



## Material Development for Informatics Management Students Based on Inquiry-Based Language Learning

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### ABSTRACT

The research was aimed at (1) finding out the quality of the existing textbook used to teach English to the second-semester students of the Informatics Management program, (2) finding out the students' needs, and (3) developing an English textbook for second-semester students of Informatics Management major based on inquiry-based language learning (I.B.L.L.). It was a research and development (R & D) study to supplement the textbook for Informatics Management students using I.B.L.L. R & D study had two stages: (1) the exploration stage, which consists of library research, document analysis, and needs analysis and (2) the development stage, which was aimed at designing the supplementary textbook. The data were analyzed by using an interactive method. The result showed that the "English for Computer" textbook could be supplementary for Informatics Management students.

**Keywords:** *English for specific purposes, inquiry-based language learning, needs analysis, supplementary materials*

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### 1. INTRODUCTION

Competition among job seekers is very tight. Job seekers should have a specific ability to win competition in finding jobs. In addition, English is also one of the requirements for getting a job. Seeing this, the Government is trying to improve students' competence to face future challenges and compete in the industry world. One of the Government's ways to improve students' competence is by launching the 2013 curriculum, which aims as follows. As stated in Article 15 of the National Educational System Act Number 20/2003, a higher education school is one educational unit that prepares students to work on specific skills. It is also supported by Zhu (2012: 87), who states that one of the goals of teaching in higher education schools is to use English to describe the professional field of working environment, working rules, and working

procedures. Higher education schools aim to prepare students to get jobs. Therefore, they should have specific materials that are appropriate to their program. It is supported by Strevens in Richards (2001), who says that the basic skills determine the content of ESP course due to the learners' purpose; the grammatical selection, including the vocabulary and grammatical patterns and the language functions; topics and themes related to the learners' purposes, and the needs of communication. In short, it can be said that the materials cannot help students use and expand their knowledge and skills in their future workplaces.

Furthermore, the result of pre-observation shows: 1) there are no listening materials in the existing textbook; 2) the activities in the existing textbook focus on students' comprehension, while the goal of higher education students is creating students to master specific skills. The textbook should provide various activities that ask students to practice their language; 3) there are no language expression materials for speaking activity; 4) the steps of the existing textbook are unclear.

It is in line with the result of interviews with English lecturers who stated that they agree that the content of the existing book is not appropriate to students' needs and that the steps of the existing book are unclear and do not accommodate students to use language in the actual context. On the other hand, the Informatics Management lecturers also said that having appropriate material will help students understand the Informatics Management subject. In line with them, five graduate students of Informatics Management major who work as programmers and software developers also state that English is needed to understand the instruction of their duties (reading language programs, writing data coding) and to communicate with customers.

To overcome those problems, an R&D study was conducted to develop English materials for second-semester students majoring in Informatics Management. By having appropriate materials, the goals of the teaching process can be achieved, and it will be more beneficial for students. It is supported by Ellis and Johnson (1994), who explain that teaching materials should be helpful for students, relevant to the students' needs, stimulate students' curiosity to learn, and consist of activities and tasks that are worthwhile to them. In line with them, Skela (2008: 159) points out the advantages of having ESP materials are: 1) the materials focus on purposeful learning, and 2) the materials stimulate learners as active processor of information and to make sense of the information by imposing a meaningful interpretation or pattern on it.

The methodology also plays an essential role in designing a textbook because by using an appropriate method, the textbook will have a straightforward step that can help lecturers and students maximize the use of the textbook. Inquiry-based language learning (IBLL) is appropriate because it focuses on students. IBLL provides some stages emphasizing students' involvement and participation in the teaching process. In short, it can be said that the students have an opportunity to practice and expand their language. According to Roger Bybee (1977) in Fauziati (2014: 160), there are five stages in IBLL: 1) engagement. Students are asked to observe their surroundings. They may observe objects, events, or other phenomena; 2) exploration. Students are asked

to explore what they have observed before. Here, students are stimulated to ask questions about the object; 3) explanation. Lecturer gives explanations to students; 4) elaboration. Students worked with their friends to try to practice what they had learned. The role of the lecturer at this stage is as a facilitator. She/he observes and checks students; 5) evaluation. Students individually do some tasks to check their understanding of the materials.

## 2. METHOD

This research is a research and development study. As stated by Borg and Gall (1983:772) who say R & D is an industry-based development model used to design new products and procedures, which then are systematically field-tested or tried out, evaluated, revised, and refined until they meet specified criteria of effectiveness, quality, or similar standard.

Sugiyono (2013: 297) adds that R & D study is a research methodology conducted to produce specific products and the effectiveness of the product. In other words, R&D is a research process that systematically designs new products and procedures until the specified criteria and quality are met. The systematic process is field-tested, tried, evaluated, revised, and refined.

### 2.1 Research Procedure

There are two steps in the R & D process: 1) exploration stage. It comprises library research, needs analysis, and book analysis; 2) the development stage. It consists of designing a prototype, expert validation, trying out the prototype, and final revision. The description of the procedure will be explained in Figure 1.

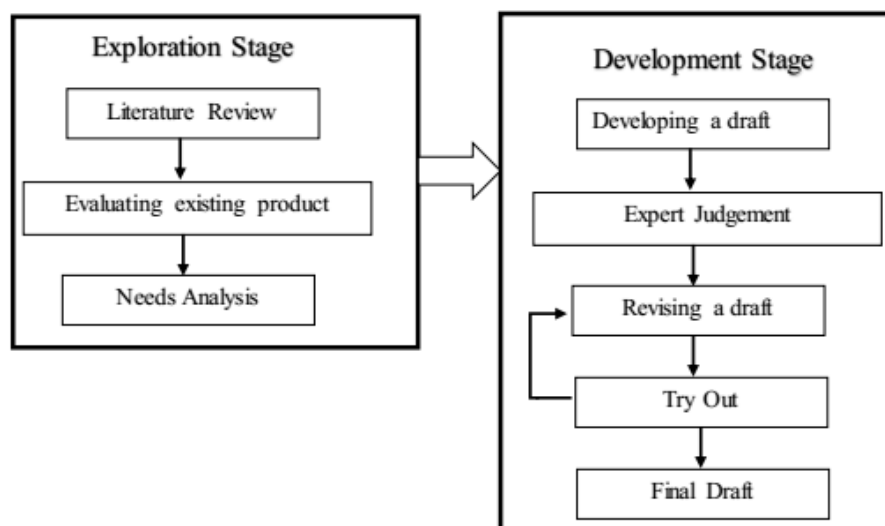


Figure 1. Research Procedure

#### 1) Exploration Stage

The exploration stage is a beginning stage in R&D research. The purpose of this stage is to investigate the existence and quality of a specific product using activities such as observation, interview, and document analysis. The subjects of this stage were English lectures of the Informatics

Management Program, second-semester students of the Informatics Program, Informatics Lectures, and the Graduate students of the Informatics Management Program, as well as documents.

## 2) Development Stage

This stage aims to design the proposed English teaching materials for the Informatics Management Program in the second semester. There are several steps in this stage: developing draft, expert judgment evaluation, revision, tryout, and developing final draft.

At this stage, a Focus Group Discussion (F.G.D.) was held to determine whether the product meets students' needs. The subjects of the F.G.D. were English Lecturers and informatics Management Lecturers, representatives of second-semester students of the Informatics Management Program.

Expert judgment evaluation was also carried out at this stage. There are six validators who come from two validators of the Informatics field, two validators of the English Language field, and two validators from the Design field.

## 2.2 Data Collection and Analysis

In this research, various data collection methods were employed. First, this research employed a semi-structured interview. The researchers prepared several questions about the research subject, which were followed by follow-up questions. The purpose of the follow-up questions was to gain more detailed and accurate information about the research. Second, questionnaires were delivered to second-semester students of the Informatics Management Program. Third, document analysis was done to analyze, review, and score the documents including English books and materials for Informatics Management Students. Fourth, Focus Group Discussion (FGD) was conducted to gain more detail and deeper information related to the product of the research. Fifth, Expert Judgment comprising two validators in this research came from the English Language Teaching field. Each of the validators scores the eligibility of products.

The data were analyzed using the Interactive Model by Miles and Huberman (201) which includes: Data reduction, Data display and Conclusion. The results of data analysis were presented in the form of describing existing problems and interpreting them into general conclusions.

## 3. RESULT AND DISCUSSION

### 3.1 Result

The results of the existing English module analysis show that 1) the aims of the existing module do not meet the student's needs. The existing textbook aims to help students master genre texts (narrative and recount texts). Meanwhile, the campus seeks to prepare students to master specific skills, so they need English materials specifically based on their skills program; 2) the existing module has been organized well. It has clear target users and a table of contents but is incomplete with indexes, guidelines, and a glossary. Therefore, the cover of the existing module is less exciting and does not represent the

content of the module; 3) the language contents of the existing module consist of grammar, pronunciation, and vocabulary, but the materials of each aspect are not in line with the students' need; 4) the existing module provides three English skills: speaking, reading, and writing. Reading is the most prominent part, while speaking and writing are the small parts. There is no listening activity; 5) the existing module discusses narrative, recount, and songs. Those topics are inappropriate for Informatics Management students because they do not represent and accommodate students' use of those materials in their future workplace; 6) The existing module is designed under the latest curriculum based on a scientific approach. It has five stages: observing, questioning, experimenting, associating, and communicating. Of the five stages, only three stages are used in the existing module. Besides, the stages are unclear. Based on the result of the book analysis, it can be concluded that the quality of the existing module is good enough and still can be used as a learning source. Since the users of this module are Informatics Management students, this textbook is inappropriate because it does not correspond to students' needs. Thus, they need supplementary modules to facilitate them in achieving their goal.

Furthermore, the needs analysis results show that 1) they need English because it is vital for their future career, especially to face the challenges in the digital era. They need English, which can be used in their workplace; 2) it is appropriate to their skill program because it can help them achieve their goals. Besides, it also can help them to figure out the situation of their future career; 3) the English materials should represent a skill program (Informatics Management field) and can be used in students' future working place; 4) the students need listening activity; and 5) the students need various activities which facilitate them to understand the materials and to practice language.

After analyzing the existing module and students' needs, the researchers designed a product prototype. To get a better result and know whether the prototype met the students' needs and could be tried, the prototype was validated by ELT experts. The result shows that Informatics Management students can try out the prototype. The score of expert validation is 85 out of 100. It is categorized as excellent. The expert scores will be discussed in the table below.

Table 1. Result of Textbook Prototype Evaluation from ELT experts.

Aspects	First Expert	Second Expert	Highest Score
Tujuan	10	11	12
Organisasi	13	14	16
Isi	15	15	16
Skill	20	20	24
Visual	14	13	16
Pendekatan Pembelajaran	12	13	16
Total score	84	86	100
Percentage	84%	86%	100%
<b>Mean</b>		85%	

Table 2. Standard of Evaluation

Percentage	Category
80% - 100 %	Excellent/can be used
60% - 79%	Good/can be used
50% - 59 %	Quite Good/should be revised
<50%	Bad/should be revised

The purpose of trying out the product prototype was to determine its feasibility. The tryout was done three times, and each was held in two meetings. At the end of each tryout, a focus group discussion (FGD) was conducted to obtain detailed information about the prototype, and questionnaires were delivered at the end of each tryout. This was done to determine the responses from students after learning by using the prototype.

The tryout results show that the prototype's aims and contents correspond to students' needs, even though some revision modules had different covers, layouts, and activities. It can be used as a supplementary module for Informatics Management students.

### 3.2 Discussion

Two significant points will be discussed: 1) the quality of the existing English module for second-semester students of the Informatics Management program; 2) the development of "English for Informatics Management" as a supplementary module for second-semester students of the Informatics Management major. The following discussion will be explained. The finding shows that the existing textbook has some weaknesses with the criteria of a good textbook from Cunningsworth. Those criteria are aims, design and organization, language content, skills, topics, and methodology.

Based on the findings, the existing module has clear aims, but these are not in line with the aims of the teaching process at the campus, especially in the Informatics Management major. To create an effective teaching process, the module's aims should be specific and in line with the skill program.

The existing module is organized well, but the design cover does not match the module's content. Besides, it is also not completed with audio for listening, workbooks, and some components of the module (guidelines, glossary, and indexes). On the other hand, Weddel (2009: 5) explains that a good textbook may contain an introduction/guideline (notes for users), scope and sequence (table of contents listing the topics, vocabulary, skills, outcomes, and standards covered in each unit), units/chapters (materials which will be discussed), assessments, tape scripts, answer key, appendices, and index.

The contents of the existing module are grammar, vocabulary, and pronunciation. The grammar materials are simple past tense only. In contrast, the students need various grammar materials to express their daily activities and students' plans. It should be added with grammar materials suitable to students' needs and levels. Meanwhile, the existing module just covers general vocabulary. In contrast, Informatics Management students need specific vocabulary related to their skill program. It can be summarized that students must have specific vocabulary and various grammar materials to support the goals of the teaching process and effectiveness. It is supported by Widodo (2014: 153),

who explains that the content of the materials focuses primarily on some content or information using the language that the students are also learning. The content of the materials is selected based on the student's skill program. For example, English for Biology for biologist students, English for Engineering for engineering students, and so on.

The existing module covers three English skills, while the students need four. Students need to learn four English skills because those skills support each other. In addition, they will be used to communicate (spoken and written) in their future workplace. It is argued by Widodo and Savova (2010: 154) that learning tasks in the materials should enable students to develop their language skills for authentic communication and content competence. This means that the module should cover the four English skills and provide them with various activities to help them use those skills to communicate. They add that integrating language skills allows learners to see how a language is mutually complementary. For example, reading can be integrated with writing, and speaking can be integrated with listening. In short, it can be assumed that the four English skills can be taught integrated.

The existing module discusses three topics: recounts, narratives, and songs. Those topics do not allow students to expand their knowledge and help them face the challenges of their future workplace. They also do not represent students' future workplace. In contrast, the students should have materials with specific topics that represent their skill program and can be used in future workplaces. Puspitasari (2014: 261) explains that the materials with a specific topic effectively teach the learning process.

Methodology is also an essential aspect of module design. Its purpose is to indicate the teaching steps and help users optimize the use of textbooks. Widodo and Savova (2010: 153-154) support this, explaining that teaching materials are designed based on topical functional-content approaches. The choice of approaches depends on what teachers believe and how the chosen approaches best suit a particular group of learners in a particular instructional setting.

The researcher uses IBLL to design the supplementary textbook because the researcher believes that IBLL is a suitable methodology. It emphasizes students as the center of learning and offers steps that stimulate students to be more creative and critical thinking. "English for Computer" is designed as supplementary materials for computer students. It is designed for second semester only. It is designed under IBLL. IBLL provides five teaching steps: Let's Explore, Let's Ask, Let's Work Together and Practice, and Progress Check. The beginning steps are "Let's Explore and Let's Ask." Those steps are used as a warming-up activity. It asks students to observe and explore their surroundings. They may observe picture phenomena or bring their experiences to the teaching process. Those activities motivate students before the teaching process and attract students' interest in learning. Besides, it also builds students' background knowledge before going to the main materials. Those activities also ask students to engage in the teaching process. It is argued by Brown (2001) states that the materials should be started with an activity that aims to engage the students in the topic, and it is provided in a warming-up activity.

The next step is "Let's Work Together and Practice". It comprises whole-

class work, group discussion, pair work, teacher's talk, and small groups. The last step is "Progress Check," which consists of several questions that students should answer individually. The purpose is to check students' comprehension of materials. It is in line with Brown's procedure of teaching (2001: 151)

To determine the feasibility of the draft prototype, experts evaluate it, try it out on students, and revise it. The final draft becomes the supplementary English module used by the second-semester students of the Informatics Management major.

The draft prototype's strengths and weaknesses are found after being tried out. The strengths will be explained below.

- 1) English for Informatics Management can be used as a supplementary module to teach English.
- 2) English for Informatics Management is completed with listening materials and an exercise part.
- 3) English for Informatics Management is designed based on inquiry-based language learning, emphasizing students as the learning center.
- 4) English for Informatics Management contains materials suitable for students' needs, such as Informatics Management.
- 5) English for Informatics Management contains materials representing students' future work.
- 6) English for Informatics Management contains various activities that facilitate students' expansion of their knowledge.
- 7) English for Informatics Management can be taught in many ways.
- 8) English for Informatics Management is completed with a glossary comprising computer terms.

Then, the weaknesses of the draft prototype will be explained as follows:

- 1) Before using English for the Informatics Management module, the lecturers should prepare to support the successful teaching process.
- 2) English lecturers should know the field of Informatics Management to make the teaching process more effective.
- 3) English for Informatics Management contains the materials for the second semester only.

#### **4. CONCLUSION**

After conducting research, the following conclusions can be drawn: The result of the exploration stage shows that the quality of the existing English module is good enough. Students can still use the existing book to study, but the book's content is not suitable for the student's needs. The book's content is too general, and the students need more specific English materials based on their skill program. They need English materials specifically for Informatics Management. Besides, the steps in the existing book do not represent the steps of inquiry-based language learning. Consequently, the researchers decided to design a supplementary English module for second-semester Informatics Management students based on inquiry-based language learning.

Researchers have conducted several steps at the development stage. The



development stage results show that the proposed module can be supplementary for teaching Informatics Management students. There are some differences between the existing module and the proposed module. The most significant differences are the content and design of the module. The existing book consists of general English materials, while the proposed module consists of specific English materials related to Informatics Management. Besides, the proposed module is designed based on inquiry-based language learning, while the existing module is not.

The final product of this research is an English supplementary module for second- semester students majoring in Informatics Management. It can be used as a supplementary English module.

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