

DEVELOPING ENGLISH READING MATERIALS BY USING  
SCIENTIFIC APPROACH FOR THE GRADE X STUDENTS OF  
COMPUTER ENGINEERING AND NETWORKING PROGRAM  
AT SMKS TAMAN SISWA MEDAN

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**ABSTRACT**

This study concerns on how reading text are developed for vocational school. This study was conducted by using Research and Development (R&D) design. It was started from collecting the data, analyzing data, designing course grid, designing new reading material by using Scientific Approach, validating by experts, and revising for final product. The new reading material contained of five stages namely; observing, questioning, exploring, associating, and communicating. The source of data of this study was the grade X students of Computer Engineering and Networking Program at SMKS Taman Siswa Medan consisting 24 students. Instrument of collecting data were observation, questionnaire, and interview. After analyzing data, the researcher got the students' need in learning English in term of vocation that they have. The interview and questionnaire result proved that the students need English reading materials which contain English for Computer Engineering and Networking program. The materials which were developed were focused on descriptive text. The product had been validated by the experts. The average scores are 3,4 both from English teacher and English lecturer. It means the developing materials categorized as relevant for students of Computer Engineering and Networking program grade X.

**Key words:** *Research and Development (R&D), Scientific Approach, Reading, Material, vocational school, Computer Engineering and Networking program*

## **INTRODUCTION**

### **Background of Study**

English is a foreign language in Indonesia and it has been being one of the main subjects for each of education level in every school. English also is one of the subjects which is included in National Examination, that is why the students should learn English in school.

There are four skills in English that should be mastered by the students. They are; reading, listening, speaking and writing. Reading and listening is the way for the students to get information and knowledge, while writing and speaking is the product of reading and listening.

The better students are in reading and listening, the better they are in writing and speaking. Furthermore, Eskey (2000:25) describes reading as a process of obtaining information from a written text. In conclusion, by reading the readers or the students make sense what a writer means and can also catch the information in a text. Therefore, a text can be a good model to learn English because it provides structures and information to support their learning.

Reading has a positive effect on students' vocabulary knowledge, on their spelling and on their writing (Harmer, 2007:99). Then, he notes that good reading text can introduce interesting topics, stimulate discussion, excite imaginative responses and provide the springboard of well-rounded, fascinating lessons. In other words, by having reading skill they will be easy to get information, knowledge and science.

In learning English, it is not easy for the students to understand and cover all the English skills. There are some problems that we can find in the learning process of English subject, not only for the teachers, but also the students, such as the teachers

ability in teaching, the lack of students motivation in studying, the learning media, learning materials, and many others.

Reading is one of the difficult skills for the students. For example, in the Vocational High School Taman Siswa Medan, it is not easy for them to understand and comprehend the text in their text book. When I was doing my teaching practice program in that school, I saw that they were very lazy to read the text. When I asked them why they are lazy to read, they answered to me that the text is not interesting for them, they are easy to feel bored, the reading materials have no relation with their focus, so the reading material didn't fulfill their needs, and also they have the lack of vocabulary.

The researcher found that the English textbook which is used in that school is a textbook based on Curriculum 2013 entitled "Bahasa Inggris", produced by "Kementrian Pendidikan dan Kebudayaan Republik Indonesia 2016". The materials in that book are not appropriate with their needs. Here is the example of existing materials that the researcher found in the text book that the school used.



## READING

### Task 1:

Now, read text 1 carefully. What do you think about the place described below?

#### Text 1

#### TANJUNG PUTING NATIONAL PARK

Tanjung Puting National Park is an internationally famous ecotourism destination, which is located in the southwest of Central Kalimantan peninsula. Visitors from foreign countries come to this park because of its amazing nature. This is called a park, but unlike any park that you have seen in your city, this is a jungle! It is a real jungle, which is home to the most interesting animal in the world: orangutans.

Though the park is home to many animals, seeing orangutans is usually the visitors' main reason to visit the park. Orangutans, which literally mean the man of the forest, are the largest arboreal animal on the planet. Most of their lives are spent in trees where orangutans travel from branch to branch by climbing or swinging with their long arms.

To see orangutans, we should go to Camp Leakey, which is located in the heart of Tanjung Puting National Park. Camp Leakey is a rehabilitation place for ex-captive orangutans and also a preservation site. It is also a famous center for research about orangutans which has been conducted by the famous primatologist Dr. Birute Galdikas since 1971. Here visitors can see daily feedings to orangutans at jungle platforms as part of the rehabilitation process to their natural habitat. This event gives them opportunity to see orangutans up close.



Source: <http://orangutanexplore.com>  
Picture 4.2

To reach the place, we should take a boat down Sekonyer river. The boat is popularly called perahu klotok which is a boathouse that can accommodate four people. The trip by the boat to Camp Leakey takes three days and two nights. You sleep, cook, and eat in that klotok, night and day during your journey into the jungle.

The traveling in the boat offers an unforgettable experience. In daylight, on your way to Camp Leakey, you can see trees filled with proboscis monkeys, monkeys that have enormous snout which can only be found in Kalimantan. The

Figure 1.1 The Example of Existing Materials in the Text Book

The text above absolutely is not relevant with the students' need because the material is still too general. The descriptive text above is about "Tanjung Puting National Park". The text talks about a tour place where the text has no relation at all with the Computer Engineering and Networking Study Program. The appropriate materials for students of Computer Engineering and Networking properly talk about everything related to their major, such as about computer, networking, technology and others related materials.

Computer Engineering and Networking as one of the majors of vocational high schools in Indonesia prepares the students to face this kind of global competition. Once the students graduate, they can continue to the higher education or apply for job. English plays the role to make the students get qualified when they apply for job in Indonesian or overseas companies that require the workers to be good in English. There are actually many ways to make them have good competence in English in order to support their career, one of them is by providing good materials.

In fact, the needs of materials for vocational high school are still neglected. Materials for vocational school are not appropriate enough in terms of the content, the vocabulary, the topics, and so on. For example, the books they use in the school do not contain technical terms related to computer engineering and networking and the topics are too general for them. The materials used are the same as what are used by regular high school, while their needs are far different.

In addition, the book that they used is based on Curriculum 2013 but the contents of Bahasa Inggris textbook are not organized under the five steps of teaching and learning process based on scientific approach; observing, questioning, exploring, associating, and communicating, while the approach that is Curriculum 2013 used is Scientific Approach.

Scientific approach will be used in the development of the material. Kemdikbud (2014) stated that scientific approach refers to the investigation techniques on some phenomena to get a new knowledge or doing correction and integrating the previous knowledge. In applying scientific approach, students will learn English by observing, questioning, exploring, associating, and communicating. The processes of observing, questioning, exploring, associating and communicating are expected to promote students to have critical, analytical, investigational,

procedural and communicative competences. It's in line with the previous study done by Wahyudin and Sukyadi (2015) who found that scientific approach itself gives some positive contributions to the students' participation, and critical thinking as it is depicted in the questioning stage and communicating stage and also seem to positively affect students' confidence in using the target language.

Based on the stated problems, the researcher tries to carry out a study which is expected to produce Reading materials based on Scientific Approach that can facilitate students majoring Computer Engineering and Networking in learning English. Throughout the reading materials, students are supposed to learn English in an enjoyable way and take reading activities into account that can change their English ability in a good way.

### **CONCEPTUAL FRAMEWORK**

Students of vocational high school need English not only for academic demanding but also for preparation to face the real working place in the future. Computer Engineering and Networking program as one of the vocational schools programs in Indonesia needs English to support the students to be able to face the invention of technology that has been growing rapidly. In reality the available English materials are not really appropriate to fulfill their needs.

To solve the problems, the researcher tries to design Reading materials to support the learning materials that will give impact to language teaching and learning process. The product of this study then is expected to help students at Computer and Networking department become more excited to learn English, especially Reading skills. Reading skill is chosen as the focus of this study since there are not many reading materials that are relevant to the field.

In order to get the relevant reading materials, the researcher used the procedure of educational research and development by Borg and Gall where the procedure are consist of several stages from gathering the data/ information, analyzing the data, designing the course grid, designing the materials, evaluating/validating the materials by expert, revising the materials, and produce the final product. Need analysis will be done in order to find out about the target and learning needs of students.

The materials will be developed based on scientific approach stages. It means that in developing the materials, the researcher will develop the task or activity under the five stages of scientific approach; observing, questioning, experimenting, associating and communicating. Observation is the first stage in scientific approach. In this stage, the students will do some activity such as reading, listening, scrutinizing and looking (with or without media) to get some details which results in gaining perceptual knowledge. The second stage is questioning. In this stage, the students can deliver or answer some questions that are factual related to the observation and use some questions to ask for clarification, express their curiosity, and find some information. In experimenting stage, the students will do some activity such as doing experiment, reading other sources, observing other objects or activities, etc. In associating stage, the students can classify data that they get from several sources and associate some events to become a memory in their thoughts. In the last stage of scientific approach, the students will convey the information or conclusion they got based on their analysis orally or written.

Further, the process of developing the materials should consider many aspect, such as principles of materials development (Tomlinson, 2008), so that the developed materials will achieve the goals of learning. After developing the units, the materials

are evaluated by the expert to check whether the purpose and goal of the materials are achieved or not. In evaluating the materials, the criteria proposed by BSNP (2011) are used. The criteria cover the items about contents, language, presentation, and layout. By using those criteria, the appropriateness of the materials is measured. After getting feedbacks, the materials are revised to get the final draft of the materials. This will be considered as the appropriate reading materials for the students of Computer Engineering and Networking program grade X.

### **RESEARCH METHOD**

This research belongs to Research and Development (R&D) since the main objective is to design Reading materials for Computer Engineering and Networking students. According to Borg & Gall (1983) R&D is „a process used to develop and validate educational products (materials, objects, teaching methods, and media)“. The materials will be developed based on Jolly & Bolitho model in Tomlinson (1998). The final result of this research was the materials which were developed based on the need analysis. It was expected to fulfill the students“ need in learning English.

In this study, the data was collected by observation, questionnaire, and interview. The data of this study were the existing English Reading materials and the result of students“ need analysis questionnaire of the grade X Students of Computer Engineering and Networking Program, especially in descriptive genre. The sources of the data were the textbook used by the grade X students in SMKS Taman Siswa Medan and one class of the grade X students of Computer Engineering and Networking class X- TKJ.



### Techniques of Analyzing Data

The data from needs analysis was analyzed by calculating the percentage of each answer in the questionnaire based on the formula proposed by Suharto (2005). The highest percentage of the result represents students' real condition.

$$P(\%) = \frac{f}{N} \times 100$$

P = Percentage

N = total respondents

f = Frequency

100 = fixed number

### The Diagram of Materials Development

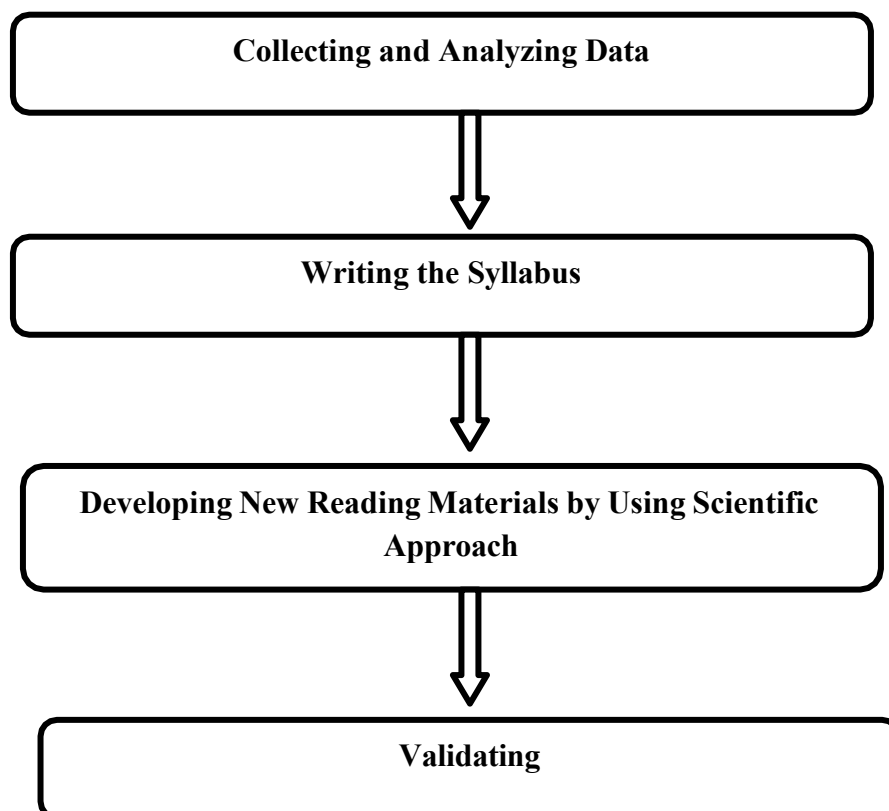


Figure 3. 1 The Diagram of Materials Development

## **RESEARCH FINDING AND DISCUSSION**

### **The Results of the Need Analysis**

The questionnaire was administrated to 24 students of Computer Engineering and Networking Program in Grade X. They were given a questionnaire which consisted of 16 questions. The questionnaire itself was developed based on the theory proposed by Hutchinson and Waters (1986:55). They state that in order to do the need analysis, there are three categories of questions which should be covered, namely: necessities, lacks, and wants. The three categories were presented in which the questions number 1-5 about necessities, the questions number 6-8 about lacks and the questions number 11-15 about wants.

From the result of the need analysis, the researcher can identify the necessities, lacks, and wants of the students of Computer Engineering and Networking program, grade X related to learn English. There were 22 or 91.6% students who said that the students of Computer Engineering and Networking program learn English at school is to be able to use English whether it is orally or written to support their job in the future. Then, there were 10 or 45.8% students who said that after graduate from vocational school they use English in their job to read article/book about the developing Computer Engineering and Networking. They will use English to read article/book about the developing Computer Engineering and Networking in their job. Furthermore, there were 23 or 95.8% students who said that reading material which has relation with Computer Engineering and Networking Program is very useful for them.

There were 24 or 100% students who said that reading is the language skill which will be often when they become an Engineer. Then, 20 or 83.3% students need to learn English because descriptive text is one of the texts which will be often read

by the students when they become a programmer and engineer. While the texts which are provided in the textbook are not needed by them, it can be conclude because there were 18 or 75% students who said that the texts about “Tanjung Puting National Park, Taj Mahal, and Visiting Niagara Falls” do not support them as the students of Computer Engineering and Networking. In addition, there were 22 or 91.6% students who said that they have never given the text which has relation with their major, while actually they need it, by the result of their answer in questioner that here were 23 or 95.8% who said that they will understand easily the text which describing about computer and networking. There were 12 or 50% students who said that input reading they like is the texts which describe daily life that related to the need of Computer Engineering and Networking Program students.

From the questionnaire administrated, the researcher can identify that generally they need reading skill so that they can improve their ability in comprehending a text. The long of the text that they need is about 251-350 words (1/2 page). The reading texts given also should be accompanied by pictures. Furthermore, after read a text they expect that they can get more vocabularies related to the terms of computer and Engineering. They also want that they not only learn reading but also they get knowledge about grammar/structure. Kinds of activity in learning grammar/structure that they need are doing exercises about grammar. They also prefer doing the activity individually.

### **Designing New Reading Materials**

Designing the English reading materials, the researcher choose that the texts related to the students of Computer Engineering and Networking program based on the result of the need analysis, there were; E5372 Huawei Mobile Broadband, ASUS

N551JB, the Best Laptop for Multimedia, Canon PIXMA MG3250. These texts were developed by selecting descriptive texts related to the students of Computer Engineering and Networking program in the internet and book. In this development, some original ideas of the researcher were included. The researcher design the layout of the text, added some pictures and make the vocabularies to make texts will be more interesting and also the researcher developed some questions in the reading materials of descriptive text.

The materials were design based on the five stages of Scientific Approach, namely observing, questioning, experimenting, associating, and communicating. The following table describes the outline of the material unit design in the developed materials.

### **The Experts' Validation**

The expert judgment covers four aspects namely the appropriateness of the content, the appropriateness of the language, the appropriateness of the presentation and the appropriateness of layout. After calculating for each point, the mean score gotten was 3.5. It is categorized as "Very good" as its positions is in the interval  $3.25 < x < 4$ .

## **CONCLUSION AND SUGGESTION**

### **A. Conclusion**

The English reading materials was developed by adjusting the materials with the basic competency demands and the student's need. The need analysis was conducted on July 24, 2018 to identify the students' needs of the Grade X students of SMKS Taman Siswa Medan. There were 24 students as respondents in the class X TJK 1. After conducting the need analysis, the course grid was written based on the syllabus in curriculum 2013 and the students' preferences about the students' need. After writing the course grid, the new reading material was written. The material was written under the five stages of

scientific approach; observing, questioning, exploring, associating and communicating. Then, the new English reading materials was validated by the expert. From the expert evaluation, it could be concluded that the developed workbook based on Scientific Approach was appropriate to be used by X students of SMKS Taman Siswa Medan.

## **B. Suggestion**

### **1. Students**

Students can find the materials related to their study program from the internet and other books, if the existing materials provided are not appropriate to Computer Engineering and Networking program.

### **2. English Teacher**

In teaching, teacher should consider the students' needs in choosing the learning materials. The learning process can be successful if the teacher can give the materials related to the students' program. This new reading materials can be used in teaching the students of Computer Engineering and Networking, grade X, especially in descriptive text material.

### **3. School**

In order to provide the appropriate English reading materials, the product of this study can be selected to be used in the school especially for students of Computer Engineering and Networking program.

### **4. Other Researcher**

To other materials developers, they can develop English materials for senior high school students for other skills such as writing, reading, listening or materials with integrated four skills. It is also suggested for other developers to emphasize the needs of the learners and the demands of the curriculum.

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