

## CHAPTER I

### INTRODUCTION

#### 1.1. The Background of the Problem

D-3 graduate of mechanical engineering study program is categorized as skill level of associate degree who have competence in world of production mechanical engineering nationally and internationally. Thus in principle the purpose of this institution is to produce graduates as an expert in the field of mechanical engineering production that has an insight IMTAQ and IPTEKS and produce graduates who have an entrepreneurial culture that encourages the ability of study programs to generate income by involving internal and external stakeholders.

To realize these objectives, D-3 mechanical engineering study program must implement the curriculum of KKNI-based mechanical engineering program. This curriculum requires that every D-3 graduate of mechanical engineering must have a professional technician competence in the field of Mechanical engineering Production. In line with the above matters, specifically the program of mechanical engineering studies is projected to produce graduates of quality associate degree and meet the standard competencies applied in the curriculum. The application of the curriculum KKNI has implications for several things for the D-3 mechanical engineering study program.

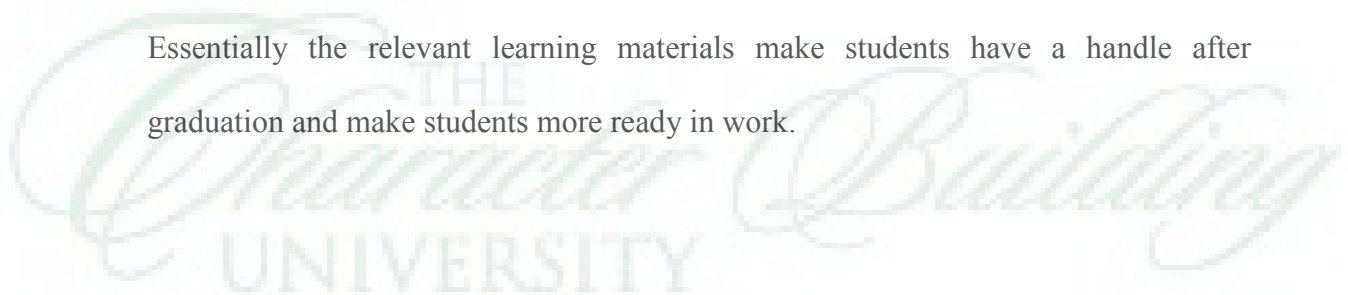
First, in the KKNI-based curriculum. English is classified into a group of scientific courses and skills of the field of study with the name of the English language of engineering and has the weight of 2 credits, position, function and the

same role with the courses of other machine production expertise such as Basic Mathematics course, Engineering Physics, Materials Engineering. Second, to anticipate future needs and to improve the competence of graduates. Third, to achieve the learning achievement, D-3 engineering program must have standard facilities and infrastructures such as laboratory, textbook, journal, teaching materials, etc. with KKNI-based curriculum.

In accordance with the Semester Learning Plan (RPS) D-3 mechanical engineering study program by English lecture Sahala Siallagan, Ph.D in academic year 2017/2018. The core of Semester Learning Plan (RPS) written that every student must be able to communicate in English that is general, specific and concerned with the field of mechanical engineering both on campus and work world actively.

In the teaching and learning process learning materials are an important part in the implementation. Through learning materials lecturers will be easier in implementing learning and students will be more helpful and easy to learn. Teaching materials can be made in various forms according to the needs and characteristics of teaching materials to be presented. Learning materials are prepared with the aim of providing instructional materials that fit the needs of the learner, ie Learning materials that match the characteristics and setting or social environment of students, helping learners in obtaining alternative teaching materials in addition to text books that are sometimes difficult to obtain, facilitate teachers or lecturers in carrying out learning.

Essentially the relevant learning materials make students have a handle after graduation and make students more ready in work.



But those hopes are very dissimilar to the reality in D-3 mechanical engineering study program at Unimed at the moment. Based on observation The learning still depends on the teacher and the management depends only on the material provided by the textbook, and the teacher centered method and existing documents of learning materials used, the learning materials is so simple, lack of motivation and creativity. Lecture uses Diktat by Drs. RU. Ginting as learning materials. In fact, the design of learning materials either by design or innovation and creativity really influence and determine the success of teaching and learning itself.

The weakness of this learning material are less relevant to the mechanical engineering study program D-3. because the content of existing learning materials about grammar does not contain material related to mechanical engineering. So the existing learning materials at Unimed can not encourage and motivate the students optimally because it apparently does not designed by using student centered learning. The materials are designed not to be based on students need or activities so that the students are actively involved in teaching and learning process.

In term of learning materials may be designed and improved without prior study and need assessment in order to match the students need and the curriculum and work place as well. Dirgayasa (2008) argue that the sources of information for developing learning material must involve the five parties that is the students, the teachers, the stakeholders, the alumni or cadets, and the active or retired seamen. And also the learning materials provided by the teaching are not designed to lead the students activities or problem based learning. In addition, the unsuccessful

teaching and learning of English for mechanical engineering purpose, also probably is caused by the students themselves due to their lack of information. Also the poor motivation of students to learn is caused by the lack of learning materials in terms of content and process of teaching and learning itself.

In line with the students' achievement of learning materials, the learning materials used by both students and lecturers influence the success and the competence. Learning materials play an important role in teaching and learning. Learning materials contain competencies that must be mastered by the students. Dirgayasa (2011) argues that theoretical and empirical learning materials are the most decisive and crucial variables in determining learning outcomes because the learning materials are the variables that contain the competencies to be mastered by the students. Learning materials are the heart of a learning process. For that, the role of teaching materials must be very vital and centralistic. Then Dirgeyasa (2014) said that learning materials are one component for teaching and learning process. By this, it is also positively a determining factor to the success and failure of learning. Kitao, in selecting and developing teaching / learning materials in Kitao-selecting and developing teaching / learning materials. [Http://iteslj.org/articles/kitao/-materials.html/7](http://iteslj.org/articles/kitao/-materials.html/7) / 26/2009 states firmly that:

*“Learning materials or teaching materials or instructional materials is one of the five components among others (teaching methods, evaluation, the teachers, and the students) of language instructional playing an important role in the process of teaching and learning). Learning materials are the things ‘consumed’ by the students. The materials take the central role and function in the instructional.”*

It means that learning materials significantly influence the students' competencies because the learning materials are something that must be mastered

by students. that's way, to meet the students when learning *English for mechanical engineering purpose*, the materials must developed and designed by using need analysis. Need analysis will theoretically and empirically help the materials designer to develop and design learning materials in a such way so that they are really good. Relevant and reliabel for the students. Learning English materials developed are to help students achieve competence. This is caused by. In "subject matter" material. lecture's job is to describe the subject matter so that it becomes a complete learning material.

To overcome this problem the researcher consider the use of problem-based learning. PBL is defined as a learning method that uses problems as a basis for students to improve their problem-solving skills and to obtain knowledge. Necati Hirca (2011) in quoted Inel and Balim.

Previous researches on developing English speaking materials show that problem based learning design is significant to improve learner's ability. The first Previous researchers Lan Yu (2015) in her journal said that materials designed through PBL in medical majors can provide a deeper understanding of the medical. Material where the content consists of definitions, design and steps. as for the original quotation as follows:

*“The design of PBL materials for medical English course provided a deeper understanding of the process of content materials design, which consists of defining the context, designing the PBL materials and some sub-steps”*

The second Previous researchers Kadir Z. Abdul et al (2016) in their journal said that PBL and non-PBL groups have mean ranks different in terms of accuracy and quality. where the PBL group value is 35.50 and non pbl is 15.50.

This proves that students who have followed the PBL are able to solve problems in terms of accuracy. as for the original quotation as follows:

*“It can be seen that there was as ignificant difference on the mean ranks between PBL and non- PBL in terms of accuracy and quality of the solution. For the PBL group, the mean rank was 35.50 compared to non-PBL group,15.50.These results support the contention that there was improvement on problem solving skills in terms of accuracy after the students attended PBL treatments”*

The third Previous researchers Perwita.S & Surya E (2017) in their journal said thatthrough PBL students can improve matematik communication. Experiments 1 and 2 show different results. where experiment 1 was 100 and 2 was 97,22.as for the original quotation as follows:

*“There was increasing students' mathematical communication skills by problem-based learning. Thisis proved from the results of different between 1<sup>st</sup> trial and 2<sup>nd</sup> trial, results of mathematical communication skills of students with problem-based learning in 2<sup>nd</sup> trial was 100 greater than the problem-based learning in 1<sup>st</sup> trial that was 97,22”*

Researchers chose this model because the theory underlying the PBL is supported by some famous educational psychology theories. For example, Albanese reveals the theory behind the PBL that is information processing theory, cooperative learning theories, self determination theory and control theory (Albanese, 2000). An example for theory information processing consists of three components, namely activation of prior knowledge, encoding specificity dan elaboration of knowledge. (Albanese 2000, Schmidt, 1983).

Problem-based learning (PBL) is different from tradition a linstruction because it emphasizes learning through student-centered, inter disciplinary, and integrated activities in real world situations (John Savery R, and Thomas Duffy, 1995:36). Inparticular, PBL activities can be characterized as follows (**Erik**

De Graaff, 2003:657): 1) Focusing on content learning rather than on specific language patterns. 2) Is student-centered so the teacher becomes a facilitator or coach. 3) Encouraging collaboration among students. 4) Leading the authentic integration of language skills and processing information from multiple source. 5) Allows learners to demonstrate their understanding of content knowledge through an end product (e.g., an oral presentation, a poster session, a bulletin board display, or a stage performance).

Based on the Feasibility Study by searching the needs of mechanical engineering students, in learning English, it was found that the most dominant requirement in English learning is in the form of speaking or speaking skills. For this reason, researchers developed the subject matter of the course.

Moreover, the development of teaching materials for the speaking classes in the mechanical engineering department is felt so urgently considering the unavailability of the material in question. In the meantime, the teaching of speaking skills depends entirely on commercial textbooks which in fact do not fully represent the communication skills within the scope of the mechanical engineering department.

Departing from this background then the research development of teaching materials conducted. The purpose of this research is specifically to develop teaching materials in the speaking class for mechanical engineering majors. To achieve the final result in the form of teaching materials product, several stages of research have been done such as conducting preliminary study, literature study,



development research, and evaluation both from experts, lecturers and students as the target group of users of this developed book.

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In relation to English speaking material is still lacking, low student initial ability and low learning motivation. Then the development of English speaking materials that fit the needs of students and working word is very necessary to be developed. The development of learning materials in turn is expected to improve the ability to English speaking engineering students. Therefore the researcher interest to conduct the reseach entitled” Developing Speaking Materials Through Problem Based Learning for the D-3 Mechanical Engineering Students at State University of Medan.



## 1.2. The Problems of the Research

Based on the background and the objective of the study, the research problems are formulated as follows:

- 1) How are the existing English speaking materials used by the students of D-3 mechanical engineering study program at UNIMED in the first semester of the academic year of 2017/2018?
- 2) What English speaking materials are needed by the students of D-3 mechanical engineering study program at UNIMED in the first semester of the academic year of 2017/2018?
- 3) How are the English speaking materials the students of D-3 mechanical engineering study program at UNIMED in the first semester of the academic year of 2017/2018 developed based on the problem based learning?

## 1.3. The Objectives of the Research

The objectives of this study are:

- 1) To examine the English existing speaking materials used by the students of D-3 mechanical engineering study program at UNIMED in the first semester of the academic year of 2017/2018.
- 2) To find out the English speaking materials needed by the students of D-3 mechanical engineering study program at UNIMED in the first semester of the academic year of 2017/2018.
- 3) To develop the English speaking materials the students of mechanical engineering study program at UNIMED in the first semester of the

- 4) academic year of 2017/2018 developed based on the Problem Based Learning.

#### **1.4. The Scope of the Research**

This study deals with the developing English speaking material through problem based learning for the D-3 students of mechanical engineering study program at UNIMED in the first semester of the academic year of 2017/2018. The competencies prepared in mechanical engineering study program are introduction to mechanical engineering text because the students who graduate from mechanical engineering study program know some information about mechanical engineering in English in order to fulfil and increase their skill.

#### **1.5. The Significance of the Research**

This research is expected to give valuable contributions. Firstly, theoretically, the results of this research are expected to provide new contributions in development on learning materials English in D-3 mechanical engineering. Secondly, practically, the result of this research significant for the following parties;

- 1) To the students-this research provides relevant English speaking materials so that it is expected can increase the students' motivation in learning English.
- 2) To English lecturer – this research can be used as a reference in teaching English for D-3 mechanical engineering study program.
- 3) To other researcher – this research can be used as reference to further related study.