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## TARGET SITUATION NEEDS ANALYSIS: EXPLORING THE LINGUISTIC NEEDS OF POLYTECHNIC ENGINEERING STUDENTS ACROSS THREE MAJORS

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This paper reports the results of a English language needs analysis carried out at a Malaysian Polytechnic among engineering students from three different majors specifically; civil, electrical and mechanical engineering. Through the implementation of a needs analysis questionnaire to 120 students in Communicative English classes the perceived important linguistic needs of learners in terms of skills and sub-skills are specified. In addition, the students' linguistic wants and lacks, attitude towards their current English language course and expectations towards their English language lecturers are analyzed. The paper concludes with some pedagogical implications to improve and develop the current English language course .

**Keywords:** Target Situation Analysis, Linguistic Needs, Engineering students

### 1.0 INTRODUCTION

The English language has achieved a global status where a quarter of the world's population is fluent in English and no other language in the world today can match the vast spread of the English language (Crystal, 2003). Many countries, including Malaysia in 2003 have re-adopted English as the medium of instruction for science and mathematics in order to meet the demand of technological advancement and academic internalization. To keep abreast with the demands of globalization and the aspirations of the higher education policy, polytechnics and community colleges have gradually commenced the use of English as the medium of instruction of all content subjects since 2008.

English language learning at polytechnics and community colleges had been greatly emphasized in order to produce local graduates who are able to perform at the workplace and compete in the global arenas (*Pelan Tindakan Pengajian Tinggi Negara Fasa 2 (2011 – 2015): Mencetus Transformasi Pengajian Tinggi, 2011*). Consequently, English Language teaching and learning at polytechnics has undergone a change from learning English for Specific Purposes and Commercial Purposes in 2002 to Communicative English in 2010. This was the result of many initiatives and talks undertaken with the academicians in universities and employers in industry by the Curriculum Development Centre of Polytechnic to improve the standard of English teaching and learning at polytechnics and community colleges. However, very little attention is given to students' needs and perceptions whenever changes are made to the curriculum. "Teacher may rely more often on intuition when making course planning than on informed assessment on learners needs (Barkuizen, 1998, Spratt 1999 as cited in Davies 2006).

Higher learning institutions, specifically polytechnics and community colleges should furnish to the English language needs of students of different fields in relation to Malaysia's progress and development in the fields of science and technology. For instance, English language for engineers requires a special register that includes the most common grammatical and lexical features used in their field. The students should be equipped with subject-specialist knowledge and specific English language of their chosen fields during their study periods at higher learning institutions that would prepare them well for the workplace (Venkatraman & Prema, 2007, Al-Tamimi & Shuib, 2010 and Md. Momtazur Rahman, 2012). However, the current English Language syllabus in the Polytechnics is taught across all disciplines whereby students of different specializations like engineering, business,

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computers, and hotel and catering take the same English course of the same ‘generalized’ syllabus. Thus, the current English Language syllabus may not be able to fully cater to students’ specific language needs.

According to Cowling (2007) there is often a lack of awareness of the existence and the importance of needs analysis as a tool in course designing. He even has disapproved on the use of textbook as the whole syllabus by some institutions as it may disregard the specific learning needs of the target students. In order to accommodate students’ specific needs, it is significant to delve deeper into the needs of students so that the right measures can be taken to embark on materials preparation. In order to do this, an English language needs analysis (NA) was administered to students in order to delineate their needs and wants.

English language needs analysis can ascertain the language needs of students in a specific field. According to many writers in the ESP context, needs analysis is prerequisite for designing and developing a course, and the development of syllabuses and materials (Hutchinson & Waters, 1987, Brindley, 1989, Dudley-Evans & St John, 1998 & 2009)

This study aims at exploring the English language needs of the engineering students at a polytechnic on the basis of their perceptions. Specifically, the study addresses the following five questions:

1. How important are the English language skills to the engineering students at polytechnic?
2. What are the engineering students’ English language lacks?
3. What are the engineering students’ English language wants?
4. What are the engineering students’ perceptions towards the current English language course?
5. What are the engineering students’ expectations regarding their English language lecturers?

## 2.0 LITERATURE REVIEW

Needs analysis has become an important element in the field of ESP as the foundation for designing ESP courses (Dudley-Evans, 1998). Hutchinson and Waters (1992) have stressed that any language course designed should be based on needs analysis. The term needs analysis is interpreted diversely by many researchers (Brindley, 1989; Hutchinson & Waters, 1992; Brown, 1995; Dudley-Evans & Jo St John 1998) and therefore different meanings are implied.

Target-Situation Analysis, Present-Situation Analysis and Learning Situation Analysis are the main landmarks in needs analysis studies. Target Situation Analysis according to Hutchinson & Waters (1987), is an umbrella term which includes learners' necessities (their target linguistic features), lacks (their target linguistic features minus what they already know), and wants (what the learners feel they want and need). Present Situation Analysis involves strengths and weaknesses in language, skills and learning experiences meanwhile Learning Situation Analysis includes subjective, felt and process-oriented needs (Dudley-Evans & St. John; 1998). This study adapted the Target-Situation Analysis approach since it is more appropriate for the objectives of the study which is to investigate the English Language needs, lacks and wants of polytechnic engineering students.

Venkatraman and Prema (2007) conducted a study to find out the English Language needs of engineering students at SASTRA University, India. In addition, the study was also aimed to discover the students expectations regarding their English teachers. A needs survey was administered to 254 engineering students and it was found that these students had ranked listening (comprehension and scientific texts) and professional speaking skills (job interviews and group discussions) as the most required language skills and subskills. It is also reported that 98.9% of the students agreed that teachers of English in engineering colleges need a specific set of competencies, other than those of General English teachers. Based on the findings, the researcher proposed designing a modern curriculum in English and Communication studies for engineering students and a competency-based training for English teachers in order to provide more audience-targeted instruction in EST.

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Another needs analysis study was carried out by Al-Tamimi and Shuib (2010) to investigate the English Language needs of petroleum engineering students at Hadramout University of Sciences and Technology, Yemen. A total of 81 students were selected and surveyed for data collection purpose. It was found that although students reported listening, reading, and writing sub-skills to be most frequently used, they considered almost all the language skills to be important to acquire. Furthermore, most of the students surveyed felt that they cannot use English effectively and they have expressed the opinion that they would like continued instruction and training to improve proficiency in all the language skills. As for the questions pertaining to the relevance of the English Language course, students reported that the English language course does not meet their language needs and the time allocated to the course is not sufficient to enable them to use the language efficiently. Moreover, it is also found that the subjects preferred to take English for Occupational Purpose courses. Thus, the researcher suggested that ESP teachers should take students needs into consideration when designing English Language course by giving more emphasis to speaking and listening skills and the duration and number of English courses should be increased.

A similar study was conducted by Mohamed Salehi (2010) for the purpose of investigating the English Language needs of engineering students. A questionnaire was administered to a total of 225 Sharif University students from various engineering fields. The results indicated that translation skills was considered inappropriate meanwhile note taking skills was considered unimportant in their future careers. Besides that, technical writing was considered to be very important, however, it was found that the skill has been totally ignored in the English curriculum in the university.

Md. Momtazur Rahman (2012) explored the needs for reading skills among fifty undergraduate students in the field of computer science at Putra University, Malaysia. The study was based on the three fundamentals to explore language needs; Target Situation Analysis, Present Situation Analysis and Learning Situation Analysis. The findings revealed that a majority of the undergraduate students of computer science discipline found difficulties in reading skills mainly in skimming for the gist of the subject matter written in English, scanning to extract specific information of subject matters written in English and decoding meaning of the subject matters written in English. The researcher concluded by proposing an English language course, named “English for Computer Science” that suits the target needs of undergraduate students to develop their reading skills in English language for their specialized discipline at the university.

All these studies above confirmed the importance of identifying learner’s needs and it can be implied that need analysis is crucial before any courses are designed. However, learner needs should be analysed on an ongoing basis because they are likely to change over time, depending on contextual and human affective variables (Brown, 1995; Hutchinson and Waters, 1987. ).

### **3.0 METHODOLOGY**

The participants of this study involved three classes consisting of 120 fifth semester engineering students from three engineering departments namely, Mechanical Engineering Department (JKM), Civil Engineering Department (JKA) and Electrical Engineering Department (JKE) in one of the polytechnics in Perak.

The rationale of selecting fifth semester engineering students was that these students have undertaken both Communicative English 1 and 2 courses and have completed their industrial training. At present they are enrolled in Communicative English 3 course. Therefore, they are able to provide feedback on which aspects of English language they perceive is needed.

The main data collection methods for needs analysis are questionnaires and interviews (Dudley-Evans & Jo St John, 1998:132). The questionnaire was adapted from two survey instruments used by Al-

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Tamimi & Shuib (2010) and Venkataraman & Prema (2007). The data were computed and analyzed using an SPSS version 17.

The questionnaires were initially administered to a class of 32 Mechanical engineering students on 23 July 2012 as a pilot study. After piloting the questionnaires, they were later administered to three classes of 120 fifth semester engineering students. The classes were chosen randomly by drawing lots.

## 4.0 RESULTS

### 4.1 The Students English Language Proficiency

*Table 1: Students' Self-Rating Of Their Ability In English Language Skills*

English language skills	No ( n = 120)	Mean	SD
Listening	120	2.3167	.62151
Speaking	120	1.8333	.57003
Reading	120	2.2667	.64474
Writing	120	1.9833	.70987

As shown in Table 1, the students' responses indicated that their level in all English language skills are either average or weak. They rated their performance in speaking, writing, reading and listening to the average level of mean scores, 1.8333, 1.9833, 2.2667 and 2.3167 respectively.

### 4.2 The Importance of English Language Skills

*Table 2: Importance Of English Language Sub-Skills*

	English language skills	N0	Mean	SD	Overall Mean
Reading sub-skills	Reading textbooks	120	2.9833	.60784	3.2145
	Reading technical articles in journals	120	3.0500	.67176	
	Reading technical manuals	120	3.1917	.66479	
	Reading course handouts	120	2.9667	.63422	
	Reading texts on the computer	120	3.3417	.58691	
	Reading instructions for assignments/projects	120	3.3500	.69391	
	Reading instructions for labs	120	3.2750	.75551	
Writing sub-skills	Reading study notes	120	3.5583	.51524	3.2361
	Writing lab reports	120	3.1417	.70169	
	Writing assignments	120	3.5500	.51613	
	Writing field-trip reports	120	2.8250	.65674	
	Writing short projects	120	3.2083	.64685	
	Taking notes in lectures	120	3.3250	.64685	
Listening sub-skills	Writing test/exam answers	120	3.3667	.67280	3.3033
	Following lectures	120	3.2750	.67317	
	Following question/answer sessions in class	120	3.2000	.65594	
	Listening to spoken presentations	120	3.3667	.63422	
	Listening to instructions and explanations in labs	120	3.4833	.60784	
Listening to instructions for assignments	120	3.1917	.73674		

Speaking sub-skills	Participating in discussions	120	3.2333	.69492	3.2736
	Asking questions in class	120	3.2667	.70691	
	Giving spoken presentations	120	3.3417	.64163	
	Describing products/models	120	3.3333	.62622	
	Describing processes	120	3.4667	.59314	
	Responding to questions	120	3.0000	.72181	

This sub-section reports the results regarding students' perceptions on the importance of the English language skills. Based on Table 2, all the items have mean score higher than 3.0 except for reading textbooks (2.9833), reading course handouts (2.9667) and writing field-trip reports (2.8250). Of the four language skills, the overall mean show that listening skills (overall mean=3.3033) have been perceived to be the most important. This is followed by speaking skills (3.2736), writing skills (3.2361) and reading skills (3.2145). The overall mean score indicates that students perceived all the English sub-skills as important to be acquired.

### 4.3 The Students Lacks in the English Language Sub-skills

Table 3: Students' Lacks In English Language Sub-Skills

Sub-skills	Number of students	Percentage (%)
Reading technical manuals	98	81.7
Writing lab reports	84	70
Writing assignments	77	64.2
Writing test/exam answers	76	63.3
Following lectures	92	76.7
Listening to spoken presentations	97	80.8
Listening to instructions and explanations in labs	84	70
Participating in discussions	91	75.8
Giving spoken presentations	101	84
Defining and describing objects	83	69.2

This section presents the students' responses to section D of the questionnaire, which required them to select the English Language sub-skills that they perceive lacking. It was found that giving spoken presentations (84%), listening to spoken presentations (81.7%), reading technical manuals (80.8%), following lectures (76.7%) and participating in discussions (75.8%) were the English Language sub-skills that the majority of students reported lacking.

### 4.4 The Students English Language Wants

Table 4: Students' Wants Of Language Training

English language skills	Number of students	Percentage (%)
Grammar	77	64.2
Technical vocabulary	81	67.5
General vocabulary	56	46.6
Listening comprehension	93	77.5
Reading comprehension	72	60
Speaking skills	95	79.2
Writing skills	78	65
Communication skills	85	70.8

Based on Table 4, it can be implied that student's interest in receiving training in speaking (79.2%) and listening comprehension (77.5%) are slightly higher than writing (65%) and reading comprehension (60%). These results are in a way consistent with the study conducted by

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Venkataraman & Prema (2007) and Al-Tamimi & Shuib (2010). They found that the majority of students perceived speaking and listening skills should be an important element to be covered in the English language course. Therefore, speaking and listening skills are to be given more emphasis in the classroom.

#### 4.5 The Students Perceptions regarding the current English Language Course

This section presents the data collected on the students perceptions regarding the current English Language course. The four main aspects on perceptions that has been investigated are mainly the usefulness, course preferences, time allocation and the relevance of the course materials.

*Table 5: Students' Perceptions Regarding The Usefulness Of The English Language Course*

Questionnaire Item	Choices	Total (n=120)	Percentage (%)
How useful is the English language course with regards to your English Language needs?	Very useful	12	10
	Useful	47	39.2
	Of some use	52	43.3
	Of little use	9	7.5
	Not useful	0	0

The results in Table 5 revealed that students have mixed perceptions towards the usefulness of the English language course in terms of meeting their English language needs. Around 49.2% of the students believed that the current English language course is useful meanwhile, 43.3% of the students perceived that the current English language course is of some use with regards to their English language needs.

*Table 6: Students English Language Course Preferences*

Questionnaire Item	Choices	Total (n=120)	Percentage (%)
Which type of English language course would you like to attend?	English for academic purposes	10	8.3
	English for specific / occupational purposes	48	40
	General purpose English	6	5
	Communicative English	56	46.7

As shown in the above table, majority of the students preferred to take Communicative English (46.7%) and English for specific/occupational purposes course (40%). The results imply that students would like to take courses that would prepare them to communicate and function effectively at the workplace in the future.

*Table 7: Students' Satisfaction Of The Time Allocated To The English Language Course*

Questionnaire Item	Yes		No	
	n = 120	%	n = 120	%
Is the time allocated for the English course enough for you to use the language effectively?	71	59.2	49	40.8

Based on Table 7, 59.2% of the students stated that the time allocated for the English language course is sufficient meanwhile 40.8% reported that the time allocated is insufficient.

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*Table 8: Students' Perceptions On The Relevance Of The Course Materials*

Questionnaire Item	Yes		No	
	n = 120	%	n = 120	%
Are the materials found in the English language course relevant to the engineering field?	22	18.3	98	81.7

The results in Table 8 indicates that the vast majority of the students (81.7%) found that the materials in the English Language course are irrelevant to their engineering field. This may be due to the use of the same course book by the English language lecturers across all departments.

#### 4.6 The Students Expectations regarding their English Language Lecturers

*Table 9: The Students' Expectations On Their English Language Lecturers*

Questionnaire Item	Yes		No	
	n = 120	%	n = 120	%
Do you agree that English language lecturers teaching engineering students should have a special set of competencies/skills that could cater specifically for engineering students?	105	87.5	15	12.5

The results in Table 9 revealed that a wide majority of students (87.5%) agreed that English language lecturers teaching engineering students should have a special set of competencies/skills that could cater specifically for their needs as engineering students. This finding is similar to those of Venkatraman & Prema (2007). They found that 98.9% of the students agreed that teachers of English in engineering colleges need a specific set of competencies, other than those of General English teachers.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

This study explored the English language needs of polytechnic engineering students in terms of the importance of English language skills, their English language lacks, and their English language wants. Additionally, the study also investigated the students' perceptions of the current English language course and their expectations regarding their English language lecturers.

The findings revealed that students fall in the category of either weak or average in terms of their ability in English Language skills. Furthermore, listening skills is perceived as the most important skills by the students.

Concerning students lacks in the English Language sub-skills, it is found that giving spoken presentations, listening to spoken presentations, reading technical manuals, following lectures and participating in discussions are their main concerns. In terms of training needs, it is found that students are more keen in receiving training in speaking and listening comprehension.

Pertaining to the students views on the usefulness of the English Language course, it is revealed that students have mixed perceptions. With regards to the students English Language course preferences it is found that the students prefer to learn Communicative English and English for Specific/Occupational purposes. The time allocated for the English Language course is reported to be sufficient by the students however they found that the materials found in the English Language course to be unrelated with regards to their engineering field.

Relating to the last research question, it has been exposed clearly that students expect their English lecturers to possess a special set of competencies/skills that could provide specifically for their needs as engineering students.

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Based on the findings, the following recommendations are suggested:

1. The current Communicative English syllabus could be revamped by giving more emphasis to listening comprehension skills.
2. Students' level of proficiency should be considered when materials are being prepared or designed.
3. Materials related to engineering field should be incorporated in the course in order to cater to the students' field of specialization.
4. English Language lecturers should be equipped with specialized training/skills in order to meet the needs of engineering students.

One limitation of the present study lies in the research instrument. The instrument used for data collection was questionnaires and the researcher did not use a combination of methods for data collection purpose. Hence, the results of the needs analysis fully relied on the perceptions and feedback given by the respondents. In addition, more conclusive data pertaining to students' English language needs could be attained if more students from other polytechnics were involved.

In sum, the current study explored the English Language needs of polytechnic engineering students. It is hoped that the findings of the study would benefit Curriculum Development Centre of Polytechnic and ESP practitioners in developing and designing English Language curriculum for polytechnic students.



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