysis and the results showed that students' reading comprehension increased when using the Problem-Based Learning technique based on quantitative data and qualitative data. The results of Monica Sheryn Cahya etc, al research show that the application of Problem-Based Learning strategies can improve students' reading comprehension and activity.

[178] Monica Sheryn Dwi Cahya, Adenan Damiri, and Febriyanti, "The Use of Problem Based Learning for Improving Students' Reading Ability," *Jurnal Ilmiah Mahasiswa Pendidikan Bahasa Inggris* 5, no. 1 (2023).

The research used by the current researcher is also almost the same as the previous research found in Monica Sheryn Dwi Cahya's research, namely using the problem-based learning. The purpose of the current research is to find out whether there is a significant difference between students who are taught by using problem-based learning have better reading comprehension than students who are not taught by using problem-based learning in class XI Science SMAN 1 Sambit. The subjects of the current research are students of class XI Science SMAN 1 Sambit in the academic year 2023/2024. The difference between the previous research and the current research is that the current research uses quantitative research design with experimental design. In addition, the current study used SPSS calculations using the T-Test to analyze the data.

Third, a study conducted by Hazwani Sidik and Alias Masek entitled "The Effects of Problem-Based Learning in Students Reading Comprehension for Mastering the Content and Vocabulary Acquisition".[179]

Hazwani Sidik and Alias Masek's research, this study used Problem-Based Learning. The purpose of this study was to examine the effectiveness of problem-based learning (PBL) on students' English reading comprehension for content mastery and vocabulary acquisition. The data analysis used in this study is quantitative data using pretest-posttest experimental design and independent t-test and one-way ANOVA have been conducted to test the research hypothesis. The results of this study showed that there was a statistically significant difference between the experimental and control groups in terms of

[179] Hazwani Sidik and Alias Masek, "The Effects of Problem-Based Learning in Students Reading Comprehension for Mastering the Content and Vocabulary Acquisition," *ASEAN Journal of Science and Engineering Education* 1, no. 2 (2021).

students' reading comprehension in content acquisition and vocabulary acquisition when using problem-based learning. The results showed that students who received the problem-based learning approach achieved higher performance results than students who did not receive the problem-based learning approach.

The research used by the current researcher is also almost the same as the previous research found in Hazwani Sidik and Alias Masek's research, namely using the problem-based learning. The purpose of the current research is to find out whether there is a significant difference between students who are taught by using problem-based learning have better reading comprehension than students who are not taught by using problem-based learning in class XI Science SMAN 1 Sambit. The difference between the previous research and the current research is that if the previous research used independent t-test and one-way ANOVA to test the research hypothesis, then the current research uses SPSS calculations using the T-test to analyze the data, and the N-Gain test to determine the effectiveness of using a particular treatment in one group pre-test and post-test design (experimental design) research or research using a control group. By calculating the pre-test and post-test (Gain score), researchers can find out whether the use of problem-based learning model can improve or not. Researchers used a quantitative research design with experimental design.

Fourth, a study conducted by Wulan Agustin entitled “The Effectiveness of Problem-Based Learning in Improving Students' Reading Comprehension of Report Text at SMKN 1 Way Panji.[180]

[180] Wulan Agustin, “The Effectiveness of Problem-Based Learning in Improving Students’ Reading Comprehension of Report Text at Smkn 1 Way Panji,” 2023.

Wulan Agustin's research, this study used Problem-Based Learning. The purpose of this study was to find out whether the use of problem-based learning can improve students' reading comprehension and to find out more about students' perceptions in the use of problem-based learning in class XII of SMKN 1 Way Panji. This study used a quantitative approach with a quasi-experimental design. This research shows that the use of problem-based learning to teach report text can improve students' reading comprehension. The scores obtained were calculated using excel and analyzed using SPSS with descriptive statistical analysis. The analysis was used to get an overview of the scores of the two classes before and after receiving treatment. The results of the research are in the form of descriptive statistical analysis with pretest and posttest score data. Researchers calculated data analysis using the independent sample t-test. Based on the statistical analysis contained in this study, there is a significant difference between the average (mean) score of students' reading comprehension in the experimental and control groups. So it can be concluded that the research using problem-based learning is more effective to improve students' reading comprehension.

The research used by the current researcher is also almost the same as the previous research found in Wulan Agustin's research, namely teaching using the Problem-Based Learning. The purpose of the current research is to find out whether there is a significant difference between students who are taught by using problem-based learning have better reading comprehension than students who are not taught by using problem-based learning in class XI Science SMAN 1 Sambit. This research used quantitative approach with quasi-experimental

design. In addition, the current research also calculates the results of data analysis using Microsoft Excell and SPSS 22. Researchers use SPSS calculations using the T test to analyze data, and the N-Gain test to determine the effectiveness of using a particular treatment in one group pre-test and post-test design (experimental design) research or research using a control group. By calculating the pre-test and post-test (Gain score), researchers can find out whether the use of problem-based learning model can improve or not.

Fifth, research conducted by Iskandar Rosyidin, Nurrudin Nurrudin, Ratna Dewanti entitled "The Effect of Problem-Based Learning Model towards Students' Comprehension of the English Reading Text".[181]

In Iskandar Rosyidin, Nurrudin Nurrudin, and Ratna Dewanti's research, this study used the Problem-Based Learning. This study aims to determine the difference in students' comprehension of English reading texts using problem-based learning and team-based learning. The research design used in this study is an experimental method where there are two groups available. The first group is the experimental group which is treated using problem-based learning and the second group is the control group which is treated using team-based learning. The sampling technique used was purposive sampling, and the samples chosen were fourth semester students of English Department of Sriwijaya State Polytechnic. Researchers used SPSS ANOVA 2-way calculation to analyze the data. The results of Iskandar Rosyidin, et al research showed that there was a significant effect between students who were treated using problem-based

[181] Iskandar Rosyidin, Nurrudin Nurrudin, and Ratna Dewanti, "The Effect of Problem-Based Learning Model Towards Students' Comprehension of the English Reading Text," *English Review: Journal of English Education* 10, no. 2 (2022).

learning had a much higher understanding of English bible text compared to students who were treated using team-based learning.

The research used by the current researcher is also almost the same as the previous research found in the research of Iskandar Rosyidin, et al, namely teaching experimental classes using problem-based learning. The purpose of the current research is to find out whether there is a significant difference between students who are taught by using problem-based learning have better reading comprehension than students who are not taught by using problem-based learning in class XI Science SMAN 1 Sambit. The research used in this study is an experimental method where there are two groups that aim to investigate whether or not there is cause and effect and the relationship between cause and effect by giving certain treatments to the experimental group and providing a control group for comparison. The experimental group was treated by using problem-based learning, while the control group was taught by not using problem-based learning. The reason researchers use the entire population as a sample is because it represents the entire population. Because if there are less than 100 populations, then all of them are used as research samples, therefore researchers took 58 samples taken from all classes. The difference between previous research and current research is that current researchers use SPSS calculations using the T test to analyze data, and the N-Gain test to determine the effectiveness of using a particular treatment in one group pre-test and post-test design (experimental design) research or research using a control group. By calculating the pre-test and post-test (Gain score), researchers can find out whether the use of the problem-based learning model can improve or not.

C. Theoretical Framework

Theoretical framework is a concept that refers to the theoretical foundation used to connect concepts, variables and relationships in research. Theoretical framework provides a structure and conceptual foundation that helps understand and explain the phenomenon under study. Within this theoretical framework, there is usually a connection between more than one variable in the dynamics of the situation being studied. After the problem has been identified, the next step is to conduct a literature review to look for variables that are related or have contributed to the problem. After these variables are identified, the next step is to explain the interrelationships or relationships between the variables and then reduce them to relevant hypotheses. This hypothesis is proven by using appropriate data analysis methods. The next theoretical framework is the basis for the entire research process. The following is an overview of the theoretical framework of this research:

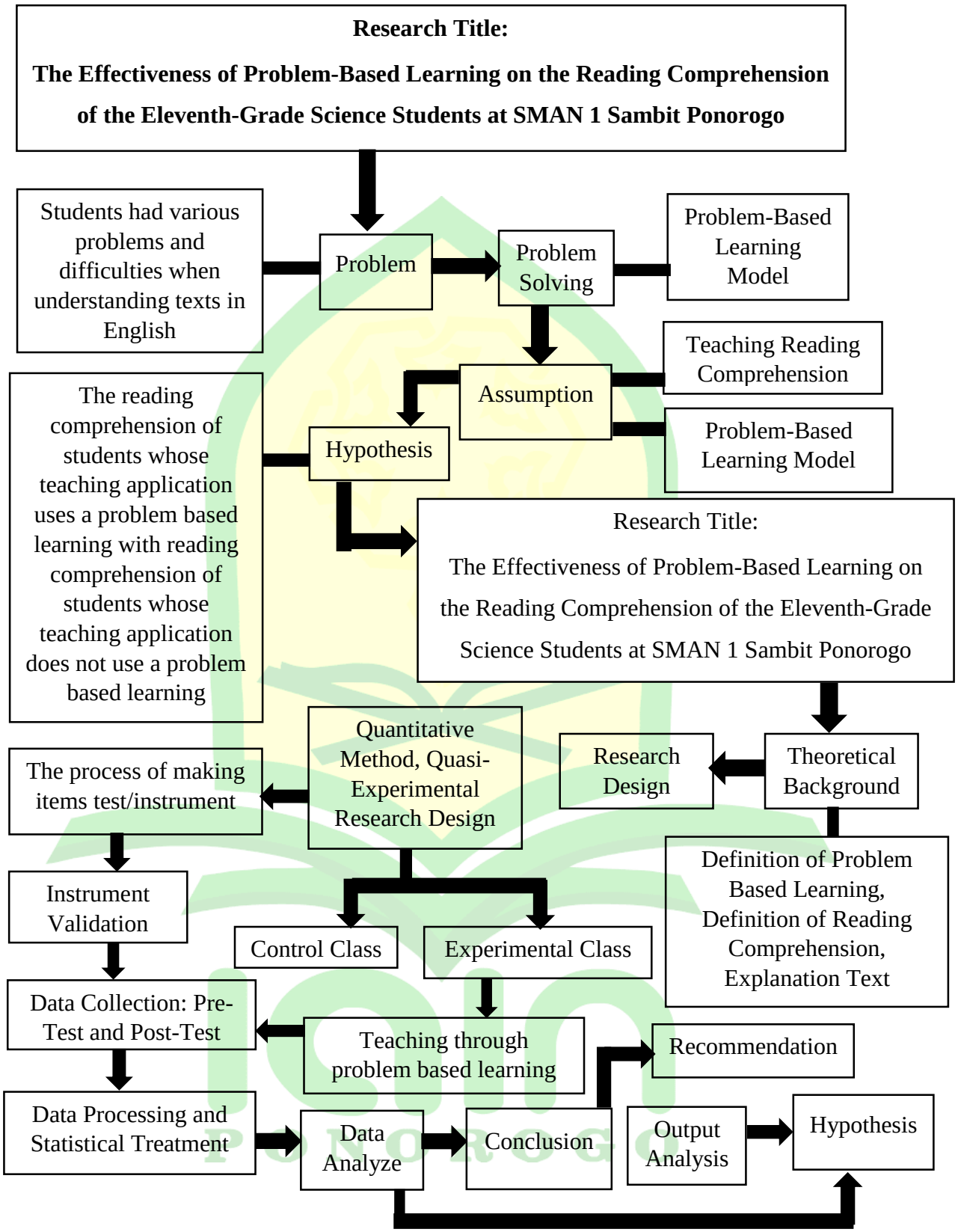

Figure 2.2. Theoretical Framework

Researchers discovered the phenomenon of class XI Science students at SMAN 1 Sambit that students experienced problems, especially in reading English. This happens because many students when carrying out English learning in class have difficulty understanding the meaning of reading explanation text in English learning materials. In the ability to reading comprehension, vocabulary is an important thing to master. Many students have a low vocabulary so it is difficult to understand a sentence, resulting in lack reading comprehension. Even though in primary to secondary education students are equipped with knowledge of English, students are still not able to master reading comprehension well. Students still have difficulties when reading in English, for example they are still confused about understanding the meaning of the correct reading to use, so that students become hesitant or have difficulty answering explanation text questions in English learning in class.

Students' knowledge related to reading has a very important role in improving students' reading comprehension. If a student's mastery of sentences in English is good, then the student will be more confident when carrying out learning in the classroom. An effective way to increase vocabulary, students must read more, search for and memorize new vocabulary, as well as obtain the latest information and enrich vocabulary.

From the statement above, students need a treatment to improve reading comprehension. Therefore, the researcher assumes to treat students using a problem-based learning model when teaching English material in the classroom for the experimental class, so that students are able to improve reading comprehension. Researchers conducted research using the title of current

student problems, namely "The Effectiveness of Problem-Based Learning on the Reading Comprehension of the Eleventh-Grade Science Students at SMAN 1 Sambit Ponorogo". The aim of this research is to determine the significant different between reading comprehension in classes taught using the problem-based learning model and classes taught not using the problem-based learning model in class XI Science at SMAN 1 Sambit.

The researcher explains about the problem-based learning model, and reading comprehension in theoretical framework, as well as several previous research to strengthen the theory and make the first assumptions to make a hypothesis. The Null Hypothesis (H_0) state that there is a significant different between the reading comprehension of students whose teaching application uses a problem-based learning model and the reading comprehension of students whose teaching application does not use a problem-based learning model in class XI Science at SMAN 1 Sambit.

This research uses quantitative research methods and is a quasi-experimental design using pre-test and post-test. Researchers used two classes which were used as an experimental group and a control group. The experimental group and control group were first given a pre-test to find out the extent of the students' initial comprehensions before being given treatment using the problem-based learning model. After being given a pre-test, the experimental group was given treatment, namely reading learning using the problem-based learning model and the control group was given learning that did not use problem-based learning model. After completing learning using the problem-based learning model and not using the problem-based learning model,

the experimental group and control group will be given a post-test to find out to what extent using the problem-based learning model and not using the problem-based learning model can improve reading comprehension in class students XI Science.

D. Hypothesis

The hypothesis is a temporary answer to the formulation of research problems, where the formulation of research problems has been stated in the form of a question sentence. It can be said to be temporary because the answers given are only based on relevant theories, aka not yet based on empirical facts obtained through data collection.[182] According to Creswell, a hypothesis in quantitative research is a declarative statement in which the researcher makes predictions or conjectures about the outcome of a relationship.[183] The following is a hypothesis or temporary conjecture in this study:

$H_0 : \mu 1 = \mu 2,$ There is a significant different in the reading comprehension of students whose teaching application uses a problem-based learning model and the reading comprehension of students whose teaching application does not use a problem-based learning model.

$H_1 : \mu 1 \neq \mu 2,$ There is no significant different between in the reading comprehension of students whose teaching application uses problem-based learning model and the reading

[182] Sugiyono, "Metode Penelitian Kuantitatif Kualitatif Dan R&D," Edisi Kedu (Bandung: Alfabeta, 2023), 99.

[183] John W. Creswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research*, Fourth Edi (Pearson, Boston, 2012), 621.

comprehension of students whose teaching application does not use problem-based learning model.

CHAPTER III

RESEARCH METHOD

A. Research Design

Research design referred to a set of procedures and methods used to collect and analyze data in an undertaking to examine variables related to the research topic. It could also be described as a procedure used by the researcher to connect each element of the research in a systematic way, so that the analysis and determination of the research focus became more efficient and effective.[184]

This research used a quantitative approach. According to Creswell, quantitative research was a method used to examine objective theories by exploring the relationships between variables. These variables could be measured, often through research instruments, which allowed the data to be represented numerically and analyzed using statistical procedures. The final written report had an applied structure, so the report consisted of an introduction, literature and theory, methods, results, and discussion.[185] Quantitative research was similar to qualitative research in that it engaged in a form of inquiry that had assumptions related to testing theories deductively, making defenses such as prejudices or assumptions, controlling for alternative explanations, and being able to generalize and replicate the findings of the research.[186] According to Sugiyono, quantitative research employed a deductive-inductive approach, beginning with a theoretical framework and

[184] Sugiyono, "Metode Penelitian Kuantitatif Kualitatif Dan R&D."

[185] John W. Creswell, "Research Design: Qualitative, Quantitative, and Mixed-Methods Research," Third Edit (SAGE Publication, Inc., 2009), 22.

[186] Creswell, 209:22-23.

ideas proposed by experts, followed by the researcher's comprehension shaped by their experiences. After that, it was developed into a problem and solution stated by the researcher to get the truth in the form of empirical data when conducting research in the field. Empirical data was an approach or method of knowledge obtained from the process of making observations or experiments.[187] In addition, quantitative research was an approach used to test specific theories by investigating the relationships between variables. These variables were typically measured using research instruments like tests, questionnaires, or interviews, allowing the data, which consisted of numerical values, to be analyzed through statistical calculations.[188]

Based on the above understanding, the researcher used a quantitative approach in the research. Because the researchers were looking for relationships between variables to test objective theories. Researchers used statistical calculations, namely SPSS 22, as data analysis. In addition to using a quantitative approach, researchers used research methods, namely experimental research methods. The experimental research method was conducted through experiments aimed at determining the effect of the independent variable (treatment) on the dependent variable (result) while maintaining controlled conditions.[189] Meanwhile, according to Creswell, experimental research was employed when researchers aimed to understand the causal relationship between the independent variable and the dependent variable. Researchers had to be able to control all variables that would affect the outcome, except for the

[187] Sugiyono, "Metode Penelitian Kuantitatif Kualitatif Dan R&D.", 16-17.
[188] Creswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research, 212*.
[189] Sugiyono, 111.

independent variable (treatment) that had been determined. This impact was assessed by giving a certain treatment to one group and not giving it to another group, then determining the scores of the two groups as the result of the research.[190] So, it can be concluded that the experimental method was a research method in which manipulations were made to the object of research and there were controls that aimed to investigate whether or not there was cause and effect and the relationship between cause and effect by giving certain treatments to the experimental group and providing a control group for comparison.[191]

In this experimental research, researchers used one of the research designs, namely quasi-experimental design. Quasi-experimental design was one of the experimental studies in which individuals were not randomly assigned to groups.[192] In this design, there were both an experimental and a control group; however, the control group did not fully function to control external variables that might impact the execution of the experiment. In quasi-experimental design, the data validation used was inferential statistics.[193] Inferential statistics aimed to correlate variables or compare groups on hypotheses.[194]

The form of quasi-experimental design used in this study was a non-equivalent control group design.[195] In this design, the subjects of the experimental group and control group were not randomized. The experimental

[190] Creswell, "Research Design: Qualitative, Quantitative, and Mixed-Methods Research.", 29.

[191] Creswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research, 194*.

[192] Creswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research, 309*.

[193] IAIN Ponorogo, *Modul Pedoman Penulisan Skripsi Fakultas Tarbiyah Dan Ilmu Keguruan: Kuantitatif, Kualitatif, Kajian Pustaka, Penelitian Evaluasi Dan Penelitian Pengembangan* (Ponorogo, 2023), 28.

[194] Sugiyono, "Metode Penelitian Kuantitatif Kualitatif Dan R&D."

[195] Sugiyono, 120.

and control groups were selected without random assignment.[196] Both groups, namely the experimental and the control group, underwent a baseline test and a final test. The experimental group received the treatment.[197] So, when the placement of subjects was not randomized, researchers used cluster random sampling techniques.[198]

In this study, researchers used pre-test and post-test. When the researcher conducted the experiment with the experimental and control classes, the researcher gave a pre-test to the two classes (experimental group and control group). Then, the researcher gave the treatment (problem-based learning) to the experimental group (XI Science 1) when teaching reading comprehension. As for the control group (XI Science 2), the researcher taught reading comprehension without using the treatment. Finally, the researcher gave a post-test to the two classes (experimental group and control group).

The following is a quasi-experimental design table used by researchers to be applied at SMAN 1 Sambit:

Table 3.1 Research Design

GROUP	PRE-TEST	TREATMENT	POST-TEST
Experimental Group	O_1	X_1	O_2
Control Group	O_3	X_2	O_4

Information:

O_1 : Pre-Test for Experimental Group

O_2 : Post-Test for Experimental Group

[196] Creswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research, 309*.

[197] Creswell, 309.

[198] Sugiyono, "Metode Penelitian Kuantitatif Kualitatif Dan R&D.", 131.

O_3 : Pre-Test for Control Group

O_4 : Post-Test for Control Group

X_1 : Treatment (Experimental Group)

X_2 : Without Treatment (Control Group)

Based on the table above, the experimental and control groups conducted pre-tests and post-tests. The experimental group received treatment using the problem-based learning model in English learning. The control group did not receive treatment using the problem-based learning model. The purpose of this study was to determine the significant difference between students who were taught using the problem-based learning model for reading comprehension and students who were not taught using the problem-based learning model for reading comprehension in class XI Science at SMAN 1 Sambit in the academic year 2023/2024.

B. Research Setting and Schedule

1. Research Setting

This research was conducted at SMAN 1 Sambit. The class used in this study was class XI Science in the 2023/2024 academic year. SMAN 1 Sambit was located on Jalan Raya Trenggalek-Ponorogo KM 18, Besuki Village, Sambit District, Ponorogo Regency. The reason the researcher chose SMAN 1 Sambit as the object of the research was that, at that time, there were still many students who had difficulty in English, both in terms of reading and interpreting reading material from English to Indonesian, as well as answering questions in the form of long texts on explanation texts. This was due to their lack of interest in reading and English reading

comprehension. Thus, the teacher's role was crucial in enhancing the learning process. During this process, the teacher did not only deliver the material but also implemented various strategies to ensure that teaching and learning occurred effectively and engagingly, motivating students to improve their English language skills, particularly in reading. The researcher was interested in conducting this study, which aimed to find out whether there was an influence if the teacher taught by using problem-based learning model in English language learning that could improve students' reading comprehension in class XI Science.

2. Research Schedule

a. Experimental Class (XI Science 1)

In the experimental class conducted in class XI Science 1, researchers conducted research which was carried out over four meetings. The following is a table list of research results carried out in the experimental class (XI Science 1), namely:

Table 3.2 Experimental Class Schedule

DATE	ACTIVITY
May, 15th 2024	Pre-Test
May, 16th 2024	First Treatment
May, 20th 2024	Second Treatment
May, 21st 2024	Post-Test

First meeting in the experimental class, the researcher gave a pre-test to students to measure their initial abilities before participating in learning activities. The pre-test questions given were in the form of a short-answer test consisting of 10 questions. Students worked on the

pre-test questions on the pre-test sheet provided by the researcher. The material tested in this pre-test was about explanation text.

Second meeting in the experimental class, the researcher began to apply the treatment using the problem-based learning model during the lesson. The steps taken by the researcher were to convey the material and learning objectives. Students were given examples of explanation texts presented by the researcher. Then, the researcher asked the students questions regarding the explanation text material, such as providing several examples of other explanation texts found in the surrounding area, and the students answered the questions given by the researcher. The next step in this meeting was that the researcher grouped students into several groups. The researcher gave students a worksheet (LKPD) which was discussed in groups and set a time limit for completing it. Regarding the LKPD questions given to students, they were found in LKPD I, where students in groups were given an explanation text, and students had to complete each part of the generic structure. Then, the researcher monitored the students while discussing and asked each group to stop working on the questions when the working time was over. The researcher asked one of the students in the group to present the results of their work. The final step was that the researcher, together with the students, discussed and evaluated the results of their work to check if there were still errors.

Third meeting in the experimental class, the learning was the same as in the previous meeting, namely the researcher still applied the problem-based learning model treatment in the experimental class. The steps taken by the researcher at the third meeting were to group students into several groups and provide students with explanation text worksheets (LKPD) for each group. The LKPD questions given to students were found in LKPD II, where students in groups were given an explanation text question and had to look for generic structures and language features on the LKPD that had been given. The researcher monitored students during discussions and asked students in each group to stop working on the questions when the work time was over. After that, the researcher asked one of the students to convey the results of their work. The final step in this meeting was that the researcher, together with the students, discussed and evaluated the results of their work to check if there were still errors.

Fourth meeting in the experimental class, the researcher gave a post-test to students to see the extent of students' knowledge regarding mastery of the learning material that had been taught. The purpose of administering the post-test during this session was to determine whether students showed an improvement in reading comprehension after receiving the problem-based learning treatment. This was assessed by comparing the results of the pre-test and post-test conducted by the students. The post-test comprised a short-answer format with 10

questions, which students completed on the provided post-test sheet. The material tested in this post-test was about explanation text.

b. Control Class (XI Science 2)

In the control class conducted in class XI Science 2, researchers conducted research which was carried out over four meetings. The following is a table listing the results of research carried out in the control class (XI Science 2), namely:

Table 3.3 Control Class Schedule

DATE	ACTIVITY
May, 15th 2024	Pre-Test
May, 16th 2024	First teaching process is without treatment
May, 20th 2024	Second teaching process is without treatment
May, 21st 2024	Post-Test

Class XI Science 2 was a control class, where when teaching, researchers used conventional model from the control class (no treatment). The teaching flow implemented by researchers in the control class (XI Science 2):

First meeting in the control class, researchers gave a pre-test to students to measure students' initial abilities before participated in learning activities. The pre-test questions given were in the form of short-answer tests totaling 10 questions. Students work on pre-test questions on the pre-test sheet that has been given by the researcher. The material tested on this pre-test is a question about explanation text.

Second meeting in the control class, researchers taught by not using the problem-based learning model during the learning process. The steps taken by the researcher were to present the material and learning objectives. Students were given examples of explanation text presented by the researcher. Then, the researcher asked questions to students related to explanation text material, such as given several examples of other explanation texts found in the surrounding area, and students answered the questions given by the researcher. The next step in this meeting is that students in groups (groups with their peers) convey the meaning, generic structure, and language features contained in the explanation text. After that, students are asked to find examples of explanation text from various sources (can be from the internet or other English books). Then the researcher gave the Learner Worksheet (LKPD) to the students. Regarding the LKPD given at the second meeting, it can be seen in LKPD I where students with their peers are asked to find and interpret the explanation text into Indonesian that had been found, as a form of students' comprehension in understanding a reading in English. The next step taken by students was to work on the LKPD that has been provided by the researcher. Then one of the students can read the results of his work in the classroom. After that, students with the guidance of the researcher summarized the results of learning activities.

Third meeting in the control class was same as the learning in the previous meeting. The steps taken by the research at the third meeting were that the researcher gave the Learner Worksheet (LKPD) to students to work on in groups, namely with their classmates. Regarding the LKPD given at this third meeting, students work on LKPD II, where in LKPD II students look for the meaning of explanation text, look for explanation text to find what generic structures and language features were contained in the explanation text being sought, and in LKPD II, students was also asked to identify example sentences from generic structures and language features based on the explanation text that had been found. In this third meeting, students could also use other explanation text examples from the previous meeting. The next step carried out by students is that student representatives read out the results of their worked and if students was still difficulty, they could asked questions to each other with researchers or other students. After that, students together with the researcher make a summary or conclusion of the explanation text that had been discussed at this meeting.

Fourth meeting in the control class, the researcher gave a post-test to students to see the extent of students' knowledge related to mastery of the learning material that had been taught. The purposed of administering the post-test during this session was for the researcher to determined whether students in the control class experienced an improvement in reading comprehension after receiving instruction without using the problem-based learning model. This was assessed by

comparing the pre-test and post-test results from the students. The post-test consisted of a short-answer format with 10 questions, which students completed on the post-test sheet provided by the researcher. The material tested in this post-test is a question about explanation text.

C. Population and Sample of the Research

1. Population

Population referred to a group of individuals sharing similar characteristics.[199] According to Sugiyono, population was a generalization area that included subjects or objects with specific quantities and characteristics defined by the researcher for study and conclusion.[200] Populations can encompass not only people but also objects and other natural entities. Furthermore, population encompasses all characteristics or properties of the subjects or objects being studied, not just their numerical representation.[201] Therefore, identifying the population was the initial step in determined of the research sample.

The population in the study conducted by the researcher was all students of class XI Science at SMAN 1 Sambit in the 2023-2024 academic year. The reason why the researcher chose class XI Science as the population, based on the consideration that many students of class XI Science are currently experiencing difficulties when reading or interpreting text readings in English to Indonesian, so in that case, the researcher is

[199] Creswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research, 142*.
[200] Sugiyono, "Metode Penelitian Kuantitatif Kualitatif Dan R&D.", 126.
[201] Sugiyono, 126.

interested in exploring more deeply related to the comprehension and ability of students in learning English, especially in the reading section of students.

The population contained in this research were all students in class XI Science totaling 87 students, where each class consisted of class XI Science 1 totaling 29 students, class XI Science 2 totaling 29 students, and the last class XI Science 3 totaling 29 students. The following is a table of population data for all XI Science classes:

Table 3.4 Table Data Population

NO	CLASS	THE NUMBER OF STUDENTS
1.	XI Science 1	29
2.	XI Science 2	29
3.	XI Science 3	29
TOTAL		**87**

2. Sample

In quantitative research, sample was a subset of the population that possesses specific characteristics and attributes of the larger group.[202] Sample contained in the study is part of the total population. Determination of the sample in this study was needed for an explanation regarding the distribution of questionnaires to be carried out by the researcher. According to Creswell, sample was a subgroup of a target population that a researcher intends to study in order to make generalizations about the broader target population. In ideal situation, researchers could selected a sample of individuals that is representative of the entire population.[203] According to Sugiyono, sampling techniques was methods that did not provided

[202] Sugiyono, 127.
[203] Creswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research, 142*.

equalchances for each element or member of the population to be selected as part of the sample. Effective research must considered and utilized an appropriate technique for determining the sample to be included as research subject.[204].

Researchers used probability sampling as a sample technique. Probability sampling was a sampling technique to provided equal opportunities for each member of the population to be selected as a sample member. In other words, sampling method that provides an equal opportunity to be taken to each element of the population. While the type of probability sampling technique, researchers used cluster random sampling as a type of side technique. This type of cluster random sampling technique divided the population into several groups, then randomly selected to represent the total population. Each unit was selected to be included in the sample. The reason researchers used cluster random sampling technique as a sample, because researchers use statistics that want to generalize sampling.[205] The researchers also chose to use the entire population as the sample because it accurately represents the whole group. When the population consisted of fewer than 100 individuals, all of them are included as research samples. In this case, the researchers selected 58 samples from all the classes. From this, it can be concluded that the researcher used XI Science 1 consisting totaled 29 students who were selected to be the experimental group based on and XI Science 2 class consisting totaled 29 students who were selected to be the control group.

[204] Sugiyono, "Metode Penelitian Kuantitatif Kualitatif Dan R&D.", 127-133.
[205] Sugiyono., 133.

Researchers need two classes where students in both classes had balanced abilities (homogeneous) to represent population characteristics. In addition, the researcher also asked for advice from the XI Science class English teacher to provide information related to the assessment contained in students during English learning.

D. Operational Definition of Research Variable

Operational research variables were attributes, properties, or values of objects or activities that exhibit specific variations defined by the researcher for study, enabling them to draw conclusions.[206] The variables contained in the study must be formulated to avoid difficulties when collecting data. In this study, the following is an operational definition of the variables:

1. Independent Variable (Variable X)

Independent variable (Variable X) was a variable that affects the dependent variable (Variable Y). According to Sugiyono, independent variables (Variable X) was those that influence or cause changes in the dependent variables (Variable Y).[207] Independent variables (Variable X) tend to influenced and affected other variables.[208] According to Creswell, independent variable (Variable X) is a variable that affects or influences the results in experimental research independent of all other influences.[209] So it can be said that the independent variable (Variable X) is referred to as the treatment variable or the variable used in experimental research.

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[206] Sugiyono.
[207] Sugiyono, 69.
[208] Creswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research, 116.*
[209] Creswell, 115.

The independent variable in this study is "Problem-Based Learning." Problem-based learning was an instructional model that introduced students to a case related to the material being discussed. In this approach, learners were encouraged to identify and develop solutions for the problems they encounter during the learning process.

Problem-based learning guides students in acquiring new knowledged by analyzing various sources of knowledge and learning experienced they possess. Following this analysis, they connected their existing knowledge with the learning problems presented by the teachers. Essentially, problem-based learning was designed to provide meaningful learning experienced for students.

The learning process that emphasizes students' ability to independently analyze learning materials focused on real problems. By engaging with these issues, students could enhanced their critical thinking skills, develop problem-solving abilities, and acquire knowledge independently.

The variable used in the experimental class (XI Science 1) was the dependent variable, namely learning by using problem-based learning. Regarded the control class (XI Science 2), researchers applied learning that was using without problem-based learning (no treatment). Both of these lessons emphasize students' ability to develop their own ideas to solve a problem.

2. Dependent Variable (Variable Y)

According to Sugiyono, the dependent variable (Variable Y) was the variable that is influenced by or results from the presence of independent variables in a study.[210] Whereas according to Creswell, the dependent variable (Variable Y) was a variable that relies on the independent variable (Variable X). The dependent variable (Variable Y) was the result or effect of the independent variable (Variable X).[211] It can be concluded that the dependent variable (Variable Y) was a variable that is affected by other variables in a study. The dependent variable (Variable X) or the variable affected in this study is "Reading Comprehension". Reading comprehension was an activity where a person understands the content of reading and is limited to questions such as what, why, how and draw conclusions from the reading.

Reading has a very important role when carrying out the learning process. Reading comprehension is taken as the object of research because considering the importance of reading comprehension of a sentence in today's life so that reading needed to be improved at SMAN 1 Sambit. Reading comprehension activities needed in daily life, because reading is likened to two sides that complement each other in English learning.

[210] Sugiyono, "Metode Penelitian Kuantitatif Kualitatif Dan R&D.", 69.

[211] Creswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research, 115-116*.

E. Techniques and Instruments of Data Collection

1. Data Collection Techniques

Data collection techniques was the most important step when conducting a study. Because the purposed of a study was to get data. This research technique was used to obtain data, namely samples when conducting research. Data collection was a part of data collection instrument to establish the successed or failured of a study.[212]

Data collection techniques in quantitative research must be accounted for and could be tested for validity. The data collection techniques contained in this study was tests and documentation. The following was some of the data needed when conducting research on data collection techniques:

a. Test

Test is a method used to assess an individual's ability, knowledge, or performance in a specific area or domain.[213] This test shows that people's knowledge could be explored through testing.[214] With the test, researchers could be measured students' abilities and improve students' abilities in the process of teaching and learning activities. In education, testing is one of the important things for students. Because in addition to wanted to measured students' abilities and improved students' abilities, researchers also want to know how student progress and how

[212] Sugiyono, "Metode Penelitian Kuantitatif Kualitatif Dan R&D.", 296.
[213] H. Douglas Brown, *Teaching by Principles: An Interactive Approach to Language Pedagogy*, *Language*, Second Edi, vol. 71 (California: Longman, 2000), 384.
[214] Brown, 384.

the researcher as a teacher succeeds when conducting this job. The following was the tests used as data collection techniques:

1) Pre-Test

Pre-test was administered to assess students' initial abilities before they engaged in learning activities. Prior to providing treatment, the researcher explained the learning mechanism to be implemented and distributed a pre-test sheet to the students. This pre-test includes 10 short-answer questions that students completed, allowing the researcher to evaluate their baseline learning ability. The questions was related to the learning material, which, in this research, focused on explanation text.

2) Post-Test

Post-test was a test conducted after students take part in learning. This post-test is purposed to determine the extent to which students' achievement of teaching materials (knowledge and skills) after experiencing a learning activity. The post-test questions given by researchers were the same as the pre-test questions, namely about explanation text. Students was given a post-test sheet consisted of 10 items in the form of a short-answer test. The results of this post-test determined the answer whether the pre-test and post-test could improve students' reading comprehension.

b. Documentations

Documents was important instruments for measured and collected of quantitative data. Data collection techniques in documentation could

be in the form of writings or notes, pictures, or others.[215] Researchers used documentation such as lesson plans, attendance lists, photos, and student pre-test and post-test scores.

2. Data Collection Instruments

Data collection instruments was tools chosen and utilized by researcher to gather data in a systematic and efficient manner. In quantitative research, researchers used instruments to measure variables in research.[216] Related to the aimed of this research, which was to find out whether there is a significant difference where the teaching application uses problem-based learning on students' reading comprehension and the teaching application does not use problem-based learning on students' reading comprehension in class XI Science SMAN 1 Sambit.

Researchers used research instruments to measure existing variables. Quantitative research instruments was tools used to collect data in quantitative research. The instrument in this study consistsed of specific questions such as used a written test. This test was used to assess what students do when carrying out learning activities in the class. The written test instruments used in this research were pre-test and post-test.

[215] Sugiyono, "Metode Penelitian Kuantitatif Kualitatif Dan R&D."
[216] Creswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research, 151*.

a. Instrument

BLUE PRINT OF READING TEST

School : SMA Negeri 1 Sambit

Subject : English Language Learning (Reading)

Material : Explanation Text

Class : XI (Eleven)

Question Form : Reading Test

Table 3.5 Instrument of Data Collection

The Effectiveness of Problem-Based Learning on the Reading Comprehension of the Eleventh-Grade Science Students at SMAN 1 Sambit Ponorogo			
Variable	**Indicator**	**Instrument**	**Number of Instrument**
Problem-Based Learning (Variable Independent / Variable X)	1. Students listen to the learning objectives and materials from the teacher. 2. Students answer the problems given by the teacher. 3. Students start to get into groups that have been determined by the teacher and students receive tasks given by the teacher to be done in groups. 4. The teacher encourages students to gather	Treatment in Experimental Class (XI Science 1)	-

	appropriate information and conduct experiments to obtain explanations needed to solve a problem. 5. Students are required to be active investigators. 6. Students share tasks and prepare report assignments that will be reported as a result of problem solving in class. 7. Students together with the teacher reflect and evaluation of the learning in the class.		
Reading Comprehension (Dependent Variable / Variable Y)	1. The students are able to find the main idea.	Written Test: Short-Answer Test	1,6
	2. The students are able to analyzing vocabulary of the text.		2,7
	3. Students are able to find a sentence in the paragraph.		3,8
	4. Students are able to find the generic structure in paragraphs sequentially.		4,9

	5. Students can conclude the reading in the explanation text.		5,10

b. Rubric of Assessment

Table 3.6 Rubric of Assessment

Aspect	Point	Criteria
Main Idea	8-10 (Good)	Identifies the main idea as well as supporting details.
	5-7 (Fair)	Identifies the main idea, but cannot identify supporting details.
	0-4 (Poor)	Misidentifies the main idea, or fails to identify the main idea.
Vocabulary	8-10 (Good)	Interpret the meanings of unfamiliar words.
	5-7 (Fair)	Decodes unfamiliar word, but is not always able to interpret meaning from context.
	0-4 (Poor)	Attempts to decode unfamiliar word in the text, but does not independently interpret meaning.
Context	8-10 (Good)	Identifies most contextual references to interpret meaning.
	5-7 (Fair)	Identifies minimal contextual references to interpret meaning.
	0-4 (Poor)	Cannot identify Contextual references to Interpret meaning.
Sequence	8-10 (Good)	Exhibits the ability to identify sequentially elements as well as the ability to recognize the elements into a sequential order.
	5-7 (Fair)	Identifies sequential elements of massage, but has trouble with the reorganization of the sequential elements.
	0-4 (Poor)	Cannot identify keywords or sequential textual passages.
Inference	8-10 (Good)	Can identify when the message is inferred and can conclude.
	5-7 (Fair)	Identifies limited inferred messages, or recognize, but misinterprets the inference.

	0-4 (Poor)	Cannot conclude inferred messages nor identify prose inferred messages.

Based on the table above, the table above is used as an assessment criterion for students' reading to see how far their reading comprehension skills are when learning explanation text in class. With the criteria for this aspect of reading assessment, researchers can be easier when assessing student work.

1) Pre-Test

Pre-test is conducted to assess students' initial abilities before they engage in learning activities. Prior to the treatment, the researcher explained the learning mechanism to be implemented and distributed a pre-test sheet to the students. This pre-test consisted of 10 short-answer questions that students must complete, allowing the researcher to evaluate their baseline learning ability. The questions specifically related to the learning material, which, in this study, focused on explanation text.

Before conducting research at school, the researcher submitted validation of instruments such as lesson plans and test questions to lecturers of English Department of IAIN Ponorogo and English teachers at SMAN 1 Sambit to check the correctness of the lesson plans and test questions that had been made by the researcher. After being validated by lecturers and teachers, researchers then implemented the beginning of the learning meeting by giving instruments such as the pre-test described above.

2) Post-Test

Post-test is a test conducted after students take part in learning. This post-test is purposed to determine the extent to which students' achievement of teaching materials (knowledge and skills) after experienced learning activity. The post-test questions given by the researchers were the same as the pre-test questions, namely about explanation text. Students given a post-test sheet consisted of 10 items in the form of a short-answer test. The results of this post-test determined the answer whether by giving the pre-test and post-test there is a difference in reading comprehension improvement between classes taught using problem-based learning models have better reading comprehension than classes that are not taught using problem-based learning models.

Similar with the lesson plan instrument and the pre-test, before the research was carried out at school, the researcher also submitted a validation instrument such as a test question in the form of a post-test to the lecturers of English Department of IAIN Ponorogo and the English teacher at SMAN 1 Sambit to check the correctness of the lesson plan instrument and test questions that had been made by the researcher. Unlike the pre-test which was tested at the beginning of the learning activities, related to the post-test instrument, the researcher gave it to students at the end of the learning meeting described above.

3) Treatment

After giving the pre-test, researchers used two classes that were taught, namely class XI Science 1 and XI Science 2. Researchers conducted treatment to the experimental group. The class that was given treatment was class XI Science 1, which was the experimental group where the application of teaching used treatment, namely the problem-based learning method. While for class XI Science 2 is a control group, namely a class that is not given treatment. So the researcher taught the control class without using the problem-based learning method. Researchers conducted teaching to the experimental class and control class for four meetings with an allocation of 8X45 minutes which intended to see the results of a treatment on a factor being tested.

F. Validity and Reliability

1. Validity

Validity means the extent to which the accuracy and thoroughness of a measuring instrument when performed its measurement function. Validity refers to the extent to which a variable measured what it is intended to measure.[217] Validity in research refers to the degree of accuracy of the measuring instrument in relation to the actual content it is intended to assess.[218] In this context, it was essential to differentiate between valid and reliable research results and valid and reliable instruments. Valid instrument

[217] Sugiyono, 184-185.
[218] Sugiyono, 175-177.

indicated that the measuring tool used to collect data accurately measured what it was intended to measure.[219]

Validity means that the instrument could effectively measure what it was intended to assess. In contrast, a reliable instrument produced consistent data when used multiple times to measure the same object. By utilizing valid and reliable instruments for data collection, researchers aimed to ensure that the research results were also valid and reliable. Thus, having a valid and reliable instrument was essential for obtaining credible research outcomes. However, this does not imply that simply using instruments that had been tested for validity and reliability guaranteed valid and reliable research results. The outcomes influenced by the conditions of the object being studied and the skill of the individual administering the instrument. Therefore, researchers had to effectively manage the study's object and enhanced their proficiency in using the instruments to measure the variables being examined.[220]

According to Creswell, Validity involved providing strong evidence to demonstrate that the interpretation of test score (regarding the concept or construct the test was designed to measure) was appropriate for its intended purpose.[221]

Researchers use pre-test and post-test to test the validity, which pre-test and post-test can helped researchers to collect research data. The research contained in this validity is to measure the extent of students'

[219] Sugiyono, 175-184.
[220] Sugiyono, 175-184.
[221] Creswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research, 159.*

reading comprehension skills based on instruments that had been validated by teachers and lecturers. The test used to test the validation of XI Science class students referred to the Competency Standards and Basic Competencies at SMAN 1 Sambit. The researcher used XI Science 3 class as the subject to test the validity of quantitative research data.

Researchers conducted data testing, and after testing the data, the data was tabulated using the IBM SPSS Statistic 22 application to measure its validity. The validity test used is Pearson's Bivariate Correlation. The following was the procedured for calculating validity:

a. Researchers created a data table for analyzing student reading results using the Microsoft Excel application.
b. Opened the IBM SPSS 22 application.
c. After opened the application, there is a variable view and data view. Fill in the variable view with the number of questions and all questions, then change the decimal to 0.
d. After the variable view is filled in, click the data view and write the item result analysis.
e. Clicked analyze => Correlate => Bivariate.
f. Moved the items that were originally in the left box until they enter the variable writing in the right box.
g. Clicked correlation Coeffisien => Pearson.
h. Clicked test of significant => Two-tailed.
i. Clicked the check mark for flag significant correlation, then clicked OK.

Testing used two-sided significance level of 5% or 0.05. The test criteria as follows:

- If r count ≥ r table, then the instrument or question item is significantly correlated to the total score (declared valid).
- If r count ≤ r table, then the instrument or question item is not significantly correlated with the total score (declared invalid).

In this study, the respondents who were used as validity test subjects totaled 29 students. Researchers used a significance level of 5% or 0.05 with degrees of freedom (df) calculated by reducing the number of respondents by 2 (df = N-2). The following are the results of the validation calculations used by researchers to determine whether the items used had met the validity criteria or not:

Table 3.7 Recapitulation of Validity Pre-Test

Number of Items	r_{value}	r_{table}	Criteria
1	0.4892	0,3673	Valid
2	0.6092	0,3673	Valid
3	0.4673	0,3673	Valid
4	0.5515	0,3673	Valid
5	0.3799	0,3673	Valid
6	0.3818	0,3673	Valid
7	0.3795	0,3673	Valid
8	0.379	0,3673	Valid
9	0.3778	0,3673	Valid
10	0.4957	0,3673	Valid

The pre-test correlation calculation table indicated that all item numbers used in this study had met the validity criteria. With 29 respondents and a significanced level of 5% (0.05), the critical value (r table) was 0.3673. If the calculated r count > r table, the item is considered valid; if r

count < r table, the item was deemed invalid. In this study, all 10 question items were valid. Therefore, it could be concluded that all items included in this research possessed good quality and can serve as a reference for assessing student abilities.

Similar to the results of the pre-test validity calculations that had been carried out by researchers. In addition to the pre-test being tested for validity, researchers also calculated the validity of the post-test using IBM SPSS Statistic 22. The following were the results of the post-test validation calculation:

Table 3.8 Recapitulation of Validity Post-Test

Number of Items	r_{value}	r_{table}	Criteria
1	0.4582	0,3673	Valid
2	0.4108	0,3673	Valid
3	0.5258	0,3673	Valid
4	0.4983	0,3673	Valid
5	0.4340	0,3673	Valid
6	0.4383	0,3673	Valid
7	0.4367	0,3673	Valid
8	0.4994	0,3673	Valid
9	0.3794	0,3673	Valid
10	0.4441	0,3673	Valid

From the post-test correlation calculation table above, it showed that all item numbers used in this study had met the validity criteria. Because with 29 respondents at a significanced level of 5% or 0.05 with df = n–2, namely 29–2 = 27, the r table was 0.3673, so that if r count > r table, then the item is declared valid, whereas if r count < r table, then the item is declared invalid. Based on the table aboved, all valid item numbers in the table above with a value of r count > r table were 10 items (all valid).

Therefore, it can be concluded that all the item numbers contained in this study had good quality.

2. Reliability

According to Creswell, reliability is a referenced to how consistent the research results were when repeated in the same way.[222] The reliability test was used to test the level of reliability, accuracy, and consequences of the indicators contained in the questionnaire, so that good research had be valid and reliable so that it has accuracy value when tested at different periods. Related to instruments that measured the effectiveness of program implementation, content validity testing could be done by comparing the content with the content or design that had been determined.[223]

Technically, testing content validity could be facilitated by utilizing an instrument grid or an instrument development matrix. This grid included the variables being studied, indicators serving as benchmarks, and the item numbers (questions or statements) that corresponded to the described indicators.[224] With the instrument grid, validity testing could be done easily and systematically. Each instrument had question items. To test the validity of the instrument items further, the researcher consulted the instrument to the English lecturer Department of IAIN Ponorogo and English teacher of class XI Science SMAN 1 Sambit. After the instrument was consulted, then the instrument began to be tested and analyzed by item analysis or difference test. Researchers conducted a reliability test using the Cronbach's

[222] Creswell, 159.
[223] Sugiyono, "Metode Penelitian Kuantitatif Kualitatif Dan R&D.", 184
[224] Sugiyono, 184.

Alpha Statistical Test statistical test contained in the IBM SPSS 22 application. The following were the stages of reliability calculation:

a. Opened the IBM SPSS 22 application.

b. Clicked Scale => Scale => Reliability Analysis.

c. Then entered the items to be tested into the items box.

d. Moved the items next to the left box into the items box on the right.

e. Selected the Alpha model.

f. Finally, clicked OK.

The reliability test was conducted by comparing the Cronbach's Alpha value with the established significance level. Data could be said to be reliable if the Cronbach's Alpha value was > 0.5. If the Cronbach's Alpha value was < 0.5, then the item was not said to be reliable.

The following was a table of pre-test instrument reliability test results with a significance level of 0.05:

Table 3.9 Reliability of Pre-Test

Reliability Statistics

Cronbach's Alpha	N of Items
.688	11

Case Processing Summary

		N	%
Cases	Valid	29	100.0
	Excluded[a]	0	.0
	Total	29	100.0

a. Listwise deletion based on all variables in the procedure.

The respondents studied in the pre-test trial totaled 29 students (N=29), and all data were not excluded from the analysis. The Cronbach's Alpha value of the pre-test instrument was 0.688 with a total of 10 questions. The r table value tested with a significance level of 5%, can be found based on the number of respondents (number of students). Therefore, the value of Cronnbach's Alpha = 0.688. So the pre-test instrument tested had a Cronbach's Alpha reliability level greater than the 0.5 significance level.

After knowing the Cronbach's Alpha value on the pre-test instrument, the following was a table of post-test instrument reliability test results with a significance level of 0.05:

Table 3.10 Reliability of Post-Test

Reliability Statistics

Cronbach's Alpha	N of Items
.686	11

Case Processing Summary

		N	%
Cases	Valid	29	100.0
	Excluded[a]	0	.0
	Total	29	100.0

a. Listwise deletion based on all variables in the procedure.

The respondents studied in the post-test trial totaled 29 students (N=29), and all data were not excluded from the analysis. The Cronbach's Alpha value of the post-test instrument was 0.686 with 10 questions. The r table value tested with a significance level of 5%, can be found based on the number of respondents (number of students). Therefore, the value of

Cronnbach's Alpha = 0.686. So the post-test instrument tested had a Cronbach's Alpha reliability level greater than the 0.5 significance level.

From both instruments (pre-test and post-test), the results are presented in the following table:

Table 3.11 Reliability Statistic Result

Test	Cronbach's Alpha	N of Items	Level of Significance	Criteria
Pre-Test	0,688	11	0,05	Reliable
Post-Test	0,686	11	0,05	Reliable

The instrument contained in the table above shows that it had shown the reliability criteria in this study. The reliability results on the pre-test were 0.688 and the post-test was 0.686. Both test instruments show that the instrument reliability coefficient on Cronbach's Alpha > 0.05 significance level.

G. Data Analysis Techniques

In quantitative research, data analysis was the process that occurred after data had been collected from all respondents or other sources. This process includes several activities: grouping data according to variables and respondent types, presenting data in tables for analysis, performing calculations to address the research questions, and conducting calculated to test the proposed hypotheses.[225] Meanwhile, according to Creswell, in quantitative research, researchers must prepare and organize data and then analyze it. Data analysis

[225] Sugiyono, 206.

according to Creswell was used to answer each research question or hypothesis. The following were research questions or hypotheses found in quantitative:[226]

1. Described data trends for one variable or question on a research instrument. To answer the question, researchers needed descriptive statistics that showed general trends in the data (such as: mean, median, modus), the distribution of scores (such as: standard deviation, variance, range), or compared how one score related to all other scores (such as: Z-score, percentile rank). Quantitative research described one of the variables such as independent, dependent, control, or mediation.
2. Compared two or more groups on an independent variable that is related to the dependent variable. To answer questions on variables, researchers needed inferential statistics where researchers analyzed data from samples to draw conclusions about unknown populations. Then researchers assessed whether there were group differences (means) or relationships between variables that were much larger or smaller than what researchers expected for the entire population.
3. Relating two or more variables could use inferential statistics to answer questions on research variables.

So from the quantitative data analysis according to Creswell, it could be said that research described the results for one variable, question or concluded the results from the sample to the population. All quantitative research questions or hypotheses, researchers studied individuals who were sampled from a population. In descriptive analysis, researchers focused on examining one

[226] Creswell, *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research, 182*.

variable at a time. In contrast, inferential analysis involved analyzing multiple variables simultaneously. Researchers compared groups or established connections between variables to make predictions related to the research variables. They could also test hypotheses by comparing groups or exploring the relationships between variables.[227]

Data analysis in quantitative research used statistics as a result of hypothesis testing. The type of statistical application used by researchers in this study is IBM SPSS Statistic 22. Researchers used a quasi-experimental design in which the variables used in this study did not have other influences that were not related to the treatment given. In data analysis, researchers used 3 forms of statistical tests to get a clearer measurement result. The first step taken by researchers when analyzing data is to conduct a normality test to ensure that the data used by researchers is normally distributed in accordance with the assumptions or hypotheses in statistics. The second step taken by researchers when analyzing data is to conduct a homogeneity test to ensure that the data used by researchers had the same variance and there were no significant differences in groups. The third step taken by researchers when analyzing data is to conduct hypothesis testing to ensure that the treatment has a significant effect on the measured variables. The following were the stages of data analysis techniques in quantitative:

[227] Creswell, 182-183.

1. Normality Test

The normality test was used to assess whether a variable was normally distributed, particularly in the context of regression analysis. Regression was a statistical method employed to examine the relationship between one dependent variable and one or more independent variables. Researchers used the Kalmogorov-Smirnov test using the IBM SPSS 22 application to test the normality test of the data in the research. The following are the formulas of the normality test with the significance level set a 0.05:

$$X^2_{\text{hitung}} = \sum \left(\frac{(f_0 - f_h)^2}{f_h} \right)$$

Description:

x^2 : Chi-Square

f_0 : Frequency / Total Number of Data Observations

f_h : Total / Expected Frequency

Based on the results that have been calculated, a significance level appear whether the results are normally distributed or not. Related criteria to determine whether the data is normally distributed or not include:

a. If the significance level (p-value) < 0.05, then the data is not normally distributed.
b. If the significance level value (p-value) > 0.05, then the data is normally distributed.

2. Homogeneity Test

Homogeneity test was a test between 2 or more groups having the same distribution. Homogeneity test was used to determine whether there is similarity between the levels of variance of the scores analyzed in the study. The variance was taken from a population that has the same sample level, two or more groups. Researchers used the IBM Statistic SPSS 22 application in the homogeneity test. Levene's test is used to determine homogeneity in research. The following are the formula to calculate the homogeneity test:

$$F_{hitung} = \frac{S\ largest\ variance}{s\ smallest\ variance}$$

Description:

S : S largest that mean variance with group largest variance

s : s smallest that mean variance with group largest variance

From the above, the decision on the homogeneity test results was said to be homogeneous if the significance level was > 0.05 (5%), and it was not said to be homogeneous if the significance level was < 0.05 (5%).

3. Hypothesis Test

Hypothesis was a declarative statement in quantitative research in whereby the researcher made a prediction or conjecture regarding the outcome of a relationship. According to Creswell, hypothesis testing was a procedure for establishing decisions about results by combining observed values with population values to determine if there is no difference or relationship between the values. Researchers used the IBM Statistic SPSS

22 application to analyze the T-Test. The following were the formula in the calculation of the T-Test:

$$t_{hitung} = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{(n_1 - n_2)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Description:

$H_0 : \mu_1 = \mu_2$, (There is significant)

$H_1 : \mu_1 \neq \mu_2$, (There is no significant)

In this research, researchers used the t-test to analyze the data by comparing the pre-test and post-test scores between the experimental class (XI Science 1) and the control class (XI Science 2). The results of data analysis were contained in the answer to the research hypothesis. In the hypothesis test, researchers compared the t-test results with the t-table. The following was the decision on the hypothesis test:

a. If the t-count value > t-table, then H_0: Rejected and H_1: Accepted.
b. If the t-count value < t-table, then H_0: Accepted and H_1: Rejected.

CHAPTER IV

FINDINGS AND DISCUSSION

A. General Data

School	:	SMAN 1 Sambit
NPSN	:	20510152
NSS	:	301051104001
Status	:	Negeri
Since	:	1985
Accreditation	:	A
Address	:	Jalan Raya Trenggalek-Ponorogo KM 18, Besuki, Sambit, Ponorogo

B. Background of SMAN 1 Sambit

SMAN 1 Sambit was a senior high school located on Jalan Raya Trenggalek-Ponorogo, KM 18, Besuki, Sambit, Ponorogo, East Java, with the zip code: 63474. Similar to high schools in general in Indonesia, the school education period in this school was taken within three school years, starting from Class X to Class XII. School was an institution designed for the instruction of students or pupils under the supervision of teachers. Most countries had a formal education system that is generally compulsory. Related to the explanation of SMA Negeri 1 Sambit, the following was a brief history of the establishment of SMAN 1 Sambit:

The establishment of SMAN 1 Sambit in Sambit began with three classrooms, along with a principal's room, a teacher's room, an administrative room, a skills room, a guidance counseling (BP) room that commonly referred

to as BK (counseling guidance), a storage area, teacher's toilet, student's toilet, no electricity and telephone. At that time, the school lacked electricity and telephone facilities. There was also no fence, the soil conditions still appeared dry rice fields, the former rice fields still visible, the weather was hot with strong winds. At the beginning of this Mr. Pedjiono planted a fir tree as a sign of the existence of SMAN 1 Sambit Ponorogo.

SMAN 1 Sambit was a filial of SMA 1 Ponorogo, after moving to stand alone as SMAN 1 Sambit Ponorogo. In the 1985/1986 academic year, the teaching and learning process (PBM) was carried out at SMAN 1 Ponorogo and entered in the afternoon, after moving to the new building of SMAN Sambit. In the 1985/1986 academic year, the teaching and learning process was carried out at SMAN 1 Ponorogo and entered in the afternoon, after moving to the new building of SMAN Sambit.

Currently SMAN 1 Sambit had an accreditation status of "A". SMAN 1 Sambit was officially recognized as a state educational institution with NSS number: 301051104001 and NPSN number: 20510152. SMAN 1 Sambit Ponorogo was officially established on July 1, 1985. This decision took place in Jakarta, on November 22, 1985.

SMAN 1 Sambit Ponorogo had important intellectual centers in the local education community, such as modern infrastructure, strong academic ethos, collaborative synergy with the campus, and successfully developed a conducive environment when carrying out scientific and research activities.

The quality and commitment of SMAN 1 Sambit were so good that the school had a clear identity that can generated people's trust in SMAN 1 Sambit.

The school had a highly qualified education staff, as well as complete facilities that produced many outstanding school alumni.

The principal of SMAN 1 Sambit was led by Mr. Nasori, SE, S.Pd., S.Pd.I., MM. who has served as principal since 2023 until now. The education curriculum used is the 2013 Curriculum and the Merdeka Curriculum. SMAN 1 Sambit could be contacted via telephone: 0352-3112-85 or via school email: sman1sambit.prg@gmail.com.

The vision and mission of SMAN 1 Sambit include:

1. **VISION**

   School as a Center of Excellence for Imtaq, Science and Technology, Environmentally Friendly, and Integrating Population Education and Able to Compete in the Global Era in Harmony with National Personality.

2. **MISSION**

   a. Implementing activities to improve noble character based on faith and devotion to God Almighty.
   b. Carry out effective learning, training, and guidance to master science and technology with an environmental perspective so as to be able to compete in the global era.
   c. Carry out activities that are in accordance with the nation's personality.
   d. Strive to preserve environmental functions and prevent environmental pollution.

e. Improve the quality of environmental resources by implementing environmental protection and management in a wise and prudent manner.
f. Instill awareness and responsibility of learners towards population conditions.
g. Integrate population education in accordance with national development policies in the field of population.
h. Improve the quality of Human Resources towards the professionalism of educators and education personnel who are able to compete in the global era.
i. Organizing an Information Technology-based school administration system towards excellent service.
j. Implementing international standard participatory management by involving all school community and school stakeholders.

C. Data Description

In quantitative research, data description was a description of the data used in a study. The aim is to display the data so that the data can be presented properly and easily when interpreted. Usually the data description is standardized to explain who, what, where, when, and how the data was made.

The researcher focused on examining students of class XI Science at SMAN 1 Sambit in the 2023/2024 academic year. SMAN 1 Sambit has 3 classes in the XI Science class. The researcher chose XI Science 1 and XI Science 2 as the research sample. The number of students in class XI Science was 29 students, where the students of class XI Science 1 was used as an experimental class.

While the number of students in class XI Science 2 was 29 students who are used as a control class.

Based on research that had been conducted by researchers, researchers find problems that exist in students. These problems include: Students had difficulty answering reading comprehension questions on explanation text. This happenned because of the lack of student practiced in reading English texts. Many students had difficulty in concentrating on reading learning, lacked background knowledge about the reading topic given so that they had difficulty when understanding the contents of the reading text. Understanding English vocabulary, many students still unfamiliar with the word so that it was also the cause of students' difficulties in reading English sentences. Teachers were still lacking when providing reading teaching modelss to students. In addition, time is limited in English learning hours in the classroom. Limited learning time caused students to experienced difficulties when understanding the reading of English texts, especially if the reading of the text was lengthly. Therefore, researchers needed to teach students' reading comprehension skills. In addition, students should not only rely on the researcher as a teacher in class when learning in class, but students also need to find and understand the meaning of the words read in order to make meaning. Students could also ask the researcher as a teacher for advice or reflection on what they have read. Reading comprehension problems in students could affect academic performanced and students' confidence is reduced. So from some of these problems, the researcher assumed that the use of problem-based learning models can improve students' reading comprehension skills.

The learning material used in this research is explanation text. Researchers taught explanation text material in both classes, namely experimental and control classes. Researchers gave treatment to the class. In the experimental class, researchers taught using the problem-based learning model. While in the control class, the researcher did not use the problem-based learning model.

1. Data Description of Experimental Class

In this section, researchers explained the procedures the pre-test and post-test scores found in students in the experimental class (XI Science 1).

a. The Score of Students' Reading Comprehension in Experimental Class

The researcher used the problem-based learning model which was given treatment in the experimental class (XI Science 1) to improve students' reading comprehension. Problem-based learning focused on student activeness where in problem-based learning there was a problem and involved students to find out of the problem together. The purposed of the problem-based learning model is to introduce problem solving, critical thinking, cooperation, and communication skills.

The pre-test score taken at the first meeting was used to determine the initial level of students' comprehension ability before the treatment was given to the experimental class, namely class XI Science 1. The second meeting and the third meeting, students are required to be active in learning activities in groups. In addition, the teacher also provided feedback to students to determine the level of ability during the learning process.

In addition to the pre-test scores used in the learning assessment, researchers also took the post-test scores that had been done by experimental class students at the end of the meeting (meeting 4). The post-test is used to assess the extent of students' reading comprehension skills in the experimental class, specifically in XI Science 1, after they had been given treatment. After that, the results of the pre-test and post-test scores in the experimental class were used by researchers to compare students' reading comprehension abilities, namely before being given treatment and after being given treatment. The following is a table of the results of the comparison between the pre-test and post-test scores in the experimental class:

Table 4.1 Pre-Test and Post-Test Score of Experimental Class

NO	STUDENT (EXPERIMENT)	PRE-TEST	POST-TEST
1	S1	70	95
2	S2	67	93
3	S3	66	88
4	S4	65	91
5	S5	68	88
6	S6	73	91
7	S7	75	85
8	S8	67	87
9	S9	68	83
10	S10	69	95
11	S11	60	87
12	S12	67	96
13	S13	65	90
14	S14	70	95
15	S15	68	85
16	S16	60	87
17	S17	73	90
18	S18	67	92
19	S19	64	93
20	S20	60	98

NO	STUDENT (EXPERIMENT)	PRE-TEST	POST-TEST
21	S21	65	84
22	S22	68	93
23	S23	66	90
24	S24	70	86
25	S25	67	95
26	S26	70	83
27	S27	69	89
28	S28	65	81
29	S29	60	95
TOTAL		**1942**	**2605**
MEAN		**66.96551724**	**89.82758621**
SCORE		**LOWEST**	**HIGHEST**
PRE-TEST		**60**	**75**
POST-TEST		**81**	**98**

Based on the results presented in the table above, the experimental class achieved a highest pre-test score of 75 and a lowest pre-test score of 60. In contrast, the highest post-test score was 98, while the lowest post-test score was 81. The mean of pre-test score in the experimental class was 66.96, whereas the mean of post-test score was 89.82. The data indicated a significant difference between the pre-test and post-test results in the experimental class. This suggested that students in the experimental class experienced improvement in their reading comprehension after being treated with the problem-based learning model.

2. Data Description of Control Class

In this section, the researcher explained the procedures pre-test and post-test scores found in students in the control class (XI Science 2).

a. The Score of Students' Reading Comprehension in Control Class

The researcher used without problem-based learning model that would be taught to the control class (XI Science 2). The pre-test score taken at the first meeting was used to determine the initial level of students' comprehension ability in the control class, namely XI Science 2 class.

In addition to the pre-test scores used for learning assessment, the researcher also collected the post-test scores from the control class students at the end of the fourth meeting. The purposed of the post-test was to evaluate the students' reading comprehension skills after receiving instruction in the control class, specifically in XI Science 2. The researcher then compared the pre-test and post-test scores to assess the students' reading comprehension abilities before and after the instruction that did not involve problem-based learning. Below is a table comparing the results of the pre-test and post-test scores in the control class:

Table 4.2 Pre-Test and Post-Test of Control Class

NO	STUDENT (CONTROL)	PRE-TEST	POST-TEST
1	S1	70	75
2	S2	65	83
3	S3	68	77
4	S4	61	85
5	S5	67	78
6	S6	63	80
7	S7	69	83
8	S8	71	85
9	S9	67	81
10	S10	63	83

NO	STUDENT (CONTROL)	PRE-TEST	POST-TEST
11	S11	64	82
12	S12	61	87
13	S13	60	85
14	S14	67	84
15	S15	65	79
16	S16	73	80
17	S17	71	80
18	S18	62	78
19	S19	64	80
20	S20	67	85
21	S21	65	75
22	S22	63	84
23	S23	70	75
24	S24	66	81
25	S25	67	80
26	S26	64	83
27	S27	60	78
28	S28	73	80
29	S29	72	81
TOTAL		**1918**	**2347**
MEAN		**66.13793103**	**80.93103448**
SCORE		**LOWEST**	**HIGHEST**
PRE-TEST		**60**	**73**
POST-TEST		**75**	**87**

Based on the results presented in the table above, the control class achieved a highest pre-test score of 73 and a lowest pre-test score of 60. In contrast, the highest post-test score was 87, while the lowest post-test score was 75. The mean of pre-test score for the control class was 66.13, whereas the mean of post-test score was 80.93. The total score for the pre-test in the control class was 1,918, while the total score for the post-test was 2,347. The post-test scores obtained had a wider range than the pre-test scores. So it can be said that the post-test scores had a relatively

normal distribution and had increased on mean compared to the pre-test scores of the control class students.

D. Data Analysis and Hypothesis Test

Researchers explained the results of hypothesis testing in this data analysis. Researchers used the IBM Statistic 22 application which aimed to get the results of data analysis calculations accurately and quickly when processing data.

The stages used in the first data analysis are researchers conducting a normality test to see whether the data values used in this study are normally distributed or not in accordance with the assumptions contained in statistical calculations. Normality test is included in one type of data analysis technique in SPSS. In the normality test, researchers used the Shapiro-Wilk Test as an appropriate method for smaller sample sizes, namely < 50 samples. If the sample is > 50, then the normality test used the Kolmogorov-Smirnov technique. The normality test is used to ensure that if there is data that was not normally distributed such as Binominal or Distribution Poisson which could affect the results of the analysis.

The second stage of data analysis involves conducting a homogeneity test. This test was performed to ensure that the data used in the analysis did not exhibit significant differences in variance that could influence the results. The homogeneity test aimed to determine whether two or more groups of sample data originated from populations with the same variance. This test could be conducted only if the data groups were normally distributed.

1. Pre-Test of Reading Comprehension

a. Descriptive Statistics

Descriptive statistics referred to the methods used to analyze and summarize data by providing a clear overview of the collected information. Quantitative descriptive statistics specifically utilize numerical data derived from actual observations. This type of analysis typically included metrics such as the mean, median, maximum, minimum, and the number of students. The primary purpose of descriptive statistical analysis is to describe the data based on the responses from participants regarding each variable measurement indicator. Researchers obtained pre-test data from experimental classes which had 29 students and control classes which had 29 students. Researchers processed pre-test data using the Microsoft Excel application. The following is a table of descriptive statistical data on the pre-test of experimental and control classes:

Table 4.3 Descriptive Statistic of Pre-Test

Descriptive Statistic	Experimental Class	Control Class
Mean	66.96551724	66.13793103
Minimum	60	60
Maximum	75	75

The table above presented data collected from the pre-test concerning students' reading comprehension skills. The results indicated that the mean of pre-test score for the experimental class was 66.96, while the control class had a mean of pre-test score of 66.13. Based on these pre-test scores, it can be concluded that there was not a significant

difference in reading comprehension skills between the students in the experimental and control classes.

b. Inferential Statistics

Inferential statistics in quantitative research are divided into two, namely parametric inferential statistics and non-parametric inferential statistics. The inferential statistics used in this study use parametric inferential statistics where these statistics perform normality tests, homogeneity tests, and mean tests. Parametric statistical analysis is a statistical analysis that requires the fulfillment of many assumptions. The main assumption in question is that the data to be analyzed must be normally distributed. The requirement when conducting a normality test is that the data must be normally distributed. If there are indications that are not normal or do not meet the normality requirements in the data, then researchers can use non-parametric statistical analysis, namely by conducting the Mann-Whitney test. If the data is normally distributed, then the researcher does not need to do the Mann-Whitney test. The researcher conducted an inferential statistical analysis test using the SPSS 22 application. The following are the results of tests conducted by researchers to see the initial ability of students:

1) Normality Test

Researchers used a normality test to determine whether the pre-test data was normally distributed. The hypothesis formulated was tested with parametric statistics. The normality test used is the Shapiro-Wilk normality test. The Shapiro-Wilk normality test was a

statistical method used to test whether data is normally distributed. The Shapiro-Wilk normality test had the advantaged of testing normality because it had a high sensitivity to deviations from the normal distribution. In addition, the Shapiro-Wilk normality test effective for small samples. The hypothesis in the Shapiro-Wilk normality test is as follows:

a) H_0 = Data is normally distributed

   H_1 = Data is not normally distributed

Shapiro-Wilk normality test decision making could be seen as the statement below:

a) The significance value (p-value) < 0.05, then the H_0 hypothesis is rejected and it means that the data is not normally distributed.

b) The significance value (p-value) > 0.05, then the H_0 hypothesis is accepted and it means that the data is normally distributed.

The results of the normality test for students' reading comprehension ability pre-test scores can be seen in the SPSS table below:

Table 4.4 Test of Normality Data Pre-Test

Tests of Normality

Class		Shapiro-Wilk		
		Statistic	df	Sig.
Pre-Test	Experimental Class (XI Science 1)	.943	29	.120
	Control Class (XI Science 2)	.959	29	.317

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the table of normality test calculation results above, it can be seen that:

a) The experimental class had a significance value (p-value) of 0.120 > 0.05, then the H_0 hypothesis is accepted and the data is normally distributed. This means it can be concluded that the data in the experimental class is normally distributed.
b) The control class had a significance value (p-value) of 0.317 > 0.05, then the H_0 hypothesis is accepted and the data is normally distributed. This means it can be concluded that the data in the control class is normally distributed.

From the statement above, it could be seen that the experimental class had significant value (p-value) of 0.120 > 0.05 and the control class had a significant value (p-value) of 0.317 > 0.05, where both classes had all normally distributed data. In accordance with the statement sentence on inferential statistics, the requirement when conducting a normality test is that the data had to be normally distributed. If there had been indications that the data were not normal or did not meet the normality requirements in the data, then researchers can use non-parametric statistical analysis, namely by conducting the Mann-Whitney test. If the data were normally distributed, then the researcher did not need to conduct the Mann-Whitney test. So in this study, researchers did not need to test the normality of the data using the Mann-Whitney U-Test.

2. Post-Test of Reading Comprehension

Researchers used a post-test to determine the extent of the students' ability level at the end of learning (meeting 4). Researchers used two classes, namely experimental class (XI Science 1) and control class (XI Science 2). The material contained in the students' post-test is explanation text. The post-test value is obtained by giving students the reading text "Explanation Text" which amounts to 10 questions with a short-answer task question model in the form of an essay that must be answered by students during the learning process until the end of the learning time. The following is a table of descriptive statistical data results in the form of pre-test data on students' reading comprehension skills:

Researchers used a post-test to determine the extent of the students' ability level at the end of learning (meeting 4). Researchers used two classes, namely experimental class (XI Science 1) and control class (XI Science 2). The material contained in the students' post-test is explanation text. The post-test value is obtained by giving students the reading text "Explanation Text" which amounts to 10 questions with a short-answer task question model in the form of an essay that must be answered by students during the learning process until the end of the learning time. The following is a table of descriptive statistical data results in the form of pre-test data on students' reading comprehension skills:

Table 4.5 Descriptive Statistics of Post-Test

Descriptive Statistic	Experimental Class	Control Class
Mean	89.82758621	80.93103448
Minimum	81	75
Maximum	98	87

The table above displayed data collected from the post-test regarding students' reading comprehension skills. The results indicated that the mean of post-test score for the experimental class was 89.82, whereas the control class had a mean of post-test score was 80.93.

3. N-Gain of Reading Comprehension

The Normalized Gain test, often referred to as the N-Gain test, is designed to evaluate the effectiveness of a specific treatment within a single group using a pre-test and post-test design, or in research involving a control group. This test calculates the difference between pre-test and post-test scores. By assessing these scores (Gain score), researchers can determine whether the implementation of the problem-based learning model has led to improvements. Below are various analyses used in the N-Gain test to evaluate the enhancement of students' reading comprehension skills:

a. Descriptive Statistics

The following is a statistical description of the N-Gain data obtained from the pre-test and post-test results of students' reading comprehension skills in the experimental and control classes:

Table 4.6 Descriptive Statistic of N-Gain

Descriptive Statistic N-Gain		N-Gain of Experimental Class	N-Gain of Control Class
N	Valid	29	29
Mean		0.685833726	0.426566833
Minimum		0.4	0.166666667
Maximum		0.95	0.666666667

Based on the table above, the experimental class (XI Science 1) had a mean N-Gain score of 0.685, whereas the control class (XI Science 2) has a mean N-Gain score of 0.426. These N-Gain mean indicated that a significant difference in reading comprehension between the students in the experimental class and those in the control class.

b. Inferential Statistics

Inferential statistics contained in the N-Gain test had 3 tests, namely normality test, homogeneity test, and t-test. Below are 3 tests contained in the inferential statistics of the N-Gain test and their explanations:

1) Normality Test

The normality test was carried out to determine whether the dependent variable and the independent variable in the N-Gain data were normally distributed or not. In testing N-Gain data, the hypotheses used include:

a) H_0 = N-Gain data is normally distributed.

b) H_1 = N-Gain data is not normally distributed.

In the N-Gain normality test, researchers employed the Shapiro-Wilk test, a statistical method designed to assess whether data follows a normal distribution. This test is advantageous due to its high sensitivity to deviations from normality and its effectiveness for small sample sizes. To determine if the N-Gain data was normally distributed, the results of the Shapiro-Wilk normality test can be interpreted by examining the significance value:

a) The significance value (p-value) < 0.05, then the H_0 hypothesis is rejected and it means that the data is not normally distributed.

b) The significance value (p-value) > 0.05, then the H_0 hypothesis is accepted and it means that the data is normally distributed.

The following was a data table of the results of the N-Gain score normality test on students' reading comprehension skills using the SPSS 22 application:

Table 4.7 Result of Normality Test of N-Gain

Tests of Normality

Class		Shapiro-Wilk		
		Statistic	df	Sig.
n-gain score	Experiment Class	.969	29	.527
	Control Class	.972	29	.617

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the results of the normality test above, the probability value contained in the N-Gain data significance table contained in the experimental and control classes, namely:

a) The significance value (p-value) of the experimental class = 0.527 < 0.05, then the hypothesis H_0 was accepted and H_1 is rejected, so it could be interpreted that the data was not normally distributed.

b) The significance value (p-value) of the control class = 0.617 < 0.05, then the hypothesis H_0 was accepted and H_1 was rejected, so it could be interpreted that the data was not normally distributed.

The results from the significanced table of the N-Gain data for both the experimental and control classes indicated that the data in both classes was normally distributed. Following the successful completion of the normality test for the N-Gain data, the next step is to proceed with the homogeneity test.

2) Homogeneity Test

The homogeneity test included in the N-Gain assessment is designed to determine if the two data sets are equivalent. This test compares the two values: the pre-test and the post-test. When evaluating the N-Gain data, the hypotheses employed during the pre-test analysis included:

a) H_0 = Pre-test data is normally distributed.

b) H_1 = Pre-test data is not normally distributed.

The method used when conducting the homogeneity test was the Levene Test. The purpose of the Levene Test was to see how much varianced there is between two different data. From the results of testing the data, researchers could see whether the existing data has a homogeneous indication or not. The following is the basis for making homogeneity test decisions using the Levene Test:

a) The significance value (p-value) < 0.05, then the H_0 hypothesis is rejected and it means that the data is not normally distributed.

b) The significance value (p-value) > 0.05, then the H_0 hypothesis is accepted and it means that the data is normally distributed.

Table 4.8 Result of Homogeneity Test of N-Gain

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
n-gain score	Based on Mean	.578	1	56	.450
	Based on Median	.629	1	56	.431
	Based on Median and with adjusted df	.629	1	55.970	.431
	Based on trimmed mean	.595	1	56	.444

Based on the results of the Levene Test on the homogeneity test, it could be seen that the significant value (p-value) of the N-Gain data obtained a result of 0.578 > 0.05, thus indicating that H_0 = Accepted and H_1= Rejected. From this it can be concluded that the N-Gain data in both classes were homogeneous (normally distributed).

3) T-Test

The homogeneity test was conducted as a prerequisite for the T-Test. Its purpose was to assess whether the variances of two distributions are equal. This test helps ensure that any observed differences are due to variations between groups rather than within groups. Additionally, it verifies that the data groups originated from the same sample. The criteria for making decisions based on the homogeneity test were:

a) The significance value (p-value) < 0.05, then the H_0 hypothesis is rejected and it means that the data is not normally distributed.

b) The significance value (p-value) > 0.05, then the H_0 hypothesis is accepted and it means that the data is normally distributed.

Because the results contained in the homogeneity test show data that had homogeneous groups, the similarity test on the two mean used the Independent Sample T-Test test found in the T-Test. The following is the hypothesis used in the Independent Sample T-Test, among others:

a) H_0 = There is no difference in the improvement of reading comprehension of students taught by using problem-based learning model than students taught by not using problem-based learning model.

b) H_1 = There is a difference in the reading comprehension improvement of students who are taught by using problem-based learning model than students who are not taught by using problem-based learning model.

The following was a table of the results of the mean difference test in the two classes as follows:

Table 4.9 Result of T-Test of N-Gain

Independent Samples Test

		t-test for Equality of Means		
		t	df	Sig. (2-tailed)
Result of Pre-Test	Equal variances assumed	7.067	56	.000
	Equal variances not assumed	7.067	55.275	.000

Based on the data analysis that had been carried out in chapter 4, researchers know that:

1. The mean of pre-test score in the experimental class was 66.965 and the mean of post-test score in the experimental class increased to 89.827. While the mean of pre-test score in the control class was 66.137 and the mean of post-test score in the control class increased to 80.931. From these two values, it can be said that the experiment class and control class experienced an increase in reading comprehension.
2. The researcher analyzed the data using the IBM Statistics SPSS 22 application.
3. The T-Test results contained in the N-Gain test show that the significance value is 0.00 < 0.05, which indicates that there is a significant difference between the improvement of reading comprehension of students taught using problem-based learning model and students not taught by using problem-based learning model.

E. Discussion

The aim of this study is to prove whether there is a significant difference between students who are taught by using problem-based learning have better reading comprehension than students who are not taught by using problem-based learning.

The results of student learning in the students' pre-test and post-test show that the experimental class students' pre-test results get a mean score of 66.96 and the control class post-test results get a mean score of 89.82, while the control class students' pre-test results get a mean score of 66.13 and the control

class students' post-test results get a mean score of 80.93. So that, the test in both classes there is an increase in reading comprehension. In calculating the mean test, the experimental class got better test results than the control class. After calculating the mean, it was then calculated using the t-test where the value showed a significance of 0.00 < 0.05 which showed that there was a significant difference between students who were taught by using problem-based learning model had better reading comprehension than students who were not taught by using problem-based learning model.

The results of the study are proven by the theory used by the researcher. Researchers used Oon-Seng Tan's theory on Problem-Based Learning theory. In Oon-Seng Tan theory's, states that learning curriculum using problem-based learning can help encourage the development of students' lifelong learning skills, such as open-minded, reflective, critical, and active learning. In addition, with a learning curriculum that uses problem-based learning, students can gain deeper facilities on how to solve a problem, communicate, teamwork, and interpersonal skills. By designing responsive and relevant learning, the learning experience using problem-based learning can be more meaningful and effective so that students can understand the reading more quickly. Therefore, the use of problem-based learning model in class XI Science can make students' comprehension increase.

Based on the above statement, it can be said that the alternative hypothesis (H_1) is accepted, and the null hypothesis (H_0) is rejected. The use of a problem-based learning model shows a significant difference, this can be seen from the data of the control class and the experimental class. Because it is in accordance

with the purpose of this study which is to prove that there is a significant difference between students who are taught with problem-based learning have a better understanding than students who are not taught using problem-based learning. In other words, students who are taught using problem-based learning have better reading comprehension than students who are not taught using problem-based learning. Therefore, it can be concluded that the use of problem-based learning is very effective to improve the reading comprehension of students in class XI Science at SMAN 1 Sambit.

CHAPTER V

CONCLUSION AND SUGGESTIONS

A. Conclusion

Based on the results of this study, it can be concluded that there is a significant difference between students who are taught by using problem-based learning have better reading comprehension than students who are not taught by using problem-based learning in class XI Science SMAN 1 Sambit. This is proven by the application of the use of problem-based learning model in class and given a test to obtain research data that is tested using 3 tests, namely normality test, homogeneity test and hypothesis test. The results of the data show that the use of problem-based learning in classroom learning can make students more effective and able to improve students' reading comprehension in class. The conclusion of this study is related and relevant to the research topic taken by the researcher, namely "The Effectiveness of Problem-Based Learning on the Reading Comprehension of Eleventh-Grade Science Students at SMAN 1 Sambit Ponorogo".

B. Suggestions

Based on the results of the study, the following are recommendations from researchers related to the use of problem-based learning on students' reading comprehension:

1. For the Institution

   The researcher hopes that this finding can be useful for English foreign language when reading research using Problem-Based Learning model is able to make effective learning to improve students' reading

comprehension skills, especially in the context of English as a Foreign Language (EFL). With proper implementation, problem-based learning can have a significant impact in improving students' reading comprehension skills as well as their critical thinking skills.

2. For the English Foreign Language Students

   The research hopes that by teaching students learning materials using problem-based learning method, students can carry out classroom learning with excitement and motivated to improve reading comprehension in English learning in the classroom.

3. For the English Teachers

   Teachers as educators and teaching staff are expected to be able to create creative, professional learning, adequate teaching materials, interesting media, and adequate learning methods and resources that can support the achievement of the desired learning objectives, especially in the problem-based learning method which is able to make learning in class feel fun, active, creative and innovative, so that the use of problem-based learning methods can help improve reading comprehension in students.

4. For the Future Researchers

   The research hopes that the findings of this study can be useful for researchers and other researchers as a reference for conducting further research studies related to teaching using problem-based learning methods to improve reading comprehension.

5. For the Readers

The research hopes that readers can add new knowledge related to teaching using problem-based learning that can improve reading comprehension in students.

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