

## CHAPTER III

### RESEARCH METHODOLOGY

This chapter gives a deep explanation about methodology in conducting this research. The discussion about methodology in this research is divided into 6 parts; Research design, research variable, population and sample, research instruments, data collection technique, and data analysis technique.

#### **A. Research Design**

To conduct this study, the researcher used quantitative method because this method describes a research problem through a description of trends or a need for an explanation of the relationship among variables<sup>103</sup>. According to Creswell, quantitative research asks specific questions to obtain measurable data on variables through instrument then analyze those using statistical procedures<sup>104</sup>. Similarly with Creswell statement, this research observed test taking strategy used by the students through valid and reliable instrument. Furthermore, the researcher also analyzed the data using statistical procedure. Because of observing the data through valid and reliable instrument and using statistic in data analysis, this research fits to quantitative research criteria.

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<sup>103</sup> John W Creswell, *Educational Research “Planning, Conducting, and Evaluating Quantitative and Qualitative Research Fourth Edition”* (Boston: Pearson, 2012), 13.

<sup>104</sup> John W Creswell, *Educational Research “Planning, Conducting, and Evaluating Quantitative and Qualitative Research Fourth Edition”* (Boston: Pearson, 2012), 15.

In term of research design, this research used survey design. Survey has the purpose to describe the characteristics of a population dealing with the researcher's goal to find out distribution of one and more variable in respondent answer<sup>105</sup>. Determining survey design as the method of this research drives benefit to concern with the present and determines the status of the phenomena under investigation<sup>106</sup>. For further, descriptive survey type was used since this research investigates the status of test taking strategy used by sixth semester students of English Education Department UIN Sunan Ampel Surabaya and the significant relationship of the strategy to the students TOEFL equivalent test score partially and simultaneously.

To know the significant relationship between test-taking strategy and TOEFL Equivalent Test, testing hypothesis was presented. The key hypotheses of this study were:

H<sub>0</sub> (1): Test-taking strategy does not have a significant relationship to TOEFL Equivalent Test score simultaneously.

H<sub>1</sub> (1): Test-taking strategy has a significant relationship to TOEFL Equivalent Test Score simultaneously.

H<sub>0</sub> (2): Test-taking strategy does not have a significant relationship to TOEFL Equivalent Test score partially.

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<sup>105</sup> Jack R Fraenkel and Norman E Wallen, *How to Design and Evaluate Research in Education 7th Ed* (USA: Beth Mejia, 2008), 390.

<sup>106</sup> Yogesh Kumar Singh, *Fundamental of Research Methodology and Statistics* (Mumbai: New Age International Publishing Ltd , 2006), 101.

H<sub>1</sub> (2): Test-taking strategy has a significant relationship to TOEFL Equivalent Test Score partially.

Where:

H<sub>0</sub> = Null Hypothesis

H<sub>1</sub> = Alternative Hypothesis

## B. Research Variable

There were two variables used in this research; Independent Variable and Dependent Variable.

### 1. Independent Variable

According to Umar, Independent Variable is variable that influence and explain other variables<sup>107</sup>. In this research, independent variable was test-taking strategy.

### 2. Dependent Variable

While dependent variable is variable that is influenced by independent variable<sup>108</sup>. In this research, dependent variable was TOEFL Equivalent Test score.

## C. Population and Sample

If people discuss about quantitative research, it is always related to population and sample. These two terms “**population**” and “**sample**” can be very

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<sup>107</sup> Husein Umar, *Metodologi Penelitian untuk Skripsi dan Tesis Bisnis* (Jakarta: Gramedia Pustaka, 2003), 63.

<sup>108</sup> Husein Umar, *Metodologi Penelitian untuk Skripsi dan Tesis Bisnis* (Jakarta: Gramedia Pustaka, 2003), 63.

necessary in quantitative research. To get a deep understanding about population and sample, some definitions are next presented. According to Fraenkel and Wallen, sample is the group of something on which information is obtained for the research<sup>109</sup>. Whereas Trochim and Donnelly state their definition about sampling as “Sampling is the process of selecting units (such as people and organizations) from a population of interest”<sup>110</sup>. Knowing some definitions about sampling also drive us to know more about population. According to Fraenkel and Wallen, population is defined as “The larger group to which one hopes to apply the results”<sup>111</sup>. The statement means that population is the large group on which sample is taken. On the other hand, Trochim and Donnelly mentioned the function of studying population and sample as “... By studying the sample you can fairly generalize your results to the population from which the units were chosen”<sup>112</sup>. Because of conducting educational research, the researcher took the population and sample from educational areas. As like what Fraenkel and Wallen state in their book that population and sample in educational research is a group

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<sup>109</sup> Jack R Fraenkel and Norman E Wallen, *How to Design and Evaluate Research in Education 7th Ed* (USA: Beth Mejia, 2008), 392.

<sup>110</sup> W.M. K. Trochim., and J.P. Donnelly, *the Research Methods Knowledge Base 3<sup>rd</sup> ed* (Mason: OH, 2008), 41.

<sup>111</sup> Jack R Fraenkel and Norman E Wallen, *How to Design and Evaluate Research in Education 7th Ed* (USA: Beth Mejia, 2008), 90.

<sup>112</sup> W.M. K. Trochim., and J.P. Donnelly, *the Research Methods Knowledge Base 3<sup>rd</sup> ed* (Mason: OH, 2008), 41.

of persons (students, teachers, or other individuals) who possess certain characteristics”<sup>113</sup>.

After getting brighter about population and sample as explained previously, the readers possibly have an opportunity to know about population and sample used in this research.

### **1. Identification of Population**

Population of this research was sixth semester students of English Teacher Education Department UIN Sunan Ampel Surabaya. Sixth semester consisted of students who enroll to the department on 2011. Moreover the students are noted in academic year 2013-2014 at present. The number of sixth semester students who noted in academic year 2013-2014 was about 90 students.

### **2. Sampling Technique**

Indeed, this research tried to generalize the sample using *probability sampling* as used in convenience quantitative method. But, finally this research set to use *non probability* sampling which was *purposive sampling* because this research obligated some criteria in sampling technique. In purposive sampling, sample is purposed in mind by seeking one or more specific predefined groups<sup>114</sup>. *Purposive sampling* also selects a sample based

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<sup>113</sup> Jack R Fraenkel and Norman E Wallen, *How to Design and Evaluate Research in Education 7th Ed* (USA: Beth Mejia, 2008), 91.

<sup>114</sup> W.M. K. Trochim., and J.P. Donnelly, *the Research Methods Knowledge Base 3<sup>rd</sup> ed* (Mason: OH, 2008), 56.

on believes and prior information, which provides the data we need<sup>115</sup>. The first criterion of this research was limited on sixth semester students who were taking TOEFL Preparation class. While the second criterion of this research was sixth semester students who took TOEFL equivalent test in all section (reading, listening, and structure) at one time. The consideration of choosing all section helped the researcher to identify test-taking strategies used in TOEFL equivalent test. In fact, TOEFL equivalent test was seen as the test for all section not in Reading section, listening section, or structure section only.

### 3. Number of Sample

There were some considerations for researcher to decide the number of sample in this research. **The first consideration** was based on formula developed by Isaac and Michael. Sugiyono stated in his book that Isaac and Michael formula is used for false degree 1%, 5%, and 10%<sup>116</sup>. The number of sample formula developed by Isaac and Michael is as follows:

$$S = \frac{\lambda^2 \cdot N \cdot P \cdot Q}{d^2 (N-1) + \lambda^2 \cdot P \cdot Q}$$

Where:

$\lambda^2$  With freedom degree =1, false degree can be 1%, 5%, or 10%.

$P=Q= 0, 5$ ,  $d= 0, 05$ ,  $s=$ Number of sample

<sup>115</sup> Jack R Fraenkel and Norman E Wallen, *How to Design and Evaluate Research in Education 7th Ed* (USA: Beth Mejia, 2008), 99.

<sup>116</sup> Prof. Dr. Sugiyono, *Metode Penelitian Pendidikan* (Bandung; Alfabeta, 2012), 126.

If researcher uses 5% false degree of sampling number with the population number 90 students, the result of calculation of sampling number will be 72 students. **The second consideration** was that sample should fulfill two criteria of sampling technique. Firstly, sample should be noted as sixth semester students at present. While secondly, Sample took TOEFL equivalent test in all section (reading, listening, and structure) at one time.

Unfortunately, In spite of using 72 students, the researcher used 58 students only. This decision was based on second consideration to take sample if they fulfill sampling criteria appropriately to this research. 58 students were taken from all sixth semester students in A class and B class. In fact, only A class and B class which applied TOEFL equivalent test for all section at one time. Whereas the rest class which was C class applied TOEFL equivalent test partially (grammar test in first test, structure test in second test, etc).

## **D. Research Instruments**

### **1. Instrumentation**

To obtain the necessary data, this research used questionnaire, interview, and TOEFL Equivalents score as the instrument. Questionnaire is a paper and pencil instruments that asks respondents to complete<sup>117</sup>. Whereas, interview is the personal form of research that more personal than

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<sup>117</sup> W.M. K. Trochim., and J.P. Donnelly, *The Research Methods Knowledge Base 3<sup>rd</sup> ed* (Mason: OH, 2008), 108.

questionnaire<sup>118</sup>. Furthermore, this research defines TOEFL Equivalent Score as score obtained by sixth semester test-taker of English Teacher Education Department UIN Sunan Ampel in TOEFL Equivalent Test. In this case, two test-taking strategies instruments have been developed; 1) Test-taking strategy questionnaire, and 2) Test-taking strategy Survey (Motivation, Difficulties, and Belief).

#### **a. Test - taking Strategy Questionnaire**

Because of not finding the appropriate questionnaire from other sources, it drove this research to design the instrument by own. Test-taking strategy questionnaire tried to look for some information about test-taking strategies used by sixth semester students. In designing instrument, the instrument points were based on theoretical framework. Test – taking strategy questionnaire contains of 3 test-taking strategy theories; Chesla (*strategies the week before the test, strategies at the day of the test, and strategy at the test site*), Lake Washington (“*before the test strategy*” and some points of “*during the test strategy*”), and North Shore Community College (*preparation strategy and general test-taking strategy*). Although test-taking strategies naming were different on each theory, it could be divided on two big general themes which was “Pre test-taking strategies” and “whilst test-taking strategies”. This decision reflected on definition

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<sup>118</sup> W.M. K. Trochim., and J.P. Donnelly, *The Research Methods Knowledge Base 3<sup>rd</sup> ed* (Mason: OH, 2008), 109.



about test-taking strategies explained by College of the Canyon that divide test-taking strategies into two big themes; before and during a test<sup>119</sup>.

Test-taking strategy questionnaire was contained of 34 questions with two broad themes; Pre test-taking and whilst test-taking. Pre test-taking category consisted of 18 questions (question 1 to18) and whilst test-taking category consisted of 16 questions (question 19 to 34). While the answer choice on each question was described by 5 point Likert Scale; strongly disagree, disagree, neutral, agree, and strongly agree<sup>120</sup>. Every 5 point Likert scale composed of score as shown in table 3.1.

Table 3.1 Scoring Criteria of Test- taking Strategy Questionnaire

Alternative Answer	Score
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

#### **b. Test - taking Strategy Survey (Motivation, Difficulties, and Belief)**

Test-taking strategy survey used structured interview model.

Structured interview model is a quantitative research method commonly

<sup>119</sup> LEAP Team. "Test Taking Strategies".

(<http://www.canyons.edu/committees/leap/team1/15tips/tip7.asp>, accessed on December 09, 2013).

<sup>120</sup> W.M. K. Trochim., and J.P. Donnelly, *The Research Methods Knowledge Base 3<sup>rd</sup> ed* (Mason: OH, 2008), 115.

used in survey research that confirms each interviewee with the same question in the same order. This kind of interview tried to develop test-taker motivation to use test taking strategies. Moreover, this instrument also looked for difficulties found by test-takers in applying test-taking strategies and test takers belief about test-taking strategies used by them. Test-taking strategy survey consisted of 4 questions. First question asked about motivation, Second question asked about feeling difficulties, Third question tried to develop some difficulties had by test-takers, and fourth question claimed about test-takers belief while using test-taking strategy. Type of questions used in this questionnaire was categorized as structured questions. Trochim and Donnelly defines structured question as the questions that poses the greater difficulties in designing instrument<sup>121</sup>.

## 2. Validity and Reliability of Instrument

Every instrument has been made should be tested first. It seems important to know how good an instrument used for measuring data. To know the definition of validity and reliability, some theories are presented. Fraenkel and Wallen define validity as “validity of a valid instrument is that it measures what it is supposed to measure<sup>122</sup>. More detail, Fraenkel and Wallen add the explanation about validity as something that refers to the

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<sup>121</sup> W.M. K. Trochim., and J.P. Donnelly, *The Research Methods Knowledge Base 3<sup>rd</sup> ed* (Mason: OH, 2008), 113.

<sup>122</sup> Jack R Fraenkel and Norman E Wallen, *How to Design and Evaluate Research in Education 7th Ed* (USA: Beth Mejia, 2008), 111.

*appropriateness, correctness, meaningfulness, and usefulness* of the data collected<sup>123</sup>. The statement defined by Fraenkel and Wallen give us a description that validity relates to instrument capability in measuring the right data. Whereas, reliability is defined as the capability of an instrument to give consistent score/result obtained<sup>124</sup>. In the other word, reliability must have an opportunity to give consistent results although the research is repeated in many times. Because of the instrument validity and reliability urgency, below are presented validity and reliability of two questionnaire used in this research.

#### **a. Validity and Reliability of Test-taking Strategy Questionnaire**

This research used *SPSS for Windows 20* to examine validity and reliability of the first instrument. Dealing with validity and reliability, the questionnaire was first tested to some respondents outside the research population. This process was called as pretesting questionnaire. Pretesting data collection involves administering a questionnaire to a small sample of the relevant population under conditions close to or identical to the main survey<sup>125</sup>. In this case, 32 respondents from eight semester students of English Education Department were being researched.

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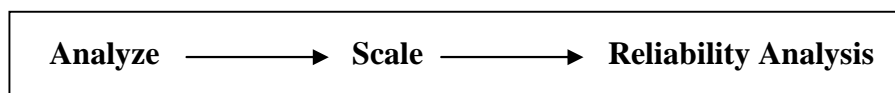
<sup>123</sup> Jack R Fraenkel and Norman E Wallen, *How to Design and Evaluate Research in Education 7th Ed* (USA: Beth Mejia, 2008), 111.

<sup>124</sup> Jack R Fraenkel and Norman E Wallen, *How to Design and Evaluate Research in Education 7th Ed* (USA: Beth Mejia, 2008), 154.

<sup>125</sup> Jon A. Krosnick and Stanley Presser, *Question and Questionnaire Design Handbook of Survey Research Second Edition* (Emerald Group Publishing Limited, 2010), 296.

Some similar characteristics drove this research to argue that choosing eight semester students as trial respondents was the right decision. First, both of eight semester and sixth semester was member of English Education Department UIN Sunan Ampel Surabaya. This condition gave us description that they studied in the same institution with the same environment. Second, eight semester had participated in TOEFL Class Preparation on the previous period. This reality brings an assumption that they have joined the TOEFL Equivalent Test from department in their period. It is more appropriate to use eight semester in spite of taking the fourth semester or second semester. In fact, TOEFL Preparation Class is started to learn in sixth semester.

After getting the result from 30 respondents of eight semesters, the data gotten was then inputted in *SPSS for Windows 20* using step



The result of analysis can be shown in Table 3.2 and 3.3.

Table 3.2 Reliability Result from SPSS Output

<b>Cronbach's Alpha</b>	<b>Cronbach's Alpha Based On Standardized Items</b>	<b>N of Items</b>
0,854	0, 870	34

*Source: Appendix 3*

One of ways to look for reliability is by scanning into “Cronbach coefficient alpha” in SPSS output. According to Nunally, minimum value for *Alpha Cronbach* is 0.70 for reliability<sup>126</sup>. From the result of table, we can see that *cronbach alpha* of Test-taking strategy questionnaire is 0,842. While *Cronbach Alpha* based on standardized test items are 0,860. This reality drew a conclusion that reliability of test-taking strategy questionnaire have been designed is good. As Nunally obligate the minimum value of *Cronbach Alpha* in 0,70, the minimum value have been passed. Therefore, this instrument was assumed to give a consistent result for research.

Table 3.3 Validity Result from SPSS Output

No	Question	Corrected Item-Total Correlation	Remarks	No	Question	Corrected Item-Total Correlation	Remarks
1.	Q1	0,155	Invalid	18.	Q18	0,327	Valid
2.	Q2	0,467	Valid	19.	Q19	0,381	Valid
3.	Q3	0,629	Valid	20.	Q20	0,295	Invalid
4.	Q4	0,626	Valid	21.	Q21	0,327	Valid
5.	Q5	0,372	Valid	22.	Q22	0,452	Valid
6.	Q6	0,397	Valid	23.	Q23	0,690	Valid
7.	Q7	0,104	Invalid	24.	Q24	0,481	Valid

<sup>126</sup> J. C. Nunnally, *Psychometric Theory 2nd ed.* (New York: McGraw-Hill, 1978), 245.

8.	Q8	0,461	Valid	25.	Q25	0,437	Valid
9.	Q9	0,218	Invalid	26.	Q26	0,363	Valid
10.	Q10	0,557	Valid	27.	Q27	0,055	Invalid
11.	Q11	0,380	Valid	28.	Q28	0,370	Valid
12.	Q12	0,434	Valid	29.	Q29	0,306	Valid
13.	Q13	0,687	Valid	30.	Q30	0,325	Valid
14.	Q14	0,428	Valid	31.	Q31	0,555	Valid
15.	Q15	-0,034	Invalid	32.	Q32	0,454	Valid
16.	Q16	0,320	Valid	33.	Q33	0,213	Invalid
17.	Q17	0,186	Invalid	34.	Q34	0,368	Valid

*Source: Appendix 4*

Table 3.3 have shown us the result of validity item in test-taking strategy questionnaire. To give explanation in drawing conclusion about valid item and invalid item, the theory of validity from Pallant can be a consideration. Pallant states that Corrected Item-Total Correlation-minimum value for valid item is 0.3<sup>127</sup>. Pallant's statement indicates that the item with Corrected Item-Total Correlation under value 0.3 need to be considered even it should be removed.

From 34 questions are proposed, there are 26 items with Corrected Item-Total Correlation 0, 3. The valid items were 2, 3, 4, 5, 6, 8, 10, 11,

<sup>127</sup> J. Pallant, *SPSS Survival Manual: a Step by Step Guide to Data Analysis Using SPSS for Window* (Maidenhead: Open University Press, 2007), 98.

12, 13, 14, 16, 18, 19, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31, 32, and 34. Whereas, invalid items were 1, 7, 9, 15, 17, 20, 27, and 33. Then, all of invalid items were reconsidered to be removed from questionnaire, so that only 26 valid items were used. Because of determining to use 26 items, reliability of instrument should be retested. The retesting instrument process with 26 valid items used SPSS for Windows 20 to know the reliability level after reducing. The result of retested reliability can be shown in table 3.4.

Table 3.4 Retested Reliability Result from SPSS Output

Cronbach's Alpha	Cronbach's Alpha Based On Standardized Items	N of Items
0,880	0,888	26

*Source: Appendix 5*

As shown in table 3.4, the reliability after retesting increases from *cronbach alpha* 0,842 before reducing invalid items to *cronbach alpha* 0,880 after reducing invalid items. While *Cronbach Alpha* based on standardized test items also increases from 0,860 to 0,888 after reducing invalid items.

**b. Validity and Reliability of Test-taking Strategy Survey (Motivation, Difficulties, and Belief)**

To ensure the validity and reliability of test-taking strategy survey, the researcher had brought the instrument to the expert. Expert review is

process of giving critique by one or more experts to the questionnaire<sup>128</sup>. There are no calculation of validity and reliability as in test-taking strategy questionnaire because interview model just obligate validity by using a face validity. In interviews, inferences about validity are made too often on the basis of face validity that is, whether the questions asked look as if they are measuring what they claim to measure<sup>129</sup>. By asking an expert to examine if the instrument measure what it should measure, validity of test-taking strategy survey was undoubted. On the other hand, reliability of structured interview model as used in this research was probably good. Cohen tried to argue this statement by explaining that structured interview is one of way to control the reliability of interview, because this model infinites a complexity and open-endedness of social interaction<sup>130</sup>.

### **E. Data Collection Technique**

In this research, the researcher collected the data by three instruments; test-taking strategy questionnaire, test taking strategy survey (structured interview), and TOEFL equivalent score. Every instrument was useful for getting the data to answer every single research question of this research. First question of this research addressed to find out the test-taking strategies used by test taker.

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<sup>128</sup> Jon A. Krosnick and Stanley Presser. *Question and Questionnaire Design Handbook of Survey Research Second Edition* (Emerald Group Publishing Limited, 2010), 295.

<sup>129</sup> C. F. Cannell, and R. L. Kahn, *The Handbook of Social Psychology, vol. 2: Research Methods* (New York: Addison-Wesley, 1968), 526–595.

<sup>130</sup> Louis Cohen, Lawrence Manion and Keith Morrison, *Research Methods in Education Sixth Edition* (UK: Taylor & Francis e-Library, 2007), 150.



While Second question addressed the test-takers reason to use the strategies. And, third question addressed to investigate the significant relationship between test-taking strategies (either pre test-taking or whilst test-taking) to the score partially and simultaneously. More detail about data collection is shown in table 3.5.

Table 3.5 Data Collection Technique

Research Question	Data Collection		
	Questionnaire	Structured Interview	TOEFL Equivalent Score
RQ 1	Test-taking strategy questionnaire (see appendix 6)		
RQ 2		Test-taking strategy survey (motivation, difficulties, and belief) (see appendix 7)	
RQ 3			Test-taker Score (See appendix 9)

### 1. Data Collection procedure

The researcher collected the data through five steps. Firstly, the researcher gave “Test-Taking Strategy Questionnaire” to selected sample which were students in A class and B class. Second, the researcher asked respondents to fill the questions based on what they did in test. After getting the questionnaire answer, the researcher spread the structured interview “Test-taking Strategy Survey (Motivation, Difficulties and Belief) to students.

Fourth, the researcher gathered the data from lecturer about all participant TOEFL scores. Fifth, finally the researcher reported the data.

## **2. Data Qualification and Data Voluntaries**

Data qualification of this research involved data qualification of questionnaire, data qualification of structured interview, and data qualification of TOEFL Equivalent Score.

### **a. Data Qualification of Questionnaire**

There were 2 qualifications must been had by data obtained through questionnaire. First, the data must be well identified. The name of respondent should be clear because it helped this research to match the data from questionnaire with the score obtained from lecturer. Second, the data from questionnaire should have a clear answer. This requirement meant that the respondent's answer should not be confusing for example the respondent answer two choices. As a result, those choices possibly make the researcher difficult to report the data on which one of two choices was right for respondent.

### **b. Data Qualification of Structured Interview**

The data obtained from structured interview must have 2 qualifications. Firstly, the identity of respondent should be clear. If the identity was not clear, the researcher was not able to identify the respondent. Secondly, if respondent gave illogical answer, the data from those respondents should be reconsidered. As example the respondent give

check to the choice agreement that he/she does not feel difficult to do test-taking strategy in the second question but in the third question he/she give check to some difficulties they have.

### **c. Data Qualification of TOEFL Equivalent Score**

The data obtained from TOEFL Equivalent Score had to fulfill the qualifications such as the score must from the score of all section. All section involved reading, listening, and structure not from the score in partial score such as score in reading only, score in structure only, or score in listening only.

To collect the necessary data, the researcher also needed volunteer to spread the instrument in the class. In this case, volunteer were the students that help the researcher to spread the instrument to their friends. Consequently, the students did not wait too long to fill the questions.

### **3. Data Collection Schedule**

To collect the data, a data collection schedule is very necessary. Data collection schedule gives a well-organized timing to do the research. Moreover, data collection schedule is able to be guidelines for researcher to determine what must to do at the specific time and what must to do next. Due to the department policy, Data collection schedule helped this research to obtain the data in appropriate time. For more detail, Data collection schedule are able to be shown as in Table 3.6.

Table 3.6 Data Collection Schedule

Data Source	Month											
	April				May				June			
	1	2	3	4	1	2	3	4	1	2	3	4
Preliminary Data												
Questionnaire												
Structured Interview												
TOEFL Equivalent Score												

#### F. Data Analysis Technique

To analyze the data, the data gathered from three instruments were analyzed to get brief understanding. This research used both of statistical procedures either descriptive statistic or inferential statistic. Descriptive statistic is the branch of statistics that deals with numerical manipulations to describe and summarize the data<sup>131</sup>. On the other hand, inferential statistic is purposed to infer the characteristics of the population of reference from the sample<sup>132</sup>.

Descriptive statistic was used to answer the first research question which wants to know test-taking strategy used by sixth semester students. Descriptive statistic used in this research involved mean and standard deviation of each

<sup>131</sup> Ricardo Russo, *Statistical for the Behavioural Sciences an Introduction* (NY: Psychology Press, 2003), 9.

<sup>132</sup> Ricardo Russo, *Statistical for the Behavioural Sciences an Introduction* (NY: Psychology Press, 2003), 10.

strategy. Mean is commonly understood as the arithmetic average<sup>133</sup>. Whereas, Standard deviation is most frequently used as a measure of spread or dispersion of scores in a distribution<sup>134</sup>. This research ranked five most and five least strategy by looking into mean result. Moreover, descriptive statistic was also used to answer the second research question by using frequency of distribution. In this case, frequency of distribution used in this analysis was Pie Chart.

On the other hand, inferential statistic was purposed to answer the third research question which wants to know the significant relationship of test-taking strategies and TOEFL equivalent score partially and simultaneously. In this case, this research used linear multiple regression formula to analyze the data. To run the multiple regression analysis, this research did some statistical procedure as follows:

### **1. Classical Assumption Test**

Classical assumption test is used for ensuring the inexistence of Multicollinearity and Heteroscedasticity in Regression model, also ensuring the normality of data distribution<sup>135</sup>. Based on the definition, classical assumption test involves three components; Test of normality, Test of heteroscedasticity, and test of multicollinearity.

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<sup>133</sup> John W. Best & James V. Kahn, *Research in Education Eight Editions* (USA: Allyn and Bacon, 1998), 343.

<sup>134</sup> John W. Best & James V. Kahn, *Research in Education Eight Editions* (USA: Allyn and Bacon, 1998), 349.

<sup>135</sup> Imam Ghozali, *Aplikasi Analisis Multivariat dengan Program SPSS* (Semarang: BP Universitas Diponegoro, 2007), 25.

### a. Test of normality

The purpose of Test of Normality is to test whether disturber variable and residuals have a normal distribution or close to normal in regression model<sup>136</sup>. To test the normality, this research applies *One Sample Kolmogorov-Smirnov Test*. Guidelines of interpreting the result of *One Sample Kolmogorov-Smirnov Test* is as follows<sup>137</sup>:

1. If the value of significance or probability value  $< 0,05$ , data distribution is not in normal condition.
2. If the value of significance or probability value  $> 0,05$ , data distribution is normal.

### b. Test of Heteroscedasticity

Test of Heteroscedasticity is addressed to investigate whether the data used in regression model have the similar variance or not<sup>138</sup>. One of the ways to test heteroscedasticity, this research runs Glejser Testing. Glejser testing is the statistical procedures run to know the existence of heteroscedasticity by doing regression of Residual absolute ( $AbsU_i$ ) to other independent variables<sup>139</sup>. Significance value is able to be an

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<sup>136</sup> Imam Ghozali, *Aplikasi Analisis Multivariat dengan Program SPSS* (Semarang: BP Universitas Diponegoro, 2007), 110.

<sup>137</sup> Imam Ghozali, *Aplikasi Analisis Multivariat dengan Program SPSS* (Semarang: BP Universitas Diponegoro, 2007), 30.

<sup>138</sup> Dyah Nirmala Arum Janie, *Statistik Deskriptik dan Analisis Regresi Berganda* (Semarang: Semarang University Press, 2012), 24

<sup>139</sup> Dyah Nirmala Arum Janie, *Statistik Deskriptik dan Analisis Regresi Berganda* (Semarang: Semarang University Press, 2012), 26

indication of heteroscedasticity. If the significance value (sig.)  $> 0,01$ , heteroscedasticity does not happen in regression model<sup>140</sup>.

### c. Test of Multicollinearity

Test of multicollinearity is addressed to test whether it has a high correlation between independent variables in regression model<sup>141</sup>. As explained in previous explanation, independent variable in this research is test-taking strategy. Then, the result of testing indicates a serious multicollinearity if the *Tolerance* value  $< 0,1$  and *VIF* value  $> 10$ <sup>142</sup>.

## 2. Multiple Regression Coefficient Test (Testing Hypothesis)

Multiple regression coefficient tests involved Determination Coefficient Value, F-test (Simulate Testing), and T-test (Partial Testing).

### a. Determination Coefficient Value (R square)

Determination Coefficient value was used to test in what extend test-taking strategies was able to explain the TOEFL equivalent score. If the value close to 1, it means that independent variable are able to give almost all of necessary information to predict the dependent variable<sup>143</sup>. In this research, independent variable was Test-takings strategy. While dependent variable was TOEFL equivalent score.

<sup>140</sup> Dyah Nirmala Arum Janie, *Statistik Deskriptik dan Analisis Regresi Berganda* (Semarang: Semarang University Press, 2012), 26.

<sup>141</sup> Dyah Nirmala Arum Janie, *Statistik Deskriptik dan Analisis Regresi Berganda* (Semarang: Semarang University Press, 2012), 19.

<sup>142</sup> Dyah Nirmala Arum Janie, *Statistik Deskriptik dan Analisis Regresi Berganda* (Semarang: Semarang University Press, 2012), 23.

<sup>143</sup> Imam Ghozali, *Aplikasi Analisis Multivariat dengan program SPSS* (Semarang: Badan Penerbit Universitas Diponegoro, 2001), 45.

**b. F – test (Simulate Testing)**

F-test was used to test whether there is significant relationship between test-taking strategy and TOEFL equivalent score simultaneously. Ghozali appears the guidelines to see the result of F-test as follows<sup>144</sup>:

1. If the value of significance or probability value  $< 0,05$ ,  $H_0$  is rejected and  $H_a$  is accepted.
2. If the value of significance or probability value  $> 0,05$ ,  $H_0$  is accepted and  $H_a$  is rejected.

**c. T-test (Partial Testing)**

T-test was used to test whether there is significant relationship between test-taking strategy and TOEFL equivalent score partially. Ghozali appears the guidelines to see the result of T-test as follows<sup>145</sup>:

1. If the value of significance or probability value  $< 0,05$ ,  $H_0$  is rejected and  $H_a$  is accepted.
2. If the value of significance or probability value  $> 0,05$ ,  $H_0$  is accepted and  $H_a$  is rejected.

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<sup>144</sup> Imam Ghozali, *Aplikasi Analisis Multivariat dengan program SPSS* (Semarang: Badan Penerbit Universitas Diponegoro, 2005).

<sup>145</sup> Imam Ghozali, *Aplikasi Analisis Multivariat dengan program SPSS* (Semarang: Badan Penerbit Universitas Diponegoro, 2005).



### 3. Multiple Regression Analysis

Multiple regression analysis was addressed to know in what extend the significant relationship of each strategy to TOEFL equivalent score. The regression formula used in this analysis is as follows<sup>146</sup>:

$$Y = 1 \quad 1 + 2 \quad 2 + 3 \quad 3 + 4 \quad 4 + 5 \quad 5 + \dots$$

Remarks:

Y = TOEFL equivalent score

$\beta_1$  = Regression coefficient of  $X_1$

$X_1$  = Strategy 1

$\beta_2$  = Regression coefficient of  $X_2$

$X_2$  = Strategy 2

$\beta_3$  = Regression coefficient of  $X_3$

$X_3$  = Strategy 3

$\beta_4$  = Regression coefficient of  $X_4$

$X_4$  = Strategy 4

$\beta_5$  = Regression coefficient of  $X_5$

.....

e = Error standard

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<sup>146</sup> Supranto J, *Statistik Teori dan Aplikasi* (Jakarta: Erlangga, 2002), 270.