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## CHAPTER III

### RESEARCH METHODOLOGY

#### 1.1. RESEARCH DESIGN

This research is a quasi-experimental study: the pre-test-post-test non-equivalent group design. Cohen, L. Manion, L & Morrison, K (2007) state that this design is one of the most commonly used quasi-experimental designs in educational research. A similar term used is a nonrandomized comparison group design, specifically termed as the Nonrandomized Pretest-posttest Comparison Group Design (Ary, Jacobs, Razavich, and Sorensen 2006).

In this quasi-experimental research of multiple pre-test and post-test non equivalent group design, two research questions were addressed to explore the effects of Mobile Phone Technology towards students' involvement in learning English at Language Center of Uin Suska Riau. A quasi-experimental design is selected for this study because of the following factors: (a) administrative constraints by the selected elementary schools that do not allow for random selection; (b) based on the real condition, it is not realistic to conduct the study in true experimental design due to the complexity of human behavior and language behavior, and the difficulty of defining various variables involved in language learning (Hatch and Farhady 1982); c) quasi-experimental design can reflect what happens in real life settings without any disruption in the educational set-up; therefore, this eliminates 'artificiality' existing in true experiments and also shows that ecological validity of such designs is strong (Bryman 2001; Pelham and

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Blanton 2007; (d) the results of quasi-experimental research, as Bryman (2001) argues, is still ‘compelling’ and particularly prominent in evaluation research studies; and (e) the use of intact classes in quasi-experimental designs could reduce the threat of Hawthorne effect that can often result when subjects are randomly selected and assigned to conditions for cooperative lesson periods (Chong 2003).

The notion of ‘pre-test and post-test non equivalent group design’ indicates that subjects are not randomly selected and assigned to conditions (Gay and Airasian 2003; Haslam and McGarty 2003). Besides, the term ‘nonrandomized’ refers to the use of existing intact groups that are of ‘un-assured equivalency’ (Campbell and Stanley, 1963). With regard to the un-assured equivalency of certain characteristics between the experimental and control groups, it was assumed that subjects’ past language learning experiences and their language background, among other possible characteristics, could be of ‘un-assured equivalence’ in this study. The pre-test- post-test non equivalent group design can be schematically represented in the following manner (Figure 3.1).

Group	Pre-questionnaire	Independent Variable	Post- questionnaire
Experimental Group (E)	01	X	02
Control Group (C)	01	-	02

**Figure 3.1 Schematic Representation of the Pre- questionnaire -Post questionnaire Non-Equivalent Group Design**

E : Experimental group of using MPT based on android smartphone application.



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C : Control group of using the conventional learning of communicative approach.

O1 : Pre-questionnaire

O2 : Post- questionnaire

X : Treatment of Mobile Phone Technology

In this study, attempts are made to rule out the six classes of extraneous variables suggested by Campbell and Stanley (1963). Three experimental groups using Mobile Phone Technology and three control groups using conventional learning are conducted in three different categories of school accreditation of A, B and C. A number of other possible non-treatment factors, which might affect the interpretability of the quasi-experimental research, are minimized. In general, these factors are as follows: (1) participant history, (2) participant maturation, (3) test effects, (4) instrumentation, (5) statistical regression, (6) experimental mortality, (7) participant selection, (8) selection interactions, (9) statistical data analysis, (10) experimenter bias, (11) location, (12) floor and ceiling effects, (13) implementation, and (14) diffusion of treatment.

It should be emphasized, however, that there are times where some factors affecting the internal validity of the research are beyond control (Mackey and Gass 2004), especially in educational research. An absolute control of extraneous variables is difficult, if not impossible. The uncontrollable confounds of the present study should be an important consideration in evaluating the research outcomes.

This study will be conducted in two phases. During the first phase, students' involvement in learning English was measured by their gain scores



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obtained at pre-test and post-test. More specifically, in this phase, quantitative data were collected by employing one between and two within factor repeated measures design. The between factor (method) has two levels: (a) the experimental group (treatment), and (b) the control group (non-treatment). One within factor (test time) has two levels: (a) pretest, and (b) posttest, and the other within factor (language components: vocabulary and grammar) has two levels. Therefore, Independent t-test and paired sample t-test, ANOVA and Multivariate Analysis of Variance (MANOVA) with repeated measures were performed to assess the data obtained. The data analyses were considered appropriate for this study because the independent and dependent variables were truly multi-dimensional and interrelated in nature.

Considering the above arguments, this particular design was found to be appropriate in providing the answers to the first research question of the study restated as follow:

What are the effects of Mobile Phone Technology on students' involvement in learning English?

Upon completion of the intervention which took 14 weeks, inclusive of pre-test and post-test sessions, data collected from pre-and post-tests were put under a series of descriptive and inferential analyses. During the second phase, this study also attempted to provide descriptive information regarding participating students' behavioral change. According to Creswell (2003), such qualitative data set collected in a study, unravel many things related to 'the not-directly-observable' (e.g. perceptions, behavioral change and attitudes). The data obtained through



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interview protocol from teachers' perceptions dealing with learners' behavioral change and English language achievement were used to address the second research question of this study, namely:

## **POPULATION AND SAMPLING TECHNIQUES**

### **3.1.1. POPULATION**

The population in this research is the entire of the second semester of TIF and psychology students of UIN suka Riau. The number of population is 120 students with consist of 4 classes. Due to the large number of schools and cost efficiency (economy and feasibility), the researcher considers to get the sample by selecting the intact group as a whole is known as a cluster sampling (Singh, 2006:89).

In this research the researcher selects a specific number of groups and test the entire member in those selected groups. From 2 classes of second semester, each class consists of 28 students which are divided in experimental group and control group. From 2 classes of second semester consists of 28 students which are divided in experimental group and control group

### **3.2. INSTRUMENTATION**

To collect data from samples that are needed to support this research, the researcher will use several instruments as follow:

#### **3.2.1. Observation**

the researcher will observe the activity of the students during teaching learning process. The research uses an observation list that consisted of 10 items to observe the students' actual behavior (meaningful participation) as

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the indicator of the students' involvement in learning English. The observation will be administered twice to both of groups before and after using mobile phone technology.

The maximum score for the students' meaningful involvement (part of motivation) is 100, whereas the minimum score is 10. After getting the total score (TS), the researcher interpretes it into three qualitative categories based on the scale below:

4. Tabel 3.5 The Scale of Meaningful Participation

Percentage	Categories
71-100	High
41-70	Middle
10-40	Low

### 3.2.2. Questionnaire

In order to get data of the students' English involvement, the writer used a set of questionnaire. The form of the questionnaire was mobile phone technology adopted from Horwitz consists of 20 items. This scale was chosen for this research because of its effectiveness in students' English involvement. The questionnaire dealt with respondent's opinions in responding to following options based on the Likert' - scale:

- Strongly agree
- Agree
- Undecided
- Disagree

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- Strongly disagree

### 3.4.4 Data Analisis Technique

To test the hypothesis in this current study, the researcher will use t-test, which is used to discover whether there are statistically significant differences between the means of two groups, using parametric data drawn from random samples with a normal distribution. It is used to compare two groups randomly assigned, e.g. on a pretest and a post-test in an experiment (Cohen, Manion, and Morrison, 2007: 543).

In this research t-test is needed to measure:

- The difference between the mean level of the experimental group on the pre-post- questionnaire (the t-test for related or ‘paired’ samples).
- The difference between the mean scores of the experimental and control groups on the post- questionnaire (the t-test for independent samples).

The data is administered twice that can be explained as follows:

- Pre- questionnaire: which done before the samples got the treatment (using mobile phone technology). The purpose of Pre- observation is to measure the students’ involvement without using mobile phone technology.
- Post- questionnaire: which done after the samples of experimental class got the treatment. Students of the experimental group received instruction through the proposed method (using mobile phone technology), whereas students of the controlled group received instruction through the traditional method. The purpose of post-observation is to measure the students’ involvement level by using mobile phone technology.

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The calculation of a statistic t-value can be done based on the following formula (Cohen, Manion, and Morrison, 2007: 543):

$$t = \frac{\text{Sample one mean} - \text{sample two mean}}{\text{Standard error of difference in means}}$$

Finally, to accept or reject the null hypothesis is done by comparing calculated t-value ( $t_o$ ) and t value from the table ( $t_t$ ). if  $t_o < t_t$ , null hypothesis is accepted. The calculation is processed by SPSS 20.