CHAPTER III
RESEARCH METHOD

This chapter provides detailed description of the research methodology used to answer the formulated research questions. It begins with the design of research, followed by the research site and participants, the research instruments, and the steps of collecting and analyzing data.

3.1   Research design

The present study is aimed at finding out the role of the Jigsaw with crossword-puzzle implementation in teaching accounting vocabulary. Specifically, the study attempts to find out both the effectiveness and the process of how the jigsaw with crossword-puzzle technique supports the students' accounting vocabulary. Based on the objectives, the study was conducted under the frame of a mixed-method design which embraces both quantitative and qualitative procedure of investigation. It is in line with Creswell (2009) who states that a mixed-method comprises qualitative and quantitative characteristics to assess the outcomes of the collected data. The two-different data are expected to provide more comprehensive information about the phenomenon being investigated (Creswell, 2009; Malik & Hamied, 2016). The objectives of the study require both qualitative and numerical data, therefore the aforesaid design was selected. As a note, this research is also a practitioner research, which the researcher takes two roles both as a researcher and teacher (Menter et al, 2011).

As stated above, the study was conducted using mixed-method design in which both quantitative and qualitative methods were utilized. In regard to the quantitative method, the study used a quasi-experimental design in the form of nonequivalent control group (Creswell, 2009; Menter et al, 2011; Nunan, 1992). The design is marked by the quantitative enquiry in which the impact of the intervention is determined by comparing the results before (pre-test) and after (post-test) the treatment. Moreover, in such a design, there are two groups of participants namely control and experimental groups (Menter et al, 2011). They are usually

given different treatments, but they receive the same pre-test and post-test instruments. Meanwhile, in regard to the qualitative method, the study employed several instruments such as questionnaire, interview, and observation. Those three instruments were used to figure out the students' attitudes and investigated how the Jigsaw with crossword-puzzle technique facilitates the students in increasing their accounting vocabulary mastery.

3.2   Research site and participants

The study was conducted at one of the vocational high schools in Majalengka district in West Java. The site was not randomly selected by the researcher. In fact, the site was chosen for several reasons. First, based on the preliminary observation done by the researcher in the research site, the students often find difficulty in understanding the accounting vocabulary. It is also supported by the informal conversations done by the researchers and some students in which it reveals that the students felt confused when reading accounting articles, journals or economy news. Besides, it is confirmed by the two accounting teachers who stated that their students did not master the accounting terminology that commonly appears in the accounting field.

Second, the chosen school applied an accounting application, well-known as MYOB (https://www.quora.com/What-does-MYOB-in-accounting-mean) which implicitly requires its users to have mastery in accounting vocabulary. This application is displayed in English, involving many accounting vocabularies and accounting terminologies. However, these students did not understand these vocabularies and have difficulty in writing them. Therefore, they needed longer time just to find out the meaning of the vocabularies or to figure out how to write these vocabularies. Last but not least, the school was demanded by some companies, which where students conducted training or practical working, require students to mastery the accounting vocabulary, at least they are familiar with accounting terminology and know how to write the appropriate vocabulary of accounting register.

In regard to the participants, the study randomly selected two classes from the second grade. It was done to avoid the subjectivity and bias of the research. Thus, the forty-nine students were selected and grouped into two classes namely control class (24 participants) and experimental class (25 participants). The participants were all EFL students with age ranging from sixteen to eighteen. They came from the sub-urban area where English was hardly practiced in their daily life. The exposure to English, thus, only happened in the classroom that took only 2 hours per week. Furthermore, the participants came from the lower to the middle economic level. It means that they have lack of learning budget and facility such as a supplement of textbooks/e-books and attending English course. As they come from the same background, their English ability is also almost in the same level.

3.3   Data collection techniques

In collecting the data, the study employed quantitative and qualitative techniques. By quantitative, the data were collected by using pretest and posttest which were employed to find out the effectiveness of the jigsaw with crossword-puzzle game application. Meanwhile, by qualitative technique, the data were obtained by using the observation, the semi-structured interview, and the questionnaire. These instruments were utilized to investigate the students' attitude toward the implementation of the jigsaw with crossword-puzzle game. The explanation of each technique is provided in the following sections.

3.3.1   Quantitative

The design of quantitative method used in the study was the quasi-experimental design in the form of nonequivalent control group (Creswell, 2009; Menter et al, 2011; Nunan, 1992; Malik & Hamied, 2016). Hence, the study employed both pretest and posttest. The pretest was carried out before the treatments, while the post-test was conducted after the treatments (Menter et al, 2011). The design of the study was illustrated in the following pattern.

<div style="text-align:center">

Experimental group O_1 **X** O_2

Control group O_3 O_4

</div>

Explanation:

O_1 = pre-test of the experiment group

O_2 = post-test of the experiment group

X = the four times treatments (teaching using jigsaw with crossword-puzzle game)

O_3 = pre-test of the control group

O_4 = post-test of the control group

The study has two variables: independent and dependent variables. They are clarified as follow:

1) **Independent Variable**

The independent variable of this study is the implementation of Jigsaw with crossword-puzzle game. This variable is what affects the dependent variable.

2) **Dependent Variable**

The dependent variable of this study is the improvement of the students' accounting vocabulary mastery. The accounting vocabulary mastery is examined both from the process and the outcomes (the students' achievement scores and attitudes).

Furthermore, the procedures of manipulated treatments (Independent variable) of the teaching using jigsaw with crossword-puzzle game are explained as follow.

3.3.1.1 The tests (Pre-test and post-test)

The pre-test and post-test were given to the participants both in control or experimental class. The pre-test was given before the teaching implementation, while the post-test was given after the teaching implementation. The questions in pretest and posttest were the same. They were multiple choices in format and they

consist of twenty questions respectively as shown in the appendix 5. The tests also have similar time allotment: 45 minutes each. All questions in these two tests have passed the validity and reliability test as written in the subchapter 3.4.

3.3.1.2 The treatments (Independent variable)

a) Teaching Materials

The materials given in both control and experimental class were the same. The materials were sets of accounting register lists that consist of vocabulary of accounting register taken from the accounting textbook and accounting/economy journals/literatures (see appendix 7). Furthermore, an additional teaching tool was involved in the experimental class. It was the crossword-puzzle teaching tool as independent variables. It was created by the researcher following the step of "the teacher corner", crossword-puzzle game maker application site available at: <https://worksheets.theteacherscorner.net/make-your-own/crossword/>. This site was easy to be accessed and its features were very simple. The site also enable the user to print, share and copy the result of crossword-puzzle worksheet.

b) Teaching Procedures

This study conducted two different ways of teaching. The control group was taught by using conventional method (individual learning) while the experimental group was given the treatment that was the crossword-puzzle game. Further explanation of the teaching procedure could be seen in the subchapter 2.8 in the chapter two) and the lesson plan in the appendix 1. The following table presents the schedule of teaching implementations in the study.

Table 3.1

The schedule of pretest-posttest and teaching implementation

No	Date	Topic	Classroom	Manipulated treatment (Independent variable)
1	2nd Aug 2017	Pretest	Control	-
			Experimental	-
2	4th Aug 2017	Vocabulary 1 (Accounting Register 1)	Control	Conventional (Individual learning)

				Experimental	Jigsaw with crosword-puzzle
3	8th Aug 2017	Vocabulary 2 (Accounting Register 2)	Control	Conventional (Individual learning)
			Experimental	Jigsaw with crosword-puzzle
4	10th Aug 2017	Vocabulary 3 (Accounting Register 3)	Control	Conventional (Individual learning)
			Experimental	Jigsaw with crosword-puzzle (Internet project based)
5	15th Aug 2017	Vocabulary 4 (Accounting Register 4)	Control	Conventional (Individual learning)
			Experimental	Jigsaw with crosword-puzzle (Internet project based)
6	18th Aug 2017	Vocabulary review (Accounting Register review) Posttest	Control	-
			Experimental	-

In addition, since this study uses a quantitative method, declaring the hypotheses are needed to evaluate data analysis. In this case, the hypotheses are specifically formulated as follows:

(1) The null hypothesis (Ho): the Jigsaw with crossword-puzzle game is not an effective medium to increase the accounting register mastery of the students in an accounting program at West Java.

(2) The alternative hypothesis (Ha): the Jigsaw with crossword-puzzle game is an effective medium to increase the accounting register mastery of the students in an accounting program at West Java.

3.3.2 Qualitative

This part elaborates the qualitative procedure done in the study. The study utilized questionnaire, interview and observation. The following section provides explanation of the instruments.

3.3.2.1 Questionnaire

The first instrument used as qualitative method was questionnaire. The questionnaire was designed to investigate the students' attitudes toward the teaching implementation given in the experimental class. The questionnaire was used as it enables the researcher to capture the real situation of students' affecive, behavioral, and cognitive aspects. The questionnaire was administered in form of

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closed-ended format and used Likert scale ranging from"strongly agree"=5, "agree"=4, "neutral"=3, "dissagree"=2 to "strongly dissagree"=1.

The questionnaire consists of fourteen items divided into three major parts. (a) *Affective* is the emotional or feeling segment of attitude. It is related to the statement which affects another person. It deals with feelings or emotions that are brought to the surface about something, such as fear, hate or happy (Ostrom, 1969). The first part is affective which consists of five questions and asks about the students' feeling about the use of the technique in teaching accounting vocabulary. Thus, the questions deal with whether the technique motivate them, interest them, make them happy and etc. (b) *Cognitive* of attitude refers to the beliefs, thoughts, and attributes that we would associate with an object. It refers that part of attitude which is related in general knowledge of person (Ostrom, 1969). The third part is cognitive which is projected to investigate the students' belief toward the implementation of the technique. And (c) *behavioral*, it is a person's tendencies to behave in a particular way toward an object. It also refers to the part of attitude which reflects the intention of a person in short run or long run, therefore attitude has not changed but behavior could be modified (Ostrom, 1969). The second part of the questionnaire is behaviour which consists of five questions. This part explores the students' behavioural tendencies in learning as the result of using the given treatment. All items in the questionnaire were written in Indonesian and only delivered to the experimental class after the four times experiments. The questionnaire items could be seen at appendix 6.

3.3.2.2 Interview

The second instrument used as qualitative method was interview. The interview was used to investigate the students' attitudes and responses toward the implementation of jigsaw with crossword-puzzle game in teaching vocabulary of accounting register. The interview was done using semi-structured format. This type of interview allows the researcher to give questions that may elicit specific answers from interviewees. It also allows the researcher to add follow up questions based on the interviewees' responses.

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The interview was conducted to six participants who were the representatives of high, medium, and low achieving group of students in the experimental group. They were asked ten basic questions related to 1) perceptions on the learning activity/experience and 2) attitudes toward the method. For the purpose of clarity, the interviews were conducted in Indonesian and even *Sundanese*.

3.3.2.3 Observation

The third instrument used as qualitative method was classroom observation. The observation was carried out to find out how jigsaw with crossword-puzzle game supports the increasing of students' accounting vocabulary mastery and how the students engage in the activities under the jigsaw with crossword-puzzle game platform. The categorization was based on the theories presented in chapter two, therefore, the observation focused on the basic elements of the cooperative learning that are stated in number 1 until 8 (Johnson & Johnson 1984; Kagan 2009; Slavin 1995). And the elements of the crossword-puzzle were stated in 9 until 20 (Orawiwatnakul 2013). In addition, the observation used in this study was adapted from Gustary (2016) and Orawiwatnakul (2013) that were presented as follows:

Table 3.2
The observation sheet

Element of jigsaw (Cooperative learning)	Yes	No	Notes
1) *Positive Interdependence:* Helping and encouraging each other - Do the students responsible for learning the assigned materials/projects?			
2) *Individual accountability:* Everyone participating/ no letting others do all the work/each student is accountable for his/her individual contribution and learning. - Do the students have the same accountability for learning the assigned materials/projects?			
3) *Group processing:* Giving students time and procedures to analyse how well groups are functioning			

- Does each group share with teammates the problems/conflicts/misunderstanding in their group and how do they solve them in order to make the projects?

4) *Small-group and interpersonal skill:*
   - Do group members actively discussing to each during group discussions to increase their understanding?

5) *Face-to-face interaction:* Students get involved in promoting each other's learning
   - Do group members explain the materials?

6) How do the elements of Jigsaw with crossword-puzzle game help students to develop the students' accounting vocabulary mastery?

7) How do students' mastery of accounting vocabulary develop while they collaborate in completing the tasks/projects in the jigsaw with crossword-puzzle game implementation?

8) Do all students have the same chance in discussing, asking, explaining, answering the assigned tasks/projects?

Elements of Crossword-puzzle	Yes	No	Notes
9) Authentic			
10) Constructs students-centered			
11) Creates an interesting and enjoyable atmosphere			
12) Reduces anxiety			
13) Motivating			
14) Encouraging			

Elements of Crossword-puzzle	Yes	No	Notes
15) Gives a retention			
16) Constructs a challenging atmosphere			
17) Constructs a competitive atmosphere			
18) Constructs a cooperative atmosphere			
19) Helps a long-term memorizing			
20) Facilitates an effective learning (in terms of increasing vocabulary of accounting register comprehension)			

In conclusion, to collect the qualitative data, the study utilized three different instruments. The observations were conducted four times, meanwhile interview and questionnaire were conducted after four time treatments. The schedule for collecting the data this instrument was summarized in the following table.

Table 3.3

The schedule of classroom observation, questionnaire and interview

No	Date	Activity/Teaching	Method
1	4th Aug 2017	Accounting vocabulary 1	Observation checklist/Field notes
2	8th Aug 2017	Accounting vocabulary 2	Observation checklist/Field notes
3	10th Aug 2017	Accounting vocabulary 3	Observation checklist/Field notes
4	15th Aug 2017	Accounting vocabulary 4	Observation checklist/Field notes
5	2nd Aug 2017	Questionnaire	Worksheet
6	2nd Aug 2017	Interview	Recording

3.4 Validity and reliability

This subchapter is divided into two points. They are 1) testing validity and reliability of the quantitative test instrument, and 2) testing validity and reliability of qualitative instruments. The explanations for these two parts are presented in the following sections.

3.4.1 Validity and reliability of the test instrument

The validity and reliability of the pre-test and post-test were tested on April 2017. To determine the level of the validity, the correlation coefficient from Hatch and Farhady (1982) was used. It is presented in the following table.

Table 3.4
The level of validity

Range	Classification
$0.91 \leq r_{xy} \leq 1.00$	very high validity
$0.71 \leq r_{xy} < 0.90$	high validity
$0.41 \leq r_{xy} < 0.70$	medium validity
$0.21 \leq r_{xy} < 0.40$	low validity
$0.00 \leq r_{xy} < 0.20$	very low validity
$r_{xy} < 0.00$	Invalid

Table 3.4 above indicates the classification of correlation coefficient which can be used to locate the obtained value. The obtained result value(s) needs to be

correlated with this classification in order to determine the next step of the verified instrument. If verified instrument(s) is located in a range in between $0.00 \leq r_{xy} < 0.20$; it indicates that the instrument(s) is not valid and need to be revised. Meanwhile, if verified instrument(s) is located in a range in between $0.21 \leq r_{xy} < 01.00$; it indicates that the instrument(s) is valid and can be used to collect data. Thus, the validity results of each item were written in the table below:

Table 3.5
The validity of the test instrument

Item of instrument	r	Validity degree	Result
1	0,5	Medium	Valid
2	0,5	Medium	Valid
3	0,6	Medium	Valid
4	0,1	Very Low*	Invalid
5	0,5	Medium	Valid
6	0,5	Medium	Valid
7	0,7	Medium	Valid
8	0,7	Medium	Valid
9	0,3	Low	Valid
10	0,8	High	Valid
11	0,5	Medium	Valid
12	0,4	Low	Valid
13	0,5	Medium	Valid
14	0,4	Low	Valid
15	0,1	Very low*	Invalid
16	0,5	Medium	Valid
17	0,4	Low	Valid
18	0,4	Low	Valid
19	0,4	Low	Valid
20	0,4	Low	Valid

(* need to be revised)

From the table above, two items -number 4 & 15- have very low levels of validity. Hence, revision was done until all items achieved at least low level of validity. At the end of the revision stage, all items were valid and these items were ready to be applied for obtaining the data.

Meanwhile, calculating the reliability was also done on April 2017. To determine the reliability of the instrument, the *Spearman Brown* with split odd and even number was used (Hatch & Farhady, 1982). Similar with the validity, the reliability has its own classification levels. It is presented in the following table.

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Table 3.6

The level of reliability

Range	Classification
$r_k \leq 0.20$	very low reliability degree
$0.20 \leq r_k < 0.40$	low reliability degree
$0.40 \leq r_k < 0.70$	medium reliability degree
$0.70 \leq r_k < 0.90$	high reliability degree
$0.90 \leq r_k \leq 1.00$	very high reliability degree

The result of the reliability is presented in table 3.7 below. The reliability score was 0,88. This score then was verified with the table 3.6. The result showed that the reliability score was in between $0.70 \leq r_k < 0.90$. It can be concluded that the instrument is highly reliable.

Table 3.7

The result of reliability of the test instrument

r_1 score	r_k score	Value
0,78	0,88	high reliability degree

3.4.2 Validity and reliability of qualitative

Maintaining the validity and reliability of qualitative data can be achieved by using triangulation technique. This study embraced three instruments: interview, observation and questionnaire. These instruments were used to cross check the data collected.

3.5 Data Analysis

3.5.1 Quantitative

The study proposed two hypotheses in which Ho would be accepted under a condition: if t-observed < t-critical and Ha would be accepted under a condition: if t-observed ≥ t-critic with α=0,5. To test these hypotheses, both pre-test and post-

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test were analysed by using t-test. In this test, the mean scores of experimental and control groups were compared. The test was run in the SPSS application. In addition, the simple percentage was simply used to analyze the instrument of questionnaire.

3.5.2 Qualitative

3.5.2.1 Questionnaire

The questionnaire was analysed in two ways: descriptive analysis and quantitative analysis to determine the standard deviation. These two stages of analysis were conducted to figure out the students' attitudes toward the implementation of the jigsaw cross-puzzle game. This questionnaire was the closed-ended questionnaire tha used the Likert scale as "strongly agree"=5, "agree"=4, "neutral"=3, "dissagree"=2 and "strongly dissagree"=1. The questionnaire consisted of fourteen items divided into three parts as cognitive, affecive and behavioral. Therefore, the analysis of these questionnaires were conducted in several steps. The first step was identifying the data from students' perspectives regarding benefits or challenges of the jigsaw crossword-puzzle game method. The second step was categorizing students' answers based on theories of jigsaw (cooperative learning) and word game. Furthermore, analysing the result of questionnaires was also conducted by calculating the percentage technique as below.

$$x = \frac{number\ of\ students\ choosing\ an\ item}{total\ number\ of\ student\ choosing\ an\ item} \times 100\%$$

3.5.2.2 Interview

The interview was also used to collect data. The semi-structured interview was used in order to seek students' attitudes toward the implementation of jigsaw with crossword-puzzle game through teaching vocabulary of accounting register. This kind of interview was set some related questions to elicit specific answers from interviewees but it was able to add further questions as the follow up of interviewees' responses. Furthermore, the data of the interview would be analyzed

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by five ways, they are organizing, transcribing, coding, describing, and interpreting (Creswell, 2012), therefore, this data were gained through recording the interview process and then the records were transcribed. The transcripts were categorized and interpreted to give meaning to the data. The categories were based on the mentioned description of the interview guidelines. At last, the transcriptions were correlated with the theories presented in chapter two, which was focused on the attitudes of the basic elements of cooperative learning and word-game-based learning (Johnson & Johnson 1984; Kagan 2009; Slavin, 1995).

3.5.2.3 Observation

This technique was employed to find out how jigsaw with crossword-puzzle game ran in the classroom and how this technique supported the students' vocabulary mastery of accounting vocabulary and how did students engage the activities under the jigsaw with crossword-puzzle game platform. The data from this observation were analysed descriptively. The analysis was initiated making verbatim transcription. Then, the data were selected, matched, interpreted, and at last, the data were correlated with the theories presented in chapter two, which was focused on the basic elements of cooperative learning and word-game-based learning (Johnson & Johnson 1984; Kagan 2009; Slavin, 1995).

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