CHAPTER 3

METHODOLOGY

The purpose of this study was to investigate the design of elementary school's environmental print (ESEP), the rationale behind the design and the effect of ESEP on pupils' learning and teachers' teaching, and how pupils and teachers made use of ESEP. This chapter presents the methodology of the current study, including participants, instruments for data collection, procedure of this study and how data are analyzed.

As nobody has done anything like this in Taiwan before, questionnaires and interviews are used to collect data in this study. In order to obtain information about the design of ESEP and the effect of ESEP, the researcher chose the in-service school in Taipei County as the research case. This elementary school, which is located in Taipei County of northern Taiwan, was established in 1991. There are five EFL teachers and 61 classes in this school. The number of classes in each grade is listed as follows: 9 classes in the first grade, 12 classes in the second grade, 11 classes in the third grade, 9 classes in the fourth grade, 10 classes in the fifth grade, and 10 classes in the sixth grade. The total number of students was 2012. Students from the third to the sixth grade have two English classes (80 minutes) per week, while the first graders and second graders only have one English class (40 minutes) each week.

Participants

Participants of this study are the school staff involved in the design of ESEP and students randomly sampled from this school. The school staff, including four administrative staff and five English teachers, and students are described as follows.

Staff involved in the design of ESEP. Four administrative staff and five English teachers were involved in the design of the ESEP. First, Table 1 presents four

administrative staff's background information and administrative positions. To protect these participants' privacy, they are referred to as Sa, Sb, Sc, Sd. Among these four administrative staff, three, Sa, Sb, and Sc, served as the Director of Academic Affairs Division at different times. The other one, Sd, was a member of the Academic Affairs Division.

Table1 *Background Information and Administrative Positions of the Four Administrative Staff*

	Sa	Sb	Sc	Sd
Gender	Male	Male	Male	Female
Age	42	43	41	39
Academic degree	Master	Master	Master	Master
Administrative position	2001-2003 2005-2007 Director of the Academic Affairs Division	2003-2005 Director of the Academic Affairs Division	2001-2003 Director of the General Affairs Division 2007-2008 Director of the Academic Affairs Division	2003-2005 a member of the Academic Affairs Division
Teaching experience	22 years	21 years	20 years	17 years

Second, Table 2 shows background information of the five English teachers in this school. All of them were females and non-native speakers of English. Each of them had at least five-year teaching experience in this school. To protect these teachers' privacy, their names were pseudonymous as Ea, Eb, Ec, Ed, and Ee.

Table2 *Background Information of the Five English Teacher*

	Ea	Eb	Ec	Ed	Ee
Gender	Female	Female	Female	Female	Female
Age	38	38	33	35	35
Academic degree	Master	Bachelor	Master	Master	Master
The grade they teach	The fourth grade	The third grade	The fifth grade	The sixth grade	The first and second grade
Teaching experience	18 years	7 years	7 years	7 years	7 years

Students. Student participants were sampled from the third graders to the sixth graders. Considering the students' cognitive abilities, the researcher eliminated first and second graders. All classes were mixed-ability. Students in the same grade were taught by the same English teacher. In order to get the representative participants, the researcher adopted random sampling in the present study. There were 9 to 10 classes in each grade. The even-number classes from the third grade to sixth grade were selected to join the project. There were totally 19 classes of students selected as participants in the current study, including 5 classes in the third grade, 4 classes in the fourth grade, 5 classes in the fifth grade and 5 classes in the sixth grade. The number of the student participants amounted to 622. Therefore, 622 questionnaires were distributed to the participants, and 592 questionnaires were collected. Among those 592 participants, 14 participants gave invalid responses. As a result, the final number of the participants for data analysis was 578, including 284 male students and 294 female students.

Instruments

Two sets of self-designed interviews and questionnaires were adopted in the present research. The instruments included interviews to formulate ideas about the

design of ESEP, interviews for teachers about the actual use of ESEP, questionnaire for teachers, and questionnaire for students.

As there was no related research done before, interviews and questionnaires serve as good instruments to collect needed information. According to Nunan (1992), the most widely used method for collecting data in educational research is survey. Through operating a survey, researchers could obtain a snapshot of conditions, attitudes, or events at a single point in time. Bodgan & Biklen (1992) also stated that interviews were used to gather descriptive data in the participants' own words so that the researcher could develop insights on how participants interpret their attitudes and behaviors. Moreover, interviews also helped the researcher to obtain implicit perspectives behind behaviors and to clarify the evidence or information collected from other sources (Yin, 1994).Since this study aimed to investigate both teachers' and students' perception of the ESEP in school's public area and how they made use of it, a survey research method combined with questionnaires and interviews were adopted as data sources.

However, there was little research about the use of EFL Elementary School's Environmental Print. The research instruments, therefore, were self-designed questionnaires and interviews. Through the pilot study, the researcher modified the questionnaires and interview questions. The pilot study will be discussed in the section of Procedure. The sequence of constructing the instruments is shown in Figure 1.

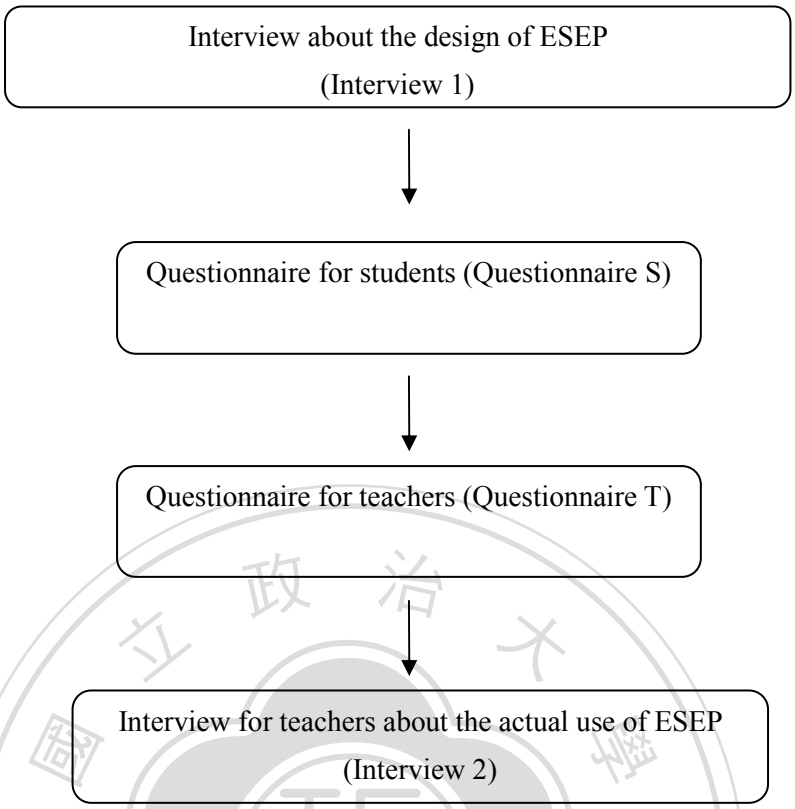

Figure1 *Sequence of Constructing Research Instruments*

The following points were taken into consideration when designing the instruments.

1. Background information of participants' learning/teaching experiences. According to the Helmholtzian constructivist-inferential approach perception was viewed as the outcome of a process of unconscious inference from sensory data and knowledge such as personal experience derived from the past. Thus, it would be essential to investigate the background information of participants' learning/teaching experiences and to find out the relationship between participants' experiences and perception of ESEP and reaction to ESEP. Besides, participants' perception might differ according to their involvement of the design of ESEP.

2. Factors that influenced participants, including teachers and students, into paying attention to ESEP and making use of the print.
3. How participants, including both teachers and students, made use of ESEP would be investigated.
4. Both teachers' and students' advice towards ESEP.

The following is an introduction of the content of the questionnaires and interviews.

Interview. In this study, two sets of semi-structured interviews including interview to formulate ideas about the design of ESEP and interview for teachers about the actual use of ESEP were designed. All the interviews were conducted in Chinese and recorded by the digital voice record pen. The recordings were later transcribed for analysis.

Interview about the design of ESEP (Interview 1) (see Appendix A). The researcher interviewed the school staff, including four administrative staff and five English teachers who were involved in the design of ESEP, with special focus on the rationale behind the design. With their answers, the participants were asked some related questions to elicit their opinions. The content of the semi-structure interview questions are as follows.

1. What is the rationale behind the ESEP design project?
2. Who was in charge of the design of ESEP? Who was in charge of the language content, form, location, and print form of ESEP?
3. Were there any criteria, limitation, and difficulties when you were working on the ESEP?
4. Was there any instruction or evaluation on ESEP? (Did administrative department ask teachers to use ESEP as teaching materials? Did you have any evaluation for

ESEP?)

5. Were any measures taken to maintain or renew the ESEP?
6. What's your opinion about the effectiveness of ESEP bringing to teaching and student's learning? Do you have any suggestion?

Interview for teachers about the actual use of ESEP (Interview 2) (see Appendix B). The interview focused on teachers who used ESEP as part of their teaching/learning materials. The interview aimed to find out teachers' rationale about using the ESEP as teaching materials, and how they make use of it. According to participants' answers, the researcher asked them some related questions to elicit their opinions. The content of the semi-structure interview questions are as follows.

1. Why did you choose ESEP as teaching materials?
2. How did you use ESEP as teaching materials?
3. What difficulties have you encountered?
4. What is your suggestion for future ESEP development?

Questionnaire. The researcher designed two sets of close-ended questionnaires, questionnaire for teachers (Questionnaire T) and questionnaire for students (Questionnaire S).

Questionnaire for teachers (Questionnaire T) (see Appendix C). Questionnaire T was designed for 5 English teachers, which consisted of participants' background information, the effectiveness of the ESEP, and the rationale and criteria behind the design of ESEP. First, participants' background included their teaching experience, teaching hours and which grades they taught. Second, the effectiveness of ESEP was discussed in terms of four thematic groups: (a) perception of the ESEP, such as the characteristics, content, and locations of the ESEP; (b) opinions about using the ESEP as teaching/learning materials. For example, did you use the ESEP as

teaching/learning materials? Are there any evaluating measurement? Finally, the rationale and criteria behind the design of ESEP was investigated.

Questionnaire for students (Questionnaire S) (see Appendix D). Questionnaire S similarly contained participants' background information (e.g., graders, English learning experience, English semester scores) and the effectiveness of ESEP. The effectiveness of ESEP was composed of students' perception of the ESEP, students' reaction to ESEP and the reason why ESEP attracted their attention and students' perception towards teachers' instruction of ESEP and opinions about ESEP.

Procedure

The following part addressed the procedure of this study. The design of the interview and questionnaire, pilot study, and the main study are described below.

The design of the interview and questionnaire. The researcher first investigated and collected the ESEP setting in the school under study, and then searched the Internet for the information about the design of ESEP from other elementary schools in the country. Based on the information on the Internet and previous studies, the researcher developed two sets of interviews and two sets of questionnaires.

Pilot study. To assure the reliability and content validity of the questionnaires, a panel of experts, including the researcher's thesis advisor and two experienced English teachers were invited to check words, phrases, and question-item usage in the questionnaires. Then, these two sets of questionnaires were piloted. 5 English teachers from other elementary schools and 18 elementary school students from different grades were invited to fill in Questionnaire T and Questionnaire S. They were all asked to circle out those phrases they did not understand or feel confused. With the results from the pilot study, the researcher discussed with the advisor and further modified the questionnaires. (see Appendix E and Appendix F).

The revised items could be categorized into three types as follows.

1. The wording was revised. For instance, the question "How did you decide the content of *the Stairs (non-context-related area) sentences?"* was revised as "How did you decide the content of *the no-context-related ESEP poster (useful sentences/expressions on stairs)?*"

Since the ESEP in the present study was divided into the print of context-related signs and the print of non-context-related posters, the original wording seemed to restrict the non-context-related ESEP posters as those posted on stairs areas. However, many teachers put non-context-related ESEP posters in different public areas such as bulletin boards, hallways, bathrooms, and etc.

2. More possible answers were added. For example*, the question* "Any suggestions for our school's ESEP?" In addition to items such as "add different content", "add more pictures and illustrations", "make print clear", "make the posters more colorful and attractive", "ask staff to maintain the ESEP poster", "enlarge the typeface", "English words only instead of bilingual signs of ESEP", and "others (please explain)", one more possible answer "*assign an area to students and they design the ESEP by themselves"* was added.

In the above example, one possible answer was added. Those teachers who joined the pilot test suggested that students could participate in the design of ESEP. They found students were interested in their classmates' worksheets and the ESEP designed and decorated by their classmates. In the pilot study of questionnaire for students, participants also wrote that they would like to assist in designing ESEP.

3. Use more participant-friendly description. In Questionnaire S, the question "How old were you when you started to learn English?": "3 years old", "4 years old", "5 years old", "6 years old", and"7 years old" was revised as **"***When did you start to*

learn English?": "junior preschool class", "senior preschool class", "kindergarten", "the first grade", "the second grade", "the third grade".

In the pilot study, most students were not sure at what age they started to learn English, but they could easily pointed out in which grade (which stage of school curriculum) they started to learn English. Therefore, the question was revised in order to prevent the hesitating situation of the participants and get a correct response.

With all these information, the revised questionnaires (Questionnaire T and Questionnaire S) were conducted and distributed to participants

Main study. First, the researcher conducted interview to formulate ideas about the design of ESEP. The interviewees were school staff involved in the design of ESEP. Next, the questionnaire for teachers (Questionnaire T) and the questionnaire for students (Questionnaire S) were carried out with objective but detailed instruction. Then, the researcher conducted the interview for teachers about the actual use of ESEP with the teachers who claimed they used ESEP as language teaching/learning materials. The major purpose was to find out how they used ESEP in classroom teaching. With all the data collected by the above instruments, the researcher stepped into the data analysis stage.

Data Analysis

Data were collected from two sources, interviews and questionnaires. Each called for different types of analysis. Quantitative statistical analysis of questionnaires and qualitative analysis of interviews were employed in the present study.

Questionnaires. Descriptive statistics and Chi-square test were employed to explicate results of the questionnaires for teachers and students. First, in order to understand the participants' perceptions and reactions towards ESEP, the researcher examined the quantitative data from the questionnaires by frequency and percentage.

Then, a chi-square test was computed to see if there were significant differences between genders, graders and students with different English semester scores in their response and reaction towards ESEP. Since the χ^2 value was computed over all cells, it neither specified which cells were major contributors to the χ^2 value nor indicated which group's responses towards ESEP determined the significant differences. Hence each of the cells was computed by the formula of adjusted standardized residual (AdjR) to examine which group's response was the major contributor. For example, if the results of Chi-square indicated that there was a significant difference between different graders' responses towards ESEP. The formula of adjusted standardized residuals was applied to find out which graders was the major contributor to the significance. When an adjusted standardized residual for a group's response was greater than 1.96 (in absolute value), it was concluded that the group was a major contributor to the χ^2 value. As for those adjusted standardized residuals was not greater than 1.96 (in absolute value), it showed that the distributional differences between different groups failed to reach the significance. In other words, they showed no significant differences.

Interviews. The interviews were transcribed, analyzed and discussed according to several issues, including the rationale behind the design of ESEP, the use of the ESEP as teaching/learning materials, difficulties in maintaining ESEP and using ESEP as teaching/learning materials, and suggestions of designing and applying ESEP in the future.