

Chapter III

Research Methodology

This chapter discusses some important aspects related to research methodology. There are research problems, research design, a phase of teaching using the Web-based Model for TEFL and data collection, research site and participants, questionnaire, interview guide, observational sheet and data analysis.

3.1. Research Problems

The problems of the present study are formulated in the following questions.

- (1) What is the construct of a web-based model appropriate for the TEFL to Junior High School students?
 - a. What are the elements of a Web-based Model?
 - b. How do the elements build the model?
- (2) To what extent does the model facilitate teaching and learning process?

3.2. Research Design

As mentioned earlier in chapter I, the design of this study is research and development following Borg, (1979) as the main umbrella for this study. This study attempts to find out the effectiveness of a web-based model which covers the design of the model, the development of the model and try out of the model and measure the effectiveness of the model. Major steps in the research and development cycle as Borg (1979) suggests are used to develop a Web-based Model for TEFL include:

- (1) Research and information collecting – This includes reviews of literatures about language learning theories in relation to e-learning and the use of computer as a media for teaching and learning languages. School and classroom observations are also conducted to observe the possibility for implementing the Web-based Model for TEFL. A visibility of running the Web-based Model for TEFL in the Learning Management System is also an important aspect to be considered at this stage.
- (2) Planning – At this stage, computer skills required by the students and teacher were defined. Both teachers and students should have the basic knowledge of browsing in the internet. Teachers' knowledge of browsing, and experience in participating in an online course would be a benefit. The familiarity to the technology and prior experience affects the success of online learning (Eastmond, 1995; Davies et al., 1989).
- (3) Developing preliminary form of Web-based Model for TEFL – the Web-based Model for TEFL (see chapter 4 of this study), learning and teaching materials for the model

were written and uploaded at the Learning Management System site (using modified Moodle platform). Evaluation device such as questionnaires and interview guidelines are prepared.

- (4) Preliminary field testing – Preliminary field testing was conducted at a private junior high school grade VIII. Two teachers and ten students were involved in this field testing. Data from interviews with the teachers and students, observational notes and questionnaires were collected and analyzed.
- (5) Main Web-based Model for TEFL development – the revised version of the Web-based Model for TEFL was developed based on the preliminary field test results.
- (6) Main field testing – The revised Web-based Model for TEFL was tested with regards to its effectiveness at two schools with 101 students for a semester. This is an experiment using the quasi-experimental design involving the experimental and control groups. The test scores of the two groups were analyzed using inferential statistics.

3.3. Research Site and Participants

As indicated earlier, this study was conducted in two private schools in Bandung, for one semester involving 101 students and 3 teachers. The first private Junior High School (School A) in Bandung was chosen as one of the research sites in this study for three reasons. First, this school has a website, its server is compatible for running the LMS software, using modified moodle as the platform (www.talenta-college.com/elearning),

and the students can access the learning materials from home or other places, as long as they can get connected to the internet (see Diagram 3.1). Second, the school has a computer laboratory with the internet connection and provides a compulsory subject that builds skills for computer technology and information. Third, the students in each class are heterogeneous in terms of English ability. Finally, it is a suitable place for language learning using a Web-based Model for TEFL.

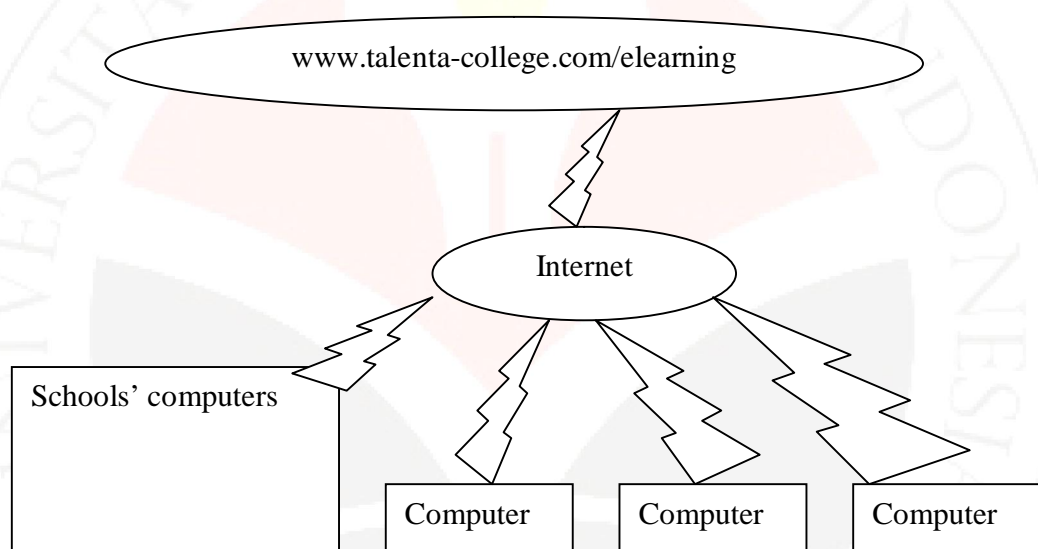


Diagram 3.1.

The second site is a private Junior High School in Bandung (School B). This school has Local Area Networks which is compatible for running the Web-based Model for TEFL. Its existing Local Area Networks is also possible to connect to the internet so that the links to resources in the internet are possible. The only disadvantage of this system is that the materials placed in the local server could not be accessed from outside (see Diagram 3. 2).

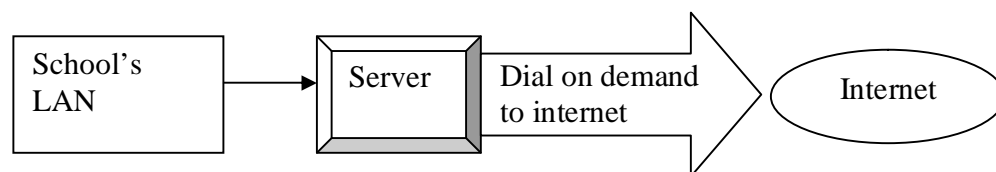


Diagram 3.2.

This study selected students from grade 8 because these students have been introduced to use the computer laboratory for language learning activities in their seventh grade. Moreover the subject on computer technology and information and connection to the internet become a very important basis for the site selection because the subject and the internet connection have made the model try out possible. This ensures the researcher that both the students and teachers were familiar with the use of computer and internet. The success of the learning in the e-learning environment is very much depending on the students' familiarity and attitude towards the technology (Zoltan et al, 1982, Webster and Hackey, 1997, Sanders et al., 2002, Derouza and Flammig, 2003).

Three English teachers were also appointed to be the subjects of this research, two English teachers from school A and one teacher from school B. They were familiar with the teaching methods and materials and also have the knowledge of multimedia used at junior high school level. They knew the students well, and they were capable of conducting the teaching and learning process both in class and computer room. In other words, the schools were appropriate to conduct the study. The teachers' readiness in using the technology and the willingness to take training is essential (Shin, 2007).

3.4. A phase of teaching using the Web-based Model for TEFL and Data Collection

Before teaching using Web-based Model for TEFL, preparation stages needed to be done. The first stage was getting the access by examining the condition of the schools and observing how web-based model for TEFL can support the teaching and learning process. The second stage was model development consisting of choosing the right Learning Management System (LMS), creating teaching and learning materials followed by piloting the materials and creating digital teaching and learning materials for the experimental groups. The third stage was trying out the model to a limited number of SMP students (10 students who were confident in browsing websites) and data were collected through questionnaire, interview and observation. The last stage was testing and validating the model. The data were collected through interview, observation, questionnaire and test.

3.4.1. Getting the Access

Site observation was conducted to look at the teaching and learning objectives, teaching methods, teaching materials, teaching facilities, students' participation in class activity and students' evaluation. The observation, interview and filling out the questionnaire were conducted for 3 weeks (9 meetings). Learning and teaching objectives, learning and teaching materials and students' participation were considered in designing the teaching and learning materials for the model in term of the presentations of the materials, tasks

and sequences. The use of the available multimedia for teaching and learning purposes such as LCD, tape and CD players and computer laboratory were observed. The speed, uplink and downlink of the existing computer laboratory connected to the internet were made certain that the teaching and learning activity using the model can be conducted. The capacity of the server at www.talenta-colege.com was ensured and able to accommodate required programs such as web-chat, discussion forum, attendance records, and scoring system. To cross check the finding of the site observation, questionnaire (see Appendix 1) was distributed to the English teachers to be completed and interview (see Appendix 2) was conducted to validate the findings of the observation. In brief, after considering the learning theories above (as discussed in chapter 2), and site observation, the study of Web-based Model for Teaching English as a Foreign Language (TEFL) can be carried out.

3.4.2. Choosing Learning Management System (LMS) and adapting teaching and learning materials

In carrying out the study, the appropriate Learning Management System (LMS) with minimum requirement in term of features and facilities for presenting the learning materials should be chosen. The Learning Management System chosen should accommodate programming based on behaviorism learning theory or zone 1 of the Web-based Model which is going to be discussed in chapter 4 of this study, cognitive learning

theory or zone 2 of the Web-based Model which is going to be discussed in chapter 4 of this study and social learning theory or zone 3 of the Web-based Model which is also going to be discussed in chapter 4 of this study. In other words, the LMS should have the facilities in accommodating the zones of the model which is going to be discussed in the next chapter. The principles of behaviorist theory adopted in zone 1 were applied in the explanation of grammar, vocabulary and special expressions. For example, in designing the grammar exercises, the explicit outcome of the grammar points were stated clearly so the students could set the expectation and judge themselves whether or not they have achieved the outcome. Feedback was provided so that the students could monitor how they are doing and take corrective action if required (Galavis, 1998).

The principles of cognitive and constructivist theory (zone 2 of the model) could also be applied in the design of the model. The learning materials were designed and arranged in such a way that the students have the opportunity to reflect on what they are learning, and collaborate with others. Self check questions and exercises can be provided for students to check how they are doing. For example, the students are given a text with pictures, graphs or videos and a set of questions to be answered. In answering the questions, a forum or chat can be provided for students to work in group. Exposure to the authentic materials was provided in the form of internal and external links. These authentic materials could be in the form of text, audio, video and the combination. Paivio (1986) states that information should be presented in different modes to facilitate process and

transfer of the information to memory. Discussion topics could be assigned to the students to be discussed in the forum and web chat. In constructivist and social theory, the arrangement of the learning materials can be presented so that the students have the freedom to control their own learning. For example in the presentation of a topic, the students have the freedom to choose the materials presented in the web, even have the freedom to decide what to do.

In applying the social theory (zone 3 of the model), tasks were assigned to the students. To do the tasks the students are requested to do reading from different sources, collaborate online or offline or the combination with their friends. In other words, students are interacting with the materials, and other students. The LMS should have the facilities to upload students' work to be discuss with the teacher. The learning is meaningful because they are using the language in the context of doing the tasks. Furthermore, examples were provided in the learning materials so that the students can make sense of the information to do the tasks assigned (Heinich, et al., 2002).

The LMS should have the basic features for participant such as list of participants, profile, and activity reports. The LMS should also have basic administrative features such as facilities for backing up and restoring files and program, facilities for scaling and grading students' work. The LMS should also have the tools to add resources into the server such as text page, a web page, link to a file or a web site and insert label.

Furthermore, the LMS should have the tools for adding assignment, chat, forum, quiz, lesson and wiki.

After choosing the LMS, a unit or theme of the available materials was selected and converted into digital format, changes were made to cater the perceptual level and knowledge organization of the students as suggested by Gillani (2003). The elements of the content were organized into a logical relationship and presented in the web-based learning environment following Gestalt laws as discussed in chapter 2. Appropriate software such as Macromedia Flash, Hotpotatoes, Microsoft movie maker and File Transfer Protocol (FTP) were prepared to convert a unit of material into digital format.

3.4.3. Trying out the model

Before trying out the model, it is necessary to train the teachers and students involved in this study on how to use the model. The practical training for teachers was conducted for 2 weeks with 4 meetings. The role of the teacher as a facilitator was elaborated in the first meeting followed by explanation about the Web-based Model. The second meeting concentrated on technical matters and how the students use the model. The teachers were assigned to try the model as student so that they have the experience being in student's shoes. After having experience to be in student's role, the teachers were trained to be the teacher and they were assigned to register their students in the LMS, look at students'

log, score students' work, give feedback and participate in web chat and discussion forum.

Ten students were prepared to participate in the tryout of the model. Training and explanation about the concept of online learning in general were explained such as; what the students' responsibility are, how learning materials are presented, and explanation about the role of materials in zone 1, 2 and 3 followed by technical training. This training was conducted for a week (2 meetings). In the first meeting, students were equipped with the understanding of the nature and environment of e-learning by demonstrating the tryout model. The second meeting concentrated on the technical matters such as how to access the texts, do the quizzes and assignments, upload assignments and participate in chat and discussion forum.

After the teachers and students were prepared with the background and technical matters related to the model, tryout was conducted to 10 students for four weeks. During the try out, observation was conducted to examine the students' activities such as how they interact with the learning materials in the model, how they interact with their friends and teacher (see Appendix 3) and teacher's activities in handling the class (see Appendix 4). At the end of the tryout, questionnaire was distributed to the students to be completed in (see Appendix 5) and group interview was conducted to cross check the result of the

questionnaire (see Appendix 6). The questionnaire was analyzed quantitatively using Likert Scale and the result was checked with the result of the interview. The data obtained from the tryout were put into consideration when designing the material for the model.

3.4.4. Testing and Validating the Model

Eight units of materials were then adapted into digital format and placed in the server. In adapting the materials, some principles of material development highlighted by Brown (1980), Elbaum (2002), Hadley et al., (2001), Barolli et al. (2006) and Holmes et al. (2006) as discussed earlier in this chapter and chapter 2, put into consideration. In other words, the principles were used to elaborate the syllabus (see Appendix 7) into scope and sequence (see Appendix 8) and learning materials. In converting the materials into digital format to be placed in web-based environments, some websites were identified and used as enrichment in the external links.

The experiment of the model was conducted in two junior high schools involving 3 classes with 101 students and 3 English teachers for one semester. Before testing the model to the experimental group, pre-test was conducted to discover whether students in the control group and the experimental group have the same ability in English. Training on using the model to the experimental group was carried out to prepare the students in

using the model. The goal of the learning, the nature of web-based learning environment and technical matters on how to navigate the model were introduced to the experimental group.

The students' activities in the experimental group were observed, such as which learning materials were accessed, which quizzes were done, and which external links were visited. Students' interactions and communication, both online and offline were observed (see Appendix 9). The teachers' activities in handling the experiment class were observed (see Appendix 10).

Similar method applied in the tryout in collecting data, questionnaire was distributed to the students to be completed at the end of the semester (see Appendix 11) and group interview was conducted to cross check the result of the questionnaire (see Appendix 12). The questionnaires were analyzed quantitatively using Likert's Scale and the result was checked with the result of the interview. Post-tests were conducted at the end of the semester to the control and experimental group. Data from the both groups were analyzed using inferential statistics.

3.5. Data Collection Techniques

There were 4 data collection techniques developed in this study, i.e. questionnaire, interview guides, observational sheets, and tests.

3.5.1. Questionnaire

Three questionnaires were developed to obtain information from the respondents (Arikunto, 1998). The number of respondents was 101 students and was representative, meaning that all features and characteristics present in the total respondents. The total population of the participants was 202 students. The first questionnaire was intended to support the interview and observation about How the Web-based Model for the Teaching of English as a Foreign Language (TEFL) to Junior High School support the learning and teaching process (see Appendix 1).

The second questionnaire (see Appendix 11) was developed to find the learners' response toward the Web-based Model for TEFL. This explores the covering the students' opinion on (1) learning by using computer and Web-based Model for TEFL; (2) learning activities in the Web-based Model for TEFL; (3) benefits obtained from learning material presented in the Web-based Model for TEFL.

The third questionnaire (see Appendix 12) was developed to find out the teacher's response toward the Web-based Model for TEFL, this explores their opinion on (1) content of the Web-based Model for TEFL (teaching and learning materials); (2) mode

and instructions used in the Web-based Model for TEFL; (3) benefit of the materials and presentation of the Web-based Model for TEFL.

The scoring criteria for each item in the questionnaires were determined by applying Likert Scale with a modification presented in Table 3.2.

Table 3.2. Likert Scale

Answer	Value
Strongly Agree (SA)	4
Agree (A)	3
Disagree (D)	2
Strongly Disagree (SD)	1

In determining the validity and the reliability of the questionnaires, a try out was conducted to 99 students. In measuring the validity of this set, Pearson Product Moment formula (Hatch and Lazaraton, 1991; 613) was used as shown in figure 3.1.

$$n\sum xy - \sum x \sum y$$

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{(\sum (x - \bar{x})^2)(\sum (y - \bar{y})^2)}}$$

Figure 1. Pearson Product Moment Formula

A guide from Arikunto (1998) and Rosenbaum (2002) was employed with some modification to interpret whether a question was valid or not, as presented in Table 3.3. A good instrument shall not be tendentious or directing the respondents to choose certain answers. If the data represent the fact, regardless how many times it is taken, it will give the same result.

Table 3.3

Coefficient Interval / Score	Validity Category
0.00 – 0.199	Poor
0.20 - 0.399	Satisfying
0.40 - 0.599	Good
0.60 - 0.799	Very good
0.80 – 1.00	Excellent

3.5.2. Interview Guide

There were interview guides developed for different purposes. The first interview guide was intended to find the condition of teaching and learning and the use of multimedia at junior high school level. There were eleven questions for English teachers at both schools (see Appendix 2). The second interview was intended to cross check the result of the questionnaire about teachers' and students' responses toward the model. There were eleven questions for 30 students and 3 teachers.

3.5.3. Observational Sheet

The observation were done directly to collect data on how the teachers conduct English class using the Web-based Model for TEFL, and how students use the model in their learning activities. On the observation sheets (see Appendix 10), students' activities, during and after their learning using Web-based model for TEFL were recorded. Incidents, events, developments and other matters related to teaching and learning using the Web-based model for TEFL were also recorded (see Appendix 3).

The observation data were recorded in two kinds of field notes. The first was used to record teacher's techniques in conducting the lesson using the model as an attempt to support the findings from the questionnaires (Appendix 4). The second field note was used to record the students' participation during the activity.

3.6. Data Analysis

As mentioned above, the present study examined four types of data; i.e. data from questionnaire, interview, observation and test. Data from questionnaires were analyzed quantitatively to find out about;

- how the Web-based Model for TEFL to Junior High School support the learning and teaching process. This questionnaire consisted of 20 questions covering questions about the goal of teaching, material development, school facilities and method of teaching. The respondents were English teachers of A school and B school
- teachers' responses toward the Web-based model for TEFL. This questionnaire consisted of 22 questions covering questions about the content, instructions, benefit and navigation the Web-based Model for TEFL.
- students' responses toward the Web-based model for TEFL. This questionnaire consisted of 25 questions covering questions about Web-based Model in general, activity, benefit and navigation of the Web-based Model for TEFL.

Data from the interviews were analyzed qualitatively to cross check the responses of the questionnaire about;

- how the Web-based Model for TEFL to Junior High School support the learning and teaching process. There were eleven questions covering questions about the goal of teaching, material development, school facilities and method of teaching.

- teachers' responses toward the Web-based model for TEFL. There were 4 main questions mainly dealing with the delivery of the Web-based Model.
- students' responses toward the Web-based model for TEFL. There were 7 main questions mainly dealing with the materials presented in the Web-based Model and process of leaning. There were 30 students interviewed.
- teachers' responses toward the Web-based model for TEFL,
- students' responses toward the Web-based model.

Finally, data in the form of test results of the experimental and control groups were analyzed using inferential statistics to examine whether the two groups perform differently in the tests.

The analysis of the data from questionnaire, interview, and observation leads to the conclusion whether or not the Web-based Model TEFL is effective for enhancing student learning.