

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter describes the research methodology used in identifying the English language needs of Higher National Diploma (HND) students majoring in Electrical Engineering at the British Malaysian Institute (BMI). The selection of subjects, the instruments used, the pilot study, the collection of data and the analysis of data are described and explained in this chapter.

#### **3.2 The Subjects**

In order to find out about the English language needs of the BMI students, the subjects chosen for this study are those who are directly involved in the Technical Presentation Skills (TPS) modules in BMI. They include:

- i. the Higher National Diploma (HND) students,
- ii. the Technical Presentation Skills (TPS) instructors, and
- iii. the Engineering instructors.

##### **3.2.1 The Higher National Diploma (HND) Students**

The students selected for this study are in their final semester of Semester 2/2002 session and are pursuing their HND in Electrical Engineering. This group of

students is selected for the purpose of this study because the Electrical Engineering course students represent 36.37% or the majority of the total HND students in BMI compared to the number of students enrolled in the other five courses (Refer 1.7 Background of the Higher National Diploma Students). The subjects have completed two TPS modules at the HND level and are currently completing their final TPS module, which is TPS V. Thus, the researcher feels that the subjects are able to provide relevant feedback and information needed for this study, based on their experience learning the Pre-HND modules and the HND modules.

In total, there are 90 students in the Electrical Engineering course. However, during the administration of the questionnaire, 10 students were absent. This means the sample represents 90.0% of the total number of Electrical Engineering students. All the students who participated in the study are Malay. The selection of subjects is made randomly as the difference in the students' level of proficiency is not significant.

### **3.2.2 The Technical Presentation Skills (TPS) Instructors**

A total of 8 TPS instructors participated in the study. This represents 100% of the total number of TPS instructors in BMI. These instructors are either currently teaching or have taught the Electrical Engineering students in semesters 1, 2 or 3 of the HND programme. The researcher feels that the TPS instructors will be in a better position to give feedback on the English language problems and needs of the Electrical Engineering students, as well as in evaluating the existing course as they are directly

involved in teaching the course. All the instructors have at least a first degree in English or TESL and have at least one year of teaching experience in the language.

### **3.2.3 The Engineering Instructors**

The total number of Engineering instructors in the Electrical Engineering Section in BMI is 25. However, due to time constraints, only a total of 10 Electrical Engineering instructors or approximately 40.0% of the total Engineering instructors have been selected as subjects for this study. All of them teach various Electrical Engineering subjects at both Pre-HND and HND levels like Mathematics, Engineering Design, Control System and Automation, Digital and Analogue Device Circuits, Power Electronics, Electrical Power, and Further Electrical Power. The Engineering instructors are selected because they will be able to provide feedback on the English language input needed by the Electrical Engineering students in relation to the Engineering courses. The feedback is based on the Engineering instructors' experience teaching the Electrical Engineering modules in English to the Electrical Engineering students, who are the subjects in this study. The Engineering instructors' responses will also be invaluable in evaluating the existing TPS course.

### **3.3 Instrumentation**

Three different sets of questionnaires form the primary instruments for the study. The three different sets of questionnaires are the student questionnaire, the Technical Presentation Skills instructor questionnaire and the Engineering instructor

questionnaire. According to Schmidt (1981), the questionnaire can be used as a technique in assessing which language skills and sub-skills are most important for students and then establishing their order of difficulty. The use of a questionnaire is also advantageous as it can be administered to a large group of students.

The questionnaires are adapted from questionnaires used by Chow (1996) administered to a group of Matriculation students, and by Basturkmen and Al-Huneidi (1996) administered to a group of Bachelor of Engineering students at Kuwait University. Part II (Language Ability) of the student questionnaire, TPS instructor questionnaire and Engineering instructor questionnaire (see Appendix I, J and K) used in this study are adapted from Chow (1996). This is to identify the possible problems that the students face in various listening, speaking, reading and writing sub-skills. Some questions asked in Chow's (1996) questionnaires are also used in Part IV (Course Design) and Part V (Course Evaluation) of the student questionnaire and TPS instructor questionnaire (see Appendix I and J). The course content in Gillett (2002) is adapted in the questions for Part III (Language Needs) of the student questionnaire, TPS instructor questionnaire and Engineering instructor questionnaire (see Appendix I, J and K). A few questions in Basturkmen's and Al-Huneidi's (1996) questionnaire are also adapted in Part II (Language Ability) and Part III (Language Needs) of the student questionnaire, TPS instructor questionnaire and Engineering instructor questionnaire.

### 3.3.1 The Student Questionnaire

The student questionnaire (Appendix I) is divided into five parts, namely personal particulars, language ability, language needs, course design and course evaluation.

#### Part I: Personal Particulars

This part is to obtain information on the students' background. There are five questions asked here - the students' gender, age, academic qualification, English grade at Sijil Pelajaran Malaysia level and their previous semester grade for TPS (grade for TPS IV module). Options are given for each question and students are required to tick the option that best represents them.

#### Part II: Language Ability

This part of the questionnaire is to find out the students' perception about their ability in English language skills, namely listening, speaking, reading and writing. It also seeks to find out the possible problems that students face in the various sub-skills of listening, speaking, reading and writing respectively. The first question asks about the students' proficiency in these four skills, and employs the rating scale ranging from 'good', 'average' and 'weak'.

For questions 2,3,4 and 5, the students are required to identify whether they have problems in performing various sub-skills under the four language skills that are listening, speaking, reading and writing skills. They indicate this by answering 'yes' or 'no' in the answer options provided after each sub-skill.

### Part III: Language Needs

This part of the questionnaire is to gain information on the types of English language tasks under the four language skills, namely listening, speaking, reading and writing, that the students perceive as important for them. There are four main questions asked in which Question 1 is on the importance of performing various listening tasks listed and Questions 2, 3 and 4 are on the importance of performing the various speaking, reading and writing tasks listed respectively. The students are required to indicate the importance of each task through the use of a rating scale namely, 'very important', 'important', 'not so important' and 'not important at all'.

### Part IV: Course Design

This part of the questionnaire is to find out students' opinion about the TPS modules in terms of course teaching and learning materials, handouts and notes, teaching aids, course assessments, activities and tasks, and the types of classroom activities carried out. These aspects are covered under seven main questions which seek to find out the extent students agree with the various statements under each question. The first question seeks the students' perception on how the teaching and

learning materials for the TPS modules should be. The second question asks the extent to which the students agree with the various statements related to the use of handouts and notes for the TPS module. Students' responses to questions 1 and 2 are measured on a scale of 'agree completely', 'agree to some extent' and 'do not agree at all'.

Question 3 is to find out the students' perception of the importance of the use of various types of teaching aids in their TPS modules. For this question, students are asked to indicate the degree of importance based on this scale: 'very important', 'important', 'not so important' and 'not important at all'.

Questions 4 and 5 are to identify the students' opinions on the types of assessments the course should consist of and also the kind of grading system preferred. For Question 4, students are to indicate their opinion through the use of this rating scale: 'agree completely', 'agree to some extent' and 'do not agree at all'. For Question 5, students should indicate their choice of how they want to be assessed through the two options given, which is either through a grading criteria or marks/percentage.

Question 6 is to find out to what extent students agree with the number of students suggested for the activities and tasks carried out in the course. Question 7 seeks students' opinion on the types of classroom activities that should be carried out during the module. For these two questions, students are to indicate their responses through the use of this rating scale: 'agree completely', 'agree to some extent' and 'do not agree at all'.

## Part V: Course Evaluation

The questions in Part V of the questionnaire are to gain information on the students' perception about the current TPS module. Students have to give their opinions on various statements regarding the TPS module, and they indicate their opinion through the use of this rating scale: 'agree completely', 'agree to some extent' and 'do not agree at all'.

### **3.3.2 The Technical Presentation Skills (TPS) Instructor Questionnaire**

The TPS Instructor questionnaire (Appendix J) is also divided into five parts namely, personal particulars, language ability, language needs, course design and course evaluation.

#### Part I- Personal Particulars

This part is to obtain information on the background of the TPS instructors. There are four questions in this part. Question 1 seeks to find out the instructor's gender, Question 2 is on the instructor's highest academic qualification, Question 3 is on the instructor's teaching experience and Question 4 is on the TPS modules that the instructor is currently teaching. Answer options are given for each question and the instructors are required to tick the answers that best represent them.



## Part II: Language Ability

This part is to find out the instructors' perception of their students language ability and problems in performing the various sub-skills of listening, speaking, reading and writing. There are five questions in this part. Question 1 requires the instructors to rate their students' overall proficiency in the four language skills, i.e. listening, speaking, reading and writing, which employs the rating scale ranging from 'good', 'average' and 'weak'.

For questions 2,3,4 and 5, the instructors are required to identify which of the sub-skills of listening, speaking, reading and writing do their students generally face problems in. The instructors have to respond to these questions by ticking either the 'yes' or 'no' options given.

## Part III: Language Needs

This part is to gain information on the various types of sub-skills of listening, speaking, reading and writing that the TPS instructors perceive as being important for their students. There are four questions asked here. Question 1 seeks the instructors' perception on the importance of the sub-skills of listening, followed by speaking in Question 2, reading in Question 3 and writing in Question 4. The instructors are required to indicate the importance of each sub-skill through the use of this rating scale, that is 'very important', 'important', 'not so important' and 'not important at all'.

#### Part IV: Course Design

This part of the questionnaire is to find out the perception of the TPS instructors about the TPS modules in terms of teaching and learning materials, handouts and notes, teaching aids, course assessments, types of grading, activities and tasks, and types of classroom activities that should be carried out. Question 1 seeks the TPS instructors' perception of how the teaching and learning materials used in the TPS modules should be. Question 2 asks students' perception on the types of handouts and notes for the TPS module. Both Questions 1 and 2 employ the use of this rating scale: 'agree completely', 'agree to some extent' and 'do not agree at all'.

Question 3 is to find out the TPS instructors' perception of the importance of using the various types of teaching aids in their TPS modules. For this question, the instructors are required to indicate their opinions through this rating scale: 'very important', 'important', 'not so important' and 'not important at all'.

Questions 4 and 5 are to identify the TPS instructors' opinions on the types of assessments for the TPS modules and also the type of grading system preferred. For Question 4, the TPS instructors are required to indicate their opinions through this rating scale: 'agree completely', 'agree to some extent' and 'do not agree at all'. For Question 5, the instructors are required to state their preferred choice of grading the students through the two options given- either through a grading criteria or marks/percentage.

Questions 6 and 7 are to obtain information on the TPS instructors' perception of the suitable number of students for activities and tasks conducted in the TPS class, as well as on the types of classroom activities that should be carried out. Both these questions employ the use of this rating scale: 'agree completely', 'agree to some extent' and 'do not agree at all'.

### Part V: Course Evaluation

This part is to gather information on the TPS instructors' opinion about the current TPS modules. The question poses a list of statements about the TPS modules and seeks the TPS instructors' perception of each of the statement. The TPS instructors are required to respond to each statement by stating the extent to which they agree or disagree through the rating scale of 'agree completely', 'agree to some extent' and 'do not agree at all'.

#### **3.3.3 The Engineering Instructor Questionnaire**

The Engineering Instructor questionnaire (Appendix K) is divided into four parts, namely, personal particulars, language ability, language needs and course evaluation.

## Part I: Personal Particulars

This part is to obtain background information of the electrical Engineering instructors. There are four questions asked in this part. Question 1 seeks information on the Engineering instructors' gender, Question 2 is on their highest academic qualification, Question 3 is on their teaching experience, and Question 4 is on the modules that the instructors are currently teaching. For Questions 1, 2 and 3, the Engineering instructors are to choose the answers that best represent them based on the options provided. Question 4 is an open-ended question which requires the Engineering instructors to indicate the modules they are currently teaching.

## Part II: Language Ability

This part is to find out the electrical Engineering instructors' perception of their students' ability in the four language skills, and the problems they perceive their students have in performing the various sub-skills of listening, speaking, reading and writing. There are five questions in this part. Question 1 requires the Engineering instructors to evaluate their students' proficiency in the four skills namely, listening, speaking, reading and writing, and it employs the rating scale ranging from 'good', 'average' and 'weak'.

For questions 2,3,4 and 5, the Engineering instructors are required to identify whether or not their students have problems with all the various sub-skills listed under listening, speaking, reading and writing skills respectively through the 'yes' and 'no' options given.

### Part III: Language Needs

This part is to gain information on the extent the different sub-skills of listening, speaking, reading and writing are perceived as being important from the viewpoint of the Engineering instructors. Question 1 requires the Engineering instructors to identify the different sub-skills of listening tasks that they perceive as important to their students, Question 2 is on the different speaking sub-skills, Question 3 and 4 are on the different sub-skills of reading and writing respectively. The Engineering instructors are asked to indicate the importance of each sub-skill through the use of this rating scale: 'very important', 'important', 'not so important' and 'not important at all'.

### Part IV: Course Evaluation

The final part of the questionnaire requires the Engineering instructors to identify the important English language skills and sub-skills they feel their students should be taught in the TPS modules that could help them in their Engineering course. This is an open-ended question.

### **3.3.4 Interviews**

According to Dudley-Evans and St. John (1998), interview is extremely useful in needs analysis as it can be used to seek for clarification and to provide more details. Mackay (1978) points out that the interview provides the opportunity to clarify and extend because of the physical presence of the analyst. Thus, in this study, interviews are also conducted with 10 students, 5 TPS instructors and 5 Engineering instructors to triangulate the findings from the questionnaire.

### **3.4 Pilot Study**

A pilot study was conducted to test whether the items in the questionnaire are comprehensible to the respondents. The purpose of the pilot study was to eliminate misunderstandings, ambiguities, or inadequacy in the questions. Feedback from the questionnaire was also used to gather some comments and suggestions from the respondents so that the final questionnaire could be improved.

The pilot study was conducted on all the three different questionnaires used for this research. The student questionnaire was administered to 30 final semester HND students majoring in Engineering and Business Information Technology course, as well as students majoring in Medical Electronics Engineering. These students had undergone the same TPS modules as the students from the Electrical Engineering course. They were selected for the pilot study on the basis that the researcher had access to these students as he was teaching these students. From the pilot study, the

respondents highlighted a few problems with the questionnaire. Based on the feedback from the students, the researcher had to rephrase a few instructions in the questionnaire and to elaborate or to give examples for some of the answer options.

The TPS instructor and Engineering instructors' questionnaires, on the other hand, were given to two TPS instructors and two Engineering instructors respectively. These instructors were given a week to return the questionnaires. They made no comment as they found the questions comprehensible enough, and therefore no changes were made to the questionnaires.

### **3.5 Data Collection**

The primary data collection involved distributing the three different questionnaires to the students, the TPS instructors and the Engineering instructors respectively.

#### **3.5.1 The Student Questionnaire**

The questionnaire was distributed to 80 final semester HND students majoring in Electrical Engineering. The researcher himself was responsible for the administration and collection of the questionnaires. The answering of the questionnaire was done in the classroom during a TPS class session. The researcher gave an initial explanation of the purpose of giving out the questionnaire to the students followed by a brief explanation on how to answer the questionnaire. The

students were given one hour to respond to all the questions asked in the questionnaire, and the researcher was present throughout the whole duration to ensure a hundred percent return of the questionnaires distributed as well as to resolve any problems or difficulties faced by respondents in answering the questions.

### **3.5.2 The Technical Presentation Skills (TPS) Instructor Questionnaire**

The questionnaire was distributed to 8 TPS instructors who have the experience teaching the Electrical Engineering students, either in this semester or in the previous semesters. The researcher administered the questionnaires to the TPS instructors while they were in their office. They were also briefed on the objectives of the study and the importance of their responses. The researcher also explained that any queries regarding the questionnaire could be addressed to him. The instructors were given one week to complete the questionnaires.

### **3.5.3 The Engineering Instructor Questionnaire**

The questionnaire was distributed to 10 electrical Engineering instructors who were teaching various electrical Engineering modules like Mathematics, Control System and Automation, Power Electronics, Digital and Analogue Device Circuits, Electrical Power, Further Electrical Power and Engineering Design to electrical Engineering students. The researcher explained the objectives of the study and the importance of their responses before administering the questionnaires. The instructors were given one week to complete the questionnaires.



### **3.6 Data Analysis**

The data obtained from the responses of each questionnaire were summarized and organized according to the sequence of the questions presented in the questionnaire. The researcher analysed each item in the questionnaire separately and made comparison, whenever applicable, between the responses obtained from the students, TPS instructors, and Engineering instructors. In order to facilitate statistical interpretation, the SPSS Unleashed Version 11.0 software was used to tabulate the responses of each questionnaire. The frequency count and percentages helped to clearly illustrate the students', TPS instructors' and electrical Engineering instructors' responses on the questions asked in the questionnaire.

### **3.7 Conclusion**

This chapter presents the methodology used in identifying the English language needs of HND students majoring in Electrical Engineering at BMI. The description of the subjects and research instruments are also presented. The methodology and design will help the researcher analyzes the perception of the students, TPS instructors and Engineering instructors in terms of the students' ability in the listening, speaking, reading and writing skills and sub-skills; the important listening, speaking, reading and writing skills and sub-skills; the kinds of teaching and learning materials, handouts/ notes, teaching aids, assessments and activities suitable for the course; and the evaluation of current course. The data obtained from the questionnaire is analyzed using the SPSS statistical analysis.