

## Developing Technical English Vocabulary Teaching Materials Based on Call

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**Abstract:** *The research is aimed to assist the English teachers and facilitate the students of Politeknik Negeri Jakarta (State Polytechnics of Jakarta), in learning technical English vocabularies. As students of polytechnics, they study ESP (English for Specific Purposes). In practice, they find some obstacles in memorizing technical vocabularies which are very important in order to read and understand manual books for laboratory and workshop, such as: "pile", "bench", et cetera. The research outcome is the software which can be used for practicing their vocabulary memory, so they will be more skillful and knowledgeable. This software is designed by using the program of Rapid E-Learning Suite Version 5.2 and Flash CS3. The software exercises contain some exercises on reading text and reading comprehension questions and presented with the multiple answers. This software is handy and flexible because students can bring it anywhere and be studied anytime. In other words, they have flexibility to learn and practice technical English vocabulary. As a result, the students are found one of the ways to overcome their problems of memorizing vocabularies. The product is a kind of software which is easily used and portable so that the students can use the software anywhere and anytime. It consists of 3 (three) sections of exercises. At the end of each exercise, the students are evaluated automatically by looking at the scoring system. These will motivate them to get good score. The most important thing is that by using this software the students can practice technical English vocabulary both in classroom or at home.*

**Keywords:** *ESP, English for engineering, Software, vocabulary*

**Abstrak:** Penelitian ini bertujuan untuk membantu para pengajar Bahasa Inggris dan memfasilitasi mahasiswa jurusan Teknik di PNJ untuk belajar Bahasa Inggris Teknik, terutama belajar Bahasa Inggris untuk tujuan khusus (ESP). Dalam prakteknya sehari-hari, mereka menemukan kesulitan memahami Bahasa Inggris Teknik karena kebanyakan dari mereka adalah lulusan dari sekolah menengah umum. Oleh karena itu dibutuhkan suatu perangkat lunak agar mereka dapat berlatih kosakata Teknik. Perangkat lunak ini dibuat dengan program rapid E-Learning Suite version 5,2 dan Flash CS3. Perangkat ini terdiri dari teks bacaan dan Latihan kosakata Teknik yang dapat dipelajari oleh mahasiswa kapan pun dan dimana pun. Pada akhir Latihan, mahasiswa dapat melihat hasil pembelajaran dari soal Latihan yang telah mereka kerjakan.

**Kata kunci:** ESP, English for Engineering, Software, Vocabulary

### 1. INTRODUCTION

English subject (especially English for Specific Purposes) at State Polytechnics of Jakarta (PNJ) requires students to know and understand some technical terminologies usually used in the workshop or laboratories. Teaching ESP for students at PNJ should be given to make students ready to work when graduating, so the knowledge of technical English will be applicable to industrial needs. Technical English that the students learn are related with technical vocabularies. In learning technical English, there are some words or vocabularies that students often use in the workshop or laboratories, especially in the department of Electronic and Electrical Engineering. Although this subject is given once a week for about two (2) or three (3) hours, this still encourages students to learn English enthusiastically. They are really aware that English is very crucial for communicating and working.

In Electrical and Electronics Engineering Department, English subject is given to the students in four semesters. It is divided into General English and Technical English. General English is given in semester 6, meanwhile Technical English is given in semester 4 and 5. This division is based on the curriculum applied in Electrical Engineering Department. due to the needs of students that they have to know the objects or process or experiments that are related with the technical terms, so technical English is given in semester 3 and 4. Students get English for Specific Purposes (ESP). This is aimed to make students familiar with objects or experiments done in the workshop. When they move to semester 5 and 6, they need ESP related with industrial work.

Based on the explanation above, I conducted the mini research in order to find ways how to teach students in better one. This mini research was done due to the needs of exercises for technical English in order to make students easy to learn and memorize technical vocabularies. The research w

It is already proved that multimedia technology eases people to do their papers, reports, study and many more. Related with that, Computer Assisted Language Learning (CALL) will make both language teachers and students study the language and improve their skills in more enjoyable environment.

Based on the explanation above-mentioned, it is important to make the exercise model for English technical vocabularies which are related with objects, process and experiments done in workshop or laboratories. This model will help students, especially students of engineering, not only for students of polytechnics but also technical students in general, so that they can learn and understand technical terminologies easily.

The need of this model is becoming primary since English is as foreign language in our country, Indonesia. It is not easy for most Indonesian to learn English effectively. With this model, learners of English are assisted to study in more and flexible way.

Frankly speaking, there is no such model found in the bookstores in Indonesia. Consequently learners of English in Indonesia find difficulties to learn vocabularies. The product of this research is very fruitful to fulfill such needs. The result of this research is a kind of a software which is easy useable and portable to be carried out everywhere. By making use of technology development, like computer, learners find the solution to their problem. They are easily able to open and practice the vocabularies, like an old saying says *practice makes perfect*.

## 2. THEORETICAL FRAMEWORK

There are so many ways to learn English vocabularies in order to make learners easy to remember. Among others are repetition exercises, using picture dictionary, using definitions or descriptions, and using real objects (Hutchinson and Allan, 1987). These old ways are mostly used by language teachers to teach their students in order to comprehend the topics taught. These also depend on the creativity of teachers to make teaching aids. Unfortunately, lecturers of English at State Polytechnics find difficulties to drill students on technical vocabularies. Those vocabularies are related with technical workshop and laboratories (Louis, 1985). These vocabularies are rarely used in daily conversation or sometimes they have different meaning if we see in general dictionary. For example, there is an object in the workshop called *bench*, it may mean *long wooden seat placed in public garden* (Oxford Dictionary, fourth edition). Meanwhile in technical terminology (English for Engineering, 1987), or it means *work table used in the workshop or laboratory*. These meanings may make students confused. Therefore, students need to be taught meaning of words related with engineering.

Other words related with technical terminology are connected with the topics, such as: *Describing tools and instruments, Describing Process, Reading Math and Formulae, Reading Graphs and Table, Shapes and Angles, and Properties of Engineering Materials.*

John M. Davies (*Communication for Engineering Students, 1996*) says that multimedia will help someone learn English faster, so she/he easily understands difficult words. Moreover, he says that this is one of the effective ways to help teachers teach and explain English subject to their student.

Computer Assisted Language Learning (CALL) has been popular among language researchers since 1990s. The similar research was done by two researchers from China, Ming-Tsan Lu and Chi Ying Wu who made the paper and product entitled: "The Effects of CALL in grammar classroom" (2009). They invented this software to facilitate for English teachers to teach grammar more enjoyable and fun. L2 students will not get frustrated when learning grammar of English.

In developing the instrument, the research is used some software, such as: Rapid E-Learning and Flash CS3. Rapid E-Learning is often used to make programs, in this case for making questions for English exercises. This program was launched in 2009 is used for making interactive learning. It is also used to integrate multimedia, interactive quiz, dynamic screen casts, and streaming video with text. Meanwhile Flash CS3 is used for a kind of animation program and to produce sound in order to make the tool more attractive to see and make other web components to be easily integrated to the video application.

### **3. METHODOLOGY**

Based on the previous invention, I was motivated to make similar software which would motivate students to learn technical vocabularies in engineering because sometimes students face difficulties when working with technical objects in the workshop. This research was done in the campus of State Polytechnics of Jakarta (PNJ). This had been done for eight months with four (5) steps. Those are (1) Planning, (2) analyzing related materials, (3) Designing the exercise model, (4) Implementation, and (5) Evaluation.

The first step is planning. In this step, I collect vocabularies for engineering used in the module of the workshop in Electrical and Electronics Engineering Department. Based on this, choosing and then determining the appropriate software for the module is the toughest job in this step. Then animation (like pictures and sound) will support the software and make it more attractive.

The second step is to analyze related materials (the exercises) which are taken from several technical English book, then categorize them based on the topics in order to get module according to what we need.

The next step is to design the software. This is a very challenging job where each of the materials is analyzed in order to fit with the design. Based on the topics, the materials are identified and then the design is made. The models of exercises are chosen based on the degree of difficulties.

The fourth is to implement what we have collect and put them into multimedia. What most important thing in this step is to make the teaching module and question-answer go smoothly. Eventually, those exercises are evaluated in order to gain the wanted module according to the target or goal.

### **4. IMPLEMENTATION OF THE EXERCISE MODEL**

This software consists of three (3) kinds of exercises. As a learner opens the software, there is a display of subject title. Then for the next display, a learner can type his/her name and student number to start the exercise program. The first module contains 50 multiple-choice

questions which a learner can answer A, B, C or D by clicking the letter for the correct answer. If the answer is correct, there will be the blue-color sign and the clapping-hand sound, meanwhile the red-color sign and the sound of *sorry* for the false answer. The sound is given here to give positive impact to the learner's emotion. Although she/he makes mistakes for the answer, she/he will be entertained by the sound. This way will motivate students to learn. In other words, this exercise model will make student study vocabularies naturally without being pressure because she/he can study vocabularies more fun. At the end of this exercise, there will be evaluation what score she/he gets after doing each exercise.

For the second exercise, a learner is given incomplete picture of CRT (*Cathode ray Tube*). In this exercise, a learner must complete the names of part of CRT. The evaluation and scoring system are similar with the first exercise.

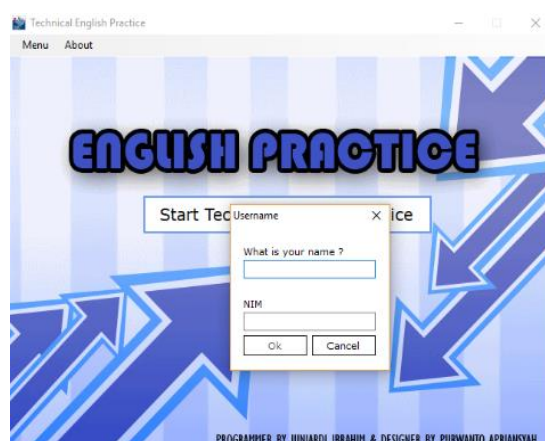
The last exercise is reading text. The reading text is incomplete. A learner must complete it by choosing with the words given. A learner must be very careful to choose the appropriate word, whether it is a verb, a noun, or an adjective in order to make this text perfect. As usual, there will be evaluation at last, similar with the first and the second ones.

With this kind of exercise, a learner can practice and memorize technical words without pressure. This will also give positive impression to the learners of English that understanding vocabularies is not difficult as they think.

The followings are the screenshots of the exercise model that appear in the menu, starting with the opening and then followed by exercises.



**Figure 1.** Opening menu



**Figure 2.** Starting menu

When students open the software, the menu will appear like it is shown in Figure 1. Students will wait for a few seconds till another picture will appear (Look at figure 2). When students start the program, students must fill out the form their names and their passwords. They wait for a few seconds, then it will continue to another screen.

Then the screen moves to next screen, that is Introduction of the reading text (Figure 3-5). It is guidance for students how to follow the program. Furthermore, it explains what is the program about, how many questions will be and what kind of score students will get. After students finish reading guidance, they will come to the reading text. After they finish reading, they can click 'next' button

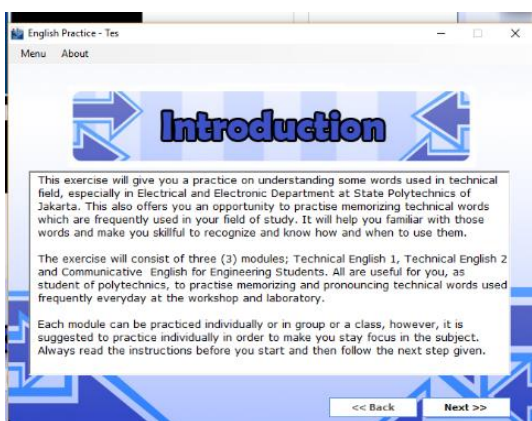


Figure 3. Typing out the form

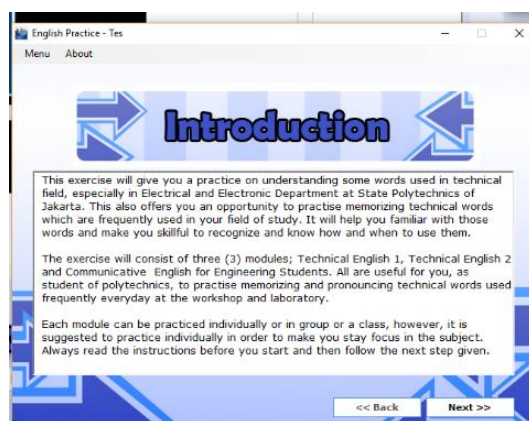


Figure 4. Introduction – Reading Text (1)

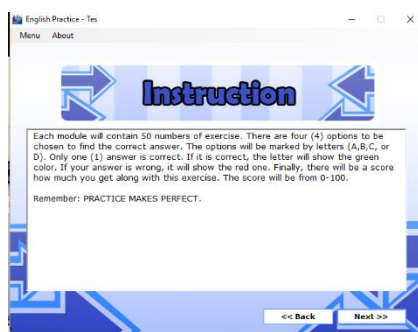


Figure 5. Introduction – Reading Text (2)



Figure 6. Answering Question – Reading Text

What other important thing about this exercise model is to test students' attitude toward it. This part is testing students' attitude whether they are confident with their answer or not. They must click two options before they move to the next screen (Figure 6).

If students fail to choose the right answer, the red indicator will light up (Figure 7). It means that they get wrong answer. There are three options to be chosen which are at the bottom of the screen. They are 'previous question' button, 'next question' button, and 'next' button. Students are free to choose them. By using this way, students have enjoyable studying environment. They are not threatened, although they fail to answer the questions.



Figure 7. False answer indicated by red color

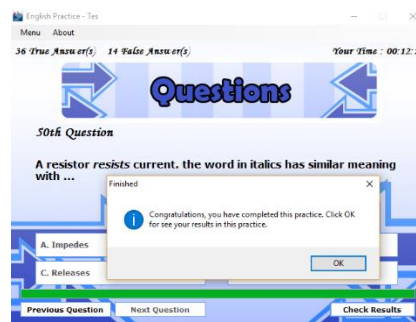


Figure 8. Right Answer

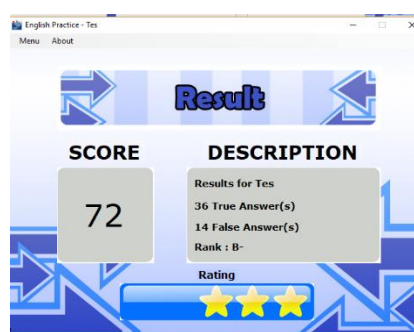


Figure 9. Final Score

On the other hand, if students get right answer, there will be a notification of appreciation that they have answered correctly (Figure 8). This will motivate students to work better and better again. When students have finished all the exercises in this program, the score will be shown in the screen (Figure 9). Besides the score which is announced, there is a description how many correct and false answer that students get. Moreover, students will know in what rank they get. They can repeat this exercise model independently till they are satisfied with the score.

## 5. CONCLUSION

This interactive model for practicing technical vocabularies has been implemented in two English classes at Electrical and Engineering Department. From the try-out program, most students got improved in reading skill, especially related with guessing the meaning of difficult vocabularies. Furthermore, students got better enthusiasm in learning technical English than using the old ways of teaching, such as: repetition and memorizing. This has shown that mental attitude students are getting improved positively.

This software has shown that it motivates both teachers and students to practice more often. It can be done in the classroom or outside classroom independently. So, learning a foreign language will be fun and enjoyable.

It is also hoped that this software will give fruitful contribution in educational system in general, especially in Indonesia where English is still considered as a foreign language. Since this exercise model is relatively new in Indonesia, it will be sold commercially in the future.

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