

DEVELOPING ENGLISH LEARNING MATERIALS FOR ELECTRICAL ENGINEERING STUDENTS AS OCCUPATIONAL PURPOSES

Ni Nyoman Yuliantini¹, Ni Made Ratminingsih², Dewa Komang Tantra³,
Nyoman Adi Jaya Putra⁴

Universitas Pendidikan Ganesha

yuliantini@undiksha.ac.id, made.ratminingsih@undiksha.ac.id,
dewa.komang.tantra@undiksha.ac.id,
nyoman.adijayaputra@pasca.undiksha.ac.id

ABSTRACT

This research was designed using the ADDIE's model development. The subjects included experts practitioners in the electrical engineering, English language instructors, and students. The objects were focused on needs containing the topics, sub topics, and the language aspects like texts, social functions, lexicon, text structure and grammar, meaning as well. The objective of this research was to assess and analyze a need and develop job related learning materials (JRLM) for EOP. O'Donnell's technique were deploying to assessed and analyzed the needs of EOP learning materials. An interview guide and rating scales were used to assess and analyze needs and to validate the draft and final EOP learning materials. The obtained data were analyzed descriptively and qualitatively. The research findings show that the needs learning materials for EOP topics in Electrical engineering, Electrical Circuit Elements and sub topics Active Element, Passive Element, Series and Parallel element, and the language aspects, namely descriptive and procedure text genres; text social function, namely a description and procedure, Electrical lexical items, descriptive and procedure text structures, list of denotative meanings of the words used in the text. JRLM for EOP exposed the students with content and procedural knowledge on Electrical Engineering to promote language learning.

Keywords: EOP learning materials; English electrical engineering; needs; model development

INTRODUCTION

Polytechnic is a type of higher education that provides vocational education in a variety of fields and/or technologies, preparing students for occupations requiring practical skills up to those with undergraduate studies. English for specific purposes has been developed and designed specifically particularly for the students' needs related to their department of major in colleges such as polytechnic. Therefore, English for

Electrical Engineering, English for Business Administration, English for Accounting, English for Tour and Travel, English for Mechanical Engineering, and other English for specific purpose (ESP) are provided in each department to train the graduates in mastering an ESP so that they can handle their work well upon their study.

English is one of the subjects designed in the Bali State Polytechnic (hereinafter: BSP) curriculum to envisage PNB's graduate competency. Prior analysis

on BSP's curriculum identified a gap between the existing English learning materials and targeted English learning materials. The existing English syllabus and general course outline had not been designed and developed to integrate the English language skills with the respective vocations in the areas of automatic electrical system in tourism, maintenance and repair of electrical industrial apparatus, supervision on building automatic systems, consultancy in planning automatic industrial control, or techno-preneurships in automatic control system. English for occupational purposes (hereinafter: EOP) is developed in such a way that students have adequate English abilities for the demands of their workplace. According to Kim (2008), EOP is committed to strengthening English language skills connected to the workplace. Furthermore, Far (2008) claimed that EOP learning activities are created within the context of professionalism in the workplace. As a result, the syllabus and teaching materials have to address the students' needs.

The BSP English curriculum had been reviewed locally by the BSP academic researchers. One study was aimed at designing and developing (D&D) English instruction based on learning needs (Mudhina, 2007). This study assumed that students were the ones who decided what English job-related learning materials for ESP at BSP. This study was triggered by a question of relevance of English for industrial demands. The research finding showed that English was still relevantly taught to yield professional and competent work forces. It was recommended that the students needed not to learn about the English language but they should learn about language literacy. Rautenbach, et al.

(2017) developed English for Occupational Purposes (EOP) curricula for universities of technology. These institutions seek to develop graduates who will be able to perform effectively once they enter the workplace. There has been an increase in demand for EOP as English was considered as the global lingua franca, so that employees could work in their areas of expertise. As a result, the need analyses of EOP had become essential. This indicated that the approaches utilized to obtain information from stakeholders throughout the development of EOP courses have to be effective. This article investigated the perspectives of stakeholders on some of these approaches, as well as the relevance that stakeholders could bring to EOP curriculum creation for Tourism Management at a South African university of technology

Similar previous researches were also conducted on EOP. Masadeh & Alahmed (2016) studied the needs for EOP-based curricula. The purpose of this study was to examine the EOP needs of students at Najran University during the second semester of 2014/2015. This was accomplished through the use of two questionnaires. One questionnaire was distributed to faculty members, while the other was distributed to students. The research findings revealed that faculty members and students agreed that reading and writing work-related faxes and emails, using information sources, communicating with foreigners about work, writing work-related reports, using tactful language with people, particularly customers, and understanding basic principles in work correspondence which were considered as the EOP needs could be achieved by conducting training for ESP learners. A series of proposals was offered to enhance

ESP instruction at the university level.

The present research is different from the previous researches which is the English learning materials were designed and developed as job-related EOP learning materials through a model development of ADDIE (Fadilasari, 2020; Taufiq; 2019; Hamsah, 2018). The JRLM needs for EOP was assessed and analyzed using O'Donnell's five steps of analysis (O'Donnell, 2018). The JRLM needs for EOP were documented through defining the needs assessment objectives, reviewing resources and capacity, identifying target audiences and data sources, summarizing results, and getting feedback. The draft and final JRLM for EOP were designed and developed using the ADDIE's model development. The process developments consisted of several activities, they were: providing a rational and feasibility of JRLM for EOP novelty, feasibility to solve problems, resources, facilities, and implement ability, designing JRLM for EOP in a systemic and gradual approach including guidance in implementing the product, developing the actual JRLM for EOP following a conceptual framework.

METHODOLOGY

This research was designed using a model development ADDIE. The main purpose was to develop JRLM for EOP based on 'Electrical Circuit Elements' (Askehave & Swales, 2001; Noguchi, et., al, 2001). This research applied ADDIE's model with its systematic framework divided into five steps as follows. Research subjects for the JRLM for EOP needs assessment and analysis consisted of a) informants on electricity, b) lecturers on electricity, c) English language instructors, and d) first-semester students. The research objects were focused on text, text

social functions, lexis, text structure & grammar, and glossary of meaning suitable for JRLM for EOP based on *Electrical Circuit Elements* (Ababio, 2013; O'Donnell, 2006; Kurt, 2018). An interview guide was administered to the informants on electricity and rating scales used to validate the readability, reliability, and validity indices in Unit One to Unit Sixteen (Candiasa, 2013; Sudiana, 2021).

Data were gathered on JRLM for EOP topics and sub-topics as well as the English language aspect such as text, text social function, lexical item, text structure and grammar, as well as glossary of meaning for the first semester students who learn English at the tertiary institution levels were gathered from informants who are experts in electricity, lecturers on electricity, English language instructors, and first-semester students registering for English. Data were also gathered on the readability, reliability, and validity of the JRLM for EOP containing topics and sub-topics as well as the English language aspect such as text, text social function, lexical item, text structure and grammar, as well as glossary of meaning were interval or quantitative data in nature, and therefore, analyzed descriptively and quantitatively.

RESULT AND DISCUSSION

Research Finding 1: Needs Assessment and Analysis.

Through interviews, the Electrical relevantly used as topics are *Electrical Circuit Elements* the topic-based on JRLM for EOP characterizes a close tie with the students' field practices on basic Electrical subjects (Abduvaliyeva, 2019; Huan, 2019; Kamil, 2021; Sudipa, 2020; Sudiana, 2021). Whereas, the sub topics are *Active Element, Passive Element, Series and Parallel element*. The English language aspects relevantly integrated in the *Electrical Circuit Elements* consisted of text,

text social function, lexical item, text structure and grammar, as well as glossary of meaning. Sixteen texts were identified and selected from the basic Electrical subjects *Electrical Circuit Elements*, they are 1) descriptive text of *Active Element*, 2) descriptive text of *Passive Element*, 3) procedure text of *Series and Parallel element*, 4) descriptive text of *Active Element*, 5) descriptive text of *Passive Element*, 6) procedure text of *Series and Parallel Element*, 7) descriptive text of *Active Element*, 8) descriptive text of *Passive Element*, 9) procedure text of *Series and Parallel element*, 10) descriptive text of *Active Element*, 11) descriptive text of *Passive Element*, 12) descriptive text of *Series and Parallel element*, 13) descriptive text of *Active Element*, 14) descriptive text of *Passive element*, 15) procedure text of *Series and Parallel element*, 16) descriptive text of *Active Element*. In terms of the English language aspects like text genres, text social functions, lexical items, text structure and grammar, glossary of word or phrase meanings nested within the Electrical fields topic and sub topics were documented for EOP learning materials. The needs for the EOP learning materials were validated by experts in electricity before they were further designed and developed as draft and final products of EOP learning materials.

Research Finding 2: EOP Learning Materials

Through rating scales, the needs for EOP learning materials were organized and structured into sixteen course outlines structured as 1) topic (*Electrical Circuit Elements*), 2) sub topics (*Active Element*, *Passive Element*, *Series and Parallel Element*), 3) learning outcome (ability to read, write, and speak in English on *Electrical Circuit Element*), 4) learning

indicators (to understand main idea, specific information, textual reference, and word meaning; to develop and arrange cohesive and grammatical paragraphs, to speak grammatically and fluently), 5) learning materials (descriptive and procedure texts); 6) social functions of the texts, 7) descriptive, and procedure text structures, and 8) glossary of word or phrase meanings.

DISCUSSION

The newly developed EOP learning materials are discussed in relation to six theoretical issues, there are text-based learning, text's social function, word-based learning, grammar-based learning, meaning-based learning, and theme-based learning. First, EOP learning materials designed and developed with a perspective of topic-based learning involves learners' learning through one central topic (Devira, 2017). The topic could have strong links to one subject. A thematic approach to teaching entails combining all areas of study under one topic. It bridges subject boundaries and assists students in connecting basic academic skills to real-world concepts. The benefits of a topic-based learning are (1) interesting topics encourage a love of learning, (2) students make deeper connections to learning, (3) students learn about the electricity deeper (Adnan, 2029; Hee, Ahmad, 2017).

An EOP text-based technique involves connecting written materials to spoken skills in the context of the Electrical. The design of lesson units emphasizes on the development of language skills regarding the whole text. It delivers the guided practice for the students as their language skills for meaningful communication can be improved through complete texts (Li,

2018). Learners' English skill will be enhanced and cultivated by collaborating the EOP text-based approach with tasks and applying target language to complete the tasks. This outline can encourage learners' participation by recalling their prior knowledge (Hafner, 2018; Liu, 2021; Widodo, 2015). Furthermore, the design of task and activities based on text-based learning environment can promote learner's motivation so that they can actively engage in the learning process. A platform is provided for the learners so that they can perform and develop their skills through their efforts (Abdujabbarova, 2020; Sasidharan, 2012).

Social function illustrates social effect in general and conformity in specific. The majority of us frequently follow the rules established by the roles we play (Belcher, 20130). For instance, the function of descriptive text is to depict the person, thing, and place with clear detail to assist the readers in portraying the targeted object (Gerot & Wignel, 1994). Besides, the framework or stages of descriptive text are also present. Identification or general statement and description are the elements or schematic structures of descriptive writing. Moreover, description activity can be applied to explain an object so that the readers can understand easily so that they can visualize the object on their mind like the real one (Knapp & Watkins, 2005). Description will also define the specific elements, characteristic, and qualities of the object. Also, the description of grammatical features of descriptive text (language features (simple present tense, action verb and adjective), vocabulary, and mechanics) will be presented.

An EOP word-based learning is defined as a teaching method in which the

learners learn by participating in meaningful and real-world projects or activities. Learners undertake their projects over a period of time. Word-based learning can be used to achieve a number of different objectives, such as: 1) to develop language skills that contribute to recognized qualifications, 2) to develop knowledge on the Electrical, and (3) to help students to understand what is involved in textual Electrical related job. Also, it provides individuals with the opportunity to strengthen six key soft skill areas (1) communication, (2) enthusiasm and attitude, (3) teamwork, (4) networking, (5) problem solving and critical thinking, and (6) professionalism. These types of skills provide a competitive advantage for achieving career goals (Chooma, 2020).

Grammar-Based Approach is one of the techniques to teaching and studying language, particularly a second or foreign language (Bratanych & Vyshnevskya). It is not literally or directly teaching grammar but scaffold learners to learn the language through and with grammar using different methods. Grammar is essential as it can support the process of communicating the language. By classifying the type of words, grammar can construct a sentence in any language. We can all perform grammar as humans, even as youngsters. There are several methods in teaching grammar namely 1) diagramming sentences; 2) learning through writing; 3) inductive teaching; 4) deductive teaching, and 5) interactive teaching. Along with an understanding of language nature, one of the primary advantages of a grammar-based approach is that it enables learners to understand grammatical ideas including subordination and coordination; ideas of expressing time relationships through the

use of verb forms; ideas of nouns and adjectives.

An EOP meaning-based reading instruction involves teaching reading through exposure to text, social function, lexical items, grammar, and meaning of the English language. In other words, reading and analyzing texts teaches students how to examine texts. The goal of meaning-based instruction is to assist students in improving literacy skills by going through real-life literary experiences (Reyes & Raga, 2020; Varita, 2017; Meurers et., al, 2019). Meaning-based and functional approach to literacy becomes the emphasis of effective literacy programs for children (Mahar & Richdale, 2008). Therefore, children are eager to learn early literacy skills through meaning-based instruction as they realize how literacy is directly related to them.

CONCLUSION

Needs assessment is important because it helps a language instructor determine the gaps that are preventing it from reaching its desired goals. A good need assessment and analysis implies some benefits for the development of EOP based on basic Electrical subject *Concept of Electrical Element* such as (1) it can improve the implementation of EOP learnings (2) it can easily collect the essential data so that the data can be analyzed and applied for EOP instructional benefit, and (3) it can determine the learning needs that should be handled for better EOP outcomes at BSP. Furthermore, according to O'Donnell (2006), needs assessment is an essential component of learning materials since it assists students to learn. Students can judge whether or not they comprehend EOP course material contextually when they can see how they are doing in a class.

Needs assessment can also encourage students' motivation. The needs for EOP learning materials were assessed and analyzed into topics and sub topics containing the Electrical for EOP as well as the language: text, social function, lexical items, grammar and glossary of meanings. The validated draft and final product of EOP learning materials contained the Electrical topic (*Concept of Electrical Element*) and sub topics (*Active Element, Passive Element, Series and Parallel Element*). And, the tried-out final EOP learning materials organized into sixteen topics to be learnt for one semester as EOP at BSP. The teaching materials produced through the development stages in this research is prepared by involving English instructors in BSP, as well as considering input from BSP learners, who will use this teaching material. This will ensure that the English teaching materials based on work competencies developed can really accommodate the needs of English learning in BSP.

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