

The Development of an English Course based on the Integration of Project-Based Learning Approach and Blended Learning Module for Enhancing English Communication Skills at Workplace for the ASEAN Community of Thai Undergraduate Engineering Students

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ABSTRACT

The objectives of the study were to investigate the needs of English communication skills at workplaces of engineers and to provide guidelines on how to develop the English course based on the Integration of Project-based Learning Approach and Blended Learning Module to enhance English communication skills at work of undergraduate engineering students. To develop the course, it is generally composed of three main phases: needs analysis, course development, and course implementation and the course evaluation. However, this research reports the results of the needs analysis and provides suggestions for the course development based on the Integration of Project-based Learning Approach and Blended Learning Module. The questionnaires were used to investigate the needs analysis of three main groups of subjects: 15 engineers, 98 engineering students, and 10 ESP teachers. The semi-structured interview was used to gain more in-depth data from the representatives of the three main groups. However, only the perspectives of the students will be presented in this paper. The results of the study theoretically and practically shed some new light to the area of English language instruction for engineers.

Introduction

No one denies the fact that English has played an important role as an international language. Good English ability is viewed as a key to success for career opportunities, business success, and academic achievement in higher education, and it has a crucial role to play both in government and private sectors (Learning Post, 2005).

However, previous research results showed that Thai learners have lower ability than international students in both subject knowledge and English knowledge (Prapphal, 2003). According to the EF English Proficiency Index 2018, Thailand ranked in 64th place out of 88 non-native English speaking worldwide and 16 out of 21 countries in Asia.

Many research findings have indicated that most national and international workplaces prefer employees who can communicate well in English as the majority of employers and clients are foreigners whose medium of communication is English. In other words, companies would rather hire the applicants who are qualified and who demonstrate the ability to use English well. Unfortunately, most Thai university graduates' English proficiency does not meet this requirement. The research conducted by Keyuravong (2002) and Wiriyachitra (2002) on the proficiency of the graduates suggested that the English language curriculum in Thai schools

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and universities had not been meeting the demands for workplace English although students had learned English in formal education for at least ten years before they graduated from the universities.

With the rapid changes of the technology in highly competitive world, it seems to be very clear that if the country does not overhaul the teaching of English, the country would lose its competitive edge internationally (Thailand Expat Forum, 2003). Therefore, there is a strong and urgent need to improve the quality of English instruction, and teachers are unavoidably responsible for exploring the effective teaching methods and assessments in order to endow students with the skills and knowledge needed to respond to global demands so that students are capable of competing with others in the highly competitive global marketplace.

At present, many manufacturing companies are fully or partly foreign owned or managed, so engineering students need to learn how to use English to work with foreigners after graduation. Continuing Professional Development Committee, The Engineering Institute of Thailand Under H.M. The King's Patronage stated that "In the trans-national activities of the world trade, English is utilized as the dominant language in doing business. In the area of engineering, proficiency in the English language not only becomes a global passport for the engineers but also an opportunity and a key competitive differentiator for individual and corporations." Even when the companies are not international companies, engineers still inevitably need English to communicate with their colleagues, clients, and suppliers. Moreover, in the year 2015, there is the professional mobility in ASEAN, especially engineering profession. Therefore, it is the must for Thai engineers to effectively use English to write, read, and speak with colleagues, customers, subcontractors, suppliers, and other related people. For all the reasons given above, it is necessary for teachers and course planners to design effective English courses to help engineering students meet the needs of the global job market.

1. Literature Review

1.1. Project-based Learning Approach

Project-based Learning Approach is an instructional approach that contextualizes learning by presenting learners with problems to solve or products to develop (Moss and Van Duzer, 1998). Moreover, Buck Institute of Education (2007 cited in Musa 2011) defined Project-based Learning as a systematic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured around complex, authentic questions and carefully designed products and tasks.

In real workplace settings, skills such as decision-making, problem-solving, managing conflicts, team working and being innovative are important elements of job competence. Kloppenborg and Baucus (2004) reiterate that many of skills learned through project-based learning are highly sought by today's employers including the ability to work well with others and handle interpersonal conflicts, make thoughtful decisions, practice and solve complex problems. Bell (2001) states that project-based learning promotes social learning as students practice and become proficient with the 21st century skills of communication, negotiation, and collaboration. In other words, it could be concluded from the previous findings that the project-based learning approach can enhance the learning skills, life skills, and literacy skills. In order to develop these skills, the teaching and learning methods need to be rejuvenated. As technology has changed the way we live, the way to teach and learn is subject to be changed too.

1.2. Blended Learning

The definitions of blended learning are differently defined by different authors. The British Educational Communications and Technology Agency (BECT) describe blended learning as a "combination of face-to-face and online delivery which they believe suits a wider range of

learning styles” (Gluc, 2006). Akkoyunlu and Soylu (2008) defined blended learning as “a type of education which combines various models of traditional and distance education and makes use of all types of technology. According to Rossett and Frazee (2006), they believed that blended learning “integrates seemingly opposite approaches, such as formal and informal learning, face- to-face and online experiences, directed paths and reliance on self-direction, and digital references and collegial connections, in order to achieve individual and organizational goals” (p. 2). It is believed that blended learning has many benefits that no one can deny. It is a way for breaking out of the traditional “chalk and talk” learning environment and living a totally new educational experience. In fact, learners do not like one way to learn, so teachers have to facilitate the way the learner learns to suit his or her preference.

Dewar and Whittington (2004) found that blended learning can match the different learning styles and improve the learning rate. Singh and Reed (2001) identified four benefits of blended learning which are 1) improved learning effectiveness; 2) extending the reach; 3) optimizing development cost and time; and 4) optimizing business results. Sharma and Barrett (2007) technology should be integrated into a language course for a pedagogical reason in order to add value to teaching and learning due to the benefits of cost saving, convenience, and the non-restriction of place and time of learning.

As there are ample benefits of using the project-based learning approach and blended learning shown by a great deal of research, the integration of these two approaches tend to yield satisfying learning results. However, there is no previous research conducted by integrating these two approaches before. As a result, an English course using the integration of project-based learning approach and blended learning to enhance English communication skills at workplace for the Thai undergraduate engineering students is worth developing and studying.

1.3. Research Objectives

The objectives of this research were to investigate the needs of English communication skills at workplace for engineer profession and to provide guideline on how to develop an English course based on the integration of project-based learning and blended learning module. However, only the needs analysis results of the engineering students will be focused in this paper.

2. Data Collection and Data Analysis

To develop a course, it generally has three main phases: needs analysis, course development, and the implementation and evaluation of the course. Then the results were transformed as a guideline for the course development. For the needs analysis of the engineering students, the questionnaires were distributed to fourth year engineering students at KMUTNB. The questionnaire has five main parts: 1) Demographic data, 2) Problems and important levels of English at workplace for your engineer profession, 3) Current ability in the required engineering skills, 4) The Importance of the 21st century skills, and 5) Opinions about developing the English at workplace for engineers course, and suggestions for the course development. A set of questions in the questionnaires were adapted from Changpueng (2012). Moreover, the validity and reliability of the questionnaire were checked and tried out before the main use. It was found that 98 questionnaires were returned. Then ten students were randomly selected for the interview session.

Descriptive statistics are used to analyze the closed ended data of the questionnaire while the content analysis was used for the open-ended questionnaires and the interview questions.

3. Results of the Study

The questionnaire used in this study has six main parts as mentioned earlier. The findings are described part by part. The first part of the questionnaire asked the respondents to complete

their demographic data. There were 98 fourth year engineering students at KMUTNB responding to the questionnaire.

Table 1.

Demographic data

Information	Percentage
Gender	
• Male	63.3%
• Female	36.7%
Educational Background	
• Matthayom 6	81.6%
• Vocational school	16.4%

Table 1 shows the 63.3% of the respondents was male students and 36.7% was female students. 81.6% of the student graduated Matthayom 6. Their ages were between 21-23 years old. The second part of the questionnaire asking the importance of the four English skills and their attitudes towards the important levels of English at workplace for engineer profession.

Table 2.

The Importance of the four English skills

Information	Speaking	Writing	Listening	Reading
1. Which of the four skills do you need to improve most?	60.2%	23.5%	16.3%	-
2. Which of the four skills do you need to improve least?	13.3%	33.7%	8.2%	44.9%
3. Which of the four skills is the most difficult for you?	35.5%	37.8%	23.5%	3.1%

Table 2 indicates the importance of the four English skills. When the students were asked about the language skill that needed to improve most and least, the results were speaking and reading respectively, and they thought that the writing skill is the most difficult skill for them. Interestingly, there was no response on the improvement on the reading skill. Next, the respondents were asked to rate the important levels of English at workplace for engineering profession by using the four-Likert scales ranging from strongly disagree to strongly agree. The results were interpreted below:

1-1.75	means that the students had very low agreement with the statement
1.76-2.5	means that the students had low agreement with the statement
2.51-3.25	means that the students had strong agreement with the statement
3.26- 4	means that the students had very strong agreement with the statement

Table 3.

Important levels of English at workplace for engineer profession

Information	Mean	S.D.
4. English at workplace is considered important.	3.43 (VH)	0.79
5. English proficiency is important to perform job well.	3.41 (VH)	0.72
6. English communication skills are important for your career advancement.	3.39 (VH)	0.79
7. Your English knowledge learned from university is enough for your future job.	2.43 (L)	0.73

*VH= very high, H= high, L= low, and VL = very low

Table 3 shows the students strongly agreed that English at workplace is important for them to perform job well and their career advancement. However, they thought that their English knowledge learned from university is not enough for them.

The third part of the questionnaire is to ask about the students 'current ability in the required engineering skills. The four-point Likert scale was used, and the data were interpreted as follows:

1-1.75	means that the students can do the required tasks very poorly
1.76-2.5	means that the students can do the required tasks poorly
2.51-3.25	means that the students can do the required tasks well
3.26- 4	means that the students can do the required tasks very well

Table 4.

Students' current ability in the required engineering skills (Spence and Liu, 2012)

Information	Mean	S.D.
Reading		
1. Reading written instructions or advice	2.54 (H)	0.59
2. Reading manuals	2.59 (H)	0.62
3. Reading project documents	2.47 (L)	0.54
4. Reading office documents	2.49 (L)	0.56
5. Reading professional texts	2.38 (L)	0.53
Writing		
1. Writing emails	2.27 (L)	0.51
2. Writing minutes of meetings	2.33(L)	0.47
3. Writing daily/weekly reports	2.44 (L)	0.56
4. Writing completion reports	2.27 (L)	0.49
5. Writing proposal for projects	2.23 (L)	0.45
6. Writing business letters	2.23 (L)	0.43
7. Writing memos	2.47 (L)	0.61
8. Writing presentation slides	2.59 (H)	0.61
Speaking		
1. Giving oral presentations	2.40 (L)	0.55
2. Attending meetings/seminars	2.40 (L)	0.55
3. Speaking with customer on occasional visits	2.28 (L)	0.45
4. Talking about everyday tasks and duties	2.45 (L)	0.56
5. Teleconference communication	2.34 (L)	0.54
6. Telephone communication	2.34 (L)	0.54
7. Having informal and social conversations	2.48 (L)	0.60
Listening		
1. Receiving spoken instructions/advice	2.38 (L)	0.53
2. Listening in international seminars/conferences	2.35 (L)	0.50

*VH= very high, H= high, L= low, and VL = very low

Table 4 illustrates the four English skills, the student thought that they can perform the required tasks for engineer profession poorly in most of the tasks, but they said they can do only three tasks well: reading instructions or advice (2.54), reading manual (2.59), and writing presentation slides (2.59).

The next part of the questionnaire asked the students to rate the importance of the 21st Century skills: learning skills, literacy skills, and life skills. The four- Likert scales were used, and the interpretation is described below.

1-1.75	means that the students considered the skills not important at all
1.76-2.5	means that the students considered the skills not so important
2.51-3.25	means that the students considered the skills important
3.26- 4	means that the students considered the skills very important

Table 5.

The importance of the 21st century skills

Information	Mean	S.D.
Learning skills		
1. Critical Thinking	3.21 (H)	0.68
2. Creative Thinking	3.39 (VH)	0.65
3. Collaborating	3.24 (H)	0.69
4. Communicating	3.41 (VH)	0.69
Literacy skills		
5. Information Literacy	3.19 (H)	0.67
6. Media Literacy	3.17 (H)	0.59
7. Technology Literacy	3.26 (VH)	0.69
Life skills		
8. Flexibility	3.17 (H)	0.59
9. Initiative	3.19 (H)	0.59
10. Social Skills	3.30 (H)	0.68
11. Productivity	3.32 (VH)	0.70
12. Leadership	3.40 (VH)	0.70

The 21st century skills are a set of abilities that students need to develop in order to succeed in the information age. Generally, the students agreed that the 21st century skills are so important for them. The first three skills that they perceived very important are communicating (3.41), leadership (3.4), and creative thinking (3.39).

The last part of the questionnaire has 20 statements, and the students were asked to rate their opinion about developing an English course at workplace for engineer profession using four-Likert scales ranging from strongly disagree (1) to strongly (agree). The interpretation of the data is as follows:

1-1.75	means that the students had very low agreement with the statement.
1.76-2.5	means that the students had low agreement with the statement.
2.51-3.25	means that the students had strong agreement with the statement.
3.26- 4	means that the students had very strong agreement with the statement.

Table 6.

Opinion about developing the English at workplace for engineers' course (adapted from Changpueng, 2012)

Information	Mean	S.D.
1. Focus on the objectives of the course for engineer profession	3.2(VH)	0.51
2. Focus on the course on academics	3.21(H)	0.52
3. Use a variety of teaching methodologies not only lecture	3.27(VH)	0.55
4. Focus on communications rather than grammar or rote learning.	3.21 (H)	0.63
5. Apply technology for learning out of class time.	3.21(H)	0.54
6. Focus on self-study.	3.13 (H)	0.68
7. Use commercial texts for as teaching materials.	3.07 (H)	0.60
8. Use real documents as teaching materials.	3.03 (H)	0.62
9. Use social media sites for teacher and student interactions.	3.22 (H)	0.58
10. Ask students to do individual work.	3.15(H)	0.62
11. Ask students to do pair work.	3.29 (VH)	0.56
12. Ask students to do group work.	3.34 (VH)	0.59
13. Use exams for course evaluation.	2.95 (H)	0.63
14. Use group projects for course evaluation.	3.05 (H)	0.58
15. Use portfolios for course evaluation.	2.86 (H)	0.69
16. Use only English for instruction.	2.87 (H)	0.73
17. Use Thai and English for instruction.	2.97 (H)	0.67
18. Focus on the learning skills required for the 21 st centuries (critical thinking, creative thinking, collaborating, and communicating).	3.27(VH)	0.57
19. Focus on the literacy skills required for the 21 st centuries (information literacy, media literacy, and technology literacy).	3.17(H)	0.54

20. Focus on life skills required for the 21 st centuries (flexibility, initiative, social skills, productivity, and leadership).	3.29(VH)	0.56
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This part summarizes the opinion of the subjects regarding the course component of an English for engineer profession course. It was found that the students strongly agreed with the following aspects: asking the students to do group work (3.34) and pair work (3.29), focusing on the life skills (3.29), focusing on the learning skills (3.27), and focusing on the objectives of the course for engineer profession (3.27), and using a variety of teaching methodologies not only lecture (3.27).

Besides, the last part of the questionnaire is an open-ended question asking the students to provide suggestions for the course development. A number of students suggested creating a website learning English for engineer profession should be developed to seek knowledge out of class time. Some of them said they think English class doesn't provide them adequate skills to perform the job in the future, so they really need an English course that can fulfill their needs and prepare them for their future career. Some comments were on the classroom activities which should be more various and authentic to what they have to encounter before they graduate.

4. Discussion

This section offers responses to research questions and recommendations for English language instructors who have to teach engineering students. The findings from the questionnaires showed that speaking and writing skills are needed and difficult in their viewpoint. They thought they have already been equipped with the reading skills. This is maybe due to the fact that reading skills are in the focus in their previous English learning experience, as reading and grammar points are the key content in English language instruction. It is not an easy chance for them to use English in their everyday life. Although they considered English is one of the most important skills, they must have for their career advancement. These findings are correspondent with the results showing the students' current ability in the required engineering skills, the tasks in the four English skills were rated quite low, so it could be inferred that they still have problems and are not confident in performing the tasks. They also reflected that their English knowledge learned from university is not enough for their future job. The results of this study has evoked the great awareness of the language instructors in Thailand to abruptly change what and how they have been teaching especially English for Specific Purpose (ESP) courses in a university, or the students will be in jeopardy in the global job market. As the 21st century skills are required by corporations and are considered very important for work, an English course that can not only enhance the students' communication skills at workplace but also fulfill the needs of Generation Z students are needed to be developed.

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