

Analysis of Students' Need of Specific English Materials for Engineering Program at Vocational High School

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Abstract

This study is aimed at revealing students' needs of specific English materials for learning materials for engineering program. Learning English for general purposes seems not suitable anymore for students of engineering program which needs specific materials to pay more attention to their future professions. This study uses a mix method methodology which combined both kinds of methodologies to get the results not only using numerical figure but also a deep description. There are 31 participants taken from vocational school found that 61.3% want to have specific English materials for studying; while 38.7% want to follow teachers' instruction relates to English materials. It means specific English materials for engineering program is significantly needed to support students' future professions.

Keywords: *engineering, needs, vocational program, mix method*

Introduction

In the era of Asean Economic Community (AEC) Indonesia sits as one of the member in the global community which plays an important role. To support its role, Indonesia has to prepare the excellent human resources in many fields of competition. In order to be able to compete, English language becomes one of the central skills which should be taught in schools more specific. The quality of English skills can affect the quality of human resources in several sectors of life such as education, economic, social, and cultural.

As an international language, English is practiced in spoken and written communication around the world. It is widely used and taught at all levels of school from elementary until university. Until now, English is taught in Indonesia using general English, while majoring at high schools is deniable. High schools in Indonesia is divided into Senior High School (used general English), Senior Vocational High School (should use specific English), and Islamic Senior High School (should use specific English). But, in its real situation of teaching materials teachers use general English for most of the majors in vocational schools especially in Jambi. Specific materials as Hutchinson and Waters (1987) suggested to be considered as a specialization area for vocational students skills in work places. Suyadi (2016: p. 144) is also suggests to have specific materials and specific method of teaching and learning for vocational students in order to make English more useful for the future profession of the students. Relevant to specific materials, the researcher conducted a research on whether or not the students of engineering majoring need specific materials for English subject.

The purpose and content of English for Engineer majoring are determined by learners' needs for function and practical application of English, rather than by the goal of general education where English for engineering is often aimed at a certain occupational requirement or regulation, generally referring to English teaching for practical purposes in engineering field. Learning is a process of coordination between learners and target situation where the participators need to have sufficient process of getting better understanding (Hutchinson & Waters, 1987). To get a better understanding of the students' needs, researcher conducted the research on engineering vocational school in Jambi. From the previous research researcher found the information about text books used in some schools, as shown in Table 1.

Students' needs of English in specific discipline can be analyzed through Needs Analysis (Richard, 2001), which is used to develop the content of materials (Richards in Nunan, 1988). Needs analysis as the activities that are involved in collecting information that serves as the basis for developing a curriculum in order to meet the needs of a particular group of students (Iwai, et al., 1999; Songhori, 2008). Moreover, Sprat (2005) said:

To meet students' personal needs, teacher should choose suitable materials, topic, speed of lesson, activities, approach to teaching (activity-based, topic-based), treatment of individual learners, skills, interaction patterns (group, pair or individual), and types of feedback. Meanwhile, in order for teacher to meet students' learning needs, they should choose suitable materials and

topic, activities, interaction pattern, approach to teaching, language and skills level of language and skills, learning strategies and workload.

To create alive atmosphere in teaching and learning, it is crucial to identify students' needs a kinds of specific materials course to be used in the classroom. Students are described as subjects of the first step that a curriculum or course planners should do to determine the students; skills, competences, knowledge, needs and purposes in teaching and learning process. Needs analysis is used to help curriculum planners know whether the content of the courses is relevant with the students' or not.

Table 1. Majoring at Senior High School

No.	Classification	Majoring	English Material
1	Senior High School	a. Science b. Social Science c. Language	General English
2	Senior Vocational High School	a. Accounting b. Secretary c. Hotelling d. Engineering e. Culinary	General English
3	Islamic Senior High School	a. Science b. Social Science c. Language d. Arabic e. Religion	General English

Furthermore, Richards (2001) states that students' needs in English for Specific Purposes (ESP) are described in terms of performance, in terms of a linguistic deficiency, and as describing the difference between what then learner can presently do in English language. Needs are identified as a judgment and reflects values to teachers, leaners, employers, employees, parents, and many others.

In more specific terms, Conelly and Clandinin (1988) define a stakeholder as people with a right to comment on, and have input into, the curriculum process offered in schools, while different stakeholders may want different things from the curriculum. Brindley (1984) stated need is not something automatically appears to replace wants, desires, demands, expectation, motivation, lacks, constraints, and requirements. In line with the above opinions, an educational setting needs to scrutinize the students' needs due to identify their knowledge, skills, and competences, versus what profession they want to be and what kinds of materials want to have in learning goals. Based on the students' needs for English materials the materials developers may formulate a syllabus and specific materials to match the real material of English of students in the classroom. Needs of English materials is very important to improve the skills of at vocational schools that is a special education programs selected for anyone interested in preparing for self-employment or work as part of a group.

The term vocational education is a form of preparatory education for work done in high school to provide the notion of vocational as organized educational programs relate to individual preparation for work to earn wages or work without additional preparation. In other words, vocational education is training or retraining of students' preparation in the form of knowledge, skills, and attitudes necessary to be able to work and renew expertise and further development in pre work preparation.

This research was conducted in a state vocational school (SMK N 1 Betara) Jambi Province at Tenth Grade of Engineering Majoring Academic Year 2017/2018. A target needs approach is used to distinguish necessities, lacks, and wants with three considerations (Hutchinson & Waters, 1987).

a. Necessities:

This term 'necessities' belongs to what the learners have to know effectively the target situation which learners need to know the linguistics features – discourse, functional, structural, and lexical – which are commonly used in the situations identified.

b. Lacks

This term ‘lacks’ belongs to the gap between the target proficiency and the existing proficiency. Whether or not the learners need the instruction will depend on how well they can do it already.

c. Wants

This term belongs to what the learners” need from an English for Specific Purposes (ESP) course. Here, before starts designing English for Specific Purposes (ESP) course, teachers and material developers have to know what are needed by the learners from joining an English for Specific Purposes (ESP) course.

English of engineering is specific material to use in the classroom of engineering for improving the students’ communication skills Ibbotson (2008). English for engineering provides engaging activities to improve reading, listening, writing and speaking while preparing the students for engineering industry. So, to meet the needs, the course is constructed at different levels of proficiency and integrates all skills English including engineering vocabulary.

Method

In analyzing the data, this research used descriptive to analyze data and it aims to draw hypothesis from the results of the research. The findings are described essentially as a case study approach deals with a single or small-scale case that is studied in detail (Silverman, 2005). Creswell (2007) explains that descriptive qualitative explores the phenomenon from the perspective of distance education students and puts it as problem solving due to it is not only sample collecting data, but covers data analysis, and interpretation to the research problem.

In line with the above opinion, Beverley Hancock (2009:p. 7) said that qualitative research is concerned with developing explanations of social phenomena to help us to understand the social world in which we live and why things are the way they are, but the results cannot be generalized (Frankel and Wallen, 2007).

This descriptive qualitative research is used to investigate the Engineering students’ needs of English learning and teaching materials. There were 34 students from the tenth grade of engineering majoring at SMK Negeri 1 Betara, Tanjung Jabung Barat Regency, Jambi Province taken as the sample of the research.

The data is collected through questionnaires which consist of ten questions and three parts as the following table:

Table 2. Specification of questionnaire

No.	Indicator	Questionnaire
1	Background Information	1-3
2	The Students’ Perceptions in English	4-6
3	The Students’ Perceptions in English course	7-10

The first part aimed at collecting general background information from the students and whether or not they consider English important for their field of study? As well, questions were asked how they describe their attitude towards English learning at the beginning of their studies.

The second part was designed to identify the students’ perceptions English and consisted of three questions and two-scale formats. One of the 4 point Liker scale (1=never and 4=always) and (sometimes and rarely= x) aimed at finding out the students’ perceptions in the use of 16 English language sub-skills related to the four skills, namely reading (items 1 to 4), writing (items 5-8), listening (items 9-12), and speaking sub-skills (items 12-16) and were adopted from Al-Tamimi and Shuib (2010).

The second question was developed to know the most important basic skills in learning English,. The respondents can choosing to rate their important basic skills using very important, important, common, and not important. The other four point Liker scale (1 = no training needed and 2= a lot of training) required the students to rate the same 16 sub-skills in first question to elicit their needs for training to improve performance in these skills.

The last part of the questionnaire was based on Al- Tamimi and Shuib 2010) work, to draw out the students’ perceptions in the current English language course. Four questions were asked in this part.

Data analysis is the process of systematically searching and collate the data. Bogdan in Sugiyono (2007:88) state data analysis is the process of systematically searching and arranging the questionnaire transcripts, field notes, and other material that you accumulate to increase your own understanding of them

and to enable you to present what you have discovered to others. Sugiyono (2012) said that data analysis is critical to the qualitative research process. It is recognition, study, and understanding of interrelationship and concept in your data that hypotheses and assertions can be developed and evaluated.

The descriptive analytic method will be used in this research. It analyses the answers of participants to the questions suggested in the questionnaires. The most detailed tool was the students' needs analysis questionnaire. Statistical Package for Social Science (SPSS v.20) was used to produce descriptive statistics for the frequencies, means, and the relative percentages. Frequencies and percentages for each item reflecting target needs was calculated so as to have the opportunity to compare the students' perceptions.

Results and Discussions

The researcher gave the questioners to tenth grade students of Engineering on Saturday 2nd June 2018. Tenth grade of Engineering in SMK N 1 Betara has 34 students, but when researcher gave the questioners it was only 31 students presented. The findings are analyzed by using descriptive analytic method. Statistical Package for Social Science (SPSS v.20) was used to produce descriptive statistics for the frequencies, means, and the relative percentages. Frequencies and percentages for each item reflecting target needs was calculated so as to have the opportunity to compare the students' perceptions.

Perceptions of students are divided into two main sub-sections: the students' English language needs and their preferences for the English language course. This section intended to collect personal information from the students. According to the first item, it is noticeable that all 31 respondents consist of 29 males and two female students.

Analysis of the Questions

Question: Do you consider English important for your studies?

Table 3. Importance of English

VALID	NUMBER	PERCENT
YES	31	100%
NO	0	0%
TOTAL	31	100%

Table (3) indicates that 100% of respondents have answered "Yes" while 0% have answered "No". Since a large proportion of tenth grade students have answered "Yes", one can say that English is very important for their studies and their motivation remains higher. This question has been devised in order to know the importance of English for this kind of learners.

In the Table (4.1) the researcher can conclude if the students knew they need to learn English. Based on the sample of 31 students, all of samples agree if learning English is important for them.

As Kennedy and Bolitho pointed out that much of the demand for ESP has come from scientists and technologists who need to learn English for a number of purposes connected with their specialism (1984, p.6).

Question: How would you describe your attitude towards English language learning at the beginning of your studies?

Table 4. Students' Attitude towards English Learning

VALID	NUMBER	PERCENT
Favorable	27	87.1%
Unfavorable	4	12.9%
TOTAL	31	100%

According to the results recorded on Table (4), 87.1% respondents expressed a favorable attitude towards English learning while 12.9% have not.

Based on table the result indicated if learning English for students is favorable in the beginning of studies. It showed that the students' interest is high when learning English, so we stay see where they

are interest. A student's previous learning of English may influence the attitude to an ESP course (Kennedy and Bolitho, *ibid*, p.16). This question was asked to get an appreciation of the students' attitude.

Question: What sub skill would you most like to use now?

Table 5. The students' perceptions regarding English language needs

English Language Skills		N	Mean
Reading Sub-Skill	Reading textbooks and course handouts	31	2.2581
	Reading technical articles in journals	31	2.8065
	Reading technical manuals	31	1.9677
	Taking notes and texts on computer	31	2.6129
Writing Sub-Skill	Assignments	31	2.2258
	Taking notes in lectures	31	1.0000
	Writing exam answer	31	1.5484
	Writing text	31	1.3548
Listening Sub-Skill	Following lectures	31	1.0968
	Following question and answer sessions in class	31	1.9355
	Listening to spoken presentations	31	1.6452
	Listening to instructions and explanations	31	1.1935
Speaking Sub-Skill	Participating in discussions	31	1.6774
	Asking questions in class	31	1.8710
	Giving spoken presentations	31	2.4194
	Others (please specify)	31	2.0645

Depending on the results recorded on Table (5), on reading sub-skills, the results indicated that the students like to use reading skill, it shown with the magnitude of the average students who choose this sub-skill compared to other sub-skill with an average more than 2 in three sub-skill especially in Reading technical articles in journals the mean (2.8065). The writing sub-skills, the results showed that the average is very low. This can be seen from taking notes in lectures have been viewed by the students to be the least frequent used sub-skills with mean (1.0000).

Question: What do you think is the most important basic skills in learning English?

Table 6. Speaking Skills

Valid	Frequency	Percent
Very Important	18	58.1%
Important	9	29%
Common	4	12.9%
Total	31	100%

Table 7. Listening Skills

Valid	Frequency	Percent
Very Important	14	45.2%
Important	13	41.9%
Common	4	12.9%
Total	31	100%

Table 8. Reading Skills

Valid	Frequency	Percent
Very Important	17	54.8%
Important	9	29.1%
Common	5	16.1%
Total	31	100%

Table 9. Writing Skills

Valid	Frequency	Percent
Very Important	19	61.3%
Important	8	25.8%
Common	4	12.9%
Total	31	100%

This question is as a purpose to know what the important basic skills in learning English. Depending on the results recorded on Table, Writing is the basic skill very important for tenth grade students in SMKN 1 Betara with 61.3 % respondents choose. And Listening is slightly from the other. If such results are seen, this may indicate that students choose writing skill most important, and follow with reading. So researcher can conclude with the students want to be able to read and write an important thing they got from reading.

Question: Which of the following English language sub skills do you want or need to study?

Table 10. Students' Wants of Training Sub Skill

English Language Skills		N	Mean
Reading Sub-Skill	Reading textbooks and course handouts	31	1.7742
	Reading technical articles in journals	31	1.5806
	Reading technical manuals	31	1.7419
	Reading study notes and texts on computer	31	1.7419
Writing Sub-Skill	Writing short projects and assignments	31	1.6129
	Taking notes in lectures	31	1.4194
	Writing exam answer	31	1.5806
	Writing text	31	1.6129
Listening Sub-Skill	Following lectures	31	1.6452
	Following question/answer sessions in class	31	1.9032
	Listening to spoken presentations	31	1.6129
	Listening to instructions and explanations	31	1.6452
Speaking Sub-Skill	Participating in discussions	31	1.9032
	Asking questions in class	31	1.6452
	Giving spoken presentations	31	1.8387
	Others (please specify)	31	1.7097

From the Table (10) the researcher concluded about target needs consideration is necessities, lack and want from the students based in the result. The target need that researcher can be conclude is the

student want to know (necessities) is learning reading skill. That show with data on the table has an average most stable from the other. It means if the student want to get the knowledge and more skill from reading. And the lack based on the result of the table, researcher see if student learner need in writing skill, this can see form the table with an average of the most low than other. And the last target need, the higher priority student want to learn are listening and speaking. Here can be seen that the wishes of students in listening and speaking very high. The concluded is student interest very high to learn sub skill in learning English.

The Students' Perceptions regarding English course

Question: How useful is English language course with regard to your English language needs?

Table 11. Usefulness English Language Course

Valid	Frequency	Percent
Useful	14	45.2%
Of some use	17	54.8%
Not useful	0	0%
Total	31	100%

The results is shown in Table (11), where most student said useful the English language course. Show high interest in self-esteem in language course.

Question: Which type of English language course do you like to attend?

Table 12. Students' Needs of Course Preferences

Valid	Frequency	Percent
EAP	4	12.9%
EOP	13	41.9%
GE	14	45.1%
Total	31	100%

The table is shown that half of students' preferred to take courses in English needed rather than general one. In other words, the half student who chose EOP want to learn English accordance with the material they need in engineering. The results expressed as what Kennedy and Bolitho (1984: p.4) stated that "EOP is taught in a situation in which learners need to use English as part of their work or profession".

Question: Is the time allocated to the English course enough to you to use the language effectively?

Table 13. Students' Satisfaction of Time Allocated

VALID	NUMBER	PERCENT
Yes	22	71%
No	9	29%
TOTAL	31	100%

The students' answers represent 29%. It is obvious that most of the respondents stated that they were unsatisfied of the time assigned to the English language course and it was not adequate to achieve the required competence in the English language. Robinson (1989: p.398) considers that time is an essential factor which must be taken into account when conducting an ESP course and he wrote that "ESP courses are normally constrained by a shortage of time."

Question: Which aspects of English language would you suggest to be focused on in the course?

Table 14. Students' Results regarding language aspects

Choices	Responses		Percent of Cases
	N	Percent	
Specific Grammar	19	13.1%	61.3%
Technical Vocabulary	10	6.9%	32.3%
General Vocabulary	26	17.9%	83.9%
Reading Comprehension	21	14.5%	67.7%
Listening Comprehension	15	10.3%	48.4%
Speaking Skills	23	15.9%	74.2%
Writing Skill	11	7.6%	35.5%
Communicative Skills	20	13.8%	64.5%
Others	-	-	-
Total	145	100%	467.7%

The percentages on Table (14) researcher can summarize based on the data. More than half of students (61,3 %) want to learn English more specific, it means they wanted English lesson associated with their department of engineering that can be useful as in the job.

Discussions

Based on the analysis of the questionnaires, we attempt to discuss the findings of the students' perceptions. After the analysis form Table (1) indicates that 100% of respondents have answered "Yes" while 0% have answered "No". Researcher can concluded that English is very important for their studies and their motivation remains higher, and the results recorded on Table (2), 87.1% of the respondents expressed a favorable attitude towards English learning while 12.9% have not. A students' previous learning of English may influence the attitude to an ESP course (Kennedy and Bolitho, *ibid*, p.16).

The Students' English Language Needs

The discussion of the results was based on Hutchinson & Waters (1987) target needs, regarding the students' necessities, lacks and wants. It is noticeable that English is very important for students in their field of studies; also they have expressed a favorable attitude towards English learning at the beginning of their studies.

First of all, the results which were shown on the above table represented the Engineering students' English language necessities. The results present the English language skills that students would most like to learn, which are: reading technical articles in journals, reading study notes and texts on computer, giving spoken presentations, reading textbooks and course handouts, and writing short projects and assignments. These are what the students have to know in order to function effectively in the target situation. In tables which are shown the most important basic skills in learning English they need to learn is writing skills with 61.3% students choice very important to learn, and the Speaking (58.1%) and Reading (54.8%) in average level they want to learn. And the last is Listening skills, the students while choice this basic skill is not very important just 45.2% from the other so that can concluded if the students think if listening skill is not very important to learn.

Secondly, regarding the engineering students' English language lacks, the findings on the previous tables reveal that they are unable to practice effectively the four skills needed to master the language. They rated themselves in listening, reading, and speaking skills being as at the average level. On the other hand, they described themselves to be weak in writing skill, we can indicate from writing sub skills "taking notes in lecture just have (mean: 1.0000) In view of that, Robinson (1989: p.402) writes "An important consideration is the degree of proficiency expected in the target situation."

Finally, in terms of the English language wants, Engineering students on table above indicate they want more training to develop their performance in the English language. Based on tables of Speaking and Listening sub-skills have high average students' wants of language sub skills they want to a lot of training.

A correlation can be drawn with the self-ratings of their ability in performing the English language skills. In terms of needs of the skills, the students have concentrated much more efforts on and developed a confidence in, speaking and listening rather than reading and writing. One can justify this difference by the fact that there has been much demand on these skills.

The Students' Perceptions of the English Language Course

The attitudes and expectations of the learners and the specifications of the official curriculum will determine and transcribe the effectiveness of a language program (Nunan, 1989: p.176). On the basis of the results shown on the above table we notice that 0% of the students responded negatively to the usefulness of the English language course. Whereas (54.8%) and (45.2%) have answered that the course is "Of some use" and "Useful" respectively.

In view of that, almost the Engineering students in our study revealed that the current English language course is not based on predetermined objectives and they would like to take General purposes English (GE) type of English course. But, 41.9% students take EOP, it can be concluded if the students want to learn English to use English as part of their work or profession. In the table of Students' satisfaction of the time allocated to the English language course, the students' answers represent 29%. It is obvious that most of the respondents stated that they were unsatisfied of the time assigned to the English language course and it was not adequate to achieve the required competence in the English language. Robinson (1989: p.398) considers that time is an essential factor which must be taken into account when conducting an ESP course and he wrote that "... ESP courses are normally constrained by a shortage of time."

Moreover, the results in percentages on the table refer to choices indicated by the respondents and can be read on the principle of the highest percentage summed up for the individual answers. It is noticed that the majority of the students gave priority to General Vocabulary 83.9%; 74.2% for speaking skills; 67.7% for reading comprehension; 64.5% for communicative skills; 61.3% for specific grammar; 48.4% for listening comprehension; 35.5 for writing skills and finally, 32.3% for technical vocabulary. So, researcher can concluded if the student still gave priority to General Vocabulary but some students also want to be focused in Technical Vocabulary. Researcher also find if the students want to be focused in speaking skill, it can see 74.2 % students choice it.

Conclusion

The results of the study may be an aid to the further development of ESP program based on the English language needs of students and improvement of the current program to better meet the needs of the students at the Engineering Program at SMK N 1 Betara, but this results cannot be taken to generalized to the other engineering majoring. Thus, it is recommended:

- the current English language program must be shifted to an ESP program to meet the specific needs of students.
- when designing an ESP course, the priority should be given to speaking, communication, and reading skills among the other language skills.
- When ESP course is prepared and developed much more attention should be given to the affective factors and the students' needs.

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