

## English as a Foreign Language Textbook for Engineering Students: Application of the Dos Santos's Textbook Material Evaluation Checklist

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**Abstract:** Current engineering classroom environments and the contemporary teaching and learning usually employ textbook materials and supplementary reading. Currently, textbook material's checklists and evaluations are not popular in most of the Asian educational environments and societies. The purpose of this study is to employ the Dos Santos's textbook materials evaluation checklist to evaluate an English as a Foreign language textbook at a South Korean University, particularly for a textbook for engineering students who tend to enhance their English language skills. The research study collected data information from both classroom teachers and students who have already completed the English language course with the textbook. The result provided a directive guideline for potential readers, university administrators, teachers, students and industrial employers evaluate their textbook and training materials with a useful checklist.

**Key words:** Engineering curriculum and instruction, engineering education, engineering teaching and learning, engineering textbook, English teaching-learning, evaluation, Foreign language, textbook checklist, textbook evaluation

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### INTRODUCTION

Within recent decades, Foreign language teaching and learning becomes one of the most important topics for university students and graduates, particularly for graduates with expertise in the field of engineering (Clement and Murugavel, 2015; Fletcher *et al.*, 2017). Although, university students may select one of the Foreign languages for personal and academic enhancements and requirements, English language is one of the most popular Foreign languages among others, particularly in East Asian societies (Kim, 2017).

Due to the reasons of globalization and internationalization, engineering students and graduates need to master at least one Foreign language in order to increase their rivalries and opportunities in the current economy (Santos, 2019). In order to help students to gain appropriate English language proficiencies and competencies, appropriate and proper textbook materials should be selected (Moore, 2017).

First, on the one hand, university department administrators and classroom teachers have strong pressures of selecting and updating the textbook materials for the needs of their targeted students. For example, university administrators may need to think about how to choose the appropriate textbook materials in order to meet the needs of both students and potential employers in the field (Ahmadi and Derakhshan, 2016).

Second, on the other hand, even if the textbook materials are selected, how to apply the textbook materials and selected teaching and learning materials into student's knowledge bases (Chegeni *et al.*, 2016) would be another issue. For example, if the textbook materials and the related supplementary readings are able to match the expectations and competencies of students appropriately, teachers do not need to spend additional hours on searching, updating and selecting further reading and materials to their students.

**The significance of the study:** In fact, there are many textbook materials and supplementary reading for English language learners, particularly for engineering students at the university levels. Most of the feedback and reviews are created and shared by the editors, book publishers and even book store sellers. Although, some feedback and opinions are posted on the textbook's front pages such comments. However, such comments and sharing are usually selected by the editors. Therefore, the appropriateness of the usage of the textbook materials may not be ideally matched with the needs of individual and individual groups of students. In order to respond to the gaps within the field of textbook materials evaluation, this research study applied the Dos Santos (2016; Santos, 2019b) textbook materials evaluation checklist to an English as a Foreign language textbook for engineering students.

This research study is to fill in the gaps of high-demanding Foreign language textbook materials that are currently being used every day at one of the South Korean universities. The textbook evaluation is a process of matching terms and key points to other terms and key points. University administrators and teachers may use the checklist to match the terms and key points to determine the appropriate textbook materials for their students, particularly for engineering students who want to enhance their English language skills (Ahmed *et al.*, 2015).

The result of this research study provided two directions. First, currently, textbook materials checklists and evaluations are not popular in most of the Asian educational environments and societies (Hussin *et al.*, 2016). In other words, most of the university administrators, teachers and students may not understand how to develop, use and apply any textbook materials checklist to evaluate their textbook materials and supplementary reading. Therefore, this research study employed Dos Santos's textbook materials evaluation checklist (Dos Santos, 2016; Santos, 2019b) as an example for potential readers.

Second, most of the university-level classrooms use textbooks materials for English language teaching and learning for their students, particularly for engineering students who want to enhance their English language for both academic and career opportunities and developments (Santos, 2019a, b). This research study showed potential readers how to employ the Dos Santos's textbook materials evaluation checklist (Dos Santos, 2016; Santos, 2019b) into practice and how to adjust and edit the checklist in order to match the needs into their own classroom environments.

**Purpose of the study:** The purpose of this research study focused on two directions. First, applying the Dos Santos's textbook materials evaluation checklist (Dos Santos, 2016; Santos, 2019b) into practice. In other words, the researcher applied the checklist to evaluate a currently used textbook material in order to measure the appropriateness for teaching and learning in English as a Foreign language classrooms for engineering students at one of the South Korean universities.

Second, the researcher tended to collect the information about how the textbook materials can be used and applied into the knowledge bases and real-life applications from the perspectives of teachers and students (i.e., the users of the textbook materials).

## **MATERIALS AND METHODS**

**The introduction of Dos Santos's textbook materials evaluation checklist:** Previously, Dos Santos (2016) has

introduced a textbook materials evaluation checklist for the application of a Foreign language textbook. The checklist was based on the Likert scale structure which employed the ranging from 1 (strongly disagree) to 5 (strongly agree). Two significant factors involved which were the usefulness of the textbook for the particular subjects and the directions of teaching and learning and the application for teaching and learning at these particular levels of learners and students. Although, Dos Santos (2016) suggested readers, teachers, university administrators and even industrial employers may edit the factors and elements of the checklists, the researcher decided to employ the checklist for textbook materials evaluation based on the standardized version without adjustments (Santos, 2019b).

Based on the needs of the situation, potential researchers and educators may send the checklist evaluation to appropriate personnel and staff. In this research study, the researcher tended to send the textbook materials evaluation checklist to the classroom teachers and the students for data collection.

**The site and participants:** The research study was conducted at one of the universities in South Korea as a small-scale research project. Based on the curriculum planning of the undergraduate program, 1st and 2nd year undergraduate students are required to complete at least four terms of English language courses in order to meet the minimum graduation requirement. Upon investigation at the university, nearly 20 courses and nearly 400 1st and 2nd year undergraduate students at the engineering program were using the textbook materials (i.e., series) for their English language courses.

The researcher sent emails to potential institutions for this investigation. The message included the title of the investigated textbook along with an image of its cover page, the objectives of the study, the protocol questions, the checklists, the significance of the study, the purpose of the study and the outcomes of the study. Within a week, the university administrators agreed and expressed the interests with the research study (Creswell, 2012; Merriam, 2009). Therefore, the researcher sent the electronic invitations to the university administrators for potential participation (i.e., invitations to teachers and the students who are at the engineering program).

To be eligible for the research study, the university and the English classrooms should meet the following criteria. First, the English as a Foreign language classrooms should use the Prism Level 1 Student's Book with Online Workbook Listening and Speaking by Dimond-Bayir *et al.* (2017) as the only textbook materials

for one of the semester-long learnings. Second, the student groups must be currently enrolled at one of the engineering programs at the university level.

**Data collections:** After the mature agreement between the university administrators and the researcher, the university staff forwarded the invitation emails and the textbook materials evaluation checklist to the teachers and the students as one of the end-of-semester surveys for the coursework and teaching and learning materials. After the participants completed the surveys, the researcher collected the survey data information and entered the data for calculations and results.

**RESULTS AND DISCUSSION**

The Likert scale checklist questions regarding the textbook for this research study was designed to explore both teachers and student’s perspective of the effectiveness of the textbook materials for the purpose of Foreign language acquisitions and real-life applications to their university major (i.e., engineering studies). The responses provided to the participants were rated from; Strongly Disagree; Disagree; Neutral; Agree and Strongly Agree.

As a result, 14 teachers and 183 students completed the surveys. Due to the nature of this research study, the researchers did not distinguish the surveys from teachers and students. In short, 197 valid surveys have been collected and analyzed. Table 1 outlined the results of the checklist questions.

Both English as a Foreign language teachers and students responded to the survey checklist questions by

indicating that the current textbook materials provided contemporary and applicable knowledge and information for language learners, particularly for engineering students at the university level. Although, this textbook has been published for 2 years, the targeted university continues to use the textbook materials for their current classrooms for engineering students.

The survey data information yielded some significant and extreme results of the textbook materials. First, the textbook is easily to access, particularly the price. All participants believed the textbook was easily to access and the price of the textbook was reasonable for contemporary Korean students and their families. In other words, based on the current networking and family incoming, most of the contemporary Korean families might afford to buy international textbooks and teaching and learning materials.

Second, the textbook materials and exercises are contemporary and applicable. For this factor, only <10% of the participants believed the applications of the textbook were able to apply to the contemporary situations of students and their academic program. Nearly 60% of the participants advocated that engineering students might not be beneficial after the completion of this textbook.

Third, the student’s exercise is applicable and useful. Over 60% of the participants believed the textbook exercises were applicable and useful for contemporary societies and their academic program. In fact, it is worth noting that engineering students and engineering teachers tend to employ and learn English language with Specific Purposes. Unlike general English with broader directions and focuses, science and engineering programs may have targets and focuses on their

**Table 1: Summary of the textbook materials evaluation checklist**

Checklist question	SA (5)	A (4)	N (3)	D (2)	SD (1)
The textbook is easily to access, particularly the price	180 91.4%	17 8.6%	0 -	0 -	0 -
The textbook materials and exercises are contemporary and applicable	0 -	15 7.6%	70 35.6%	97 49.2%	15 7.6%
The student’s exercise is applicable and useful	0 -	12 6.1%	56 28.4%	102 51.8%	27 13.7%
The textbook provides practices about essential pronunciation training	112 56.9%	75 38.1%	4 2%	4 2%	2 1%
The textbook is well organized	120 60.9%	57 28.9%	20 10.2%	0 -	0 -
The textbook offers a balance between activities and lessons	150 76.1%	35 17.8%	12 6.1%	0 -	0 -
The activities encourage learners to learn, communicate and participate	128 65%	48 24.4%	18 9.1%	3 1.5%	0 -
The grammar and vocabulary are introduced in realistic contexts	10 5%	5 2.5%	21 10.7%	140 71.1%	21 10.7%
The textbook offers a balance of four skills	132 67%	21 10.7%	32 16.2%	10 5.1%	2 1%
The language usage is at the appropriated level of students	94 47.8%	81 41.1%	18 9.1%	2 1%	2 1%

English language usages. Thus, the broader focus of the current textbook might not be able to meet the expectations and directions of these groups of engineering students.

Fourth, the textbook provides practices about essential pronunciation training. Over 90% of the participants believed the pronunciation training was applicable as the current textbook focused on the areas of listening and speaking. Although, the science and engineering pronunciation training might not be found, the broader training in speaking and listening continued to provide the essential training for engineering students. Fifth, the textbook is well organized. Nearly 90% of the participants believed the textbook was well organized. Although, the textbook was not designed for engineering students and learners, the organization of the textbook might match the expectations of engineering students in general.

Sixth, the textbook offers a balance between activities and lessons. Basically, none of the participants believed the current textbook is a negative selection for activities and lessons. Although, science and engineering knowledge and Foreign language expectations were not the same as the other fields of academic subjects and programs, the activities and lessons for general English language training matched with the expectations and language enhancements for students.

Seventh, the activities encourage learners to learn, communicate and participate. The current student-participants were traditional-aged students with the status of full-time, day-time and on-campus students. The activities from the textbook always encourage the interactions and peer communications for young adults. Therefore, more than 90% of participants believed the activities fit the learning objectives and expectations of the students.

Eighth, the grammar and vocabulary are introduced in realistic contexts. Surprisingly, more than 80% of the participants believed the grammar and vocabulary were unable to apply to a realistic context, particularly for engineering students.

Ninth, the textbook offers a balance of four skills. Although, the current textbook was designed for the training of listening and speaking skills, more than two-quarters of participants believed the four-skill training techniques and planning were applicable.

Tenth, the language usage is at the appropriated level of students. Although, this textbook was designed for general training, nearly 90% of the participants advocated the language usage for engineering students. More importantly, the current textbook was a level-1 textbook which was designed for second-year adult students who

had only 1 year of prior English language learning background. For the current groups of students who had completed a secondary school diploma during their teenage, the language usage should not be difficult. In fact, the researcher did not have the chance to interact and evaluate the student's language background. However, based on the understanding of the participants, the textbook may be appropriate due to the positive feedback.

## CONCLUSION

The current textbook materials evaluation checklist provided the opportunities for university administrators, teachers, students and even industrial employers to evaluate the overall advantages and disadvantages of textbook materials and supplementary readings for their classroom teaching and learning. Although, this checklist was designed for the evaluation of Foreign language textbook materials, potential readers, researchers and educators may edit and adjust some elements of this checklist in order to match the actual needs and situations of their classroom environments and textbook materials.

For future research directions, researchers in the field of educational evaluation and textbook research may further, develop and adjust the current textbook materials evaluation checklist in the field other than Foreign language teaching and learning and engineering education.

Also, the current textbook materials evaluation checklist may apply to any different subjects such as nursing, science, liberal arts and even fine arts. Although, the current research study focused on the usage of a Foreign language textbook for engineering students, researchers in other fields can employ this checklist to evaluate their textbook materials and supplementary readings.

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