CHAPTER III

RESEARCH METHODOLOGY

3.1. Introduction

This chapter describes the research methodology of the study. The description covers research design, participants, and research instruments for each stage of the study together with methods of data collection and data analysis.

The main objectives of the present study are to investigate the need of English listening skills for student nurses, to develop self-instructional materials to enhance English listening skills for student nurses, and to evaluate the effectiveness of the developed materials.

3.2. Research Design

The study consists of two phases including materials development and materials implementation/evaluation. Besides, five stages of conducting the research are illustrated as a research plan in Table3.1.

Table 3.1: Research Plan

Phase of the study		Steps to be applied
Phase I Development of Materials	Stage 1 Needs Analysis	1. Identify population and samples 2. Review related literature 3. Gather information about needs/skills of English listening required for student nurses by using a documentary research. 4. Design the instruments 5. Validate the instruments by panel of experts 6. Distribute the questionnaire and collect data from 300 student nurses 7. Analyze the data
	Stage 2 Materials Development	1. Explore theoretical framework for materials design 2. Specify important findings from Stage 1 (Needs Analysis) 3. Construct the material production and design (academic aspects and physical aspects)
	Stage 3 The verification of the developed SIMS & The design of listening comprehension test and the materials evaluation form	1. Validate and evaluate both academic aspects and physical aspects by panel of experts 2. Adjust the materials accordingly 3. Design the listening comprehension test 4. Validate by panel of experts 5. Readjust the test accordingly 6. Design materials evaluation form 7. Validate by panel of experts 8. Readjust materials evaluation form accordingly 9. Pilot both instruments i.e. one sample lesson unit and a listening comprehension test with ten student nurses 10. Distribute the materials evaluation form 11. Readjust the lesson unit and the test accordingly
PHASE II Materials Implementation and Evaluation	Stage 4 Materials Implementation	Implementation of the developed materials with the participating group of student nurses via; • One-on-one evaluation • Small group evaluation • Large group evaluation
	Stage 5 Evaluate the effectiveness of the developed SIMS	1. Evaluate the effectiveness of the materials via the following instruments; • The English listening comprehension test • The materials evaluation form 2. Write up the results and the findings

Phase I - Development of Materials

There are three stages to be performed during this phase as follows:

Stage 1: Needs Analysis

During this first stage, a needs analysis was conducted to investigate English listening skills needed by the participants in the study. Two research instruments including a documentary research and a questionnaire were designed and utilized.

1.1. Participants of the Needs Analysis

Purposive Sampling to obtain Participants for the Needs Analysis

Throughout this present study, purposive sampling was employed to obtain the subjects of the study. According to Emory (1976), purposive sampling involved an effort to obtain a sample that is conventional to some predetermined criteria. Therefore, criteria for selecting participants for the needs analysis were listed as follows:

For the expert in validation process

1. English teachers or lecturers must possess a doctoral degree in English language instruction or other related fields.

2. ESP teachers or lecturers must have been teaching ESP courses for undergraduate students at least five years and are responsible for the ESP materials writing or course planning.

3. ELT specialist in nursing must possess a degree in English language instruction and have been teaching English for undergraduate student nurses at least five years and are responsible for the ESP materials writing or course planning for student nurses in any nursing colleges located in Bangkok.

4. ESP assessment specialist must possess a degree in English language assessment and have been teaching English courses for undergraduate

students at least five years as well as responsible for the English materials writing or course planning.

Therefore, panel of experts in this stage including one expert from ESP assessment, one English teacher with a doctoral degree and experiences in teaching ESP, and one ELT specialist in nursing were invited to validate the questionnaire used for the needs analysis.

For student nurses

1. Student nurses must study in either year (1-4) in School of Nursing, Faculty of Medicine, Ramathibodi Hospital, Bangkok, in the academic year 2011.

2. Student nurses must be willing to apply the developed self-instructional materials for their self-study.

Therefore, the voluntary group of 300 student nurses studying between the first year and the fourth year at the School of Nursing, Faculty of Medicine, Ramathibodi Hospital, Bangkok, in the academic year 2011 was invited to be the participants of the study.

1.2. Instruments used for the Needs Analysis

All of the instruments were validated by three experts and were trialed to ensure the reliability of the data gathered before the actual use. Instruments used in this phase were documents and the questionnaire to assess the needs of 300 student nurses of the School of Nursing, Faculty of Medicine, Ramathibodi Hospital, Bangkok.

1.2.1. Content Analysis

A wide variety of relevant documents including websites and authentic materials in the field of listening and materials used for listening in English were gathered and analyzed to scope the initial framework of developing self-instructional materials. Documents in the field of ESP and materials design used in this present study included those authored by Hutchinson & Water (1987); Nunan (1995); Graves (2000); Richards (2001); Littlejohn (2003); and Tomlinson (2003). Moreover, English listening skills and competency outcomes for adult L2 learners proposed by the English Language Development Center (ELDC) of Thailand and Canadian English Language Benchmarks Assessment for Nurses (CELBAN) helped the researcher summarize skills of listening in English for student nurses. The results retrieved from the content analysis were validated and approved by experts.

1.2.2. The Questionnaire (Appendix A)

Though details and information gained from content analysis had provided some important issues of developing instructional materials for listening in English, the exact needs of the participating group of 300 student nurses was still considered essential for developing the self-instructional materials for them. Therefore, the questionnaire was an instrument used to find these 300 student nurses' needs in terms of lacks, wants, and problems concerning skills of listening in English, and types of materials needed for practicing their listening skills. This questionnaire applied five-Likert's scales (1 to 5) and consisted of six parts as follows:

Part 1: Objective of the Questionnaire

This part of the questionnaire described the objective of the questionnaire.

Part 2: Participants' Background Information

This part of the questionnaire aimed to gather background information of the respondents in terms of gender, age, years of studying English and means for practicing their listening skills by asking them to check the answer that most corresponds to themselves.

Part 3: Level of Importance and Necessity of English Listening Skills for Daily Life

This part of the questionnaire aimed to gather the respondents' opinions about the importance of English listening and the necessity of each skill for their daily life. The respondents were asked to rate the level of importance and necessity of English listening skills on five scales from 'the most important/the most needed (5)' to 'the least important/not needed (1)'.

Part 4: Degree of Causes and Problems

This part of the questionnaire aimed to gather the respondents' problems when listening in English. Such problems may be caused by the respondents themselves, by learning materials, or by other related problems. Five degrees of problems applied to rate the levels of problem were ranging from 'the most problem (5)' to 'no problem (1)'.

Part 5: Needs of Self-Instructional Materials

This part of the questionnaire asked the respondents to indicate their needs of academic aspects and physical aspects to scope the specification of self-instructional materials. Five degrees of necessity applied in this part were ranging from 'the most needed (5)' to 'the least needed (1)'.

Part 6: Additional Suggestions

This part asked the respondents to give their additional comments and suggestions in the open space.

1.3. Data Collection of the Needs Analysis

Once the first version of questionnaire was constructed in January 2011, the researcher had three experts in the ESP/ELT field of teaching and assessment to validate its contents during February – March 2011. They were asked to validate each item in the questionnaire by using three scales on an index of item objective congruence (IOC). Later, the questionnaire was revised based on the experts' suggestions in April 2011.

Three experts were invited to validate the content validity of the questionnaire using three scales (-1 means the item is not appropriate; 0 means 'I am not sure'; and +1 means the item is appropriate) on an index of item objective congruence (IOC) called 'The checklist for the experts to validate the questionnaire form (see Appendix F). The item of questions which received $\geq$ 0.5 was accepted while the item which received< 0.5 was rejected or revised according to the suggestion of the experts. Overall, the experts found that the questionnaire was suitable to use with a few minor changes such as misspelling and wording needed to be revised. Therefore, the researcher had the questionnaire revised accordingly before distributing to the participating group of 300 student nurses.

On May 1, 2012, the revised version of the questionnaire for conducting the needs analysis (See Appendix A) was ready to be distributed to a participating group of 300 student nurses of the School of Nursing, Faculty of Medicine, Ramathibodi Hospital, Bangkok. The researcher managed this procedure by

going to the School of Nursing, Faculty of Medicine, Ramathibodi Hospital and distributing all 300 copies of the questionnaire to a voluntary student nurse. She was asked to allocate these 300 copies to other student nurses in the school. The researcher gave five days for the respondents to complete this questionnaire form and went back to collect the questionnaire from the student nurses. Interestingly, all 300 copies of the questionnaire were returned and the majority of the respondents were fourth year student nurses.

1.4. Data Analysis of the Needs Analysis

After all 300 copies of the questionnaire were returned, each item of the questionnaire was descriptively analyzed by mean ($\bar{X}$) and standard deviation (S.D.) to gain data for scoping the necessity of academic aspects and physical aspects of the self-instructional materials. The five Likert's scales together with the interpretation suggested by Best (1970) were adapted to rate the necessity of each item asked inside the questionnaire. The item rated 4.51 – 5.00 was the most necessary, 3.51 – 4.50 was very necessary, 2.51 – 3.50 was necessary, 1.51 – 2.50 was somewhat necessary, and 0.00 – 1.50 was not necessary.

Stage 2: Materials Development

The second stage was to translate the information obtained from the needs analysis (from Stage 1) to the process of materials design which can be described as follows:

2.1. Explore Principles of ELT/ESP Materials Development

Tomlinson (2003) proposed three principles of materials development that the researcher could take into account when writing the self-instructional materials as follows:

1. The materials must contain plentiful spoken and written texts which provide a broad experience of language used to achieve outcomes in a variety of text types and genres and in relation to topics, themes, events, and locations.

2. The language must be authentic in the sense that it represents how the language is typically used.

3. The learners must be able to be exposed to sufficient samples of language in authentic use to provide natural recycling of language items and features that might be useful for the learners to acquire.

Moreover, trends of writing listening tasks suggested by Promwong (2520) as well as trends of writing instructional modules suggested by Nunan (1995) and Lockwood (1998) were also reviewed.

2.2. Specify Important Findings from the Needs Analysis

Findings of the needed English listening skills and the needed instructional materials from the questionnaire have provided some critical issues for the researcher to develop the self-instructional materials to enhance listening skills for the participating 300 student nurses. The needs of academic aspects help the researcher specify the exact wants and needs of language features to be applied inside the self-instructional materials as presented in Table 3.2.

Table 3.2: Needs of Academic Aspects of Self-Instructional Materials

Number	Academic Aspect
1	The language use
2	Contents
3	The presentation of contents The design of exercises and activities.
4	The organization of contents

On the other hand, findings related to the physical aspects helped the researcher specify and rank the wants and needs of physical features to be applied inside the self-instructional materials as presented in Table 3.3.

Table 3.3: Needs of Physical Aspects of Self-Instructional Materials

Number	Physical Aspect
1	Quality of sounds recording
2	Size of the materials
3	Durability of the materials
4	Printing and lay-out

2.3. Organizing the Materials' Contents and Activities

Contents of each unit were organized using Stoller and Grabe's eight-step of Six T's Approach. Examples were chosen selectively to show step by step how the Six T's Approach was at play in organizing the content inside the self-instructional materials. Eight steps of the Six T's Approach are presented as follows:

2.3.1. Step 1: Establishing the Content

The content was about nursing as the main participants were student nurses from School of Nursing, Faculty of Medicine, Ramathibodi Hospital. A participating group of 300 student nurses were asked to rate listening skills according to their degree of necessity from the most necessary (5) to not necessary (1) with the questionnaire form. Therefore, contents inside the self-instructional materials were established according to their necessity.

2.3.2. Step 2: Establishing Themes

Themes were the central ideas that organized the units. The content of the material was established using the following criteria. Themes: (1) were based on conceptually important and relevant ideas for students and instructional

setting, location, etc., (2) were relevant to the local context, (3) depend on types and extent of interesting and appropriate texts that are available and (4) depend on the number of options for captivating topics within the unit. The said criteria were considered and applied; helped establish the content of materials which was nursing and finally the themes that emerged were Hospital Admissions, Symptoms, Accidents and Emergencies, Medication, and Alternative Treatments.

These themes later became the five thematically-related units of the self-instructional materials including Unit 1: What happened to you?; Unit 2: It is more painful!; Unit 3: It's an accident!; Unit 4: What dosage am I going to give?; and Unit 5: I feel relieved!

2.3.3. Step 3: Choosing Listening Texts

To choose suitable texts for the materials, the researcher referred to documents both written and aural. Texts that help establish the nursing-oriented contents were adapted and compiled to create the listening activities. The criteria for choosing texts including (1) range that complements institutional objectives; (2) genres and formats assembled at appropriate level of difficulty; (3) motivating; (4) engaging lead into theme; (5) best at providing content resource; (6) create threads that link; and (7) culminate in tasks or projects as natural extension of content. Listening texts used in the self-instructional materials were presented in Table 3.4.

Table 3.4: Listening texts used inside the materials

Theme	Texts	Text type	Resources
1. Hospital Admissions	- Vital Signs Checking	Researcher-compiled content resources	Listening of various genres, videos, audiotapes, maps, tables, graphs, and etc.
2. Symptoms	- Ward Round Regulations - Delivering a baby - Pains around body		
3. Accidents and Emergencies	- Death of Whitney Houston - Cardiac Arrest - Death from eating triple-bypass burger		
4. Medication	- Medication administration i.e. cough syrup; ointment; capsule; nostril spray; antibiotic cream - IV prescription chart		
5. Alternative Treatments	- Qigong - Acupuncture		

2.3.4. Step 4: Formulating Topics

The topics selected for the course were based on the following criteria: (1) selected to complement student interests and content resources, (2) organized to generate maximum coherence for the theme and (3) provided opportunities to explore both content and language. The list of topics used for the self-instructional materials was presented in Table 3.5.

Table 3.5: Topics used in the materials

Theme	Topics
1. Hospital Admissions	Getting patients to the hospital
2. Symptoms	Pains around body
3. Accidents and Emergencies	Managing acute heart failure
4. Medication	Distributing medication
5. Alternative Treatments	Alternative medicines from the East

2.3.5. Step 5: Selecting Possible Threads

Threads were linkages across themes which created the coherence inside the lesson unit. They were concepts that provided means for linking themes and for reviewing or recycling important content and language themes that tie

up each strand in the content, topic, theme, task, etc. Logical relation among the five themes in the course: *Hospital Admissions, Symptoms, Accidents and Emergencies, Medication,* and *Alternative Medicine* were established by their being nursing-oriented. This logical relatedness was, therefore, a thread in itself that would promote understandability and learnability of the texts. The student nurses were made aware of ways to link, develop and elaborate their ideas about their listening to promote their comprehension. The following figure described how certain threads were selected and adapted in the self-instructional materials.

At the beginning of UNIT I, the students were asked to do the pretest to validate their initial listening skills aimed for the unit. Later they were asked to pre-read the list of vocabularies widely used for nursing-oriented jobs. Different illustrations – pictures, graphs, and diagrams provided a comprehensive input of texts presented. They had to choose, match, fill in the gap, or even summarize the exercise followed. As they carried out the task, skills were pulled together the completion of the communicative task of the unit. The task of matching the picture with the correct illustration and filling the gap with the vocabulary were threads that resulted in the effective integration or weaving or linking of the skills.

Then as the unit moves on, the students were increasingly exposed to more nursing contents and pick up listening skills as they had accomplished different tasks. They were asked to get personal details needed for completing the medical form. They needed to react to the expressions used between the nurse and the patient by jotting down details said between interlocutors. They were expected to write information over the patient's name, gender, date of birth, siblings, frequency of alcohol and smoking intake, underlying diseases, and reason for coming to the hospital. Another one or two texts of listening resulted in loose threads and students could think of and used texts assembled as threads in the course to understand the larger picture or a unified content that was nursing. This unity was aimed at facilitating comprehension.

Content itself was used as a thread. The grammar aspects raised an awareness of the importance of English grammar. Grammar tasks were thread embedded in the unit as a unifying thread in itself. The specialized contents were to create linkages, and gave the unit's coherence and student content familiarity. Besides, each unit would provide opportunities for students to integrate information for a better understanding of the texts they were listening to.

Figure 3.1: Discussion of how threads were selected and adapted in the self-instructional materials

2.3.6. Step 6: Sequencing the Content

Sequencing decisions depended on the difficulty of tasks as the students tackled the content and accomplished the activities. The following discussion describes how the unit was sequenced.

The unit started with a pretest to assess students' listening skills before going through another activity. Later, an introductory task called "Warming Up" reminded students what they had known and would know inside the unit and would preview common vocabularies used in the unit. Vocabularies and expressions from "Warming Up" could be applied in the following task called "Listening Task 1" and followed by "Listening Task 2" which allowed students to practice their different skills of listening. The grammar aspects called "Language Awareness" allowed students to self-study and practice their language competency with sample expressions and exercises. The "posttest" was administered to assess listening skills aimed for each unit right after the listening task 2. The self-assessed form called "checklist" provided opportunity for students to assess the skills right after finishing all tasks.

Figure 3.2: Discussion of how the unit was sequenced

Table 3.6 illustrates the sequencing of the unit of the materials.

Table 3.6: Sequencing of the unit of the materials

Theme	Unit	Tasks
Hospital Admissions	Unit 1: *What happened to you?*	1. *Pretest:* to pre-validate listening skills aimed in each unit 2. *Warming up*: this task taps students' background knowledge. 3. *Listening task 1* and *Listening task 2:* these tasks allow students to listen to different inputs and for different purposes in order to practice different listening skills. 4. *Language awareness:* this section helps students analyze key points of grammar and vocabulary. 5. *Posttest*: to assess students' listening skills after every task inside the unit are done. 6. *Checklist:* this section allows students to self-assess according to unit objectives.

2.3.7. Step 7: Designing Tasks

Each unit had a highlight text that draws students' attentions. The text was an engaging current situation or information with tasks that require students to accomplish and enjoy at the same time. The task was determined by the

text materials. These materials fit into two kinds of scaffolds: reception scaffolds and transformation scaffolds. Receptive scaffolds helped the students gather information from the materials. They prompted the students to organize and record what they saw, for example, "Warming Up" in the picture of unit 1. This task helped students extract key information from the provided illustration. On the other hand, transformation scaffolds helped the students change the information they received from the text into some other forms, for instance, a space which prompted students to categorize logically and chronologically the information they had heard.

2.3.8. Step 8: Determining Transitions

Transitions facilitated a natural and systemic flow of content and tasks from the first task to the following task. Table 3.7 presents example of transitions extracted from the Listening English for Nursing Purposes course syllabus.

Table 3.7: Transitions inside the materials

Unit	Topical Transition	Tasks Transition
1	Topics move from a small department to a bigger department: triage nurse counter to a specialized hospital department that deals with specific treatment area.	- Move from simple task to a more complex one, for instance, listening to specific information to giving fundamental diagnosis to the patient. - From listening to writing.
2	Topics move from the narrower personal practices to the wider standard practices in the real world	- From listening to writing (*note taking*) - Move from simple to more complex: rating a patient's physical condition to providing a correct dose of medication or correct diagnosis

***Note that these tasks, Bloom's and Barrett's taxonomies are at work from knowledge level, comprehension, application, analysis, synthesis, and evaluation. E.G. Interpreting information= comprehension level, constructing a graph based on information = application, comparing and contrasting information in a graph with a tree diagram= analysis**

Stage 3: The Verification of the Developed SIMS and the Design of Listening Comprehension Test and Materials Evaluation Form

The third step is to validate and evaluate the self-instructional materials plus the listening comprehension test and materials evaluation form.

3.1. Experts' Validation and Evaluation of the Self-Instructional Materials (Appendix H)

After the contents and materials were designed, three experts including two ESP teaching experts and one nursing content specialist were invited to validate and evaluate the proposed contents and materials. The questionnaire using three scales (-1 means the item is not appropriate; 0 means 'I am not sure'; and +1 means the item is appropriate) on an index of congruence (IOC) was used. The item of questions which received ≥ 0.5 was accepted while the item which received< 0.5 was rejected or revised according to the suggestion of the expert.

The experts found both the physical aspects and academic aspects of the materials acceptable with a few minor comments mostly in terms of spelling and word choices that need to be revised and adjusted. The contents and materials were revised and adjusted accordingly.

3.2. The Design of Listening Comprehension Test (Appendix D)

Contents inside the developed self-instructional materials shaped the specification of the test in which topics or issues of the test were considered popular and widely acknowledged for the student nurses. This test, therefore, was designed to assess the participating student nurses' English listening skills before and after using the developed self-instructional materials.

This listening comprehension test was composed of questions in which students were given short conversations, long conversations, and monologues in multinational accents. Students were instructed to select the best answer from multiple-choice questions. The listening module of the test contained 30 items of questions in three parts (50 marks); part A, B, and C and took approximately 26 minutes to complete.

Following the formats which were based on the first part of the Test of English for International Communication (TOEIC), three formats i.e. photographs, question - responses, and short talks were adapted with assessment task types including four-optional multiple choice and filling the gap format with impromptu caption of picture. To identify types of listening performance suggested by Brown (2003), a category to consider assessment tasks and procedure comprised within was as follows:

1. *Responsive*. Listening to a short stretch of language – a greeting, question, command, comprehension check, etc. – to make an equally short response.

2. *Selective*. Listening to 'scan' for designated information in longer stretches of spoken language such as radio news items, stories, or classroom direction.

3. *Extensive*. Listening to develop a global understanding of spoken language (top-down process). This kind of performance ranged from listening to lectures to listening to a conversation and deriving a comprehensive message, purpose, gist, and main idea.

3.3. Experts' Validation of Listening Comprehension Test (Appendix J)

To ensure the content validity of the test, three experts (one in the field of assessment, one English teacher with a doctoral degree and experience in teaching

ESP, and one nursing content specialist) were invited to validate and evaluate the test by completing an item checklist form of three scales (-1 means the item is not appropriate to ask; 0 means 'I am not sure'; and +1 means the item is appropriate to ask) on an index of item objective congruence (IOC).

The question items which received ≥ 0.5 was accepted while the item which received < 0.5 was rejected or revised according to the suggestion made by the experts. The researcher rewrote and adjusted these five questions as well as their alternatives accordingly before trying out with a participating group of 10 student nurses (non-study group) during the pilot study to find degree of difficulty (p) and power of discrimination (r) of the test (see Appendix E).

3.4. The Design of a Materials Evaluation Form (Appendix B)

A materials evaluation form was designed and contained similar items of question in accordance with the questionnaire form used during the needs analysis (Stage 1). This evaluation form used Likert's scale from 5 (strongly agree) to 1 (do not agree at all) in which respondents were asked to rate their satisfactions of both academic and physical aspects of the developed self-instructional materials.

3.5. Experts' Validation of a Materials Evaluation Form (Appendix L)

The materials evaluation form was validated by three experts (two English language assessment specialists and one English language teacher with a doctoral degree). The questionnaire using three scales (-1 means the item is not appropriate; 0 means 'I am not sure'; and +1 means the item is appropriate) on an index of congruence (IOC) was used. The item of questions which received ≥ 0.5 was accepted while the item which received< 0.5 was rejected or revised according to the

suggestion of the expert. The experts found all items of questions acceptable to be used.

3.6. Pilot Study

The listening comprehension test and the lesson unit 1 of the self-instructional materials were tried out with a participating group of 10 student nurses (non-study group) during April, 2012. All of them were the fourth year student nurses who were recruited from 300 participants during the needs analysis based on their willingness and interests.

The researcher initially tried out the 25-minute listening comprehension test with these ten student nurses as a whole group on April 1, 2012 and they were free to complete the test wherever they want to. There was no 'rubrics' for grading in this test so the student received one mark for the correct answer and zero for the wrong answer. Later, the researcher collected all test papers and had all their correct and wrong answers analyzed to find the reliability of the test by using KR-20 of Kuder-Richardson; degree of difficulty (p), and power of discrimination (r). The researcher selected the item of questions that had reliability ≥ 0.6, degree of difficulty between 0.2 and 0.8, and power of discrimination from 0.2 onward as suggested by Lawthong (2548) to be used for the actual version of the listening comprehension test during the implementation/evaluation phase (the main study).

After the test administration was completed, the researcher distributed the first lesson unit (Unit 1) of the self-instructional materials to this voluntary group of student nurses to study for four weeks. They were allowed to study the self-study materials and complete the lesson anywhere and anytime. On April 30, 2012, the last day of the pilot study, a materials evaluation form was distributed to them to assess

their level of satisfaction and gain some additional suggestions for scoping the specification of academic and physical aspects of the other four units of the self-instructional materials during the revision process in May, 2012. Data gained from the materials evaluation form revealed that, overall, this pilot group of student nurses were satisfied with the developed self-instructional materials and found them appropriate to use for self-study.

Phase II - Materials Implementation and Evaluation

In this research study, the researcher would like to develop the self-instructional materials for the student nurses and to identify whether the developed materials could improve their English listening skills. The one-group pretest-posttest design, therefore, was applied as illustrated in Table 3.8.

Table 3.8: Research Design

Pretest	Treatment	Posttest
O_1	X	O_2

O_1 is pretest

X is treatment

O_2 is posttest

Generally, the scores from pretest and posttest were tallied and compared to identify the improvement of English listening skills. However, to find the effectiveness of the developed self-instructional materials against the set criteria of efficiency at E_1/E_2 = 80/80, the effectiveness while using the developed self-instructional materials (E_1) was compared with the effectiveness after using the developed self-instructional materials (E_2). Two stages performed during this phase

were implementing the developed self-instructional materials and evaluating their effectiveness.

Stage 4: Implementing the Materials

The revised materials including the listening comprehension test and the self-instructional materials were implemented for eight weeks during June - August, 2012 with 1, 10, and 30 student nurses as suggested by Promwong (2520: 136). Details are presented as follows:

During June 1-7, 2012, the researcher went to the School of Nursing, Faculty of Medicine, Ramathibodi Hospital to give the developed self-instructional materials to student nurses who were not the study group and give them the orientation of how to use the developed self-instructional materials for their self-study. On the other hand, the researcher administered the listening comprehension test (the pretest) and distributed the developed self-instructional materials and the listening comprehension test to the study group of 30 student nurses, giving them the orientation how to use the developed self-instructional materials for their self-study. This process took seven days to complete as the participants did not come as a whole group at the same time.

In addition, the developed self-instructional materials were aimed at helping student nurses enhance more skills of listening in English on their own so they came as a package of self-study book with a CD whose five units possessed contents, activities, and self-tests that reflect the real use of language in the field of nursing. The researcher also introduced all participants "the learner's contract" which was put at the very beginning of the developed self-instructional materials. This contract was aimed at activating and regulating their self-learning behavior both before and during

their study. Moreover, an additional channel to share opinions and suggestions during their study like Facebook was also introduced.

During June 8 – August 8, 2012, the researcher conducted the implementation process (the main study) by allowing all participants study the developed self-instructional materials themselves. During this process, the researcher was also on-line on the Facebook between 19.00 - 24.00 p.m. almost every day to give some pieces of advice or answer their questions.

During August, 8-14, 2012, the researcher went back to the school of nursing again to administer the listening comprehension test for the non-study group of 11 student nurses and for the study group of 30 student nurses, the listening comprehension test (posttest) was applied to assess their English listening skills after using the developed self-instructional materials. This process took seven days to be completed as the participants did not join the process as a whole group at the same time.

4.1. Participants

Forty one student nurses ranging from the first year to the fourth year at the School of Nursing, Faculty of Medicine, Ramathibodi Hospital, Bangkok, in the academic year 2011 was the participants at this stage. They were recruited from 300 participants during the needs analysis stage based on the voluntary basis and the majority of them were the fourth year student nurses.

Purposive sampling to obtain participants

Purposive sampling was employed to obtain participants of the study. The criteria for selecting the subjects for this implementation/evaluation phase that should be noticed are listed as follows:

1. Studying during the first to the fourth year in School of Nursing, Faculty of Medicine, Ramathibodi Hospital, Bangkok, in the academic year 2011.

2. Being willing to participate in the study by using the developed self-instructional materials for their self-study.

However, since the recruited participants were already full-loaded with their learning schedules it should be noted that they were likely to possess the characteristic of being industrious and studious for some levels; otherwise, they would not willingly participate in this study.

4.2. Instruments

The developed self-instructional materials (Appendix C)

The developed self-instructional materials were entitled "Listening in English for Nursing Purposes". Five units inside the materials were constructed with authentic materials such as spoken texts, published materials, and written information from and were written based on the needs of 300 participating student nurses. These five units are as follows:

1. What happened to you?

2. It is more painful!

3. It's an accident!

4. What dosage am I going to give?

5. I feel relieved!

Features of the developed self-instructional materials were that all of the five units were created with up-to-date written and spoken details and information about nursing and medicine. Some current situations such as the death of a well known pop-star singer like Whitney Houston and the acute heart failure from fast-

food overeating from the website http://www.breakingnewsenglish.com were also considered interesting to learn as it was genuine to the students' environment. Moreover, the physical aspects such as printing and lay-out were also attractive and very up-to-date in the way that they were created with an inspiration from the current well known commercially published materials.

Stage 5: Evaluating the developed self-instructional materials

The fifth stage was to evaluate the effectiveness of the developed self-instructional materials. A single group pretest-posttest design was employed to investigate the effectiveness of the developed self-instructional materials (independent variable) on the study group of 30 student nurses' English listening skills (dependent variable 1) and their opinions towards the developed self-instructional materials (dependent variable 2).

5.1. Participants – the same group of participants in stage 4

The researcher adapted the process of evaluating the effectiveness of the instructional materials suggested by Promwong (2520) during this stage by distributing a package of the developed self-instructional materials to 1, 10, and a study group of 30 student nurses respectively. The process is described as follows:

One on one evaluation

The researcher initially distributed a package of the developed self-instructional materials to one participating student nurse who shared similar characteristics as a study group of 30 student nurses on June 1, 2012 at the School of Nursing, Faculty of Medicine, Ramathibodi Hospital, Bangkok. The researcher allowed her to manage the study herself for two months. On August 1, 2012, the

researcher administered the listening comprehension test to assess her listening skills after using the developed self-instructional materials.

Small group evaluation

The researcher also distributed a package of developed self-instructional materials to 10 participating student nurses who studied during the first year to the fourth year and shared similar characteristics as a study group of 30 student nurses on June 1, 2012 at the School of Nursing, Faculty of Medicine, Ramathibodi Hospital, Bangkok. The researcher allowed them to manage the study themselves for two months. On August 1, 2012, the researcher administered the listening comprehension test to assess their listening skills after using the developed self-instructional materials.

Large group evaluation

As the large group evaluation was made by the study group of 30 student nurses, the process of distributing the developed self-instructional materials and administering the pre-and posttest could be described as follows:

On June 1-7, 2012, the researcher administered the listening comprehension test to the study group of 30 student nurses to assess their English listening skills before using the developed self-instructional materials. The researcher asked them to complete the test in their own room inside the dormitory of nursing school within 26 minutes. For those participating first year student nurses who did not reside in the dormitory, they were invited to complete the test under the dormitory building instead. Later, all 30 student nurses were asked to hand in the test papers to the researcher and receive the developed self-instructional materials to study by themselves until August 8, 2012. During August 8-14, 2012, the researcher went back

to the school again to administer the posttest to assess their listening skills after using the developed self-instructional materials. Also, the researcher distributed them a materials evaluation form to assess their level of satisfaction of the self-instructional materials developed.

5.2. Instruments

After the implementation phase was completed, the effectiveness of the developed self-instructional materials was evaluated. Instruments for evaluating the developed self-instructional materials include a pre-and posttest English listening comprehension test and a materials evaluation form. Each of them is presented as follows:

5.2.1. English Listening Comprehension Test (Appendix D)

The trial listening comprehension test from Stage 3 was used to measure English listening skills of study group of 30 student nurses both before and after using the developed self-instructional materials.

5.2.2. A Materials Evaluation form (Appendix B)

The trial materials evaluation form from Stage 3 was distributed to the study group of 30 student nurses. Each of them was asked to rate both academic aspects and physical aspects of the developed materials. The data was later statistically analyzed by mean ($\bar{x}$) to indicate their satisfaction level of the academic aspects and the physical aspects of developed self-instructional materials.

5.3. Data Collection of Evaluation Stage

The data collection of the implementation/evaluation stage can be divided into four phases as follows:

5.3.1. Pretest

The paper-based listening comprehension test comprised of 50 items of multiple choice questions was given to the study group of student nurses on the same day of distributing the self-instructional materials (June 1-7, 2012). However, the study group of 30 student nurses did not come to receive the developed self-instructional materials as a whole group in the same time so it took seven days to complete this session. Their pretest scores were compared with those of posttest in order to identify their learning progress after using the developed self-instructional materials.

5.3.2. Self-Study Period

The self-study period of the implementation stage lasted for eight weeks (June 8, - August 8, 2012). During this period, the researcher was also giving some advice and suggestions to the study group of student nurses via facebook's fan-page 'Listening in English for Nursing Purposes' and collecting their scores of all activities to statistically evaluate their learning progress during the evaluating stage.

5.3.3. Posttest

The same form of paper-based listening comprehension test comprised of 50 items of multiple choices questions was distributed to the study group of 30 student nurses. However, they did not come to receive the test as a whole group at the same time so it took seven days to complete this session. The researcher collected the posttest score from all of them on August 14, 2012. The posttest scores were then statistically compared with the pretest score collected during the first week of June, 2012 (see Appendix M).

5.3.4. A Materials Evaluation Form

A materials evaluation form was distributed to all 30 student nurses after they finished their posttest in order to rate their opinions after using the developed self-instructional materials. So, the process was taking place during the same period of distributing the posttest (August 8-14, 2012).

All phases from the above data collection process are presented in Table 3.9.

Table 3.9: Data collection process

Week No.	Data collection process
1 (June 1-7, 2012)	**Pretest** - Listening comprehension test (n = 30) ↓ Collect scores of pretest ↓
2-9 (June 8 - August 8, 2012)	Self-Study Period ↓ Treatment with the developed self-instructional materials ↓
10 (August 8-14, 2012)	**Posttest** - Listening comprehension test (n = 30) - Materials evaluation form

5.4. Data Analysis

To verify the hypothesis of the developed self-instructional materials were at a standard criteria 80:80, the standard criteria of efficiency at E_1/E_2 = 80/80 was employed (Promwong, 2520: 140). The formula is as follows:

$$E_1 = \frac{\Sigma X_1}{N \times A} \times 100$$

When E_1 is the efficiency of the developed materials

X_1 is score gained from each end-of-unit test

A is total score of end-of-unit test

N is number of students

$$E_2 = \frac{\Sigma X_2}{N \times B} \times 100$$

When E_2 is the efficiency of the learning

X_2 is score gained from the posttest

B is total score of the posttest

N is number of students

Paired sample t-test (Dependent Samples) was also employed to compare the student's mean score before and after using the developed self-instructional materials to see whether there is a significant difference between them (Taweerat, 2530 : 165). In other words, t-test was used to compare the mean scores of the pre-and posttest and to indicate whether participants in the study have higher scores in their posttest of English listening comprehension at a significant level ($p < 0.05$). The formula is as follows:

$$t = \frac{\Sigma D}{\sqrt{\frac{n\Sigma D^2 - (\Sigma D)^2}{n-1}}}$$

When t is t score

D is difference of each paired score

n is number of paired score

$\sum D$ is total score of D

$\sum D^2$ is total score of D^2

For the results from materials evaluation form, the arithmetic mean or the average score of satisfaction level of both academic aspects and physical aspects of the developed self-instructional materials was applied. Each of the aspects rated 4.51 – 5.00 was 'strongly agree', 3.51 – 4.50 was 'agree', 2.51 – 3.50 was 'neutral', 1.51 – 2.50 was 'do not agree', and 1.00 – 1.50 was 'do not agree at all'.

The formula is as follows:

$$\bar{X} = \frac{\sum_{i-1}^{n} X_1}{n}$$

When $\bar{X}$ is the average score

$\sum_{i-1}^{n} X_1$ is total score gained

n is number of students

List of the research instruments used in the study are summarized in Table 3.10.

Table 3.10: List of research instruments

Instruments	Participants	Purpose	Schedule/period	Validation	Analysis
Documentary review	-	To obtain information about skills of English listening for student nurses	At the initial step of the study	-	Content analysis
The validated list of English listening skills for student nurses	The researcher compiled the list of English listening skills for student nurses	To be translated into English listening skills needed	After the analysis of content from documentary review	By experts	Descriptive statistics (IOC)
Questionnaire	300 student nurses of School of Nursing, Faculty of Medicine, Ramathibodi Hospital, Bangkok.	To obtain information about participants both their personal information and their needed English listening skills. To develop the specification of SIMS based on the quantitative data gained from the questionnaire.	During April 2011	By experts	Descriptive statistics (mean)
Checklists for experts to validate the sample lesson unit as well as the English listening comprehen-sion test	Three experts were distributed the checklists to evaluate the sample lesson unit as well as the English listening comprehen-sion test	To evaluate the developed self-instructional materials and the listening comprehen-sion test developed	After collecting data from Needs Analysis	By experts	Descriptive statistics (IOC)

Table 3.10: List of research instruments (continued)

Instruments	Participants	Purpose	Schedule/period	Validation	Analysis
A materials evaluation form	10 student nurses (non-study group) --- The study group of 30student nurses	To evaluate the sample lesson unit --- To evaluate the developed SIMS	At the end of the pilot study --- At the end of materials implementation/ evaluation phase	By experts	Descriptive statistics (mean)
English Listening Comprehen-sion Test	The study group of 30student nurses	To measure the students' level of English listening skills before and after using the developed self-instructional materials	Before and after using the developed self-instructional materials	By experts	t-test to compare the scores of pre- and posttest
Self-instructional materials (SIMS) to enhance English listening skills	The researcher designed and developed the Self-Instructional Materials (SIMS) to enhance English listening skills for student nurses	To be used for the materials implementation which is the main study of this research	During the materials implementation (June 8-August 8, 2012)	-	Standard criteria of efficiency at E_1/E_2 = 80/80

3.3. Summary

The study consisted of two phases including materials development and materials implementation/evaluation of its effectiveness. The process of materials development was divided into three steps. Step one initiated with the needs analysis with a group of 300 student nurses. Purposive sampling was used to obtain all responses. Based on the validated list from three experts, a questionnaire for assessing needs analysis was designed and distributed to participating 300 student nurses

studying in the first year to the fourth year at School of Nursing, Faculty of Medicine, Ramathibodi Hospital, Bangkok, in the academic year 2011 to find out their needs in terms of lacks and wants of English listening materials. Then, contents and materials were constructed based on the findings from analysis of the needs and were validated and evaluated by the experts before conducting a pilot study.

The second phase was materials implementation and evaluation. Forty one student nurses were recruited from 300 participating student nurses based on their willingness and interests. However, 30 of them were the study group during this stage. A single group pre-and posttest design was used to measure these 30 participants' English listening skills after using the developed self-instructional materials and their opinions towards the developed materials were also investigated by means of a materials evaluation form.

To answer the first research question, "What are the needs of English listening skills for student nurses?" two main research instruments i.e. a review of related literature and a questionnaire were employed to conduct the needs analysis. Content analysis was used to analyze the data from literature review and the validation of the experts while descriptive statistics was used to analyze data gained from the questionnaire.

To answer the second research question, "How can self-instructional materials to enhance English listening skills for student nurses be developed?" contents and materials were developed based on information obtained from the needs analysis. Three experts were invited to validate the sample lesson unit's contents and materials while another three experts were invited to validate and evaluate the listening comprehension test. All mentioned instruments were adjusted in response to

the experts' comments and feedbacks from the pilot study. The main study (the implementation/ evaluation phase) was implemented during June 8 –August 8, 2012.

To answer the third research question, "How effective are the developed self-instructional materials?" the English listening comprehension test along with the developed SIMS was used to verify the hypothesis of the developed self-instructional materials at a standard criterion of 80:80. The standard criteria of efficiency at E_1/E_2 = 80/80 was applied. Besides, paired sample t-test was also employed to compare the mean scores of the pre-and posttest and to indicate whether the study group of 30 student nurses has higher scores in their posttest at significant level ($p \leq 0.05$).

To answer the fourth research question, "What is the attitude of student nurses towards the developed self-instructional materials?" a materials evaluation form was used to measure the opinions of the participants towards the developed self-instructional materials (SIMS) in terms of academic aspects and physical aspects.

The research results and findings for each research question are presented in Chapter IV.