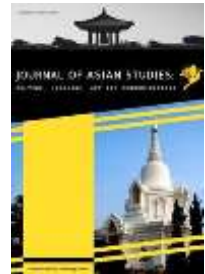




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## THE NEEDS FOR ENGLISH LEARNING MATERIAL IN MECHANICAL ENGINEERING DEPARTMENT AT INSTITUTE TECHNOLOGY OF PADANG

### KEBUTUHAN MATERI PEMBELAJARAN BAHASA INGGRIS PADA JURUSAN TEKNIK MESIN DI INSTITUT TEKNOLOGI PADANG

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#### **Abstract**

*The use of English in specific areas such as (culinary, automotive, hospitality, and others.) is a crucial thing and it is well-known as English for Specific Purposes. The process of learning English is still separated by many aspects such as the limitation of appropriate learning material where each area has its environment and learning material has to consider it carefully. This research aims to find out the needs of learning English for Mechanical Engineering students at the Institute Technology of Padang. The respondents are mechanical engineering students, English lecturer, Mechanical Engineering Lecturer, and User. This study used questionnaires and interviews as a technique of data collection. The researcher used Target situational analysis, Present Situational Analysis, Learning Need Analysis and material development questionnaires in classifying the needs of learning English for Mechanical Engineering. The result from the three types of need analysis showed that Students have high interesting in learning English, Students' English ability is still low or basic/intermediate level, English subject should emphasize to education and specific-field of students, Reading and Speaking should be more emphasized in the learning process, and learning English should relate with the students' specific-field. Therefore, learning material for Mechanical Engineering should consider the result of the needs above.*

**Keywords:** Need analysis, English for Specific Purposes

#### **Abstract**

*Penggunaan bahasa Inggris di bidang tertentu seperti (kuliner, otomotif, perhotelan, dan lain-lain.) merupakan hal yang krusial dan lebih dikenal dengan istilah English for Specific Purposes. Proses*

*pembelajaran bahasa Inggris masih dipisahkan oleh banyak aspek seperti keterbatasan materi pembelajaran yang sesuai dimana setiap bidang memiliki lingkungannya sendiri dan materi pembelajaran harus mempertimbangkannya dengan matang. Penelitian ini bertujuan untuk mengetahui kebutuhan pembelajaran Bahasa Inggris bagi mahasiswa Teknik Mesin di Institut Teknologi Padang. Respondennya adalah mahasiswa Teknik Mesin, Dosen Bahasa Inggris, Dosen Teknik Mesin, dan Pengguna lulusan teknik mesin. Penelitian ini menggunakan angket dan wawancara sebagai teknik pengumpulan data. Peneliti menggunakan Target Situational Analysis, Present Situational Analysis, dan Learning Need Analysis, dan angket pengembangan materi dalam mengklasifikasikan kebutuhan pembelajaran Bahasa Inggris untuk Teknik Mesin. Hasil dari ketiga jenis analisis kebutuhan menunjukkan bahwa siswa memiliki minat yang tinggi dalam belajar bahasa Inggris, kemampuan bahasa Inggris siswa masih rendah atau tingkat dasar / menengah, mata pelajaran bahasa Inggris harus menekankan pada pendidikan dan bidang khusus siswa, membaca dan berbicara harus lebih ditekankan dalam proses pembelajaran, dan pembelajaran bahasa Inggris harus berhubungan dengan bidang khusus siswa. Oleh karena itu, materi pembelajaran Teknik Mesin harus memperhatikan hasil dari kebutuhan diatas*

**Kata kunci:** Analisa Kebutuhan, English for Specific Purposes

## 1. INTRODUCTION

In globalization era, mastering universal language, especially English is very crucial for all aspects such as mechanical engineering. Vocational schools are required to prepare their graduates to compete globally. One of the efforts that can be done is to provide international language experience during their education. In fact, the limitation of learning material that relates to the students' field study made the process of learning English could not run well. It was caused by there is no course book related to each institution. In other words, institution is expected to develop their learning material. ESP teachers or lecturer are very frequently directly involved in designing teaching materials as commercially published course books and other materials tend not to be relevant to the needs of their specialized groups of learners (Marjanovikj-apostolovski & Macedonia, 2019). It means the English lecturers have to find out the needs of learning English relates to their students' specific skill.

Then, the global demand has forced the National Education to find out alignment in preparing human sources that can survive in this situation. One of the efforts is increasing the students' competencies in using a universal language. It is supported by Santoso (2014) foreign language learning in Indonesia constitutes an attempt for Indonesians to be able to absorb and keep up with the development of science and technology in the world and to provide a way for Indonesian people to interact with other global members. In other words, teaching English should consider the need for the work-field of the students. Thus, students will obtain suitable experience, the setting of the language used, and language skills which are needed by them in the workplace later.

Unfortunately, in Vocational School, English learning material given is not suitable for the demand of students field study because the context and content of the materials are still general and do not refer to the subject-matter of learners (Ronaldo, 2016). It just provides material on a general scale without trying to face English into the students' field-study. Besides, learners should be trained to communicate in English that relates to their subject-matter. It is important to consider the approach to learning material to synchronize between teaching English and students' field-study.

Referring to the ESP theory, it is called by need analysis Flowerdew (2006) states that Needs analysis, carried out to establish the " what " and the " how " of a course, is the first stage

in ESP course development, followed by curriculum design, materials selection, methodology, assessment, and evaluation. Then, Rahman *et al* (2009) mentioned that a need analysis is a necessary first step for ESP teaching. Lastly, Martinez & Sanz in Torregrosa & Sánchez-reyes (2015) argued that A needs analysis should be the first step in designing language programs. Hence, it is the fundamental stage to develop or create a course design to synchronize between learners' needs and language learning. Need analysis should be able to cover the learners' needs and language learning into suitable material which considers learners' learning capacity and language use so that it helps them to reach the learning objectives.

Then, several types of need analysis should be done in developing a course design. Each part has its purposes to collect the information surrounding the teaching and learning process. Therefore, they are used as a starting point to design a course design or learning material for ESP. Some experts have different views on the number of types of need analysis in ESP. According to Hutchinson and Waters (1987) and Dudley and Jo (2007) mention, there are three essential types of need analysis such as; Target Situational Analysis (TSA), Present Situational Analysis (PSA), and Learning Situational Analysis (LSA). Then, Purpora and Graziano-King (2009) and Hou (2013) add Means Analysis as a type of need analysis beside of TSA, PSA, and LSA.

This study used three types of need analysis in collecting the fundamental information for designing learning material that suitable with the students' specific-skill. Firstly, Target Situational Analysis; refers to the form of needs analysis, which centers on identifying the learners' language requirements in the occupational or academic setting. Its purpose is to find out the learners' necessities overall. Secondly, Learning Need Analysis: refers to subjective, felt, and process-oriented needs. It focuses on what the learners want in learning English such as; belief, goals, attitudes, motivations, expectations, and learning styles. Lastly, Present Situational Analysis: It estimates strengths and weaknesses in language, skills, and learning experiences.

Briefly, to answer the question of 'what are the needs of English learning material for mechanical engineering students at Institute Technology of Padang?' The data of study showed the needs of learning English for Mechanical engineering that came from various respondents. The data consisted of lacks, wants, and necessities related to the English learning material. It could be a mapping of designing learning material for English subject in mechanical engineering department. Thus, English lecturers or teachers who teach for mechanical engineering students could consider the result of the need analysis in order to match between learning material with the demand of workplace.

## 2. METHODS

This research used multiple-methods in conducting the result at the end of the research process, as Long (2010), explains the methods used in taking need analysis can be both of existed methods; quantitatively and qualitatively. It means the data were collected quantitatively and qualitatively in collecting the information about the needs for learning English in mechanical engineering department. The respondents of this research are 28 mechanical engineering students, an English lecturer who teaches in mechanical engineering department of Institute Technology of Padang, a mechanical engineering lecturer, a principal of engineering company in West Sumatera.

In line with method used, there are two kinds of data; quantitative and qualitative. Quantitative data came from 28 engineering students. The data were divided into four parts such as Target Situational result, Present Situational result, Learning needs result. In addition,

researcher also distributed material development questionnaire to the students to get information about kinds of topic and linguistic features that they really need in specific skill. Then, qualitative data were interview's result from English lecturer, Mechanical Engineering lecturer, and User. Shortly, the data were collected by using questionnaires and interviews.

In analyzing process, questionnaires have analyzed by using formula proposed by Riduwan (2004) as follow:

Note:

P = Final Score

F = Gained Score

N = Maximum Score

$$P = \frac{\sum f}{N} \times 100$$

Then, the result of the questionnaire has been calculated into the percentage model as follow:

**Table 01:** Category of Item Questionnaire

Percentage	Category
0 – 20	Very Low
21 – 40	Low
41 – 60	Average
61 – 80	High
81 – 100	Very High

Then, data from interview the respondents, researcher applied three steps in analyzing the qualitative data, such as data reduction, data display, and conclusion drawing or verification.

### 3. RESULTS AND DISCUSSION

To answer the question of 'what are the needs of English learning material for mechanical engineering students at Institute Technology of Padang', researcher has taken some actions; distributing questionnaires and doing the interview with several informants. The purpose is to get information about the needs of learning English in mechanical engineering. Referring to Hutchinson and Waters (1987) and Dudley and Jo (2007) mention there are three essential types of need analysis such as; Target Situational Analysis (TSA), Present Situational Analysis (PSA), and Learning Situational Analysis (LSA). In addition, the researcher also collected information about the development of learning material in order to determine what topic and situation in the learning material. It means there are four kinds of questionnaires have been distributed to the students and the researcher also took an interview with English lecturer, and user to get a deep insight in developing learning material.

#### 3.1. Target Situational analysis

The purpose of target situational analysis is to determine the goals of learning English. It consists of collecting the necessities of learning English for mechanical engineering students. Based on analyzing the data, the researcher explained as follow:

**Table 02:** Result of Target situation analysis

No	Pernyataan	TS	KS	CS	S	SS	N		TS	KS	CS	S	SS	F	N	P (%)	Category
		1	2	3	4	5											
The Needs of Using English																	
1	For education			11	11	6	28		0	0	33	44	30	107	140	76.43	High
2	For job and career			9	9	10	28		0	0	27	36	50	113	140	80.71	High
3	For training	25	2	1			28		25	4	3	0	0	32	140	22.86	Low
4	For taking language examination	22	6				28		22	12	0	0	0	34	140	24.29	Low
Language Skills used in Mechanical Engineering																	
5	Listening skill	1	3	20	4		28		1	6	60	16	0	83	140	59.29	Moderate
6	Speaking skill	1	2	19	4	2	28		1	4	57	16	10	88	140	62.86	High
7	Reading skill	1	5	19	3		28		1	10	57	12	0	80	140	57.14	Moderate
8	Writing skill	17	8	3			28		17	16	9	0	0	42	140	30.00	Low
Content and Context areas of using English																	
9	Content of using english				14	14	28		0	0	0	56	70	126	140	90.00	Very High
10	Context of using english			8	10	10	28		0	0	24	40	50	114	140	81.43	Very High
The use of Spoken Language in Mechanical Engineering																	
11	Friends	16	9	2	1		28		16	18	6	4	0	44	140	31.43	Low
12	Lecturers	16	10	2			28		16	20	6	0	0	42	140	30.00	Low
13	Foreign students	1	2	24	1		28		1	4	72	4	0	81	140	57.86	Moderate
14	Experts	6	20	2			28		6	40	6	0	0	52	140	37.14	Low
The use of Written Language in Mechanical Engineering																	
15	Reading book sources		3	20	5		28		0	6	60	20	0	86	140	61.43	High
16	Reading journal international as references		3	21	4		28		0	6	63	16	0	85	140	60.71	Moderate
17	Reading and understanding manual book and sparepart book			8	13	7	28		0	0	24	52	35	111	140	79.29	High
18	Writing reports	12	14	2			28		12	28	6	0	0	46	140	32.86	Low
19	Writing articles	7	4	17			28		7	8	51	0	0	66	140	47.14	Moderate

The data above got from questionnaires that collected from Mechanical Engineering students. Based on the data researcher got some result that relates to Target Situational Analysis. Target Situational Analysis consist five sub-indicators. They are the need of using English, language skills, content and context areas of using English, the use of spoken language and the use of written language.

Based on the questionnaires, for first sub-indicators the researcher got result that 80.71% most of mechanical engineering students chose the needs of using English in Mechanical Engineering is for job and career. It means that English is important part in find a job and build their career. For engineer, working with local company or foreign company is a possibility. In addition, English is needed for education with percentage 76.43%. For education side, English is needed when the mechanical engineering continue their study into Bachelor or Magister. From the data, the objectives of learning English for Mechanical Engineering Major should be built up and take more attention for job and education because they are in the high category.

Next, the second sub-indicator which explored the language skills demand in learning English, the data showed that speaking skill got 62.86% that categorize in high category. It



explained that speaking skill is needed for Mechanical Engineering students. Next sub-indicator is about content and context areas of using English. Based on the data, 90.00% participants chose that in learning English the material should have relevant material with their major. It is included a text, vocabulary for mechanical engineering, questions, pictures and others that relates to mechanical engineering. The learning material that has relates content to the students' major can help them to using English in their learning process. For context areas of using English, 81.43% the participants expect that in learning English they can implement their English based on the context. For example, they can use their English in practical test in how to use an engine. In conclusion, speaking skill is in high category also, participant expect that a learning material should be created based on content and context areas of using English.

For the next sub-indicator, the implementation of spoken and written language, the item questionnaires presented the various result. In spoken language, participants mentioned that they prefer using English to communicate with foreign students that showed with percentage 57.86%. Then, for written language, reading competency has gotten much attention. It was proved by the data that reading competency is needed to understand manual book or spare park book with 79.29%. In the other hand, writing skill does not get too much portion yet as the data presented that the needs of writing report 32.86% and scientific article 47.14%.

### 3.2. Present Situational Analysis

Present situation analysis is required to find out the information about strengths and weaknesses language skills and language learning experiences. From the result of this questionnaire, the researcher could arrange an appropriate learning material for the learner. The data were described as follow.

**Table 03:** Result of Present situation analysis

No	Pernyataan	TS	KS	CS	S	SS	N		TS	KS	CS	S	SS	F	N	P (%)	Category
		1	2	3	4	5											
Strengths and Weaknesses in Language Skill																	
20	Listening skill	23	5				28		23	10	0	0	0	33	140	23.57	Low
21	Speaking skill	22	6				28		22	12	0	0	0	34	140	24.29	Low
22	Reading skill	23	5				28		23	10	0	0	0	33	140	23.57	Low
23	Writing skill	17	9	2			28		17	18	6	0	0	41	140	29.29	Low
Strengths and Weaknesses in Learning Experiences																	
24	Having experiences in learning english	21	4	3			28		21	8	9	0	0	38	140	27.14	Low
25	Having experiences in spoken language with foreigner	20	8				28		20	16	0	0	0	36	140	25.71	Low
26	Having experiences in reading english books	14	12	2			28		14	24	6	0	0	44	140	31.43	Low
27	Having experiences in reading journals	19	7	2			28		19	14	6	0	0	39	140	27.86	Low

There are two main indicators, language skills and language learning experience. Language skills in learning English is the main point how to mastering English. From the four language skills, all the participants are in the low category. The lower skills are listening and reading with same percentages 23.57%. Based on the data, the participants have low ability in

language skills and it parts of their weaknesses in learning English. Then, similarly, with language skills, language learning experiences are also in the low category. The lower percentage is 25.71% about experience in using spoken language with foreigner. The participants have less experience in learning English, communicating with foreigners, or reading English books and journals. In addition, having ability in language skills and learning experience are important part for students in learning English, because mastering language skills will help students get more experiences in learning English.

### 3.3. Learning Need Analysis

Learning needs analysis focuses to find out the language learning information about the effective ways of learning the language and its skill. In ESP, learning need analysis refers to the process of matching the environment of students' specific skills with the language learning process. Both should be suitable to motivate the learners in learning a language.

The data of learning need analysis were analyzed generally because the questionnaire has been set to close-ended questionnaires. It would present the process of learning related to implementing the ESP into the learning process of English subject in the mechanical engineering department at Institute Technology of Padang (ITP). Each item of the questionnaire is asked the students' perspective on the English learning process. Three sub-indicators appeared in this questionnaire, they are reason, process, and sources. To know the learning needs, the researcher should know what the reason of participant take English course, the process that participants need in learning English, and the availability of sources of English course.

**Table 04: Result of Learning needs analysis**

No	Pernyataan	TS	KS	CS	S	SS	N		TS	KS	CS	S	SS	F	N	P (%)	Category
		1	2	3	4	5											
Reasons of the Learners Taking the Course																	
28	The importance English for their career		1		13	14	28		0	2	0	52	70	124	140	88.57	Very High
29	The benefit of learning english			7	7	14	28		0	0	21	28	70	119	140	85.00	Very High
Process of Learning English in Mechanical Engineering																	
30	Background of learners			9	11	8	28		0	0	27	44	40	111	140	79.29	High
31	Concept of teacing and learning				13	15	28		0	0	0	52	75	127	140	90.71	Very High
32	Methodology of learning process				5	23	28		0	0	0	20	115	135	140	96.43	Very High
33	Technique of learning process				10	18	28		0	0	0	40	90	130	140	92.86	Very High
34	Various of learning activities				14	14	28		0	0	0	56	70	126	140	90.00	Very High
The Sources Available																	
35	Lecturer competency			8	10	10	28		0	0	24	40	50	114	140	81.43	Very High
36	The available of relevant learning source	5	16	7			28		5	32	21	0	0	58	140	41.43	Moderate
37	Teaching aids			6	12	10	28		0	0	18	48	50	116	140	82.86	Very High
38	Opportunity of out-class activities		4	21	3		28		0	8	63	12	0	83	140	59.29	Moderate

First sub-indicators is reason, about what is the reason participants take English course. It has two items: the importance of English for future career and English as supported competence

for mechanical engineering. From both of item questionnaires showed that their reasons in take English course are in very high category with higher percentage is 88.57% from 100% scale. It means almost of participants have reasons in learning English for their career and supported competence in the future.

Next sub-indicators is processed. In process sub-indicators, the researcher wants to know what process of learning that students need in English course. It consists with five items. First, the learning process should be based on the background of learners and it is suitable with students' experiences. Second, concept of the learning is focus on the language used in mechanical engineering. Third, learning process is using various methods. The two lasts are learning process should have variety of learning strategies and activities. Then, from the data it showed that all the items are in high and very high category, with the highest percentage is 96.43% about methodology of learning process. From the result, the researcher knows participants agreed that learning English should be appropriate with their major. In other words, English for specific purposes approach have to be implemented in developing English learning material for Mechanical Engineering students.

The last one is sources, there are four items related to the sources, lecturer competence, learning sources, teaching aids, and real-life or outside activity. Teaching aid is the item that gets the higher percentage with 82.86% and it is in very high category. After teaching aids, it follows by lecturer competence with percentage 81.43%. From the result about sources, the researcher concludes that availability of sources and lecturer competency are part of the supporting parts in learning process.

### 3.4. Material Development analysis

The data of the analysis phase informs that mechanical engineering students have interesting in learning English. However, they have a lack of English ability. It shows the opposite relation. Therefore, they prefer learning English related to the mechanical engineering field. In other words, the topics that they are most needed to learn are related to their specific skill, such as; *Introducing self, Object Identification, Daily Activities, The Factory, The workshop, Profession: Engineer, Materials, Working Time, Measurement, Electricity, Engine Four and Two Stroke, Hydraulic System, Engineering*. Those topics are part of topics for mechanical engineering students proposed by team teaching Akademi Teknik Mesin Indonesia (ATMI) Solo.

In additions, the result also showed that some tenses (*Simple Present Tense, Simple Past Tense, Simple Future Tense, Present Progressive Tense*), kinds of text (*Descriptive Text, Procedure Text, Notice/Caution/Warning, Short Message, Announcement, Advertisement, Asking and Giving Permission, Asking and Giving Information, Asking and Giving Clarification*) *parts of speech, and modality*. Besides, the result of need analysis also showed that most of the respondents prefer to master reading and speaking skills in English.

In line with the result above, some previous studies related to the need analysis for vocational school such as Kadek and Luh (2016), Grabiella and Bestri (2016), and Wahyudi (2016) preferred to show the similar result. Almost of the needs result is related with this research result. The result showed that students need learning English related to their own specific workplace. Unfortunately, most of the students have lack competency in English. Besides, they also have low motivation in learning. It may be caused by the learning material was not interesting for them because it was too general. Therefore, the researchers decided to develop learning material related to their students' need.



#### 4. CONCLUSION

This study presented the needs of English learning material in mechanical engineering department. Based on the discussion, the result of target situational analysis showed that mechanical engineering students need to learn English related to their specific-skill and. It means the content in learning material have to synchronize with mechanical engineering topic and field. It also expects to use English for their career and education and focuses in speaking and reading skill. In addition, they also need to read manual book or parts book of machine.

Then, present situational analysis has described that most of students have lack experience in English. The result showed they do not high confident in using English because of the less competency in language. This result should be considered in developing learning material because giving difficult material prefers to make students bored in learning process. Though learners have chosen the topic and linguistic features, the learners' level in learning must be considered during developing learning material. Lastly, Learning Need analysis generally mentioned that learning English should be related to the English for Specific Purposes.

This research could give recommendation that Vocational School must implement the ESP in learning English as a foreign language because each discipline has its own specific purposes in using English. For example, a receptionist needs to master English in hospitality aspect. It could be different with an engineer that needs to master English in engineering aspect. By implementing the ESP theory, learning English would be more valuable for the specific person in the specific studies.

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