

Exploring Current Needs of English for Electrical Engineering: Students and Professionals' Voices to English Instructional in Tertiary Education

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ABSTRACT

This paper reports on the results of the current needs of English for electrical engineering students. The data were collected from 63 electrical engineering students of Rajamangala University of Technology Srivijaya (RUTS) in the academic year of 2018 and 18 professional electrical engineers who were working in both government and private organizations. The study employed a questionnaire for data collection. The data were analysed by using means and standard deviation (SD). The findings of the study revealed that all the English topics for electrical engineering were required by the electrical engineering students and professionals at a high level. Another important result was that the researcher also came up with the realization that contents combined with English for Specific Purpose (ESP) should be highly considered when designing and developing the instructional materials in teaching English for electrical engineering students.

Keywords: English for Electrical Engineering, English for Specific Purposes, English Instructional, Need Analysis, Tertiary Education

1. INTRODUCTION

English language is a principal medium of science, technology, and engineering field (Pritchard & Nasr, 2004). Mastering English language is even more important not only for the students' academic life but also for their prospective career. As Rajprasit & Hemchua (2015), claimed that English language proficiency is a necessity for engineers' job recruitment, job routines, and job promotion. Additionally, many studies (for example, Radzuan & Kaur, 2011; Gözüyeşil, 2014; Sureeyatanapas, Boonma & Thalangkan, 2016) revealed that graduated engineers need to have appropriate English language skills and should be able to communicate effectively in the workplace context. Significantly, to develop engineering students' English language proficiency, and to enable them to use English communicatively, Rajprasit & Hemchua (2015) suggested that setting the main learning objectives of English language courses should be based on the real-world workplace situations for strategically effective communication and accuracy. Similarly, Kilickaya (2004) argued that teachers should promote students to interact with the real language and content rather than the form. Consequently, students feel that they are learning a target language as it is used outside the classroom.

For these reasons, it is necessary for the researcher who is also an English language lecturer, to provide lessons and find ways and means to enhance students' language proficiency. The lessons should also encourage them to become ready and effective in the workforce after completing their

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degree. In order to develop methods, approaches, and strategies to enhance students' English language learning proficiency, the researcher needs to seek fundamental information from a specific group of participants and uses the obtained information to revise and develop the most appropriate language input and instructional materials that can be used in class. The researcher strongly hopes that the findings gathered from this study will be useful for both language and content teachers who take responsibility to provide knowledge and experience for electrical engineering students. Furthermore, the study may provide some preliminary findings for further studies in the future.

2. THE PURPOSE OF THE STUDY

This study is aimed to explore the current needs of English for electrical engineering students. The results can assist the researcher, English lecturers, and curriculum designers in preparing the syllabus for the English for Work course.

3. LITERATURE REVIEW

3.1 The Needs Analysis Approach

This study is designed based on the approach of needs analysis. It was the first step taken in designing any courses. In developing a language curriculum, needs analysis is considered to be of crucial importance for both English for Specific Purposes (ESP) and general English courses. As explained by Hutchinson & Waters (1987), any English language courses offered should be based on the analysis of learners' needs. Needs analysis has also been considered as a prerequisite for planning and developing courses and the development of syllabuses and materials (Hutchinson and Waters, 1987; Long, 2005; Kaewpet, 2009).

3.2 English for Specific Purposes (ESP)

There have been different definitions of English for Specific Purposes (ESP). Hutchinson & Waters (1987) view ESP as an approach, not as a product. They define that ESP is not a particular kind of language, methodology, or teaching material. The critical point for Hutchinson & Waters is that all decisions about the content and method of an ESP course are based on learners' needs and reasons for learning. These needs or reasons can be discovered by conducting a needs analysis from the learners. Richards & Schmidt (2010) define ESP as the role of English in a language course or programme of instruction in which the content and aims of the course are fixed by the specific needs of a particular group of learners. The definition itself claims that ESP is closely linked to the learners' needs. Exploring the specific needs of a specific group of learners is the job of needs analysis. According to Brown (2016), if there is no needs analysis, there is no ESP. Crucially, needs analysis plays an important role in ESP. It functions as the starting point of any ESP programme or course.

3.3 English for Work Course

This course is one of the English for Specific Purposes courses offered for 2nd year electrical engineering students at RUTS. Students who enrolled in this course will learn about job advertisements, writing resumes and application letters, job interviews, organization charts, vocabulary and expressions for working and communicating in offices.

4. RESEARCH METHODOLOGY

4.1 Participants

In this study, there were two groups of research participants:

- i. A group of 63 electrical engineering students of RUTS in the Academic Year 2018 which were selected to be the participants by a purposive sampling method.
- ii. A group of 18 professional electrical engineers who were working in both government and private organizations which were selected to be participants by a purposive sampling method.

4.2 Research Setting

This research was conducted at Rajamangala University of Technology Srivijaya (RUTS), Songkhla Campus and College of Industrial Technology and Management, Nakhon Si Thammarat. RUTS is a public university in the south of Thailand. The majority of electrical engineering students were from the southern part of Thailand, aged between 19-22 years old. They had similar educational backgrounds. The majority of them were from high school and some of them were from vocational college.

4.3 Research Instruments

Data was collected through a questionnaire. It was divided into three parts. Part I was on the participants' demographic data. Part II consisted of English for electrical engineering topics. In this part, participants were asked to evaluate their requirement for the course. The scale of responses was rated from 1 (the lowest requirement values) and 5 (the highest requirement values). In Part III, the participants were asked to give any suggestion and recommendation in a space provided. The questionnaire was distributed to the students during class time and they spent around ten minutes to complete the whole set of questionnaires. Before employing the questionnaire, the validity and reliability of the questionnaires were validated by three experts. For the professional engineers, in order to ease the collection of data, the researcher created a questionnaire in a google form. Before sending out the online form, the researchers contacted the government and private organizations that have a relationship and collaboration with the university and informed the QR Code for them to access the survey link.

5. DATA ANALYSIS

The researcher analysed questionnaire data by using means (\bar{x}) and standard deviation (S.D).

6. RESULTS

The objective of this study was to explore the needs of English for electrical engineering students. The following table 1 showed the analysis of the data gathered from the questionnaire.

Table 1 RUTS Engineering students' needs on English topics

English Topics	Level of requirement		
	Mean (\bar{x})	S.D.	Results
1.Tools safety	4.35	.765	high
2. Preparing for a job interview	4.33	.861	high
3. Common interview questions and answers	4.30	.835	high
4. Resume or CV	4.27	.827	high
5. Email inquiry for job application	4.27	.884	high
6. Signs and notices	4.22	.771	high
7. Reading job advertisements	4.22	.958	high
8. Email inquiry for internship	4.19	.859	high
9. Giving instructions and safety rules	4.10	.756	high
10. Job responsibility	4.06	.840	high

In table 1, the results revealed that all English topics were required at a high level. According to the responses of electrical engineering students, tools safety was identified as the highest needed topic ($\bar{x} = 4.35$). Moreover, they are required to study about preparing for a job interview ($\bar{x} = 4.33$) and for common interview questions and answers ($\bar{x} = 4.30$). Signs and notices ($\bar{x} = 4.22$) and reading job advertisements ($\bar{x} = 4.22$) were also highly valued. Furthermore, the vast majority of the students highly valued email inquiry for internship practice ($\bar{x} = 4.19$) and giving instructions and safety rules ($\bar{x} = 4.10$). Significant need was also assigned to job responsibility ($\bar{x} = 4.06$).

Table 2 Professional electrical engineers' needs on English topics

English Topics	Level of requirement		
	Mean	S.D.	Results
1.Tools safety	4.44	.700	high
2. How to use tools	4.39	.610	high
3. Explaining operation	4.33	.690	high
4. Signs and notices	4.33	.770	high
5. Giving instructions and safety rules	4.33	.690	high
6. Describing general tools	4.28	.750	high
7. Describing electrical engineering tools	4.22	.650	high
8. Tools installation	4.22	.810	high
9. First-aid administration	4.22	.730	high
10. Describing functions of Electrical engineering tools	4.17	.620	high

As presented in Table 2, the responses from professional electrical engineers were consistent with the students' results. To clarify this, the highest need was tool safety ($\bar{x} = 4.44$). The results also revealed that all English for electrical engineering topics were highly required by professional engineers.

Furthermore, based on the questionnaire data analysis, the participants regarded the topic of how to use tools as the second important topic ($\bar{x} = 4.39$). Explaining operation, signs and notices, and giving instructions and safety rules were also highly valued ($\bar{x} = 4.33$). Additionally, the majority of professionals needed the topics of describing general tools ($\bar{x} = 4.33$) and describing electrical engineering tools ($\bar{x} = 4.33$). Significant needs were also assigned to tools installation and first-

aid administration ($\bar{x} = 4.22$). Describing functions of electrical engineering tools was highly valued too ($\bar{x} = 4.17$).

7. DISCUSSION

Findings of the study revealed that both electrical engineering students and professional electrical engineers required a range of English topics for their works. All English topics for electrical engineering topics were required at a high level. Among the topics of English required by electrical engineering students and professionals, the tool safety topic was perceived as the most important.

7.1 The Contents of English for Electrical Engineering Used in the Workplace

With regards to topics required in the workplace, both students and professionals' needs of English for electrical engineering perceived that tools safety was the highest priority to study followed by many contents related to other operations in the electrical engineering context. Significantly, in order to cultivate English language proficiency and skills for electrical engineering students, the following course contents: safety in the workplace, giving instructions, professional presentations, languages for jobs interviews and job applications, languages in professional documents and manuals, and professional writing should be included in English for Work syllabus.

7.2 The Power of Needs Analysis

To this point, the discussion has considered the language in the real world of the workplace from the needs analysis perspectives provided through the lens of English for Specific Purposes. Currently, there is a significant gap between language education and actual workplaces in the real world (Bouzidi, 2009; Rajprasit & Pratoomrat, 2012). Researchers, English language lecturers as well as the curriculum planners should consider and employ needs analysis to gain in-depth information.

8. CONCLUSION

This study explored the current needs of English for electrical engineering, by employing a questionnaire to two groups of participants: 63 electrical engineering students and 18 professional electrical engineers who were working in both government and private organizations. The results also revealed that all English topics for electrical engineering topics were required by electrical engineering students and professionals at a high level.

Professionals who worked in both government and private organizations have provided a vivid picture of English needed in the workplace. They offered recommendations on instructional management to educational institutions, in particular at the tertiary education which may help prepare new graduates for the demands of the labour market.

In sum, based on the results, the current curriculum needs to be revised and adjusted to the relevant English for Work course and other English for Specific Purposes courses to prepare electrical engineering students in accordance with the expectations of the engineering workforce.

9. RECOMMENDATIONS FOR FURTHER RESEARCH

Based on the findings of this study, the results were unique for a particular group of students and professionals. It is recommended that a larger sample size of participants should be further

studied to increase the degree of generalization of the study and this may provide significantly different results.

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