

# **THE DEVELOPMENT OF SETS- ENGLISH LEARNING MATERIAL BASED FOR SCIENCE STUDENTS AT IAIN BENGKULU**

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## **Abstract**

The problem that occurs in English learning at IAIN Bengkulu's Science study program is the limited learning resources that suit the needs of students. Therefore, this study aims to develop SETS-based English teaching materials (ESP) for students of IAIN Bengkulu's Natural Science study program. The subjects in this study were 40 science students, and 2 English lecturers who taught in the Science study program while the object of research was English textbooks. This research uses the Borg & Gall approach development model which includes rare steps: analyzing needs, developing teaching materials, conducting expert validation, revising materials, try-out materials, and revising materials. The result of this research is an English textbook consisting of four 44 topics that can be used for English learning in the Science program at the State Islamic Institute (IAIN) Bengkulu, Indonesia.

***Keywords: Teaching Materials, SETS-Based, Science Study Program.***

## **A. Introduction**

According to the results of research, the English language skills of non-English speaking students such as health study program students, economics students are still very low (Dewi 2010: 1). In her research she stated that this was caused by the mismatch between the needs of students and the availability of curriculum and its tools such as syllabus, availability of teaching materials, and language teaching methods applied in the classroom.

There are several factors that can cause students' lack of ability to use English. These factors include inappropriate curriculum design that does not support the learning process because it can cause a mismatch between learning activities and the goals expected by students according to their scientific fields. Thus, it can be concluded that there needs to be certain considerations in designing the curriculum and learning tools. However, at present, it is often found that mistakes in designing ESP in certain institutions can lead to not achieving the standard needs of students according to their field of knowledge. For example, the teaching staff only teaches language not according to the context, only focusing on teaching grammar. Therefore, it is necessary to have English for specific purposes (ESP) to answer the basic needs of prospective professionals in this era of globalization so that they can have good language skills.

English for specific purposes (ESP) is a concern in the context of English language teaching because it is considered relevant to the progress in daily life according to the times and ESP concentrates more on the target of achieving the ability to use language in a particular field (Baleghizadah and Rahimi 2011). In this case, a teacher or lecturer is required to understand the main objectives that must be achieved by students. Therefore, teachers and or lecturers must be able to design learning objectives based on the needs of their learners.

In its application ESP is still faced with various problems. First, the limited ability of lecturers in the field taught can cause them to not be able to fully master the material or teaching materials. Secondly, there are limited teaching materials that suit the needs of students. This can lead to not achieving the ultimate goal of learning. The last problem is the absence of learning objectives that are theoretically not in accordance with ESP standards (Falaus, 2017).

Based on field experience, researchers found that there are still shortcomings in IAIN Bengkulu's science study program, namely the absence of teaching materials that suit the needs of students because the teaching materials used are general English. Based on interviews with students, they are very enthusiastic to know English that suits their field.

Based on the above problems, researchers realize that there is a need to analyze the existing curriculum design which includes syllabus, RPS and teaching materials that are relevant to the scientific field of science students. In this case, the researcher will design English for Specific Purpose (ESP) teaching materials through a context-appropriate approach.

According to Toharidin (2013), one of the approaches that can be used to achieve learning objectives is SETS. In this approach, teaching materials must be designed by linking aspects of science, environment, technology and society. From this approach it can be seen that through this approach students can improve their science literacy. Based on the understanding of this approach, of course this can also be done in designing English teaching materials for science study program students because in addition to increasing students' linguistic knowledge, they can also understand their scientific field in depth. Prayitno et al (2016) SETS-based learning can increase student interest or motivation in learning.

In the design of this teaching material there are four elements that will be connected, namely Science, Environment, technology and society. With the integration of these

elements, of course, learning English is not only from the linguistic side but there will be a correspondence between the language studied and aspects related to student science. With this connection, learning can be more effective. Binadja (2006) explains that learning in the field of language can be associated with the field of science, social can be combined through the SETS learning model.

## **B. Review of Literature**

In teaching, English can be divided into two categories: English for general and English for specific purposes. Liu, Chan, Yan and Sun (2011), Rahaman (2015) explained that the purpose of English for General (EGP) is to instill an interest and habit of learning English that aims only to develop general language competence to improve the accuracy and fluency of receptive and productive skills in daily contexts.

ESP is part of English language teaching (ELT) and in general ESP can be understood as the concept of the combination of students' needs and English courses or lessons. Smoak (2003) explained that ESP is a form of actualization of needs related to real life. In this case, it can be interpreted that ESP is a form of English language teaching in a particular field that is directly related to the student's scientific field.

Rahman (2015) states that the difference between ESP and EGP lies in the learning objectives themselves, the goal of ESP learners is generally so that they can communicate their professional skills and also they can perform various activities related to their profession. This is the basis why ESP learning is developed based on needs analysis, learning objectives and activities. Thus, ESP is more precisely an English language learning activity that is linked to other fields of science or certain professions through creative learning methods that are different from teaching methods in English for General purposes (EGP).

Hutchinson and Water (1978:53) stated that the difference between ESP and EGP is not the existence of language learners' needs but the awareness of learners' needs. All parties involved in the language learning process such as teachers, lecturers, stakeholders, and potential users must be aware of the need analysis and the importance of this process.

Theoretically, the development of ESP-based teaching materials is always based on a needs analysis. According to Basturkmen (2010:17) is to identify the language and skills used in determining and selecting ESP-based learning. This analysis can also be used to

assess language learners and the learning process at the end of the learning period.

## **1. The Definition of Learning Material**

According to its type, teaching materials vary greatly. According to Pratama (2019) teaching materials can be in the form of printed teaching materials, such as: modules, student work sheets, brochures. Furthermore, teaching materials can also be in the form of audio, such as: radio, cassettes, CDs, visual teaching materials, such as: photos, images, modes, multimedia such as: Interactive CDs, computer based, and the Internet. In this study, the teaching materials to be developed are teaching materials in the form of printed books for learning English. By making this learning book, the researcher hopes that English learning in the Science study program at the Faculty of Tarbiyah and Tadris IAIN Bengkulu can run more effectively.

In preparing or making English printed textbooks in this study, researchers pay attention to several things or aspects such as uniqueness, creativity, and also the environment (Ningsih et al: 2015). Therefore, researchers or print textbook makers must understand the factors that must be considered in designing teaching materials, such as: content accuracy, material coverage, language use, illustrations, appearance or packaging.

## **2. SETS Learning Based**

SETS are research products that link science and non-science concepts with everyday life (Puskur Balitbang Depdiknas, 2006: 4). In learning, the conditions that allow the learning process to occur must be designed and considered in advance by the designer/teacher. SETS vision is a perspective that states everything known in nature contains four elements, namely science, environment, technology and society (Puskur, 2006:4). SETS vision learning is defined as education that will produce graduates who can apply the knowledge gained to improve the quality of human life without having to endanger the physical or mental environment.

In contrast to SETS education (Science, Technology and Society) SETS not only pays attention to science, technology and society but also the positive and negative impacts caused by science and technology needed by society. In contrast to EE (Environmental Education) SETS not only focuses on learning in, for and about the environment but also finding and revealing the main causes of problems and possibilities that can have an impact on the environment in the future, especially the

impacts arising from the use of science and technology to meet the needs of society (Binadja, 1998). Basically, it can be said that through SETS vision learning, it is expected that students will have the ability to see things in an integrated manner by paying attention to the four elements of SETS so that a deeper understanding of the knowledge they have can be obtained (Binadja, 1992).

### **C. Research Method**

This research uses a research and development (R&D) model. In this study, the product to be produced is English teaching materials with the content of science, environment, technology and society.

The research instruments used in this study are validation sheets from material experts with natural science disciplines, validation sheets from graphic design experts, and validation sheets from linguists. In the research the researcher also used a questionnaire which was designed and compiled by considering several indicators. Furthermore, this research also uses the interview method.

In this study there are two approaches to data analysis, namely qualitative analysis and quantitative analysis. Qualitative analysis is a description of the results of the analysis of data in the form of interpretation of data obtained from respondents in the form of descriptions or explanations not in the form of numbers.

### **D. Result and Discussion**

#### **1. The result of Need analysis**

Based on the results of the data analysis obtained through questionnaires, the data shows that 60% of students in science classes are interested in English subjects, 20% are very interested, while 10% of students say they are less interested, and 10% say they are not interested. Based on this data, the researcher concluded that most students have an interest in attending English lectures.

In the indicator of the level of difficulty of students in English lessons in science study programs, the data shows that 50% of the number of respondents stated that English was difficult, 20% of students felt that English was not difficult, 20% of students stated that English was very difficult, and 10% of students stated that English was not too difficult. Based on this data, the researcher concluded that English is still a difficult subject to be understood by students of science study program.

In the indicator of language skills that are most in demand by students, the data shows that 70% of students stated that the prioritized skills are reading, 20% writing, 10% speaking. While in micro language skills 75% stated that vocabulary is very important, and 25% of students stated that grammar is also very important. Based on this data, researchers get an idea that in general students think reading skills are very important, but students also think writing and speaking. In the micro aspect of language skills, students stated that mastery of vocabulary and the ability to understand English grammar are also important to support the main skills that students are interested in.

On the indicator of the importance of ESP, the data shows that 75% of students stated that mastery of English in accordance with their expertise is very important, 10% stated that it is not too important, 10% stated that it is important and 5% stated that it is not important. Furthermore, the data showed that 80% of students stated that they were interested in understanding texts with science content or according to the basis of the student's study program. From the interpretation of the data, it can be concluded that students need teaching materials in the form of reading and whose subject matter is related to natural science or science study programs.

In the indicator of the availability of materials and the use of ESP teaching, information is obtained that the teaching materials used do not contain discussions that are in accordance with the knowledge of students. This causes students to be less interested in learning English.

On the indicator of the availability of ESP teaching materials is very difficult to find, and specifically for science English has not been found in the library or outside the environment of science study program IAIN Bengkulu. Furthermore, the lecturer said that students or often have difficulty in understanding or learning English, this is caused by the limitations of teaching materials.

From the results of data analysis, researchers obtained information that lecturers really expect innovation in the context of the availability of teaching materials, especially ESP in the science study program of IAIN Bengkulu. Furthermore, on the indicator of the design approach of SETS-based science English teaching materials, the lecturer strongly agreed.

According to the data analysis from the lecturer's questionnaire above, it can be concluded that the teaching materials used by lecturers and students are not English that

suits the needs of students. Of course this is an obstacle or problem in the English learning process. Furthermore, the researcher also drew the conclusion that there is a need for ESP teaching materials for students so that learning can run effectively because teaching materials based on student needs can attract student attention.

## **2. The Result of English material Development**

Based on the results of peer discussions with researchers, the subject matter in the book includes aspects of SETS. In designing ESP teaching materials for students majoring in science, the first thing to pay attention to is determining the topic of learning and determining the competency standards and also the basic competencies of English language learning in the Natural Science Education Study Program at Bengkulu State Islamic Institute.

In the development of this ESP, researchers focus more on the macro skill of reading students. Therefore, the material to be developed consists of various texts or discourses related to the students' disciplines. Overall there are 44 reading topics. Each topic is equipped with micro language skills that must be mastered by students. Therefore, each topic is equipped with practice questions, and each topic is also equipped with language micro skills, namely vocabulary and grammar (structure). In addition to reading skills, this book is also equipped with another macro skill, namely listening.

After conducting a poll with English lecturers in the Science study program, researchers obtained information that lecturers really need teaching materials related to the scientific context of students so that in this lecturer is very interested and excited about the development of SETS-based science teaching materials.

## **3. The Result of Expert Judgment**

After developing the English ESP Science teaching materials, the step taken is to ask for input or feedback by experts or validators. In this research there are three expert validators, namely English validators, material validators, and media validators.

To get quality teaching materials, researchers consulted with three experts, namely graphic design experts, material experts and English experts. The expert has S2 qualifications and who has experience in related fields.

After showing the draft or design of teaching materials to experts, researchers will certainly get various positive responses to improve the quality of teaching materials that will be used by lecturers and students in the IAIN Bengkulu science study program.

#### **4. Graphic Design Validation**

In the aspect of suitability of teaching materials and aspects of suitability experienced considerable improvement where in the first stage of validation the two aspects only got only 60% feasibility and in the second validation rose to 100%.

Unlike the case with the percentage increase in the aspect of the suitability of the material with the indicators that have been formulated and the aspect of the suitability of the images displayed to help the reader's understanding is at a level suitable for use.

#### **5. The Results of Language Expert Validation**

According to the linguists, overall the language used is quite good. It's just that on certain subjects there needs to be some improvements. For example, there needs to be some improvements to grammar, the form of sentences must consider the effectiveness of sentences, for example, it is necessary to consider the use of active forms.

#### **6. Material Expert Validation Results**

According to the material experts, overall the topic or subject matter used is relevant to the scientific field of science. It's just that in the aspect of some improvements. For example, there needs to be some improvements to the picture.

#### **7. Revision of Teaching Material Development**

All suggestions from experts for this developed material are very useful for making this developed material better. All aspects related to the weaknesses of this complementary teaching material were developed and redesigned based on the suggestions and have been validated by both experts. Then, the materials were improved properly and ready to be tested.

#### **8. Teaching Material Trial Results**

In the aspect of the feasibility component of the material content which is divided into three aspects of indicators, the relevance aspect, which consists of six assessment descriptors, the accuracy aspect consists of four assessment descriptors and in the aspect of completeness of presentation consists of one assessment descriptor. The calculated



data is described quantitatively from all descriptors of material expert validation with an average value of 82. After getting this number, the researcher matched it with the criteria table, and the results were declared very valid / very feasible.

The next aspect is language feasibility which consists of five aspects of assessment indicators. The first assessment indicator is straightforwardness which consists of three assessment items, namely the correctness of the sentence structure, the liveliness of the sentence and the standardization of terms, the second indicator, namely communicative and interactive, consists of one assessment indicator, namely the ease of material to be understood by students. The third indicator, namely the suitability of language and the intellectual development of students, consists of an assessment item, namely the suitability of language to the emotional development of students. The fourth indicator believes that conformity with language rules consists of two assessment items, namely the accuracy of the discussion, and the accuracy of spelling, punctuation. From the calculation of the numbers obtained from the results of two validations, the average is 85. After being matched with the eligibility criteria table, it is declared very feasible or very valid.

In the aspect of appearance or design consists of three aspects of assessment, namely the general display aspect consists of three assessment descriptors, namely teaching materials that are attractive to look at, selecting the right image and image layout according to the topic or subject matter. Specific aspects consist of four assessment descriptors. From the results of the calculation of the value of the validation expert with a value of 82 and categorized was very feasible.

From the aspect of the attractiveness of the materials, the researcher arranged these materials with interesting shapes and colorful pictures or photos. Therefore, the students were very excited and highly motivated during teaching and learning in the trial process because the attractive materials made them active during learning English.

From the aspect of difficulty level, all students stated that the developed materials are easy to understand where students can understand well each material in this product easy to understand materials make them active during the teaching and learning process in the trial process.

From the aspect of activity steps, students claim that the developed material is a logically good sequence. Students can understand the material well because the material

is organized from theory to real practice. Through a good sequence of activities, students will not be confused about which part to master first and so on.

From the aspect of the usefulness of the materials in supporting English learning activities, almost all students stated that the developed materials are very important and useful to improve their English language skills and can be a solution to English learning so far. They hope that the developed materials can be used effectively to motivate them to be more active in learning English, especially speaking English.

The last aspect of the questionnaire for students after the pilot test was the practicality aspect. For this aspect, almost all students stated that the developed materials significantly affected them to solve their problems in improving their English proficiency. The students also claimed that these materials gave them a great space and opportunity to be used in learning English for students in the Natural Sciences Study Program, State Islamic University of Bengkulu. Finally, from the pilot test process, the lecturers found no problems and the students also had no difficulties to discuss the developed materials. It is concluded that the implementation of the pilot test has in principle been done well.

#### **E. Conclusion**

After being validated by experts, classroom trials were carried out to determine suitability to the needs, effectiveness, strengths and weaknesses of the teaching materials developed, and revised based on expert verification and trial results, the final product of this study consisted of forty-four topics that had a connection with the major courses of the Natural Science study program. All of these materials were developed based on SETS. In each unit, the material begins with a title, readings that aim to direct students to understand the topic to be discussed, modeling as an authentic form of language, exercises, and reinforcement in the form of a collection of important vocabulary related to the text presented.

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