

Chapter 5

SUMMARY OF FINDINGS AND RECOMMENDATIONS

In the preceding chapters, the importance of analyzing the needs in the process of learning and teaching in a educational setting were discussed. Chapter 1 consists of the description of the background of English as an international language, function of English in the employment domain, information about the PUO and details related to the purpose of the study. Chapter 2 provides the different perspective on syllabus, syllabus design, types of syllabus and ESP and its parameters. The focus in chapter 3 was the discussion on the methodology used to analyze needs of the students and employers and opinions of the lecturers at the PUO. Chapter 4 contains the quantitative findings of the research findings.

5.0 Introduction

As stated in chapter 1, this study was undertaken to answer the following research questions:

- A What are the present needs of the UOP Diploma of Electrical Engineering?
- B What are the needs and problems of the UOP Diploma of Electrical Engineering students during industrial training?
- C What are the needs in terms of proficiency of prospective UOP Diploma of Electrical Engineering employers?

D How can the UOP syllabus be adapted to meet the real and actual needs?

With that, a comparison and discussion of the findings with the content of the present syllabus in use will be done. In addition the implication of the research, its limitation and recommendations will be made. The purpose is to provide pragmatic solutions in the effort to provide better learning environment to the PUO Diploma of Electrical Engineering students. Lastly, suggestions for further research for the benefit of students and lecturers will be proposed.

5.1 Summary of the Findings

The main findings in Chapter 4 is summarized and discussed in this section through a number of sub-headings.

5.2 Background of the respondents.

60 final semester Diploma of Electrical Engineering students were chosen. They were undertaking Electrical Engineering as their major area of study. They were chosen randomly and made up of various level of proficiency. Therefore, it was evident that the students need considerable language skills to follow their course at PUO and make references in English as well as for future needs in the employment domain. As indicated in Table 9, 90% of the big companies rated the four language sub-skills as 'important' and 'most important'. From the statistics in Table 3, 8%, 50%, 35% and 7% of the students scored distinctions, credits, pass and fail respectively in the SPM English Language paper. It can be concluded that

the students have an average proficiency in the English language. As for the English language lecturers, all the ten of them majored in the teaching of English as a second language. Therefore, they were qualified to teach ESP for the Diploma of Electrical engineering students. Besides their qualification, all the ten too have adequate experience to teach English and equip the students with the desired language skills. The employer respondents were operating from Kinta Valley. For the purpose of the study 5 large companies and another 5 small companies were chosen to study their needs as it was anticipated that their English language needs will differ. All the employers were engaged either in the electrical or electronics component productions and providing electrical or electronics services.

5.3 Abilities of Students in the English Language Skills.

Refer to summary of Table 8

About 67% of the students have good reading skills and another 43% have good listening skills. While 8% reported that they were weak in the speaking and 6% weak in the writing skills. On the other hand, 50% of the lecturers graded the students abilities in the language skills as average. However, almost 50% of the students rated themselves as having average abilities in the writing skill.. Hence, the students superiority in the reading skill will facilitate them in doing their reference work as 50% said they have to do more than 50% of reference work. in English (Table 6). Nevertheless, in order to enhance proficiency it is essential to be proficient in all the 4 skills of language as they are cohesive and intertwined.

5.4 Importance of the English Language Skills.

More than 90% of the large companies respondents (Table 9), students and lecturers (Table 10) indicated that all the 4 language skills are important. Speaking was the rated as the vital skill by the respondents. As a result, syllabus designers in the wake of analyzing needs ought to consider prioritizing all the 4 skills equally so as to prepare the students adequately for dual roles i.e. as students of higher institutions and professional employees in the future.

5.5 Speaking Sub-skills

The English lecturers, students and the large companies felt that the most important speaking sub-skill was "ability to participate in meetings". Although, this sub-skill was not used widely while being a student, the respondents had in mind the students would ultimately end-up in the employment scene. Furthermore, it was required extensively in the employment scene most of the time. Nevertheless, the students and lecturers felt that "ability to explain process and procedures" as the next important sub-skill. This sub-skill may of less importance in the formal class at PUO as the medium of instruction is purely in Malay language. However, it will serve the students immensely when they get employed in the future especially in large companies.

5.6 Reading Sub-skills

The three different respondents said that "read messages", "read reports" and "read and understand technical terms as the most important reading sub-skill (Tables 13 and 14). It can also be noted that the students have placed more importance on reading sub-skills that would help them in

the technical field rather than reading sub-skills which are more "social and leisure" in nature, for example "read and understand novels/story books" and "read and understand letters". It was natural for the students to place great emphasis on the technical-in-nature reading sub-skills as they had fully realized its importance while on industrial training and are fully conscious that English is the language of science and technology.

5.7 Writing Sub-skills

Refer to summary of Tables 15 and 16

The writing sub-skills that were regarded most important and important were ability to write "messages/memos, fill-up forms, notices and general reports" by the students, lecturers and employers' (large). These sub-skills were regarded as important because those skills could help them in terms of employment rather than in their coursework.

5.8 Listening Sub-skills

Refer to summary of Tables 17 and 18

The listening sub-skills found to be important by the respondents were ability to follow and understand "discussions, oral instructions, orders and face-to-face and telephone conversations". These were tasks that frequently carried out in a workplace upon graduation. Almost all the listed sub-skills were tasks-oriented and needed most outside the classroom setting.

5.9 Problems of Students in the Various English Language Skills

5.9.1 Listening Problems

(Refer to summary of Table 19)

From the findings the students and lecturers found that the major problems in listening were "understanding technical/scientific descriptions ", "following different structures of sentences" and "understanding the meaning of technical words". Probably, this nature of problem was due to the limited exposure to spoken English in the professional settings.

5.9.2 Speaking Problems

(Refer to summary of Table 20)

Most of the students and English language lecturers identified "have to stop and think what to say", "cannot find the right word to express" and "have problems with pronunciations" as the students major problems. These problems were due to insufficient usage in the formal and social scenes.

5.9.3 Reading Problems

(Refer to summary of Table 21)

A high percentage of students and lecturers stated that the students "have difficulty in understanding the implication of a text", "understand the writer's idea" and "finding important information".

5.9.4 Writing Problems

Refer to summary of Table 22

Most of the students and lecturers stated that the major writing problems were "difficulties in writing laboratory/technical reports, "difficulties in choosing suitable words" and "difficulties in writing grammatically correct and complete sentences"

The problems that were identified in the 4 language skills appear "technical" in nature and basically the problems were intertwined. Therefore, any solutions to remedy problems in one skill will help to alleviate the problem in another area. Therefore, consistent identifying of needs analysis is essential in especially in designing an ESP course.

5.10 Types of Problems in Learning the ESP Course

60% of the lecturers and students (Table 25) indicated that the students face problems in following the ESP courses at the PUO. The related problems were "lack of confidence in using the language", "lack of confidence and motivation in participating actively" and "lack of interest in language and materials". These problems appear to be psychological and attitudinal in its appearance rather than external reasons outside the control of the emotional and psychological factors.

5.11 English Language Proficiency Evaluation : Wants

The students and the lecturers agree that criteria of the materials for the teaching and learning of English should be of a "suitable level", "interesting", "well organized" and "covered sufficiently". In other words,

both the respondents stated that the materials should have most of the mentioned criteria. It means both the students and the lecturers felt that the materials ought to cater for a multitude of purposes. Therefore, the lecturers should exercise innovativeness and high degree of sensitiveness in the selection of materials.

All the lecturers agreed that the materials used in the ESP courses were of the right level to enhance the proficiency of the students. Meanwhile, the lecturers responded that the materials for the ESP courses were "wide enough". (Table 34).

In commenting on the characteristics or nature of the materials for the students, all the lecturers stated the materials have to be related to a variety of interest and general topics" and 90% of them identified that the materials should be "related to technical and academic subjects"(Table 35). The wide experience and profound knowledge possessed by the lecturers in the area of ESP (Tables 1 and 2) will guide them in preparing the desired materials.

5.12. English Language Proficiency Evaluation: Means.

The students identified 3 important facilities for the learning of English Language. The students chose conducive classroom, language laboratory and cassette and cassette recorders. The first facility was chosen as that was the common setting in the primary and secondary English classrooms. The other two facilities were felt important as they are able to provide the different criteria as stated in Table 31 and create an interesting environment for learning of English.

In discussing the most conducive number of students for an English class, 90% of the lecturers chose 10-20 persons. This was felt

appropriate as the students were only allotted two 45 minutes classes per week and any attempt to lower the number in a class will only increase the work load of the lecturers as there were only 15 lecturers to teach about three thousand students. On the other hand the students preferred a class of less than 10 students. This was rare in the Malaysian English classroom as we frequently face shortage of English language teachers. The students chose an ideal environment because they wanted to be equipped adequately to function in the employment world effectively and to some they would pursue an engineering course in local universities. (Table 30)

A large number of students and lecturers identified "language games", "problem solving tasks", "exercise completion and discussion" and "audio-visual activities" as the type of classroom activities that students preferred. It was evident the students preferred an environment that can stimulate communications and interactions and a fun-filled classroom to evoke enthusiasm towards English language as the students stated earlier that they lack motivation and confidence in the language (table 26)

A large percentage of the students and lecturers responded positively concerning the learning of ESP courses. They were optimistic that the ESP courses can "equip students sufficiently to use English effectively", "provide language skills which are appropriate for the proficiency of Electrical Engineering students" and "captivate the interest of Engineering based students". Thus, the syllabus was capable to fulfil the needs of the students to equip them adequately for the academic and employment world.

A small percentage of students and lecturers identified that the ESP courses have several shortcomings. Among the shortcomings stated were "the courses were too short", "the materials and content were not relevant to the students' studies" and "there were too many things to be

learnt" (Table 24). These negative responses were detected because the PUO only allocates two periods each week and 45 minutes is allocated for each period. As it was reported earlier that the students have an average proficiency (Table 3). ESP being diversified in its characteristics, therefore adequate time allocation was essential to optimize learning in the English classroom at the PUO.

5.13. Lecturers Opinions and Suggestions About the English Language Program

"Emphasis on students wants and needs" and "communicative skills in the engineering classroom" were regarded the suitable learning and teaching strategies by the lecturers. The lecturers had in mind the importance of a student-centered approach in their teaching and learning strategies. In addition, the lecturers considered the importance of communicative needs in the workplace. Such communicative importance is especially emphasized by the large companies. On the other hand, when solicited the opinions of the lecturers about the importance of learning English, 100% "strongly agree" that English was important for the students future career. Combination of language skills and technical knowledge were the criteria for the selection of technical personnel in their organizations especially by the large companies.

In the opinions of the lecturers, they identified "promoting language practice" and "encouraging the students to learn" as the main problem area in conducting the ESP courses. (Table 38). They were of this opinion because of the students wide exposure to the national language as the main medium of instruction at the PUO. As a result they find convenient to converse in the Malay language. It was indicated previously

that the students have lack of confidence and motivation and an average proficiency in English.

5.14. English Usage During Industrial Training

More than 60% of the students reported that they have to speak English "regularly" and "often" during the course of industrial training. (Table 43)

Students stated that they have to use speaking skills mainly to "ask for clarification" and "face-to-face conversation" (Table 44) during industrial training. Being middle management personnel and novices, the students expected to experience numerous doubts and as a result they had to ask for clarifications frequently.

The students have to use listening skills frequently to "understand and follow a discussion" and "face-to-face". (Table 45). Being productions personnel in the future, the students were required to engage themselves in numerous discussions with their superiors at the workplace. Furthermore, they come to "face-to-face" regularly because the job needed cooperation and collaboration.

More than 60% of the students stated that the reading skills were frequently used to "read laboratory reports" and "general reports". Reports were prepared for every stage of progress of work or production so as to minimize overheads/costs. Therefore, the students were required and compelled to read those materials at the workplace. (Table 47).

The most frequent writing skills used during industrial training were "writing reports" and "memos". These writing skills were regularly used because the students have to report the work progress to enable production to operate smoothly. As for "writing memos" the students were required to liaise with their counterparts at the working place to relay messages during their absence or business.

The students stated that they have to use English widely during industrial training to receive information", "make introductions" and "give instructions". These" instances commonly occur at a workplace.

5.15. Summary of Research Questions and Findings.

Based on the qualitative and quantitative data collected by the researcher, the study attempts to answer the following questions:

- a) What are the present needs of the UOP Diploma of Electrical Engineering?
- b) What are the needs and problems of the UOP Diploma of Electrical Engineering students during industrial training?
- c) What are the needs in terms of proficiency of prospective UOP Diploma of Electrical Engineering employers?
- d) What are the changes needs to made to meet the real needs?

5.16 Research Question 1: What are the present needs of the UOP Diploma of Electrical Engineering students?

The students stated that most of their coursework was not done in English but their reference work was. This was because all the subjects and assignments pertaining to the Electrical engineering field was done in the Malay language. However, as far as their reference work was concerned, the students did not have a choice as most of their references were in English.

The students, employers and lecturers were of the opinion that four language skills are important. The most important being speaking. The study indicated that the students abilities in the English language skills was average. However, the students have good reading and listening skills and it was correlated by the lecturers.

5.16.1 Speaking Sub-skills.

The following speaking sub-skills identified as important by the employers, students and lecturers:

- ability to ask questions
- ability to explain processes and procedures
- ability to participate in meetings

The specific ability to speak before a crowd was apparently not very important.

5.16.2 Reading Sub-skills.

Students, employers and students placed the following reading sub-skills as important:

- hand-out
- instructions
- messages
- reports
- reference books and journals
- engineering manuals
- academic books
- technical terms
- letters

These reading sub-skills were academically-centred and closely linked to employment world in the future.

5.16.3 Writing Sub-skills.

The writing sub-skills that were regarded important for the students were:

- ability to fill-up forms
- ability to write messages and memos
- ability to write general reports.

The above mentioned sub-skills were directly related to the jobs that they will be doing later.

5.16.4 Listening Sub-skills

Three listening sub-skills that students, employers and lecturers stated as important for students were:

- ability to follow and understand discussions
- ability to understand oral instructions.
- ability to understand orders.

Recommendations

Four common threads can be drawn from data collected from employers, students and lecturers:

- i) The need to be able to communicate verbally in English (both in formal/work and informal/social situations.
- ii) The need to equip UOP students with the skills to cope with technical terms in English.

- iii) The need to train the UOP students to write reports in the various fields of specialization.
- iv) The need to listen and understand talks and oral instructions.

Based on the findings, the following recommendations are made:

1. That the communicative events mentioned below be included in the syllabus content. These are the main skills required by the respondents.

Speaking	<ul style="list-style-type: none"> *ability to ask question *ability to explain processes and procedures
Reading	<ul style="list-style-type: none"> *hand-out *instructions *messages *reports *reference books and journals *engineering manuals *academic books *technical terms *letters
Writing	<ul style="list-style-type: none"> *ability to fill-up form *ability to write messages and memos *ability to write general reports.
Listening	<ul style="list-style-type: none"> *ability to follow and understand discussions *ability to understand oral instructions.

2. Allocate adequate time to allow students to practice speaking skills. Devise student-centred activities to encourage intensive practice and spontaneous interactive language activities.

3. Devise an appropriate system of assessment to evaluate, for instance, how much has been learnt during the course or how well the students perform a task related to their field.
4. Teaching strategies should be adopted to suit the needs of young adults in a technical environment - e.g. student-centred, task-based activities in their field of specialization.

Implications

The recommendations have the following implications:

- 1 ESP teachers need to be sensitive to the professional needs of the students.
- 2 Language teachers will have to develop materials which are suitable and up to date.
- 3 A suitable system of assessment of students' performance will need to be developed.
- 4 Administrative support will be needed in terms of providing adequate resources: contact time, facilities, etc.

5.17. Research Question 2 : What are the needs in terms of proficiency of prospective employers?

Almost all the employers (large companies) responded by saying that English was important at the time of employment of the UOP Electrical Engineering students (Table 9). This can be confirmed as 62% (Table 42)

of the students reported that they had to use English "regularly" and "often" during their course of their industrial training.

According to the employers, speaking skill was stated as the most important, followed by reading, listening and finally writing.

5.17.1 Language Sub-skills

The language sub-skills section provided information regarding the English language sub-skills employers expect from the employees in order for them to function effectively. This information would become another source to analyze needs of the students.

5.17.2. Writing Sub-skills

(Refer to summary of Table 16)

The employers stated that the important writing sub-skill was the ability to write messages/memos, instructions, laboratory/scientific reports and fill-up forms. Therefore, these sub-skills needed a lot of emphasis in the English language class and syllabus designers.

5.17.3 Listening Sub-skills

Refer to summary of Table 18

The employers especially, the large companies reported that they require 4 listening sub-skills i.e. ability to follow and understand face-to-face and telephone conversations, discussions, oral instructions and orders

and explanations. Apparently, almost all the sub-skills were linked to the technical duties in a production and operation of a factory.

5. 17.4 Speaking Sub-skills.

(Refer to summary of Table 12)

It can be seen that the employers emphasis was on the ability to ask questions and to participate in meetings as important speaking sub-skills. This indicates that the employers engage its technical personnel in meetings to discuss matters pertaining to the day-to day effective operation of the production line.

5.17.5 Reading Sub-skills

(Refer to summary of Table 14)

The most important reading sub-skills identified by the employers were reading reports, messages and technical terms.

The employers reported that the students command of the language skills was of average level. However, they have stated that the students lacked confidence and faced difficulties in expressing their thoughts. Furthermore, they found grammatical and structural errors in their written English. As a result, only 40% of the employers were satisfied with the language ability of the students during industrial training.

Recommendations

1. One of the main communicative events most frequently mentioned is the ability to ask questions and to participate in meetings. Therefore, it is recommended that students be exposed to activities that have a variety of situations pertaining to meetings with appropriate register and language forms and functions.
- 2 From the findings, it is found that students lack confidence in speaking and expressing themselves. They should be exposed to more interactive activities pertinent to their workplace.
- 3 It is recommended that authentic reading materials are made available to the students. Text organization of the materials should be explored in a variety of ways such as drawing inferences, analytical and critical thinking, sequencing and evaluating skills.
- 4 ESP syllabus should be reviewed from time to time to cater to the needs of the students at the workplace.

Implications

- 1 More communication activities should be encouraged.
- 2 More writing tasks should be given.
- 3 Authentic samples of workplace documents should be given.
- 4 Have role-plays/simulations of workplace situations.
Give samples of minutes of meetings and reports to students for practical guided writing.

5.18. Research Question 3: What are the needs and problems of the students during industrial training?

Speaking sub-skills that were frequently used were "face-to-face", "over the telephone" and "ask for clarification" (Table 44).

"Face-to-face", "understand and follow a discussion" and "understand a telephone conversation" were identified as the main listening sub-skills important during the industrial training (Table 45).

While reading sub-skills that were frequently required were reading laboratory reports, reports and messages (Table 46). Meanwhile, writing reports and memos were stated the most frequently used writing sub-skills (Table 47).

The sub-skill reported by the students during industrial training differ from the ones reported by the employers. This is due to the fact that the students while on attachment were not involved in any major decision making process. They were only designated to a minor role and a short attachment period do not allow direct involvement in all levels of management.

The employers responded that the UOP students have an average level of command of the English language while they were on industrial training. However, the employers reported they were some shortcomings. They said the students lacked confidence in using the language when

necessary. As a result, they have difficulties in expressing their thoughts. As a consequence, they became reluctant to engage themselves in conversations and discussions involving technical matters.

In some instances, the employers stated that the students were unable to understand oral commands. As a result the employers had to resort to using the Malay language to make themselves understand. It was noted that the employers felt the students have difficulty with higher level of writing ability. In addition, the employers identified that their written English was found to have grammatical and structural mistakes.

Recommendations

Based on the findings of the research on the use of English at the workplace, the following recommendations are made:

- 1 English should be given emphasis in the curricula at the UOP more time should be allocated to the teaching of English.
- 2 Emphasis should also be given to confidence building as the findings show that many students are reluctant to use the language because they lack confidence. Since their reluctance to speak English is also due to the lack of vocabulary, the teaching of vocabulary should be incorporated into the syllabus.
- 3 There should be emphasis on writing as well since this is the area in which accuracy is important. Writing tasks should be specifically designed according to the nature of their work.

- 4 English Language instructors should be encouraged to visit the workplace from time to time or go on industrial training attachment in order to get a better understanding of the needs of English and to solicit authentic materials from the workplace.
- 5 Language teaching/learning should be task- based and closely related to the workplace.
- 6 Self-Access language learning could be introduced at the PUO.
- 7 Future needs analysis should be conducted to keep up with the changing needs for English in the workplace brought about, in particular , by the advent of Information Technology.

Implications

- 1 Existing teaching staff should be trained as ESP practitioners. This include areas such as, material design, assessment and teaching strategies. They should be encouraged to visit the workplace from time to time to keep up with the changing needs of the workplace as well as to solicit authentic materials.

5.19 Research Question 4: What are the changes that need to be made in the syllabus to meet the real needs?

The current syllabus in use is adequate to meet the present needs. However, a number of changes are proposed in order to make the syllabus more effective. Topics outlined in the syllabus are appropriate to

develop the four language skills and the language sub-skills. Nevertheless, the 45 minute lessons allocated thrice per week are definitely inadequate to meet the growing and expanding needs of the students. Therefore, it is suggested that it be increased to a number that will not cause any constraint to the present number of lecturers at the UOP.

As indicated in chapter 4, 35% and 7% obtained a pass and failed in the English Language at SPM level respectively, it is proposed that a pre - ESP preparatory syllabus be designed to lay sound foundation prior to pursuing an ESP course. The success of any language program is not due to distinctions scored but ability to communicate effectively in the workplace. Only when this is achieved than a syllabus be considered appropriate and wholesome.

The findings of the study show that the employers and lecturers stated that communicative skills, speaking skills in particular, are very important to the students. Thus, the teaching of integrated communicative skills should be introduced and be implemented in the syllabus.

The current ESP syllabus does not really place enough emphasis on the reading sub-skills. In addition to this, the students low level of English could be factor that contributed to those problems. However, it is a difficult to develop a specific skill to enhance reading sub-skills. Therefore, the four skills could be taught integratively through a program designed to develop a general English Language proficiency. In addition, the syllabus ought to

give emphasis on parallel writing to enable students to write based on models of written discourse which are frequently used in their workplace.

5.20 Conclusions

Based on the analysis and interpretation of quantitative and qualitative data the following are conclusions arrived at and the implication of the study as a whole.

The English Language Program

As the four language skills are found to be important, the inculcation of the four skills should be given equal focus at the beginning of the students' course. The four skills could be taught integratively.

It is recommended that the English Language program should focus on the communicative needs at the workplace along the line of ESP. To achieve this, a comprehensive staff development program will have to be designed to equip English Language lecturers at the UOP with new delivery system for teaching ESP.

Approach, Method and Strategy.

Language learning and teaching will have to task-based to allow for experimental learning and hands-on experience in the functional use of English as it is used at the workplace. Mixed-ability teaching could be practised. Students should be exposed to authentic use of the language at

the respective level to get students learn English in an environment which reflects the students' real work environment.

Parallel writing should be taught to enable students to write based on models of written discourse which are frequently used in their workplace.

Materials

Students have to be exposed to authentic materials. Such materials must form an integral part of the English Language lecturers resources and they should be easily accessible to the students.

Semi-authentic materials, both teacher-made and commercially produced, need to be used to cater for paced learning among students who have different levels of English proficiency.

Materials should be multi-media in orientation. They should encompass the visual, audio and kinetic.

Assessment

There should be assessment of spoken language. As the teaching and learning of English would be task-based assessment and evaluation procedures should reflect students learning experiences.

Networking

A mechanism has to be established to help the English language lecturers' at UOP to liaise with industries in order to understand their English language needs. This will enable and ensure curriculum and materials development on the basis of the information gathered from the employers.

The local UOP could be encouraged and facilitated to network with institutions involved with ESP at the national and regional levels. This would lead to the possibility of achieving consistently high quality ESP training.

5.21 Suggestions for Further Research.

Normally, it is only possible to identify a particular need at any one research study. As the study of needs analysis is an ongoing attempt and it is by no means a conclusive and unending one.

The factors that influence the needs of PUO students are aplenty and unending in the rapid advancement of science and technology in the years ahead and in the next millennium. Further research needs to be done to determine other effective instruments to identify needs in the fast changing world. It is also worthwhile to do a study on designing preparatory courses for the PUO students before they embark on the ESP programs as many students accepted to the PUO were having SPM

qualification. This is because SPM students were only taught the communicative syllabus. In summary this study only attempts to identify needs of the Diploma of Electrical Engineering students only at the UOP. As such, a general conclusion can not be made to represent the needs of the entire polytechnics in Malaysia. The study hopes to contribute towards improving ESP teaching and learning especially in the areas of science and technology for the purpose of realizing Vision 2020.