

CHAPTER III

RESEARCH METHODOLOGY

This chapter discusses the method employed in this study with the intention of discovering the answers to the questions stated in Chapter I. The chapter includes research purpose, research design, site and participants of the study, data collection techniques, research procedures, data analysis, and criterion of success.

3.1 Research Design

Research is a process of movement used to gather and analyze information or data, in order to raise our comprehension of a problem or an issue of a phenomenon Creswell(2012); Malik & Hamied (2014), whereas research design refers to the plan used to investigate the question of interest (Marczyk, DeMatteo, & Festinger, 2005). The topics discussed in this research are the use of Quick Response Codes in improving students' vocabulary and the use of it in shaping students' learning involvement, so Classroom Action Research was implemented.

This study was conducted by using classroom action research; this study attempted to explore the use of Quick Response Codes in improving students' English Vocabulary. Furthermore, this research involved a small-scale research project, closely focused on a particular problem or issue, and was carried out by the individual teacher within a school or school district, as pointed out by (Burns, 2010; Alwasilah, 2011; Creswell, 2012). There are some descriptions of action research proposed by several authors. According to Hopkins (2008), action research is an action undertaken by an educator to improve their own or collaborator's teaching, to analysis the ideas of educational theory in practice, or as a way of assessing and employing whole school priorities. In addition (Burns, 2010) also states that 'action research is an element of a broad development that has been going on in education commonly for some time. It is associated with the scheme of 'reflective practice' and 'the teacher as a researcher'. Meanwhile, (Gay, Mills, & Airasian, 2009) maintain that action research is every methodical investigation carried by educators, headmasters, school counselors or other stakeholders in the teaching-learning setting that includes collecting information or data about the technique in which their specific schools operate, the teachers teach and the students study. In addition, (Mills 2012, cited in Creswell, 2012) maintains that Classroom Action Research are orderly practices

conducted by teachers (or another person in an educational setting) to collect information about, and consequently develop, the technique their exact educational setting runs, their teaching and their students learning.

Action research is a 'self-reflective investigation' undertaken by participants in order to enhance the consistency and justice of their own social or educational procedures and the conditions in which these procedures are carried out (Kemmis and McTaggart as cited in Burns, 2010). For the time being the action research in this study followed a model proposed by Kemmis and McTaggart in which each cycle composed of four phases: planning, action, observation, and reflection. Those phases are illustrated in the following diagram in figure 9:

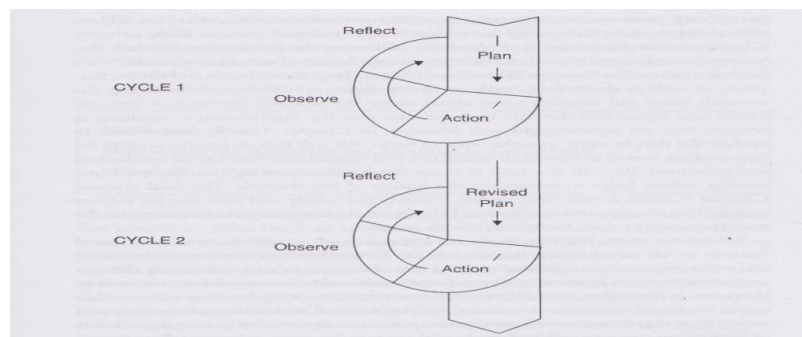


Figure 9 Action Research Phases by Kemmis & Mc. Taggart as cited in Burns (2010)

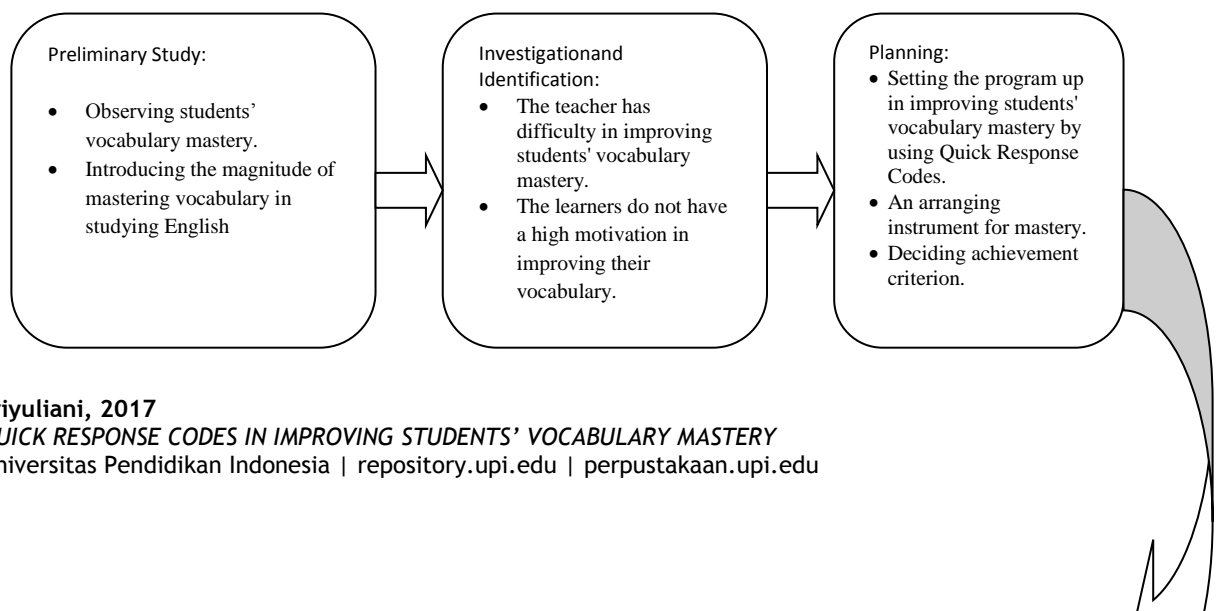
Based on the above model, a Classroom Action Research usually entails four broad stages in a cycle of research.

The first cycle may turn out to be a spiral of the cycle which was persistently done until the action researcher has achieved an acceptable outcome and feels it is the time to stop. They also affirmed that this model is composed of four steps in a spiraling method.

Those are (a) Planning. In this phase the lesson plan, the materials, and the evaluation or assessment instruments are prepared since those components are essential in conducting the action; (b) Acting. When all of those components as stated in the planning phase had been prepared, the activity was continued by implementing the plan. In this study, Quick Response Codes were used by the researcher in improving students' vocabulary. It is used for conducting a game or an activity for the learners which were done by them in groups. In the end of the teaching and learning process, the post-test was given to evaluate or assess the students related to their vocabulary achievement. (c) Observing. In this stage, the outcome of the crucially informed action in the situation in which it appears was examined and observed. During the process, the

observation sheet was also created to describe the teaching and learning process; (d) Reflecting. After undertaking the observation stage, another action (namely reflection) was carried on by the researcher. In this step, the teaching and learning process was reflected and evaluated by the researcher. This step was intended to find out the strengths and the weaknesses of the action. Other design or planning was also arranged in case there was no improvement of students' vocabulary.

The Classroom Action Research in this study focused on the implementation of Quick Response Codes in improving students' vocabulary. The following figure will describe the process of adapting the Classroom Action Research, which is adapted from Kemmis & Mc. Taggart to this research design.



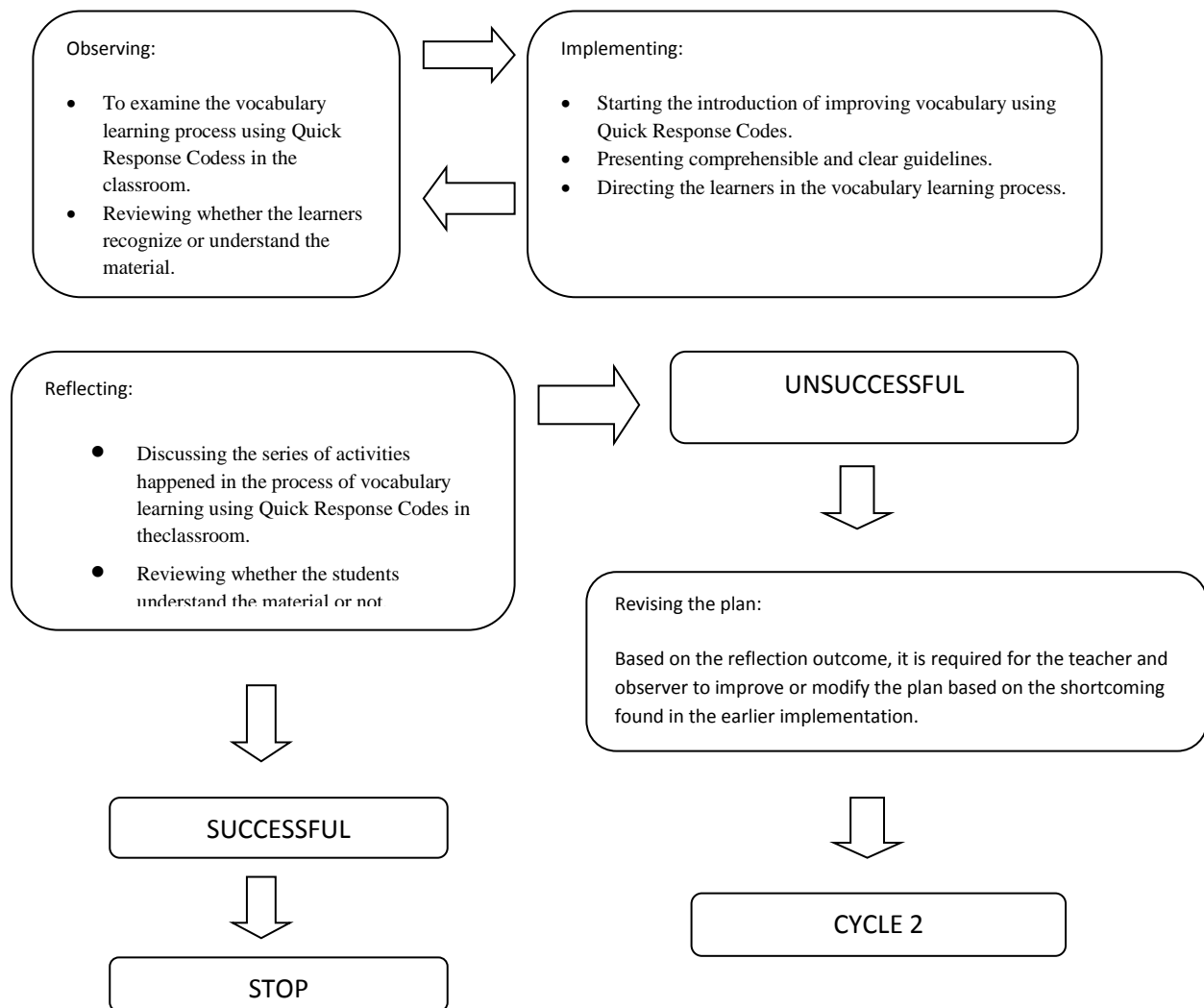


Figure 10 Classroom Action Research Procedure (Adapted from Kemmis and Taggart as cited in Burns, 2010)

As the procedure which is shown in figure 3.2, the steps began with a preliminary study, then the next step was creating a plan of the action based on the results that have been found in the preliminary study. This figure also related with observation sheets preparation, interview guidance, and observation checklist which are useful in gathering the data throughout the process of assessment, and also designing the criteria of success used in this research.

After the step of the planning, action has been done. It was continued by the implementation step of Quick Response Codes in improving students' vocabulary. There are some activities which are concluded to the strategies that have been done by the researcher such as introducing the idea of using Quick Response Codes in improving students' vocabulary, running or conducting the learning activity, and assessing students' performance or work. In the last stage, the reflection was conducted based on the finding data analysis. The reflection was formed to determine whether this classroom action research has to be continued or not. In the next cycle, the revised plan of the prior cycle was implemented. In order to make sure the steps that have been planned were done correctly, the observation was done.

In answering the research questions, two cycles were conducted. In the first cycle, it was started with a planning phase, which contains plans for some detail steps that would be employed in the acting step. After that, the implementation of the planning, which was considered as the acting step, was carried out. The observation phase was conducted by conducting a collaboration between the researcher and an observer, as long as the phase was conducted, the observation was aimed to observe the whole activity which occurred all through the research. Afterward, the effects of the treatment were reflected, described, and evaluated to develop the steps that will be done in the second cycle. The spiral of the cycles was repeated until the acceptable result had been accomplished and stopped until the point in time was sufficient (Kemmis and McTaggart, 1988, as cited in Burns, 2010).

To find out the answers for the research questions, a mix method, quantitative and qualitative design has been applied in the present study. Quantitative data (quantifiable data) and qualitative data (words) were collected and analyzed to find out the answers to the current research problems. Creswell (2010) suggests that mix method designs are procedures for collecting, analyzing, and mixing both quantitative and qualitative data in a single study.

Quantitative method was applied because the data was gathered through some tests and questionnaire instruments that involved numerical data. Meanwhile, Qualitative method was also applied because the next data gathering instruments used were interviews and observation. The data obtained in the interview and the observation sessions were not in numerical data, but in the forms of words. Creswell (2010) affirms

that in qualitative method, the data are in words, and they are obtained from a small number of individuals. Therefore, to present the answers to the current study, the quantitative results followed by deeper exploration of qualitative data were presented in mix method design.

3.2 Research Site and Participants

This study carried out the eleventh year students in a state Vocational High School in Cimahi, West Java, where the researcher works or work-site approach (Alwasilah, 2011). This research site was chosen for the reason that the researcher is one of the English teachers with more than eight years teaching experience within the school. This reason helped in getting an easy access to the research site for the researcher.

The participants of this research were thirty-five Vocational High School students (both male and female) of grade eleven (class XI TKJA). The students were in a classroom regularly reachable for the researcher to obtain the data since they were still active as the third and fourth semester students in the research site as recommended by Van Lier (1988 cited in Lesnawati, 2014). "Classroom research entails the researcher to spend most of the time during the collecting data phase(s) of the project within concrete, regular, ongoing classrooms that have not been specially set up for the function of research".

3.3 Data Collection Techniques

In this study, several instruments were employed in collecting the data, namely classroom observation, interview, test, questionnaire, a criterion of success. The detailed descriptions of the methods are exemplified separately in the following subsections.

3.3.1. Observation

Observation is a focused, organized and selective method of watching and listening to an interaction or phenomenon as it takes place (Kumar, 2011) In line with this, (Marczyk, DeMatteo, & Festinger, 2005) states that observation refers to two different perceptions being aware of the world around us and making careful measurements. The observation which conducted in this study was focused on the real situation, the way the teacher used Quick Response Codes, finding each cycle strengths

and weaknesses in improving students' vocabulary by using Quick Response Codes, and students' response toward the teaching and learning process of procedural text in this Classroom Action Research. These classroom observations were carried out in one of the vocational high schools in Cimahi, West Java. It was carried out at the eleventh grade in Technical Computer and Networking Department for several meetings.

Regarding the data collection, the researcher positioned herself as a teacher. In addition, considering that reflection process was required, the researcher as a teacher invited one of her colleagues as the observer to see the objectivity of the teaching program done by the researcher and to maintain the reliability of the study (Emilia, 2005).

The observer filled an observation checklist which was set from the theory of Instructional Media (Dale, 1969; Sulaiman, 1985; Kinyanjui, 1997; Talabi, 2001; Scanlan, 2003; Adekola, 2008; Nyame-Kwarteng, 2006) ; the theory of Quick Response Codes (Prosser, 1999; Leigh, 2004; Rivers, 2009; Law & So, 2010; Lee, Lee, & Kwon, 2011; Rikala & Kankaanranta, 2012; Sharma, 2013) and the theory of students' involvement (Astin, 1984; Skinner & Belmont, 1993; Schlechty, 1994; Bomia, 1997; Chapman, 2003; Fredrick, Blumenfeld, & Paris, 2004).

The researcher explained the concept especially the important elements of Instructional Media, Quick Response Codes and students' engagement to the observer prior to the preliminary study of the study in order to make sure that she understood how to fill the observation checklist. Moreover, the observer wrote some notes about what was happening during the implementation of Quick Response Codes in improving students' vocabulary. The time schedule of this study is described below:

Table 3 Classroom Action Research Schedule

No	Date	Focus/Topic	Methods/Steps
1.	Sept 20, 2016	Preliminary study: Diagnostic test	Video/Audio Recording
2.	Oct 13, 2016	Pre-test	Audio Recording
3.	Oct 13 – Oct 19,	First Cycle	Video/field notes

	2016	(Planning)	
4.	Oct 27, 2016	First Cycle (Acting)	Video/field notes
5.	Nov 3, 2016	Second Cycle (Acting)	Video/field notes
6.	Nov 24, 2016	Interview	Audio Recording
7.	Nov 17, 2016	Administering a questionnaire	Audio Recording

In this regard, students' response to teaching and learning process can be observed through the classroom observation sheet. The observation sheet enriches data analysis since it is created to comprehend the context of the situation taken place as discussed by Cohen, Mannion, & Morrison (2005); Burns (2010); Alwasilah (2011); Creswell (2012). Besides, to support the credibility of the data gathered from this technique, each session of the observation was videotaped, and the tapes were transcribed. These observations were conducted in the classroom for each cycle. Regarding to the videotaping activity to record an interaction in teaching and learning activity, Kumar (2011) stated that the benefit of it is that observers can review a number of times before interpreting an interaction or sketching any conclusion from it, and also invites other professionals to view the interaction in order to come at more objective assumption.

In the observation sheet, a note column of the observer (in order to conclude the whole learning process), and a reflection column in which the observer gave some notes toward the weakness of the learning process was enclosed. These commentaries would be discussed by the teacher and the observer so that some reflection would be constructed. The reflection was developed into the form for the next cycle so that the next cycle could be expected to run better.

3.3.2. Interview

The second data collection technique used in this study was an interview. Semi structured interview was used to find out the accuracy of the reaction that researchers has

gained through the observation. The series of questions were designed to elicit a specific answer from a respondent, and then the information acquired was compared and contrasted (Fraenkel & Wallen, 1993).

In this study, the observer and the students were interviewed to find out their point of view regarding the use of Quick Response Codes in improving students' vocabulary and shaping students' involvement in the teaching and learning process.

The interview employed in this study was a semi-structured interview. In this kind of interview, the interviewer has a broad idea of the information he/she wants to collect, without giving a list of predetermined questions (Nunan, 1992). There were ten basic questions that were asked to the interviewee after the process of each cycle. The basic questions have been determined before, and those questions were followed up by other questions, depending on interviewee responses.

3.3.3 Tests

Two kinds of tests were given in each cycle, namely pre-test and post-test. The pre-test was given in Cycle 1 before the teaching process began, while the post-test was carried out at the end of every cycle from Cycle 1 to Cycle 2. The vocabulary tests were given to the students to find out their vocabulary mastery. In order to grasp the progress of students' vocabulary achievement, the pre-test score and the post-test score were compared. By comparing the result of students' results test, it was expected that it could provide a comprehensible description whether or not the use of Quick Response Codes can facilitate the students in improving their vocabulary.

3.3.4 Questionnaire

The fourth data collection technique was a questionnaire. As discussed by (Malik & Hamied, 2014), a questionnaire is a written collection of self-report questions to be responded by a specially chosen group of research participants. Through a questionnaire, the researcher was allowed to accumulate large amounts of data. There are many advantages of using the questionnaire in this study. According to Kumar (2011), as cited in Firdaus (2016), the advantages of using questionnaires is that they are less expensive, and that it presents better secrecy. It is less expensive because we do not have to interview every respondent, and it also saves time for the financial and human resource.

The use of a questionnaire consequently is also quite convenient and economical (Kumar, 2011). Furthermore, due to the occurrence of direct contact between respondents and researchers, this method offer greater confidentiality.

This questionnaire was administered after finishing the second Cycle on November 2016. Some explanations related to the points of the questionnaire were explained to the students before the researcher administered it.

In this research, the type of questionnaire used was structured questionnaire as suggested by Cohen, Manion, & Morrison (2007); Fraenkel, Wallen, & Hyun, (2012) with yes/no questions. As a measurement toward the learners, the attitude scale was applied.

The reason for choosing the structured questionnaire was because it was easier to be coded based on the students' frequency of answers. The following are the stages that the researcher used in handing out the questionnaire:

1. Simplifying the common reasons of the questionnaire, then interpreting it into detailed purposes.
2. Constructing the questions that enclosed the purposes of the study.
3. Administering the questionnaire to the learners.
4. Coding the questionnaire.
5. Analyzing and generalizing the data.

Table 4 Categories of Questionnaire

No.	Categories	Item Numbers	Total
1	Students' interest in	(1,2,3,4,6,)	5

	using Quick Response Codes (Behavioral Components)		
2	Students' opinion on the use of Quick Response Codes in improving their vocabulary. (Cognitive Components)	(5,8,9)	3
3	Students' response to the use of Quick Response Codes in improving their vocabulary (Affective Components)	(7,10,11)	3
	Total		11
Modified from Kementrian Pendidikan dan kebudayaan (2013); Rikala et al., 2014)			

3.4 Data Analysis

This section displays the data analysis of this research. The data analysis for this qualitative study basically consists of preparing and organizing the data for analysis, then reducing the data into themes through a process of coding and condensing the code, and finally representing the data in figures, tables or discussion (Cresswell, 2009). Data analysis in this study were conducted over the course of the teaching cycles, and after the teaching cycles. Meanwhile, the ongoing analysis was conducted for data that were collected using observation sheets and field notes of classroom observations, and the document artifacts provided valuable material for evaluation and revision of the Classroom Action Research as suggested by Burns (2010); Alwasilah (2011); Fraenkel, Wallen, & Hyun (2012).

There are two methods of displaying the data, which are based on data instruments and research questions as discussed by Creswell (2012); Fraenkel, Wallen, & Hyun (2012). In this study, the data based on the instruments were presented.

The following subsections explain the procedure in analyzing the data:

1) Analyzing students' pre-test and post-test

Test data acquired in this study are pre-test, post-test 1 and post-test 2. In order to find out the improvement of students' vocabulary accomplishment, the pre-test score and the post-test score were compared. Educationally speaking, it is compulsory to test the normality of the data before comparing the results. It is intended to investigate whether the data spread or stretched from normal data. Normality test was carried out by means of Kolmogorov-Smirnov technique, with a 5% signification level in the SPSS 22.0 version.

As soon as both of the data were spread out normally, then the data processing continued to pair t-test. On the other hand, when the data were not normally distributed, the data processing can be continued by using a non-parametric statistic, for example, Wilcoxon test.

The contrasting mean test was conducted in order to decide whether both test results have the same mean score or not. By doing so, it can be acquired a clear description whether the use of Quick Response Codes can improve students' vocabulary.

2) Analyzing observation sheet

The data gathered from observation were focused on the teaching and learning process, especially on observing whether the learners could enrich their vocabulary in the learning process, and how they reacted to their teacher throughout the learning process. The data from observation field notes were directly analyzed. However, those that came from video recording were first transcribed. Then they were organized, coded, categorized, synthesized, and interpreted based on the themes and codes from several theories presented in chapter two. Regarding Instructional Media (Dale, 1969; Sulaiman, 1985; Kinyanjui, 1997; Talabi, 2001; Scanlan, 2003; Adekola, 2008; Nyame-Kwarteng, 2006); the theory of Quick Response Codes (Prosser, 1999; Leigh, 2004; Rivers, 2009; Law & So, 2010; Lee, Lee, & Kwon, 2011; Rikala & Kankaanrata, 2012; Sharma, 2013) and the theory of students' engagement (Astin, 1984; Skinner & Belmont, 1993; Schlechty, 1994; Bomia, 1997; Chapman, 2003; Fredrick, Blumenfeld, & Paris, 2004).

3) Analyzing the interview data

The data collected from recorded interviews were analyzed in phases to obtain the key topics that appear. The first step was to transcribe the recording. During the transcription step, the observer' name was replaced with a pseudonym. Then, categorization was conducted through reading and listening to the data several times to obtain the key categories.

The interview was categorized based on the central themes to answer the research questions. Those themes would lead into a description of observer's opinion related to the teaching and learning process in the classroom. The interpretation of the interview data will be presented in chapter four.

4) Analyzing the questionnaire data

The questionnaire which employed in this study was intended to detect students' responses, attitude, and also their motivation. Score 1 was given if the students preferred "yes" as the answer, and score 2 was given to them if the answer was "no".

The mean score of each expression is reached from score total divided by the total of the students. It uses criteria to confer with the following scores:

Table 5 Criteria for questionnaire data, adapted from Ari Kunto (1998)

Very positive	76 % - 100 %
Positive	56 % - 75 %
Negative	40 % - 55 %
Very Negative	Less than 40 %

3.5 Criterion of Success

Classroom Action Research (CAR) is stated successful if it can pass the criteria which have been predetermined, and fail if it cannot go beyond the standard which has been defined. In this study, the treatment would be considered successful if the students'

test scores in the vocabulary test are improving significant at least 80% of the students respond positively toward the use of Quick Response Codes in improving their vocabulary and the learning activities in each cycle show students' engagement. The engagement criterion which becomes the focus of this study was the cognitive engagement. This engagement is shown by their psychological venture in their attempt in studying, comprehending, or mastering the knowledge, proficiency, or expertise that academic work is planned to elevate.

If the criterions of success are achieved, it means that the next action of the Classroom Action Research (CAR) would be stopped, but if this condition has not been achieved yet, the alternative action would be conducted in the next cycle.

In the process of collecting the data in the preliminary research, there were several techniques that were conducted by the researcher such as interviewing the students, observing their learning activities in the teaching – learning situation, and giving pre-test to them.

3.6 Action Hypothesis

1. The use of Quick Response Codes can increase students' vocabulary mastery;
2. The use of Quick Response Codes can shape the students' learning engagement positively.

From the aforementioned explanation, it can be concluded that vocabulary is a component of language and number of words used by a person, class, profession, etc. In addition, it is also known that vocabulary always comes up in the communication of each side of life such as in trade, education, and business. Vocabulary is supposed to be studied when people are learning a language. As a matter of fact, a good mastery of vocabulary is important for anyone who studies a language (Lewis & Hill, 1990).

Teaching English to a secondary school in Indonesia is closely related to a target that has to be achieved by the learners so that they can accomplish a functional level to communicate orally and in writing to solve daily problems. According to the 2013 Curriculum, the teaching of vocabulary should be integrated into the teaching of the four language skills.

This study would try to reveal the efficiency of using Quick Response Codes in teaching vocabulary. For this reason, as an instructional media, Quick Response Codes was considered to be suitable for improving students' minimum level of mastery learning (MMC) on vocabulary mastery. It was also considered to be capable of enhancing the students' learning engagement.

3.7 Description of Preliminary Research

A preliminary study was conducted on Thursday, the 20th of September 2016 starting at 06.45 a.m., and finished at 08.10 a.m. This preliminary study was intended to reveal the factual situation of the problems faced by the students in improving their vocabulary.

This preliminary study was conducted before the Classroom Action Research was carried out. It was conducted to find out the difficulties that the students' have in improving their vocabulary and in this stage the researcher started selecting, sorting and organizing information (Stringer, Christensen, & Baldwin, 2010).

A preliminary research was carried out before conducting the Classroom Action Research. It was conducted in order to discover students' difficulty in improving their vocabulary before using instructional media such as Quick Response Codes to identify the students' responses to the lesson, including their difficulty in learning English.

The preliminary research showed a problem exists especially in the aspect of vocabulary learning. From the pre- observation it was found that the students were not totally participate in the learning process, and they did not show the engagement especially in the vocabulary learning. In addition, the result of the pre-interview also showed that they were bored with the learning technique, method, and learning media. As the last source in order capture students' vocabulary mastery, a pre-test was administered and it was found that their scores were insufficient.

3.7.1 The Result of Pre-Interview

The interview which was conducted in the preliminary study was an unstructured interview. Some questions were asked to the students and also to the observer. The list of questions which had been asked to the observer were classified into three types, i.e. The

general condition of the classroom, the teaching and learning process especially in vocabulary learning, and the problems faced by the students in mastering vocabulary.

The first category which was discussed related to the general condition in the classroom, specifically in improving students' vocabulary mastery. The process of teaching and learning was held in three stages since there were pre-activities, while activities and post-activities. Those steps are repeatedly conducted in each teaching-learning activity. One of them is teaching the vocabulary in a classical way without any sophisticated instructional media. The students were given an opportunity to know and observe some vocabularies through some pictures and in fact, they easily forget what they have seen and known because the vocabularies were never recalled for the rest of the time.

Meanwhile, the second category related to the strategy that used in the classroom in teaching vocabulary, some pictures or video related to the vocabulary learning were shown in the classroom, then the students were asked to open up their dictionary to find out the meaning of new vocabularies. Based on the interview, the students were bored with the strategy, and it became the main reason for the researcher to implement Quick Response Codes as an instructional media in vocabulary teaching.

In the third category, the researcher felt that in developing their proficiency in English, they have to build up their vocabulary. Without sufficient vocabulary, they will face difficulty in improving their English skills such as listening, speaking, reading, and writing. Through this preliminary study, it was also found that most of them have some problems in each skill, and they cannot achieve the best result in learning English because of their shortage of vocabulary. In line with this argument, it can also be stated that vocabulary is the main issue in language, which is why a particular or a special attention should be conducted toward this aspect. Related to this, based on researcher's experience as long as teaching this class, it was revealed that without vocabulary knowledge the students face many difficulties in learning the language. Whereas they have to achieve the Minimum Mastery Criterion (MMC) in two aspects such as cognitive and psychomotor aspects as stated in 2013 Curriculum therefore, they really need to build up their skill since vocabulary is a crucial thing for a language.

3.7.2 The Result of Pre-observation

From the pre-observation, most of the students were bored of the conventional way of teaching vocabulary (such as presenting new vocabularies from the students' book and asking them to memorize it) is always employed to them. During the class, some of them were talking to their friends when the vocabulary learning was conducted. In addition, related to the vocabulary teaching, it was found that the students need to be helped by applying a certain instructional media to develop their vocabulary knowledge.

3.7.3 The Result of Pre-Test

The pre-test was conducted before Classroom Action Research (CAR) to discover the learners' real competence and difficulty in vocabulary. In this test, they were given a test in multiple choice form related to their competence in English vocabulary and their understanding of procedural texts. The test consisted of 25 items in the form of multiple choice. This pre-test was conducted on Thursday, the 13th of October 2016. The time allocated for the learners to complete the test was 30 minutes. Afterward, the acquired data from the pre-test was analyzed by using SPSS 22. The result of the pre-test was presented in table 3.6

Table 6 Pre-test Result

N	Valid	35	35
	Missing	0	0
Mean			44.66
Std. Error of Mean			2.606
Median			44.00
Mode			28 ^a
Std. Deviation			15.418
Variance			237.703
Range			68
Minimum			16
Maximum			84
Sum			1563

Table 3.6 displays the number of data (N) has a total of 35 students with the maximum score of 84, with an average value of 44.66.

Based on the result of the pre-test above, it can be assumed that there was only one student who passed the MMC (Minimum Mastery Criterion) and most of them had scores under 75. It means that 99% of the students' vocabulary mastery was still low.

After conducting the interview, observation, and pre-test, it can be concluded that: 1) students' mastery of vocabulary was low; 2) Students had some problems in improving their vocabulary; 3) Students were bored with the learning technique and also the instructional media. The information related to students' problem in improving vocabulary came from the rising indicators and some factors during their learning activities which were gathered through several ways such as interview, observation, and pre-test.