

TEACHING MATERIALS OF ENGLISH FOR STUDENTS OF MECHANICAL ENGINEERING OF ENGINEERING FACULTY DARMA AGUNG UNIVERSITY MEDAN- A NEED ANALYSIS ON ESP PERSPECTIVE

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ABSTRACT

Teaching materials that meet the students need must be gained from deep analysis of student's needs that can involve not only the students but also lecturer, staff workers from students' preferred workplace. It should cover the topics needed, relevant tasks, answering the students' lacks, and touch the most priority of English language skill needed. Need analysis found is needed to design content and aims of the course which are oriented to the specific needs of the learners. This research revealed that The background of English of the students are not good and the students learned the general English not mostly specific for the Mechanical engineering students; connecting word to word or sentence to sentence (33%), vocabularies (21%), grammar (22%), Pronunciation (9%), Finding the main topic (9%), and others (6%) are their most difficulties ; The Genre Based Vocabularies and topics of the teaching materials which are suitable are as follows: The Core of Greetings, The Core of Introducing Oneself, the core of Company Profile and workplace, The Core of Reporting or Making Report, The Core of Giving and Asking Information, The Core of Asking and Giving Direction, The Core of Statistics, The Core of Interview, The Core of Job Application, The Core of Delivering a Presentation, The Core of Writing Letters, The Core of Explaining Process, The Core of Telephone Calls. It is also revealed that the students are needed to be taught in a learning atmosphere that encourages them to be more active in learning in the classroom with their low competencies and low motivation and still need the lecturer explanation and help at first followed by learning English in autonomous way.

Keywords : Teaching materials mechanical engineering need analysis ESP

INTRODUCTION

Background

English is one of the important languages for people who live in developing countries like Indonesia. English is needed not only because it is the most widely used language in this world but also become the language for business. Recently, Indonesia has designed 'Making Indonesia 4.0' as an integrated roadmap to implement a number of strategies to enter the Industry 4.0 era. The roadmap requires collaborative actions among multiple stakeholders that range from government institutions, associations and industry, to academic elements. It

means learning English becomes even more crucial for making Indonesian ready to deal with competition nowadays and in the near future. Indonesian government has formulated ten national priority strategies and improvement of human resources quality is one of them, and of course, mastering English is a crucial agenda.

English language competence is needed by the engineering students in order to master those engineering knowledge and skills which are offered in English. Understanding scientific papers, journals which are written in English and graphs marked in English strengthen the need of English for engineering students. Moreover, in

understanding the knowledge deeper by listening or watching an international class videos conducted by experts in English will require the students to master the English language. Hence, engineering students should master English in order to deal with the English lectures, tutorials, labs, projects, papers, etc.

Mastering English is one of importance requirements to involve in a multinational company. The opportunities to have a career in a multinational company/manufacture, such as S.C.Jhonson, Chevron, Astra International Tbk, Auto 2000, Pertamina, etc, or to work abroad are also penetrated into the engineering world, one of them is the need for technician or mechanical engineer. English is important, not only for their academic but also for their prospective career. In other words, the importance of English is also happened to the Engineering students who are engineers in the future. Also, in their future career, they may be asked to present their ideas and designs to their clients in English. Hence, good English is crucial to an engineer. English is important, not only for their academic but also for their prospective career.

Producing the graduates who are professional in their fields and able to speak English should be the responsibility of institutions that organize engineering education. This has actually been sought by the institution of the University of Darma Agung which requires students to take English lecture. Unfortunately, the reality in the field shows that students are still less able to speak English eventhough having attended English subject for one semester. In addition, a great number of alumni are not accompanied by their adequate quality of English requirements; consequently, the huge opportunities cannot be achieved maximally.

There are many factors that affect the student's inadequacy in learning English. The teaching materials used by lecturers also take a role that is not less important. A good English instructor or lecturer should know how to design an appropriate learning activity to answer the intended goals of learning English. Establishing key learning outcomes in the design and delivery of the learning activity is one of important role of a lecturer. As Kaur (2007) said that if English as second language instructors do not know about their students and their needs, developing a curriculum becomes a challenge causing many problems in learning and teaching the second language

There are four language skills that have to be mastered in learning English. First, the listening skill, an activity of thinking which is not only uses the sense of hearing, but also the combination of sense of hearing and thinking process. Second, the speaking skill, a productive skill in the oral mode. Third, the reading skill, an active process of receptive skill in the written mode intends to absorb and store information in order to increase knowledge. Fourth, the writing skill, which is a productive skill in the written mode.

Realizing the gap as explained previously, researchers plan a study to know the existing phenomena of English teaching and learning of Engineering students at University of Darma Agung and to find out kind of English teaching materials needed for Engineering Students at University of Darma Agung and produce teaching materials based on the analysis of student needs.

Understanding Teaching Materials

There are some terms of the teaching materials such as instructional materials, learning materials, or teaching and learning materials but they have similar and the same essence. Simply, learning materials can be defined as any materials used by the teacher and student for teaching and learning

process. Tomlison (2001) defines materials as anything which can be used to facilitate the learning of a language. They can be linguistic, visual, auditory or kinaesthetic, and they can be presented in print, through live performance or display, or on a cassette, CD ROM, DVD, internet, dictionaries, grammar books, readers' workbooks or photocopied exercises, newspaper, instructions given by the teachers, etc.

Saraceni(2003:75) notices that the materials tend to focus on such specific needs, styles, and interests that they become restricted and can only be effective and useful for a limited group of learners without much flexibility and choice. This can be said that learning or teaching material consists of set of competencies that must be learned and mastered by the students in order to have the skills and competencies during the teaching and learning.

The Need Analysis

Need analysis is a research that has been done by some scholars with their own definition of the term. Nunan (1988:13) stated need analysis is techniques and procedures for collecting information to be used in syllabus design. In line with that Iwai, et al. (1999) mentioned that needs analysis refers to the activities that are involved in collecting information that will serve as the basis for developing a curriculum that will meet the needs of a particular group of students. Simply, need analysis is defined as a systematic process of collecting information and data that are relevant and needed in order to develop and design the learning material so that the result could be optimally and effectively used by the learners. In conclusion, need analysis is a technique which involves activities that designed for collecting information that will serve as the basis for designing syllabus/curriculum/language courses to meet the needs of a particular group at

different levels of proficiency and with a variety of objectives in mind.

In developing a certain learning materials, especially specific learning material like English for mechanical engineering, the need analysis get its serious and significant attention for learning material designer or lecturer. Need analysis become the starting step or point before going further to developing and designing the learning materials. Simply, need analysis is defined as a systematic process of collecting information and data that are relevant and needed in order to develop and design the learning material so that the result could be optimally and effectively used by the learners

APPROACHES IN NEED ANALYSIS

1. Sociolinguistic Approach

This model of approach analyzes the student's condition and profile with some information then the material designer transferred the form of much detail information of the students into the syllabus (Munby, 1998). It is about information about the students not from the students as West (1994)) concludes.

2. Systemic Approach

It is a present situation model which concern to the present situation and the position of the students. Richterich and Chancerel (1977) have developed this approach to see the students needs by making the assessment before, during and after the learning process but absent in analyzing the real world needs. The shortcoming of this model is that the material designer can't fully find what exactly the students want.

3. A Learning Centered Approach.

Hutchinson and Waters (1987) developed an approach that can meet the complete issue of the students' needs of language and analyze them. According to Hutchinson and Waters (1987), target needs explain "what the learner needs to do in the target situation" (p. 54). Students' target needs involve the

necessities, lacks and wants. Necessities are what students have to know in order to be able to perform their responsibilities. Lack is what people do not know (it is the gap between the students knows and their necessities) and finally wants are what the learner think they need. The learning needs included demographic information, background knowledge, and practical skill.

The English for Specific Purposes (ESP)

A key feature of English for Specific Purpose (ESP) course is that the content and aims of the course are oriented to the specific needs of the learners. ESP courses, then, focus on the language, skills, and genres appropriate to the specific activities the learners need to carry out in English. Key issues in the teaching of English for specific purposes are how to identify learner needs, the nature of the genres that learners need to be able to produce as well as participate in and how we can know that our learners have been able to do this successfully, and, if not, what we can do help them to do this.

Tudor (1997) points out that an important distinguishing feature of ESP is that it deals with 'domains of knowledge. It can be said that what is focused on in ESP courses is not same as in the case of general English teaching.

METHODOLOGY

This research is conducted at Faculty of Engineering, University of Darma Agung. It took eight months starting from February up to August 2018. In line with the problem and objectives of the research; the method of this research is a research and development (R&D) method proposed by Borg and Gall (1987). The targeted clients of this research are the students of Mechanical Engineering students at University of Darma Agung, and the respondents are the students of mechanical engineering who have

learned English, staff workers and the lecturers of engineering faculty students. This research applied three different techniques for collecting data; they are documentary, questionnaire and interview techniques. First, the instrument for documentary technique is documentary sheet. This documentary sheet is used to collect the data from written resources such as learning document, learning guide line, etc. The types of data collected by documentary are the existing data of syllabus, learning material, assessment types, learning strategies, and students' achievement in learning English Subject. Second, questionnaire and interview is used to find out the data from respondents like students, lecturers, and staff workers that include target need learning materials in terms of contents and other related issues.

FINDINGS AND DISCUSSION

STUDENTS' NECESSITY, WANTS AND LACKS

Students' Necessities based on the motivation of learning English

As according to Hutchinson and Waters (1987) necessities is what the people has to know in order to function effectively in target situation. After the information gained, the researcher revealed that the students have to be more active in the learning process. The way the previous lecturer applied lecturer centered was not appropriate in making the students autonomous in the process of learning English. They need a student centered learning. Methods and approaches conducted by lecturers also affect the success of teaching and learning in the classroom. The method applied by lecturers who teach in Engineering of Darma Agung University is still lecturer centered. The application of this method resulted in the students not having much space to explore and involve them in the teaching and learning process in the classroom. Students need

a learning atmosphere that encourages them to be more active in learning in the classroom. In addition, Student need to have a relevant learning method and approach with their low competencies and low motivation that can guides them from the very simple or dependent step to independent step. They still need the lecturer explanation and help at first, but then they finally learn in autonomous way.

From the document of mechanical engineering syllabus, questioner and interview from/with the students, lecturers, and staff workers in mechanical engineering field of study it is revealed that the topic or genre of the learning materials content are The Genre Based Vocabularies and topics of the teaching materials which are suitable are as follows: Greetings, Introducing Oneself, Company Profile and workplace, Reporting or Making Report, Giving and Asking Information, Asking and Giving Direction, Statistics, Interview, Job Application, Delivering a Presentation, Writing Letters, Explaining Process, and Telephone Calls. As Willis (1996:23) said that designer of a course material should find the best topic that meet the students' needs which present a suitable degree of intellectual and linguistic challenge and promote their language development as efficiently as possible.

The students need to learn English because of various motivations but mostly they thought that English is very important to learn because they want to join the multinational corporate such as Civil Servant (17%) , Entrepreneur/ Owning An Engineering – Workshop (13%), Chief Of Engineer (18%), Mechanics (8%), Chief of Machinist (7%), Staff worker in a multinational corporate (10%), Machine Designer (7%), and others like lecturer, ship engineer, merchant, supervisor in preferred corporate such as BUMN, PT. Tamba, PERTAMINA, TRIAKINDO, INALUM, PERTAMBANGAN, AUTO

2000,PLN, CAPELLA, PTPN, GROWTSUMATERA, PT.KAI, KRISBOW, etc, that is why they thought after they become real engineers, they will find that English appears even more crucial than it used to be. Engineer usually works as a team since their work seldom be finished alone. The property of their work determines that being engineering forced them to cooperate and to communicate with different people even different first language. In international factory or manufactures, sometimes the supervisor or other leaders require the workers to speak English because they have to discuss with their leaders abroad through teleconference. For the native English leader, of course, most of the time they will put English as their working language. In order to coordinate and accomplish the projects with them, the non-native engineers have to speak good English.

Working as mechanical engineers in multinational company, the mechanical engineer, who studies the application of the principles of physics to machine design, manufacturing, the analysis of a machine, and its maintenance in an existing mechanical system, must meet the requirements of mastering English in their specific field. There are various employment opportunities for mechanical engineering graduates. It is ranging from consulting firms, contractors, oil & gas, mining (mining) and manufacturing. To enter the multinational companies such as S.C.Jhonson, J.W Marriott Hotel, Chevron, Auto 2000, Pertamina, ASTRA, will not easy. They usually set high requirements. Starting from GPA> 3.25, and TOEFL score> 500/550 and have the ability to communicate in English both spoken and written.

The opportunities to work abroad or having a career in a multinational company/manufacture, such as S.C.Jhonson, J.W Marriott Hotel, Chevron, Astra International Tbk, Auto

2000, Pertamina, etc, are also penetrated into the engineering world, one of them is the need for technician. Mastering English is one of importance requirements to involve in those companies. In other words, the importance of English is also happened to the Engineering students who are engineers in the future. Also, in their future career, they may be asked to present their ideas and designs to their clients in English. Hence, good English is crucial to an engineer. English is important, not only for their academic but also for their prospective career. Those characters are integrity (ethics and morals), professionalism (expertise based on the field of science), English language skills, use of information technology, communication, self-development, , leadership, discipline, honesty, work motivation, responsibility, work ethic, innovation and creativity, ability to solve problems, the ability to combine the use of computer technology with internet-based development.

In line with the motivation of the students to learn English, English language competence is needed by the mechanical engineering students in order to master those engineering knowledge and skills which are offered in English. Understanding scientific papers, journals which are written in English and graphs marked in English strengthen the need of English for engineering students. Moreover, in understanding the knowledge deeper by listening or watching an international class videos conducted by experts in English will require the students to master the English language. Hence, engineering students should master English in order to deal with the English lectures, tutorials, labs, projects, papers, etc.

From the previous explanation, it can be concluded that the students need to learn mostly speaking skill that will be designed to answer the need of other skills. It is an agreement to the point of

view of Ur (1996) that considered the importance of spoken performance of a language. He saw that speaking is the most important skill among four skills because people who really know a language are referred to as speakers of that language. As Scrivener considered that using a language is more important than just knowing about it because there is no point knowing a lot about language if someone can't use it (Scrivener, 2005, p.146). However, in the past, teaching oral communication was took a little attention to be taught because of the misconception that oral communication competence develops naturally (Chaney, 1998).

Another detail information about the necessities is that the students need to know much of the vocabulary of their fields that is why they need to learn English for their specific needs of expertise / field. The fact is that the lecturers mostly teach the students the general English, the vocabularies and the topic of the materials given by the lecturers are still not answering the need of engineering field of study (86%). The students learned the general words not mostly specific for the engineering students' especially mechanical engineering students. It is in line with Hutchinson, Tom and Alan Waters (1987) that said a key feature of English for Specific Purpose (ESP) course is that the content and aims of the course are oriented to the specific needs of the learners.

1. Students' Wants

The students said that they are happy if they work with other friends such as work in pair, work in group rather than work privately. The condition of the students showed that they will be better work with friends so they can help each other. The students said that they like learn English with peer, (27-37%), some of them said that they love to listen to the lecturer's explanations (21 %), but others said that working with exercises in pair or within

group are mostly accepted. It means they need to do the exercise alone (21%) and in group or with pair (79%). Even though they thought that English is very difficult to be learned but some of them (56%) don't have special way to overcome the difficulties. Other students said that they tried to learn alone (37%), talk and learn with peers (19%), and registering in an English course (18%). It can be concluded that the chance of learning English in the university especially in the English subject is their golden chance in learning English. It is in line with Long (2005) that said by doing need analysis, the course designer can get the particular situation in which the students or learners want to participate. Long also adds that students nowadays love to learn in dynamic way which includes various tasks that can help their independent way of making decisions. The material designer should find the best task that meet the students' needs as Willis (1996:23) says: "One job of the course designer is to select topics and task that will motivate learners, engage their attention, present a suitable degree of intellectual and linguistic challenge and promote their language development as efficiently as possible.

2. Students Lacks

Most of them are not good in speaking (99%), writing (91%), reading (90%), and Listening (90%). Most of the difficulties are: connecting word to word or sentence to sentence (33%), vocabularies (21%), grammar (22%), Pronunciation (9%), Finding the main topic (9%), and others (6%). 85% of them are not good at writing. In learning English in the classroom, the students said that 91% of the vocabularies are very difficult to be learned in other words they don't familiar with those words learned.

In speaking they find difficulties in finding the word in English when they want to share their opinion in front of their friends. They also find

pronunciations of vocabularies are very difficult to be spelled. Most of them said that lecturers often said that their grammar also in wrong pattern. A similar condition happened when they wrote in English. Connecting word to word or sentence to sentence become the most problems after finding the appropriate vocabularies for them. In Reading, the students said that they are very difficult in comprehending the text because they don't know most the vocabularies they faced in the text. Unsuccessful understanding of the text of course brings laziness in completing the following tasks given by the lecturers. The students said that it is rare for them to do listening comprehension in the classroom. Most of the listening program done by the lecturer is mostly in pronouncing the vocabularies.

RESULT

Teaching materials that meet the students need must be gained from deep analysis of students' needs that can involve not only the students but also lecturer, staff workers from students' preferred workplace. It should cover the topics needed, tasks, answering the students' lack, and touch the most priority of English language skill needed. In addition students must be taught in a learning atmosphere that encourages them to be more active in learning in the classroom with a relevant learning method and approach with their low competencies and low motivation that can guides them from the very simple or dependent step to independent step. They still need the lecturer explanation and help at first, but then they finally learn in autonomous way.

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