CHAPTER III

RESEARCH METHODOLOGY

In this chapter, the researcher will explain about the research design, research subjects, data collection techniques and instrumentation as well as data analysis techniques that will be used to conduct the research data analysis techniques that will be used to conduct the research to be carried out. Then, the explanation of this chapter can be seen as follows.

A. Research Design

Research design is known as the main step in the preparation of research methodology in which it talks about the type of research that was be used by observation to carry out future research that was be used by researcher to carry out future research. In general, a research design can be interpreted as a guideline for research which consists of several steps and research models that basically involve a researcher action research model which basically involves a research action to implement it in the field with the aim of obtaining research data field with the aim of obtaining research data.

As said by Baum (2021: 20), a series of plans in an action carried out in research is known as research design. Related to this explanation, then research design is known as a series of plans used in the context of research in which it emphasizes the actions that will be carried out by the researcher and also includes several steps that can be used to carry out the researcher and

also includes several steps that can be used to prepare and apply it in research activities both and apply it in research activities both before, during, and after.

Furthermore, Wyse and Cowan (2017:112) argue that any action taken in a type of research either in planning to do so or even after it has been completed is known as part of the research design completed are known as part of the research design. In simple terms, this means that the research design is known as the plan of action used by the researcher as a working guide to carry out the research and generally has different guidelines for each type.

Meanwhile, the definition of research itself has also been explained by many experts. Awang (2012: 1) defines that an action that is carried out systematically to find answers related to the problems that are systematically in order to find answers related to the problem is called research. The action that is carried out systematically in order to find answers related to the problem is called research. Referring to this statement, research is generally conducted because it is motivated by a problem that requires someone to solve it by taking the role of a researcher in research activities that are generally carried out systematically and scientifically. Furthermore, the results of its implementation will be presented as data that can be used to support and overcome related problems during research activities in the field.

Then in accordance with the title of this research, the researcher intends to use CAR as that will be conducted. Furthermore, the purpose of choosing this research design is used to solve problems related to students'

vocabulary at SMPN 1 Dedai, especially for grade VII students. In addition, researcher was also apply some of the steps contained in the context instructions so that they can be used when researcher conduct CAR with the aim of obtaining research data.

In general, CAR has been implemented by many researcher and teachers in the field of education that is often used to solve problems related to teaching and learning activities. In addition, the explanation of this research design has also been explained by many experts from various points of view. Pelton (2010:5) defines that research design is a method of teaching and learning research that is used as a step to implement learning in the classroom is known as action research. Classroom research is known as action research. In simple terms, this means that action research is known as a method that can be used as an approach in teaching and learning activities that also involve teacher and student participation teachers and students or even between the researcher and the researched.

Meanwhile, according to Creswell (2012: 22), classsromm actions research in research that aims to improve the process of teaching and learning activities in the classroom by utilizing qualitative and quantitative data as the source is known as class by utilizing qualitative and quantitative data as the source is known as the implementation of observation research known as the implementation of action research (action research). Based on this statement, action research can be defined as a method that is basically used by teachers in order to improve the understanding and ability of students' research in

order to improve students' understanding and abilities that are which is lacking. In addition, the use of this research design is generally also based on the use of qualitative and quantitative data that has been collected by the teacher or researcher to find out the problems that occur in the classroom and to determine the appropriate steps to overcome them.

In connection with the explanation above, the researcher concludes that CAR is a type of research that involves the role of teachers and students in an activity in the classroom that is deliberately aroused and discussed research and students in an activity in the classroom that is deliberately raised and aims to have an influence on the teaching and learning process. In addition, this research design is also known as a method that can be used by both teachers and researcher in order to solve problems related to teaching and learning activities and is very suitable for improve students' understanding and ability during the learning process.

B. The Objective of Classroom Action Research

The research design used in this research is CAR. Researcher chose this design because it is in accordance with the teaching and learning process in the classroom to determine how or to see improvements and describe student responses to the use of Puzzle Games in the classroom, so researcher chose the CAR design because CAR fulfills the requirements of this research. CAR is research that is applied directly in the classroom. Action research is a systematic approach to research that enables people to find effective solutions to problems they face in everyday life (Stringer, 2007: 1). CAR can be

interpreted as research conducted by teachers in the classroom to improve their performance as teachers so that student learning outcomes can be improved.

The implementation of CAR in educational area has some specific purposes in which it relates to the teaching and learning activity in the school. PA Sari etc. (2020:518) the purpose of CAR is following:

1. Improve and enhance the quality, content, input, processes educational outcome and learning in the school
2. Help teachers and education personnel overcome the problems of education and learning in class
3. Improve the ability and professional services of teacher and education staff
4. Develop an academic culture in the school environment
5. Further, it is to improve and develop teachers and education personnel
6. Enhance professional collaboration between teacher and education personnel

The purpose of CAR is to encourage the improvement of all participants in the teaching and learning process in the classroom. It can be said that the purpose of using CAR is to improve the process of teaching and learning activities in the classroom. Through the use of CAR, researcher improved two aspects, namely students' vocabulary mastery and also increased students’ participation in learning activities.

Researcher chose this method based on the problems that exist at SMPN 1 Dedai, especially in class VII. This is in line with the research of experts that the purpose of CAR is to determine the quality of educational practices that are improved. To carry out research using the CAR method, there are four stages that must be passed, namely (1) plan, (2) action, (3) observation, (4) reflection. The four stages are elements in the formation of a cycle. This CAR was conducted in a participatory and collaborative manner and was reviewed through collaboration and discussion between teachers and researcher.

This research had one cycle to teach vocabulary to the students in this research. This cycle was conducted in two meetings. The implementation of the puzzle game technique in the classroom consisted of four stages. The four stages are planning, action, observation and the last is reflection. The Kurt Lewin cycle model was used as the CAR design. According to Kurt Lewin (1996) (in Sari, 2011: 20), the basic components for designing CAR consist of four stages, namely; plan, action, observation and reflection. This cycle is carried out not only once, but several times to achieve the expected goals. The design of this research is planning, implementation of actions and research strategies, data collection through observation and reflection of each cycle to evaluate the data. Following the principles of action research, this research consists of four stages, namely: (1) planning, (2) action implementation, (3) observation, and (4) reflection. The principle of this CAR

procedure follows the design proposed by Kurt Lewin, the procedure is as follows:

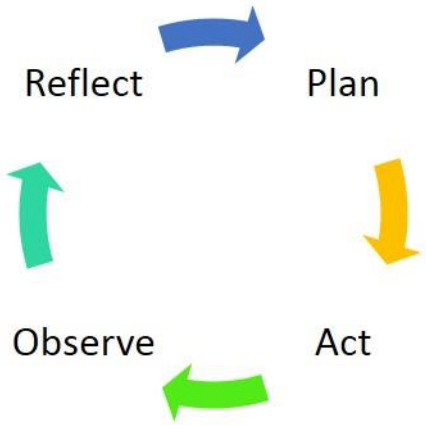

Figure 1 CAR model based on Kurt Lewin

1. Plan (planning)

   Planning here is based on the diagnosis and identification of problems that occur in the classroom. The plan should be flexible enough to accommodate unexpected effects and unseen obstacles. CAR plans should be based on initial reflective observations. The results of initial observations of the processes that occur in the situation to be improved are described in the form of comprehensive field notes that clearly describe the learning process in the situation to be improved or improved. In planning, researcher prepared what would be done in the classroom, prepared strategies during teaching and learning activities, made lesson plans, prepared learning media, and also prepared success

criteria in one cycle. Researcher planned to conduct two cycles in this research.

2. Action

   The action here is the implementation of planning in order to apply appropriate strategies in the classroom. By taking action, the researcher worked together with the teacher in guiding the teaching and learning activities. The researcher was complete one cycles in this research, namely two meetings in this research. In the implementation, the researcher will carry out several activities such as applying the Puzzle Game technique during class, implementing the lesson plan, teaching students the material that has been prepared and also participating in the teaching and learning process.

3. Observation

   The role of observation is to observe all activities carried out in the action stage. The subject of this observation is all student actions in the process of teaching and learning activities. Observation aims to describe everything that has to do with the research topic, find out the difficulties faced by students and see the answers given by students. Observation is also used to collect data needed in research. The role of observation is to observe all activities carried out in the action stage. The subject of this observation is all student actions in the process of teaching and learning activities. Observation aims to describe

everything that has to do with the research topic, find out the difficulties faced by students and see the answers given by students.

4. Reflection

   Reflection means remembering, evaluating and contemplating an action exactly as it has been recorded in the observation. The function of reflection is to understand the real process, problems and obstacles in the strategic action. Reflection is often supported by discussions between researcher and teachers. Through discussion, reflection becomes the basis for improving the plan. Reflection is the process of analysis, interpreting and recognizing all data obtained from observations of the implementation of actions.

   The second cycle plan was developed based on the reflection obtained from the observation results to get better results. The redrafting of the plan consisted of two areas of application, namely fluency in vocabulary and the classroom situation when Puzzle Game was applied to students in the classroom. In the next cycle, the researcher developed a lesson plan consisting of material preparation, learning media, student exercises and everything related to the action. The second cycle took place in two meetings. The second cycle was based on the reflection on the first cycle, so as to make the teaching-learning process through Puzzle Game better than the first cycle.

C. The subject of the research

The subjects of this research involved twenty-four students from seventh grade at SMPN 1 Dedai which consisted of thirteen female students and eleven male and seven female students. The researcher only took seventh grade students as research subjects and obtained data because their understanding of vocabulary is still lacking and they have difficulties to overcome it. Therefore, the researcher intends to help and overcome it by applying puzzle game during the teaching and learning process.

D. Data Collection Technique and Instrumentation

Data collection is known as the next step in conducting research in the field by using certain techniques and supporting instrumentation. In addition data collection is divided into two parts, which consist of the techniques that can be used by researcher and instrumentation as a medium for collecting data.

1. Data Collection Technique

   In general, data collection techniques are known as a series of techniques or ways commonly used by researcher in research activities to explore and obtain information about research data in the field. Then, data collection techniques usually consist of various forms such as interviews, observations, measurement questionnaires, and others where the implementation of each technique also differs from one another is also different from one another.

In the upcoming research, researcher will use three data collection techniques to obtain research data in the field namely observation, interview, and measurement. Furthermore, researcher use observations and interviews to obtain qualitative data, while measurement is used to obtain data that can be used to support the results of this research.

a. Observation

   As maintained by O'Donohue and Ferguson (2003:277), open-ended questions can be used by researcher in interviews activities to obtain data that suits the research needs. In simple terms, the use of open-ended questions in in research activities is basically used to build an atmosphere between the interviewer and interviewee so that between the interviewer and the interviewee to be more relaxed and directed. In addition, it is also used to direct the researcher so that it is easy to understand and interpret the information received from the respondent, so that the researcher can obtain data easily obtain data that is in accordance with the research needs. Therefore, researcher will use the interviews as a technique for obtaining data in the field.

b. Interview

   In general, interviews are known as one of the techniques that are used in various fields that aim to obtain additional information by conducting question and answer activities involving interviewers and interviewees. In research activities, interviews are often used to

obtain research data, the implementation process of which is divided into two which include preparation preparing interview guidelines and conducting question and answer activities to get answers. In addition, this technique usually also uses open-ended questions to obtain data in the field.

According to O'Donohue and Ferguson (2003:277), Open-ended questions can be used by researcher in interview activities to obtain data in accordance with research needs. In simple terms, the use of open-ended questions in research activities is basically used to build an atmosphere between the interviewer and the interviewee to be more relaxed and directed. In addition, it is also used to direct researcher to easily understand and interpret the information received from respondents, so that researcher can easily obtain data in accordance with research needs. Therefore, researcher was use the interviews as a technique for obtaining data in the field.

c. Measurement

Measurement is known as one of the techniques in data collection that can be used by researcher to obtain quantitative data, so that it quantitative data, so that it can also be used as additional information to reinforce and support qualitative explanations in to emphasize and support qualitative explanations in research activities. Referring to Sharma (2018: 156), an action done to conduct tests and process the results into quantitative data is known

as measurement. Related to this statement, it can be concluded that measurement is one of the technique that is often used by researcher in conducting test activities and has become a benchmark for the continuity of the test itself. In simple terms, measurement is a technique or tool that consists of several scales or interval numbers which become criteria and the process for determining its use in test activities is depending on the test taker's answer. In addition, the use of measurement in research activities generally appears in various ` forms such as scoring rubrics or even achievement criteria that are used to determine the results of a test.

d. Documentation

Documentation is also used to collect data, to provide tangible evidence of the research process that has been carried out. According to Kawulich (2005:12), the main consideration in a research is to conduct research in an ethical manner and let the subjects or people know that the purpose of observation is to monitor their activities. Documentation is a type of data that consists of notes, book transcripts, photos, videos, summaries, agendas, and so on. This method is used to find out the condition of teachers and students, school profiles and locations. In this research, researcher used photos and videos as documentation.

2. Instrumentation

Instrumentation in data collection can be interpreted as tools, media or even equipment prepared and used by researcher in order to carry out data collection techniques in the field during research activities. Instrumentation in data collection in general is divided into several forms based on the use of each technique. In this research, researcher will choose several instruments that will be used to obtain data during the research which consists of observation checklists, field notes, interview guidelines, and test.

a. Observation Checklist

The observation checklist is known as one of in the instrument that is often used in observation activities that are formed statements that relate to the process during the research activity and can refer to the researcher or even the researched. Being researched. Turner et al. (2013:90) explain that the sequence of steps that are recorded organized, and marked based on a certain thing to determine progress during research activities is known as an observation checklist known as an observation checklist. In relation to this statement, in the observation checklist is a type of instrumentation consisting of several steps in the form of short statements that emphasize the actions of the researcher or the researched is carried out in accordance with the attached instructions, so that the observer can put a mark on the

appropriate statement. In addition, this instrumentation also displays qualitative data as a result of observation activities.

b. Field Note

Field notes are known as instrumentation that is often used in observation activities in which it contains notes about activities, situations or conditions during research, the continuity of implementation of research, and so on. Referring to the explanation from Leavy (2017: 136), a collection of notes that record data information needed in research activities is known as the term information needed in research activities is known as field notes. In simple terms, field notes are a kind of instrumentation used to record situations in the research field by writing them down on a piece of paper or book and are also used to display the results in the form of qualitative data.

c. Interview Guideline

An interview guide is a tool used in interviewing activities and consists of several questions that have been prepared for the interviewee. The use of interview guidelines in research activities basically has a specific purpose where the guidelines are used to obtain information about the experience and opinions of the interviewees after they have participated in the entire experience and opinions of the interviewees after they have participated in all activities and are used as additional data for qualitative explanations. Furthermore, Witzel as cited in Stumpfegger

(2015: 60) explained that the use of interview guidelines are also useful to be used as data comparison. In simple terms, this means that the use of interview guidelines in research can provide a variety of responses from the interviewees who also come from different perspectives. Therefore, the interviewer an collect the data that has been provided and start comparing it with each other to determine comparing them with each other in order to find out the different development between each interviewee.

d. Student Test

Tests are known as instrumentation in data collection which displays quantitative data that is generally obtained from measurement. In general, tests are formed from several questions either in the form of multiple choice or even essays that require the right answer. Based on Sharma (2020: 109) explains that an instrumentation used to assess a certain aspect of a person is known as a test. In connection with this explanation, tests can be defined as instrumentation, tools, or media used to examine and measure a particular aspect of a person or media used to examine and measure an individual aspect both in the form of understanding, insight knowledge or even the ability to a certain thing and produce an evaluation result.

In this research, researcher will give a test to students with the aim of seeing an increase in student scores in vocabulary mastery. This test aims to obtain quantitative data in the form of student scores. As

recorded by Johnston and Vanderstoep (2006: 122), tests are prepared to determine the level of mastery or improvement of students' abilities in the form of scores. The test given in this research is a vocabulary mastery test. A test is an experiment conducted to find out whether there are certain learning outcomes for students. A test is an encouragement for someone to get a response that can be used as a basis for determining their score. This test contains topics that are in accordance with the content of the seventh grade curriculum.

In this research, the oral test form, where students are asked to arrange the vocabulary in the puzzle that has been written on the board. Before filling in the puzzle, students were asked to pay attention to the clue that had been given by the researcher. Researcher see how students can understand the clues given and can arrange the letters into the puzzle and make a word that they just know.

a) Scoring Rubric and Assessment Indicator

This assessment rubric was developed based on the indicators of students' vocabulary mastery in the related theories used in this research. This assessment rubric was taken from Cameron (2001), the researcher only took three aspects from Cameron's opinion, the three aspects are meaning, spelling and pronunciation, while the grammar aspect was not taken because the researcher in this research emphasized more on the quantity of vocabulary owned by students, namely the number of vocabulary that can be memorized

by students. The researcher emphasized on the quantity of students in mastering vocabulary because the researcher wanted to know the improvement of students' vocabulary mastery after applying the Puzzle Game technique. In this research, the researcher changed the grammatical aspect into the quantity of students' vocabulary mastery. The researcher calculated the students' scores by using the following scoring rubric:

Table 1.1 Scoring rubrics and assessment indicator

Aspect	Score	Description	Actual score
Quantity (30 %)	4	Students were capable to mention between 19 to 24 vocabulary	**X 7,5**
	3	Students were capable to mention between 14 to 19 vocabulary	
	2	Students were capable to mention between 8 to 14 vocabulary	
	1	Students were capable to mention between 1 to 8 vocabulary	
Meaning (30 %)	4	Students were capable to mention the meaning in Indonesian of vocabulary between 19 to 24	**X 7,5**
	3	Students were capable to mention the meaning in Indonesian of vocabulary between 14 to 19	
	2	Students were capable to mention the meaning in Indonesian of vocabulary between 8 to 14	
	1	Students were capable to mention the meaning in Indonesian of vocabulary between 1 to 8	
Spelling (20%)	4	Students were capable to spell the vocabulary between 19 to 24	**X 5**
	3	Students were capable to spell the vocabulary between 14 to 19	
	2	Students were capable to spell the vocabulary between 8 to 14	
	1	Students were capable to spell the vocabulary between 1 to 8	
Pronunciation (20%)	4	Students were capable to pronoun the vocabulary correctly between 19 to 24	**X 5**
	3	Students were capable to pronoun the vocabulary correctly between 14 to 19	
	2	Students were capable to pronoun the vocabulary correctly between 8 to 14	
	1	Students were capable to pronoun the vocabulary correctly between 1 to 8	

This is the formula to calculate the students' score:

$$\textbf{Total score} = (\boldsymbol{A}\ \boldsymbol{X}\ \Omega) + (\boldsymbol{B}\ \boldsymbol{X}\ \Omega) + (\boldsymbol{C}\ \boldsymbol{X}\ \Omega) + (\boldsymbol{D}\ \boldsymbol{X}\ \Omega)$$

A = obtain score from aspect quantity

B = obtain score from aspect meaning

C = obtain score from aspect spelling

D = obtain score from aspect pronunciation

Ω = actual score for each aspect

b) Level of Student's Vocabulary Mastery

After conducting the test, the researcher will determine the level of vocabulary mastery in this school, the level of vocabulary mastery is determined based on the table below:

Table 1.2 Level of Student's Vocabulary Mastery

Criteria	**Score range**
Excellent	80-100
Good	71-79
Fair	61-70
Poor	0-60

The level of students' vocabulary mastery is obtained from the scores obtained by students after the learning process, so that the researcher can determine the level of students' vocabulary in this class. For example, if most students score between 71-79, then it can be said that the students' vocabulary level is good.

Furthermore, to determine the level of success of the implementation of research activities in the field, the researcher will use achievement indicators. As below below:

Table 1.3. Criteria of success in learning process.

No	Criteria of success	Instrumentation
1	70% students get score at least 70 the rest of the students' cloud improve their score.	- Test
2	80% student are activity involved in the learning process and 80% students respond positively to the implementation puzzle game	- Observation sheet - Field note - Camera

e. Video

In this study, researcher used video as a tool to collect data when conducting research. In addition, as evidence to obtain results when using the techniques used by researcher in the classroom.

E. Data Analysis

Data analysis is known as the final step in the research methodology in which the process of analyzing, dividing, displaying, and interpreting research data is discussed as a final result before the researcher display, and interpret the research data as the final result before the researcher draws a conclusion. Data used in this research activities basically divided into two parts, namely qualitative data and quantitative data. Therefore, an explanation of the two data can be seen as follows:

a. Qualitative Data

In analyzing data, there are several stages that must be carried out by researcher. The researcher took the qualitative design suggested by Burns (2010: 104), the qualitative data analysis process consists of five stages:

1) Assembling the Data

Collecting data or assembling data is the first step in data analysis. At this stage, researcher collect all data obtained from observations, tests, interviews, field notes, and documentation. Next, the researcher explores all the data and looks at the questions and starts to find patterns or ideas to answer these questions.

2) Coding the Data

In this step, researcher categorize data in a certain way. Researcher categorize data into two, namely qualitative data and quantitative data, to make it easier to analyze the data that has been collected by researcher. Researcher have grouped data according to the origin of the data source.

3) Comparing the Data

The third step is comparing data. In this step, researcher compared all the data obtained. Researcher compared the data between cycle one and cycle two with pre-observation data. The goal is to see if students' abilities have improved.

4) Building Interpretation

At this stage, researcher try to understand each data collected. Then researcher tried to understand the data from the data categories, coded the data and compared the data. To analyze data the researcher take several times to ask questions, re-understand the data, and develop explanations to conclude research findings.

5) Reporting Research Results

In this final stage, researcher represent the research context, describe the results, and organize the entire research.

b. Quantitative Data

Quantitative data is known as the type of data used in research that usually provides numerical explanations and is also used as supplementary data to support qualitative explanations in research used as additional data to support qualitative explanations in the research report. Edberg (2015: 180) argues that the use of data in research activities that can be calculated in the form of numbers and statistics is known as quantitative data. known as quantitative data. Related to this explanation, quantitative data can be defined as data that is in the form of numbers and can be calculated by using certain formulas both can be calculated using certain formulas both mathematically and statistically.

In general, the data analysis process is also divided into several steps that depend on the point of view of each expert. Based on process to analyze

the data that will come in this research, the researcher will use the data analysis of Miles and Huberman model. Miles and Huberman as cited in Hopkins (2014: 163) state that the steps of analyzing data in research are divided into three steps consisting of data reduction, data presentation, and the process of drawing conclusions and verifying them and verification. Furthermore, an explanation of these steps can be seen as follows:

1) Data Reduction

   Data reduction is known as the first step in data analysis, which involves the researcher's action to select, separate, and organize data and summarizing research data that is considered important and appropriate in research activities. important and appropriate in research activities. In addition, data reduction is also often used for processing the contents of field notes which are considered as data that is still messy. Therefore, referring to the use of this step, it is expected that the data can be organized well and neatly in accordance with the research activities.

2) Data Display

   Data reduction is known as the first step in data analysis, which involves the researcher's action to select, separate, and organize data. which involves the researcher's action to select, separating, sorting, and summarizing research data that is considered important and appropriate in research activities. In addition, data reduction is also

often used to process the contents of field notes which are considered as the data. Therefore, referring to the use of this step, it is expected that the data can be organized well and neatly in accordance with the research activities data is expected to be organized well and neatly in accordance with the needs of the research activities.

3) Drawing Conclusion and Verification

Conclusion drawing and verification is known as the third step. As we know third step in part of data analysis that involves the researcher's action to understand and ascertain whether the data results are in accordance with the real circumstances in the research field and direct the researcher to make conclusions. In this research, researcher will make a conclusion that are generally provisional but can change if evidence is found that supports, proves, and supports the findings. Based on the explanation above, the researcher concluded that steps in data analysis include three steps consisting of data reduction, data presentation, and the process of drawing conclusions and verification. In addition, all of these series of steps are interrelated between one another and can have an influence on the continuity of research activities.