CHAPTER III

RESEARCH METHOD

A. Approach and Type of Research

The study employed a pre-experiment. Pre-experiment research (one-shot case study) is an experimental method used when full control over all variables is difficult—especially in social research settings like classrooms (Abraham & Supriyati, 2022). This chapter describes the technique used to assess the effectiveness of collaborative learning in developing higher-order thinking skills (HOTS) in reading comprehension among sixth-semester students in the English Education Study Program at Universitas Islam Negeri Fatmawati Sukarno Bengkulu. Given the special setting and the need to get a thorough knowledge of the phenomenon within a single group, a One-Shot Case Study approach was chosen.

This study takes a quantitative approach and follows a One-Shot Case Study strategy. In this design, a single group receives treatment, and assessments of scientific attitudes are conducted at each session using observation sheets to describe the group's attitudes towards science. A One-Shot Case Study, also known as a single-group posttest-only design, is subjecting a group to a therapy or intervention and then observing or measuring their responses to determine the treatment's effectiveness (Vernon & Gage, 1965).

B. Research Location and Time

1. Research Location

This research was conducted at Study Program of English Education Universitas Islam Negeri Fatmawati Sukarno Bengkulu.

2. Research Time

This research was conducted during the even semester of 2025.

C. Research Design

This research design is Pre-Experiment research with this research design is One-Shot Case Study. This design was used because this study only involved one class, namely the experimental class which was carried out by comparing the pre-test results with the post-test results. A One-Shot Case Study, also known as a single-group posttest-only design, is subjecting a group to a therapy or intervention and then observing or measuring their responses to determine the treatment's effectiveness (Vernon & Gage, 1965). According (Sugiyono, 2020) the design can be schematically represented as follows.

Table 2. Formula Design One-Shot Case Study

Treatment	After (Post-test)
X	O

Where:

a. X = The observation in treatment (in this case, collaborative learning activities)
b. O = The results of post-test or measurement of the dependent variable (HOTS in reading comprehension performance)

This experimental model goes through three steps:

1. Administering a pretest to measure the dependent variable (*HOTS in Reading Comprhension*) before the treatment is implemented.
2. Applying the treatment to the research subject class using collaborative learning.
3. Conducting a posttest to measure the dependent variable after the treatment has been applied.

The paradigm can be stated as follows: a specific group receives a therapy, and the results are then observed. The therapy is the independent variable, while the outcomes are the dependent variables.

D. Population and Sample

1. Population

The population is a generalization of objects/subjects that have particular attributes and characteristics that the researcher has chosen to study and from which conclusions are made (Sugiyono, 2020).

Population refers to the general scope that consists of objects or subjects with specific qualities and characteristics determined by the researcher for analysis, from which the researcher can draw conclusions about the study's findings. In this study, the population comprises all Sixth-Semester students of Study Program of English Education from Universitas Islam Negeri Fatmawati Sukarno Bengkulu City for the 2024/2025 academic year, divided into four classes: A, B, C, and D. The total population can be seen in the table below.

Table 3. Population of the Research

No.	Class	Gender		Total
		Female	Male	
1.	6A	15	1	16
2.	6B	17	3	20
3.	6C	15	5	20
4.	6D	17	5	22
Total				78

2. Sample

A sample is a subset of a population that accurately represents its characteristics and amount (Sugiyono, 2020). The sample represents a portion of the population's number and characteristics. In this one-shot study, purposive sampling is the technique employed, which is purposive

sampling is a sample strategy that is guided by certain considerations or criteria. Purposive sampling is used in this study because it focuses on a specific group: sixth-semester English Education Study Program students at Universitas Islam Negeri Fatmawati Sukarno Bengkulu, Class 6B, which has 20 students (17 females and 3 males), is a representative sample of the population that reflects its overall characteristics. Furthermore, purposive sampling avoids randomization and stratification, making it a time- and resource-efficient technique while ensuring the selection of participants who can give crucial insights relevant to the study's goals. After weighing several factors, the researcher will choose representatives from one class as participants for the study. Class 6B, with 20 students.

Table 4. Sample of The Research

No.	Class	Classroom	Gender		Total
			Female	Male	
1.	Treatment & Post-Test group	6B	17	3	20

E. Operational Definition of Variables

The Operational Definition of Variables is an explanation of variables that are formulated based on the characteristics and indicators used in a study as a basis for collecting data (Setyawan, 2021). In this study, there are two

variables: the independent variable, denoted by (X), which affects or becomes the background for the emergence of the dependent variable, and the dependent variable, denoted by (Y), which is the variable that is affected or the result of the independent variable.

The operational definition of variables is a variable that is explained based on characteristics that can be observed or researched. The process of measuring variables in research is explained through operational variables. The dependent variable in this study is higher-order thinking skills (HOTS) in reading comprehension of 6th semester students, while the independent variable is collaborative learning. The variables in this study include:

1) Higher-Order Thinking Skill (HOTS) in Reading Comprehension (Y), as dependent variables. Dependent variables are what depend on the independent variables; dependent variables are the dependent variables were a function of those independent variables.

2) Collaborative Learning (X), as independent variables. Independent variables impact or affect outcomes in Experimental studies. They are considered "independent" since they are factors that are modified in an experiment are thus independent of all other influences (Creswell & Creswell, 2018)

F. Data Collection Technique

The researcher employed treatment and post-test methods to collect data for this study. The following are the steps involved in the data collection process:

1. Observation

Observation is a strategy used to obtain research data through sensing. Observation is used to gain a more accurate and thorough picture of an event or situation (Mouwn Erland, 2020). Observe collaborative learning methods among students during the learning process and give the reading teks to measure the effectiveness of Collaborative Learning for students' Higher-Order Thinking Skills (HOTS) in Reading Comprehension. Communication skills, teamwork, and contributions to problem solving can all be emphasized during an observation.

2. Treatment.

The treatment entailed using collaborative learning to help pupils develop higher-order thinking skills with reading comprehension. Treatment is carried out six times instead of once as in the name one-shot so that the results are as expected by the author and the explanation during treatment is clearer and can be more easily understood during the last meeting and final test. Collaborative tasks challenged students to analyze case studies, evaluate arguments, and develop creative solutions. The treatment's goal was to stimulate deeper cognitive engagement through peer interaction and teamwork, resulting in improved

critical thinking and problem solving abilities.

3. Post-test

Following the treatment, a post-test was administered to determine any improvement in students' higher-order thinking skills in reading comprehension. The post-test tasks followed a similar style to the pre-test but addressed various themes to avoid repetition and ensure dependability. Students were required to complete new problem-solving scenarios and critical-thinking questions meant to assess their reasoning, analytical, and evaluation skills.

The post-test findings were compared to the pre-test scores to see if the collaborative learning strategy had a meaningful impact on developing higher-order thinking skills. This comparison sought to determine the effectiveness of the treatment and the extent to which students' cognitive abilities have improved.

G. Research Instrument

The instruments in this research consist of two main sections to measure students' achievement in higher-order thinking skills through collaborative learning:

1. HOTS Test in Reading Comprehension Post-Test

The HOTS test will be designed to assess students' reading comprehension in the cognitive areas of analysis, evaluation, and creativity, as outlined by Bloom's Taxonomy.

The test will include 40 questions try out, with both subjective (multiple-choice) elements. The questions will be contextualized within the english language education program to ensure their relevance and validity. Examples of question kinds appropriate for different HOTS levels should be provided. Then, the indicator reading teks for test as follows (Riski, 2019).

Table 5. Indicator of Items Test

No	Indicators	Number of Items
1	Main Idea	1, 11, 21, 31
2	Supporting Sentence	2, 12, 22, 32
3	Summarizing Main Point/Conclusion	3, 13, 23, 33
4	Exclude Facts	4, 14, 24, 34
5	Main Idea	5, 15, 25, 35
6	Supporting Sentence	6, 16, 26, 36
7	Summarizing Main Point/Conclusion	7, 17, 27, 37
8	Exclude Facts	8, 18, 28, 38
9	Main Idea	9, 19, 29, 39
10	Supporting Sentence	10, 20, 30, 40

Table 6. Scoring Rubric Items Test

Score	Description
1	The student selects the correct answer, demonstrating accurate understanding of the text and the reasoning behind it.
0	The answer is incorrect or missing, showing a lack of understanding or misinterpretation.

H. Data Analysis Technique

The researcher analyzed the data using the treatment and

post-test results from both the experiment. The goal was to see if implementing collaborative learning helped students develop higher-order thinking skills (HOTS). Normality and homogeneity tests were used to confirm that the data was valid and reliable.

1. Documentation

Documentation, based on Sugiyono (2020) in Pandawangi.S (2021), it is a collection of reports, notes and writing about the event that has done in the form of written text, photo and monument made by individual or institutions. Photography is an integral part of documentation throughout the research. The function of this documentation is to gather information from various resources to support this paper. Forms of documentary evidence might be photographs of learning in action and other examples of evidence to support the study. Furthermore, the documentation also contains the name list or the student attendance of the 6B class Study Program of English Education of Universitas Islam Fatmawati Sukarno Bengkulu and the value list after using collaborative learning.

2. Validity test

Following Donald Ary et al. (2010), validity measures how well an instrument captures what it is designed to assess. If the significance value is < 0.05, the item is considered valid. Each question's score will be correlated with the total score. An

item is valid if r-count > r-table; if r-count ≤ r-table, the item is considered invalid.

To conduct this type of validity, the researcher used 40 multiple-choice items. The test items were validated in a trial undertaken in the same study programme and university of the research site, but in a different class from the samplerope. The trial included a total of 20 students. After the trial the researcher analysed the students' response to determine each item's validity. The data computing out with SPSS ver 30. Results: According to the analysis, 24 items (out of 40) qualified for validity criteria and the interpretation on appendices page 106.

Table 7. Total of Valid Questions

No.	Indicator	Number of Questions
1	Supporting Sentence and Exclude Facts	2, 4, 6
2	Main Idea and Summarizing Main Point/Conclusion	5, 7
3	Supporting Sentence	10
4	Supporting Sentence and Main Idea	12, 19
5	Exclude Facts	14
6	Summaring Main Point/Conclusion and Exclude Facts	17, 18
7	Supporting Sentence and Main Idea	22, 25
8	Exclude Facts and Main Idea	24, 28, 29
9	Summarizing Main Point/Conclusion and Supporting Sentence	27, 30
10	Main Idea and Exclude Facts	31, 34
11	Supporting Sentence	32, 36
12	Main Idea and Supporting Sentence	39, 40

3. Reliability test

Reliability testing is the process of evaluating the consistency of a questionniare in measuring a variable. A measuring instrument that can give consistent results is said to be reliable. Reliability In general, reliability describes the extent to which a questionnaire can be expected to function in a consistent manner as a measurement of a certain variable or construct. Reliability testing can be completed in many ways, including a method called the Alpha coefficient.

According to Ghozali (2009) in Sanaky (2021), dependability is a method for measuring questionnaires that act as indicators of a variable or construct. This is reflected in an rxx value close to 1. Reliability is generally acceptable if ≥ 0.700. If the alpha value = 0.7 or more, it reflects acceptable reliability, and if the alpha value is 0.80 or more, that means that the items are all reliable, and the entire test has high reliability (Sanaky, 2021).

The researcher used 40 multiple-choice test items at this time of reliability test. The other class was used for a trial from a different classroom but belonging to the same course on which the research will be carried out. Subjects The number of participants enrolled in this trial was 20 students. Once the trial was finished, the authors examined the test questions data for reliability. Reliability The reliability coefficient as measured for the test was 0.857. Here, since the value that is permissible to be

considered as reliable is 0.700, it can be seen that the test is highly or strongly reliable in nature.

Table 8. Case Processing Summary

Case Processing Summary			
		N	**%**
Cases	Valid	20	100.0
	Excludeda	0	.0
	Total	20	100.0

Table 9. The Result of Reliability

Realibility Statistics	
Cronbach's Alpha	N of items
.857	40

Based on the table above, it be concluded that the questions with a total of 40 questions that were tasted on a total 20 students are very suitables to be used in the post-test that will be carried out by the researcher because it shows that the results of Cronbach's Alpha reach 0.857. The value of Cronbach's a Alpha might be interpreted as follows, according to Hair et al., (2010) in (Ahdika, 2021).

Table 10. Cronbach's Alpha Level of Reliability

Cronbach's Alpha Score	Level of Reliability
0.0 – 0.20	Less Reliable
>0.20 – 0.40	Rather Reliable
>0.40 – 0.60	Quite Reliable
>0.60 – 0.80	Reliable
>0.80 – 1.00	Very Reliable

4. Descriptive Statisics

Descriptive statistics are statistics that function to describe or describe the object studied through sample or population data as it is,without analyzing and analyzing the data (Prof. Dr.Sugiyono, 2012). The collected data is then described using descriptive statistics, such as mean, median, and standard deviation. This provides an overview of the results obtained. The following describes the descriptive statistical analysis used in this study:

a. Data Analysis of Observation Results

Descriptive statistical analysis is intended to describe the characteristics of the observation results when the treatment is carried out after including: highest score, lowest score, average score, range, median, standard deviation, maximum score, and minimum. The criteria used to determine the category of observation results of class 6B are as follows:

Table 11. Standard Grading Scale

Score Range	Category
27-30	Poor
31-33	Fair
34-36	Sufficient
37-39	Good
40-42	Excellent

b. Data Analysis of Post-Test Results

The Minimum Completeness Criteria (KKM) for students of the English study program as a guide to the results of the research post-test, as in the following table.

Table 12. Passing Standard

Score Interval	Category
85-100	Excellent
75- 84	Good
56-74	Fair
<55	Low

(Source: (Purwanti, Een. 2024)

This test is conducted using SPSS 30.

5. Normality Test

A normality test determines whether the collected data follows a normal distribution, ensuring the statistical assumptions

are met. SPSS was used to conduct this test to check the normality of the post-test data. If the data is normally distributed, parametric statistical tests, such as the T-test, are applicable.

This test is conducted using SPSS 30.

6. T-Test

This study using a one-sample t-test to assess the statistical significance of the result post-test scores of the experimental groups. Testing t-test (hypothesis) based on Minimum Completion Criteria (KKM) using the mean equality test This test identifies whether collaborative learning had a significant effect on students' higher-order thinking skills in reading comprehension. The following criteria were applied for the T-test analysis:

H0 : ≤56 opponent Ha: >56

μ: average post-test result score

- H0: $\mu \leq 56$ (The average student learning outcome is no more than 56)
- Ha: $\mu > 56$ (The average student learning outcome is more than 56)

$$t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$$

Figure 2. Formula of One-Sample Test

H0 is rejected if t count > t table and H0 is accepted if t count ≤ t table where α = 5%. If t count> t table means that the learning outcomes of English students are more than 56 (KKM = 56). By using a significance level of 5% or 0.05 then,

a. If Pvalue < α = 0.05 then reject H0.
b. If Pvalue > α = 0.05 then accept H0.

This test is conducted using SPSS 30.