# CHAPTER III

RESEARCH METHODOLOGY

This chapter deals with the research methodology used in investigating the types of language learning strategies which are mostly used by the students and examining the relationship between students' language strategies and their English achievement. It consists of research design, population and sample, research instrument, data collection, and data analysis.

3.1. Research Design

This study employed a quantitative approach in form of an *ex post facto* design. This approach was chosen since some characteristics of quantitative research as suggested by Creswell (2008) belonged to this study. Those characteristics were, first, this study dealt with the numbers and gained numeric data from a large number of students using instruments with preset questions and responses. Second, in analyzing the data, statistical analyses were employed by means of descriptive statistics (frequencies, means and standard deviation) and correlational statistics (Pearson Correlation Coefficient). Descriptive statistics was used to find out and clarify the first two research questions regarding the LLS that the
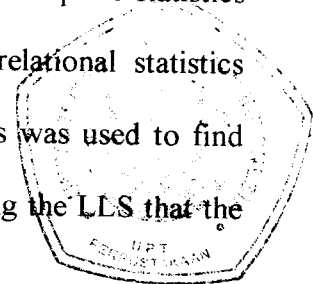
students mostly used and the LLS that the highest and the lowest English achievers most frequently used. Moreover, correlational statistics was used to investigate the relationship between the students' language learning strategies and their English achievement as stated in the third research question. The last characteristic was in interpreting the findings, those findings were compared with prior predictions (hypotheses) and past research.

In addition, *ex post facto* design was chosen since the dependent variable of this study (English achievement) was observed after the independent variable (students' language learning strategies) had already occurred (Kerlinger, 1970 see Cohen et al, 2007) without any manipulation and control (Cohen et al, 2007). Hatch & Farhady (1982 p. 26) state that this design investigates the relationship between two variables rather than a cause-effect relationship. Therefore, one of the purposes of this study was to investigate the relationship between students' language learning strategies and their English achievement without exploring the cause-effect relationship between them.

3.2. Population and Sample

The population of this study was the eleventh graders of a public senior high school in Bandung. They were chosen since they have been learning English in a senior high school for more than one year. Therefore, they were expected to have particular strategies to learn a language in their

level. 42 of 320 eleventh graders were chosen as the sample. It fulfilled the criterion which is claimed by Lodico et al (2006) and Gay et al (2009) that the correlational study requires a minimum of 30 participants who are picked randomly to make this study valid in generalization.

The names of the participants were concealed and coded into numbers, except the names of the highest and the lowest English achievers. Based on Table 3.3 which comes later on, the names of the highest English achievers were renamed as Jaka (student 12), Tina (student 23), and Sheera (student 26). Furthermore, the names of the lowest English achievers were renamed as Albert (student 2), Karra (student 7), and Billy (student 33). It was done in order to ensure the privacy of research data as Creswell (2008) suggests that names of the participants should be removed from all data collection forms and assign a number or letter to each form. It is in line with Oxford's (1990) suggestion about anonymity of the participants that a code number can be used in place of each student's name (p. 278).

3.3. Research Instruments

In this quantitative study, some instruments were used to collect the data such as questionnaire, English achievement documentary, and interview. The questionnaire was used to figure out the students' English learning strategies whereas the English achievement documentary was used to get the students' English achievement scores. The interview was

used to find further information regarding the strategies which were used by the highest and the lowest English achievers. The following subsections provide the further explanation concerning the instruments.

3.3.1. Questionnaire

The questionnaire used in this study was Strategy Inventory for Language Learning (SILL) version 7.0 (for speakers of other languages learning English) developed by Oxford (1990). The questionnaire was utilized to get the data regarding students' language learning strategies and was translated into Bahasa Indonesia. It was done in order the students got better understanding in reading the statements (see Appendix 1).

SILL questionnaire is a five-point-Likert-scale-type instrument which is used to assess how students go about learning a language (Oxford, 1990). It consists of 50 statements that are subdivided into six categories as seen in the following table.

Table 3.1 The Parts of SILL Questionnaire

LLS		Item number	Sample Questions
A	Memory strategies	1 – 9	I use new English words in a sentence so I can remember them. *(Saya menggunakan kata-kata baru dalam bahasa Inggris di dalam sebuah kalimat agar memudahkan dalam mengingat)*
B	Cognitive strategies	10 – 23	I try to talk like native English speakers. *(Saya mencoba berbicara seperti penutur asli bahasa Inggris)*
C	Compensation strategies	24 – 29	I read English texts without looking up every new word. *(Saya membaca bacaan bahasa Inggris tanpa mencari arti dari tiap kata baru yang saya temukan)*
D	Metacognitive strategies	30 – 38	I pay attention when someone is speaking English. *(Saya memperhatikan bila seseorang sedang berbicara dalam bahasa Inggris)*
E	Affective strategies	39 – 44	I give myself a reward or treat when I do well in English *(Saya memberi diri saya sendiri hadiah bila melakukan sesuatu dengan benar dalam bahasa Inggris)*
F	Social strategies	45 – 50	I ask questions in English. *(Saya bertanya dalam bahasa Inggris)*

(*Source:* Oxford, 1990 p. 294)

Each statement is given a five-point scale ranging from 1 which refers to "never used" to 5 which refers to "always used". The following table is the key for understanding the students' averages based on Oxford (1990).

Table 3.2 The Key for Understanding the Students' Average Regarding the Usage Frequency

Level	Description	Average
High	Always or always used	4.5 - 5.0
	Usually used	3.5 - 4.4
Medium	Sometimes used	2.5 - 3.4
Low	Generally not used	1.5 - 2.4
	Never or almost never used	1.0 - 1.4

(*Source:* Oxford, 1990 p. 300)

The overall average of SILL scores tells how often the students use strategies for learning English. The averages for each part of SILL show which groups of strategies the students most frequently used for learning English. The highest two average scores of each category were considered as strategies which were most frequently used by the students.

3.3.2. English achievement documentary

In this study, English final scores which the students gained from the average of cognitive, psychomotor, and affective assessments by means of daily, mid-term, and final tests were considered as the students' English achievement. The table below shows the students' English achievement scores collected from the English teacher of the eleventh grade in the second semester.

Table 3.3 The Students' English Achievement Scores

No	Students' Code	English Achievement	No	Students' Code	English Achievement
1	student 12	86	22	student 15	81
2	student 23	86	23	student 30	81
3	student 26	86	24	student 32	81
4	student 10	84	25	student 42	81
5	student 11	84	26	student 17	80
6	student 14	84	27	student 19	80
7	student 16	84	28	student 20	80
8	student 35	84	29	student 22	80
9	student 18	83	30	student 37	80
10	student 21	83	31	student 38	80
11	student 27	83	32	student 40	80
12	student 28	83	33	student 1	79
13	student 36	83	34	student 4	79
14	student 39	83	35	student 24	79
15	student 25	82	36	student 29	79
16	student 31	82	37	student 41	79
17	student 34	82	38	student 5	78
18	student 3	81	39	student 8	78
19	student 6	81	40	student 2	77
20	student 9	81	41	student 7	77
21	student 13	81	42	student 33	77

3.3.3. Interview

After obtaining the data from the questionnaire, the interview was conducted to clarify the findings, particularly about the strategies that were used by the highest and the lowest English achievers. The type of the interview was semi-structured interview in which a written list of questions as a guide was used, but the questions can be modified to get more information (Mackey & Gass, 2005). The interview was held once for each of the highest and the lowest English achiever in which the time and the place were negotiated.

3.4. Data Collection

In collecting the data for this quantitative research, there were several steps which were done. Those were administering try-out of SILL questionnaire, administering SILL questionnaire, collecting students' English achievement documentary, and conducting the interviews.

3.4.1. Administering try-out of SILL questionnaire

The try-Out of SILL questionnaire was conducted once toward 32 non-sample students in the same school in the third week of May. This try-out was carried out to test the validity and reliability of SILL questionnaire. The try-out participants were asked to clarify the clarity of the items whether there were confusing statements or not. The result was all of the items in SILL questionnaire were valid and reliable (see Table 3.4).

3.4.2. Administering SILL questionnaire

SILL questionnaire in this study refers to a students' self report for investigating the students' language learning strategies. It was held once on May 23, 2011 toward 42 students of XI graders as the samples. Before filling the questionnaire, the students were given a brief explanation about the aims of the study and the direction of how to fill the questionnaire. They were also informed that this questionnaire would not affect their grades. The available time for students to fill the questionnaire was about 20-30 minutes as recommended by Oxford (1990 p. 293).

3.4.3. Collecting students' English achievement documentary

Students' English achievements in this study were English final scores which were collected from the English teacher of eleventh grade, specifically the scores in second semester. Similar to what had been done when administering the questionnaire, the name of the students were concealed and coded into numbers. The students' English achievement could be seen in Table 3.3.

3.4.4. Conducting the interviews

The interviews were conducted toward the highest and the lowest English achievers in the fourth week of June. In order to get better and detailed information, the interviewer used interview guides (see Appendix 2) and a sound recorder (a cell phone application to record the sound).

3.5. Data Analysis

There were some steps in analyzing the data of this study. Those were testing the validity and the reliability of the questionnaire, testing the normality of the data, categorizing students' language learning strategies, analyzing the interview, and investigating the correlation.

3.5.1. Testing the validity and the reliability of the questionnaire

3.5.1.1. Testing the validity of the questionnaire

One of the criteria of a good instrument is that the instrument must be valid. Validity itself means the match between a construct (the way the idea in a conceptual definition is conceptualized) and a measure (Neuman, 2007). In this study, SILL questionnaire was the instrument used to gather the data dealing with students' language learning strategies. SILL questionnaire had also been employed by researchers all over the world (see Griffiths & Parr, 2001; Lengkanawati, 2004; Rajamoney, 2008; Demirel, 2009; Yu & Wang, 2009; Zhou, 2010; Radwan, 2011; Sheu, 2011) and the validity and reliability of it had been checked in multiple ways and in various communities (Oxford, 2006 see Kashefian-Naeeini et al, 2011). In addition, Oxford and Burry-Stock (1995 see Radwan, 2011) assert that several studies dealing with a significant relationship between strategies and language proficiency measured in a variety of ways provide SILL questionnaire a high validity.

The validity of each statement in the questionnaire, nevertheless, was also tested in this study by using Pearson Product Moment Correlation (Suparyanto, 2010). The item is valid when r value of each item is higher than r critical (Pearson Product-Moment Correlation Coefficient Values). The formula of Pearson Product Moment Correlation was as follows.

$$r = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{[N \sum x^2 - (\sum x)^2][N \sum y^2 - (\sum y)^2]}}$$

(Kranzler & Moursund, 1999)

Where

r   : Pearson's coefficient r

N   : the total numbers of respondents

x   : the items tested

y   : the total score per respondent

$\sum xy$: the sum of the multiplication x and y

The items of the questionnaire were computed and analyzed by using SPSS 17.0 computer software. The value of $r_{critical}$ for df N-2 (32-2) at significant level of $p < 0.05$ was 0.349. The results of validity testing can be seen in the following table.

Table 3.4 The Results of Validity Testing

Quest. No	r_{value}	$r_{critical}$	Validity		Quest. No	r_{value}	$r_{critical}$	Validity
1	0.365	0.349	Valid		26	0.372	0.349	Valid
2	0.510	0.349	Valid		27	0.397	0.349	Valid
3	0.582	0.349	Valid		28	0.650	0.349	Valid
4	0.615	0.349	Valid		29	0.551	0.349	Valid
5	0.434	0.349	Valid		30	0.731	0.349	Valid
6	0.427	0.349	Valid		31	0.559	0.349	Valid
7	0.509	0.349	Valid		32	0.484	0.349	Valid
8	0.478	0.349	Valid		33	0.362	0.349	Valid
9	0.561	0.349	Valid		34	0.710	0.349	Valid
10	0.399	0.349	Valid		35	0.545	0.349	Valid
11	0.528	0.349	Valid		36	0.719	0.349	Valid
12	0.478	0.349	Valid		37	0.651	0.349	Valid
13	0.450	0.349	Valid		38	0.775	0.349	Valid
14	0.707	0.349	Valid		39	0.505	0.349	Valid
15	0.438	0.349	Valid		40	0.598	0.349	Valid
16	0.513	0.349	Valid		41	0.606	0.349	Valid
17	0.507	0.349	Valid		42	0.432	0.349	Valid
18	0.425	0.349	Valid		43	0.381	0.349	Valid
19	0.396	0.349	Valid		44	0.523	0.349	Valid
20	0.435	0.349	Valid		45	0.417	0.349	Valid
21	0.652	0.349	Valid		46	0.685	0.349	Valid
22	0.453	0.349	Valid		47	0.574	0.349	Valid
23	0.371	0.349	Valid		48	0.656	0.349	Valid
24	0.420	0.349	Valid		49	0.568	0.349	Valid
25	0.398	0.349	Valid		50	0.710	0.349	Valid

3.5.1.2. Testing the reliability of the questionnaire

In testing reliability, an internal consistency measure was employed. Internal consistency measures are procedures to determine whether all the items in a test are measuring the same thing (Ary et al, 2010). Cohen et al (2007) suggest that there are two main forms which are used to measure internal consistency of instrument, split-half techniques and alpha coefficient (Cronbach's alpha). In this study, Cronbach's alpha was used since it is the most common way to assess the reliability of self-

reported items (Vanderstoep & Johnston, 2009) and provides a correlation coefficient of each item with the sum of all the other items (Cohen et al, 2007). Besides, Cronbach's alpha can be used for testing reliability when the variables are continuous, e.g. popular Likert scale (*strongly agree* to *strongly disagree*) (Creswell, 2008 p.162). Thus, the questionnaire, which was considered as Likert-scale questionnaire, could be tested by using Cronbach's alpha.

The formula for alpha is:

$$alpha = \frac{nr_{ii}}{1 + (n-1)r_{ii}}$$

(Cohen et al, 2007 p. 506)

Where

n : the number of items in the questionnaire

r_{ii} : the average of all the inter-item correlations.

Similar to the validity testing, SPSS 17.0 computer software was used to compute and analyze the reliability of the questionnaire. To determine the reliability of the questionnaire, Cohen et al (2007) provide the following guideline.

Table 3.5 The Guideline for Describing *alpha* Value

alpha value	Descriptions
> 0.90	very highly reliable
0.80 – 0.90	highly reliable
0.70 – 0.79	reliable
0.60 – 0.69	marginally/minimally reliable
< 0.60	unacceptably low reliability

(*Source:* Cohen et al, 2007 p. 506)

It was found the value of Cronbach's alpha was equal to 0.938. According to the guideline above, this questionnaire was considered very highly reliable since the alpha score was higher than 0.90. The result of the reliability testing can be found in the following table.

Table 3.6 The Result of Reliability Testing

Cronbach's Alpha	N of Items
.938	50

3.5.2. Testing Normality of the Data

There are several assumptions before using Pearson Product Moment Correlation. One of them is the distributions of the data are roughly normal in shape as stated by Kranzler and Moursund (1999). Thus, the normality of the data had been tested by utilizing Kolmogorov-Smirnov formula in SPSS 17.0 computer software for Windows. The hypotheses for SILL and English achievement normal distribution score are as follows.

H_0 : SILL score and English achievement are normally distributed

H_1 : SILL score and English achievement are not normally distributed

The following table was the result of normality testing.

Table 3.7 The Result of Normality Testing

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Students' English Achievement	.135	42	.054	.961	42	.164
Students' English Language Strategies	.082	42	.200[*]	.985	42	.859

It was found that the probability of SILL was 0.200 and English achievement was 0.054. Since those values were higher than 0.05, the null hypothesis was accepted. In other words, both variables were normally distributed.

3.5.3. Categorizing students' language learning strategies

The data gained from SILL questionnaire filled in by the students had been categorized into six categories as seen in Table 3.1. Those are memory strategies (part A, 9 statements), cognitive strategies (part B, 14 statements), compensation strategies (part C, 6 statements), metacognitive strategies (part D, 9 statements), affective strategies (part E, 6 statements), and social strategies (part F, 6 statements). As stated earlier, each item of SILL questionnaire was given a five-point scale ranging from 1 which refers to "never used" to 5 which refers to "always used".

By inputting the data and computing the mean of each student's SILL scores for each category and overall SILL scores using Microsoft Office Excel 2007, the averages of students' SILL scores both each category and overall scores could be obtained. As stated earlier, the average scores of each category represent the type of strategies that students mostly use, whereas the overall average scores indicate how often students use strategies for learning English (Oxford, 1999 p. 300).

3.5.3.1. The LLS mostly used by the students

After finding the average scores of each category and the overall average scores, the next step was finding the type of strategies which the students mostly used by comparing the means of each strategy. The highest two average scores of each category were considered as the strategies which were mostly used by the students.

3.5.3.2. The LLS most frequently used by the highest and the lowest English achievers

Having gained the students' English achievement scores and the type of each student's strategies in learning English, the investigation of LLS used by the students who got the highest and the lowest English achievement (the highest and the lowest English achievers) could be done. The students' English achievement scores were listed descendingly by utilizing Microsoft Office Excel 2007 (see Table 3.3).

From the computation, it was found that there were three students who gained the highest English achievement scores (86) and three students who gained the lowest English achievement scores (77). To find out the types of strategies that were most frequently employed by them, it was considered to investigate their average strategy scores by using SPSS 17.0 computer software for Windows. The highest two average strategy scores of each category were considered as the strategies which were most frequently used by the highest and the lowest English achievers.

3.5.4. Analyzing the interview

After conducting the interviews toward all of the highest and the lowest English achievers, renamed as Jaka, Tina, Sheera, Albert, Billy, and Karra, the interviews recordings were transcribed manually. The transcriptions were used to reinforce the findings regarding the LLS used by the highest and the lowest English achievers.

3.5.5. Investigating the correlations

It has been proven earlier that the data of the research were normally distributed (see Table 3.7). Thus, the Pearson Product Moment Correlation could be used to analyze the correlation between students' LLS and their English achievement to examine the hypotheses (Kranzler & Moursund, 1999). The hypotheses for the correlation were as follows.

H_0 : The students' SILL scores are not significantly correlated to English achievement

H_1 : The students' SILL scores are significantly correlated to English achievement

Here is the formula of Pearson Product Moment Correlation.

$$r = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{[N \sum x^2 - (\sum x)^2][N \sum y^2 - (\sum y)^2]}}$$

(Kranzler & Moursund, 1999)

Where

r : Pearson's coefficient r

N : the total numbers of respondents

x : the items tested

y : the total score per respondent

$\sum xy$: the sum of the multiplication x and y

After finding the r_{value} (0.417) and $r_{critical}$ for df (40) at significant level of $p < 0.05$ (0.304), testing hypothesis was conducting to determine whether the correlation coefficient is significant or not, whenever

$r_{value} > r_{critical}$; H_0 is rejected, H_1 is accepted

$r_{value} < r_{critical}$; H_0 is accepted, H_1 is rejected

Cohen and Manion (1994 see Creswell, 2008) provide a guide to interpret the size of coefficients as follows.

Table 3.8 A Guideline of the Size of Correlation Coefficient

r_{value}	Descriptions
$0.00 - \pm 0.10$	Week
$\pm 0.20 - \pm 0.35$	Modest
$\pm 0.36 - \pm 0.65$	Moderate
$\pm 0.66 - \pm 0.85$	Strong
$\geq \pm 0.86$	Very strong

(*Source:* Cohen and Manion, 1994 see Creswell, 2008 p. 533-536)

The contribution of determination (some called coefficient of determination) was also calculated to explain the degree of contribution in one variable toward the other variable. The formula is as follows.

$$CD \quad = r^2 \times 100\%$$

(Coolidge, 2000)

Where

CD   : coefficient of determination

r : Pearson correlation coefficient

Moreover, the correlation between each strategy and English achievement was also investigated. The presentations of the findings and the discussions gained were discussed in the next chapter.