The Effects of Genre-Based Teaching on Enhancement of Thai Engineers' Technical Writing Ability

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This paper aims at investigating the effects of a genre-based approach to teaching technical writing to Thai engineers, with a focus on writing work instructions, and the attitudes of Thai engineers toward this genre-based writing. The lesson plan was evaluated by three experts for the appropriateness of teaching technical writing to Thai engineers. Learning achievements have been examined using a comparison of pre- and post-tests for ten engineers who are in the same discipline, yet have different backgrounds of English proficiency. The learning outcomes were measured by the difference in scores between pre-test and post-test, and revealed that there was a significant difference between after teaching at p-value $< .05$ (p= 0.002) as indicated by their paired t-test analysis. Lastly, a satisfaction interview of the overall course has been conducted for four participants and showed that the engineers' attitudes were positive about the teaching method.

Keywords: genre-based approach, technical writing, work instructions, Thai engineers, writing ability, attitude

INTRODUCTION

In general, English language has influenced education in Thailand because the educational system of engineering institutes or university departments worldwide often use English as the common mode of learning and communication. Most of the engineering students focus on technical subject matter, and they successfully carry on their technical subjects without extra writing courses. English writing in engineering is often referred to as technical writing, which is any written form of writing including a variety of documents in, engineering, science and related technical occupational fields. Technical writing deals with special knowledge of scientific and technological subject matter. Technical writing is important not only in the Engineering syllabus in the universities but also in real working life. Insufficient technical writing practice is given

to the engineers who study engineering and technology. Technical writing skills are highly valuable. According to Silyn-Roberts (1998), writing English is one of the most required skills for engineers and on average engineers spend between 30% and 95% of their time on writing. For this reason, many experienced engineers reflected that when they were undergraduate engineering students, they did not spend enough time learning professional writing. Likewise, Beer (2005) stated that engineers spent over 40% of their working time on writing, and said the ability to write was one of the most crucial factors in an engineer's success. Lerdpreedakorn N (2018) also stated that writing was perhaps one of the most important – yet, most difficult - skills for students with a non-native English background to master, resulting in new graduates failing to meet employers' requirements in their ability to use the English language. This could be because undergraduate students of engineering colleges or universities are taught the technical subjects in English, using English text books, but are not taught English as a language. The lack of English communication abilities is the greatest struggle for newly graduated engineering students at the start of their working life. Many studies have recently been conducted to investigate the problems Thai students have when writing English. Boonyarattanasoontorn, P. (2017) investigated Thai students' English language writing difficulties at a high level. Noom-ura (2013), who studied English teaching problems in Thailand, revealed three of the problematic factors to be: students not having enough practice in English (1st place); students lacking English exposure outside class (2nd place); and students' having insufficient knowledge of English (3rd place). Ibrahim, S., Yunus, M.A.M., & Khairi, M.T.M. (2017) argued that three difficulties engineering students have when writing academic articles were: content, structure, and language. Good writing takes time to master and needs high quality feedback, but the time and effort dedicated to acquiring this skill in engineering courses are insufficient. In an increasingly technical world, the number of engineers is increasing correspondingly; and the information technology revolution and highly competitive environment, success depends not just on acquiring specialized analytical skills, problem solving skills and subject specific knowledge, but also on developing effective technical communication skills. Therefore, engineers need to increase their English skills in order to be able to convey their message in English at an understandable level; this is one of the skills that will accelerate their career success, increase the chance of getting a good job and subsequent promotions and therefore allow them to make more money.

The genre-based approach has been broadly adopted in language teaching and learning. In the 1980s, the genre approach gave increased attention to the notion that student writers could benefit from studying different types of written texts. Hyland (2004), stated that the concept of genre enables teachers to look beyond content, composing processes, and textual forms in order to better understand the ways that language patterns are used to accomplish coherent prose. Genre-based approaches emphasize that this higher order must be studied for effective language use. The rationale for applying a genre-based framework is that it facilitates clear links to engineers' ability in specific writing beyond the writing classroom. Thus, the primary goal is to enable engineers to perform a broad range of specific purposes for technical writing in English, and to select

specific genres based on the engineers' most immediate occupational needs. The following writing and referencing rules are to be taken into consideration.

CONTEXT AND REVIEW OF LITERATURE

Relevant Studies

Nagao, (2018) aimed at investigating genre awareness of writing argumentative essays during a 15-week systemic functional linguistics course consisting of text-based writing lessons. The results revealed that a genre-based approach to writing instruction, when applying a teaching and learning cycle, had the potential to enhance EFL students' awareness of generic structure and interpersonal meaning in writing argumentative essays. Ibrahim, S., Yunus, M.A.M., & Khairi, M.T.M. (2017) conducted a study entitled 'Project-based intensive academic writing for Electrical engineering students in Malaysia'. The result revealed, perhaps unsurprisingly, that students had different levels of capabilities. Some of the students understood what they had to do and were creative in laying out the content, whereas others were not clear on how to organize the content. Narges Rashidi, Golnar Mazdayasna. (2016) investigated the effectiveness of genre-based instruction on the development of the writing skills of undergraduate EFL learners majoring in textile engineering at an Iranian state university. The result revealed that students who had been exposed to the genre-based instruction made a significant improvement in letter writing, as measured by the attributes of content, organization, vocabulary, language use, and mechanics. In addition, students with heightened awareness of the genre-based features of letter writing demonstrated positive attitudes and produced high-quality texts.

Albino, G. (2015) studied the effect of an explicit genre-based approach to teaching writing for EFL learners of an American company in Angola. This study qualitatively and quantitatively investigated intermediate learners' abilities with a two-step approach. Firstly, they analysed the text types written in the workplace and the features deemed relevant for successful writing. Secondly, they investigated the extent to which an explicit genre-based approach could support learners with their writing, particularly concerning the readability of their texts. The overall results suggested that an explicit genre-based approach can be a suitable approach to teaching writing for learners in the workplace. Sara Salehpour, Mahnaz Saeidi (2014) investigated the effect of genre-based scaffolding through sentence starters and writing frames on MA candidates' research paper writing. The results revealed that genre-based instruction can be a useful tool in improving academic writing. Furthermore, the outperformance was indicative of the beneficial effect of scaffolding through starters and frames, since such preliminary scaffolds allayed the students' concerns not only about how to convey their message but also about how to conform to the standards of research paper writing. Moreover, the explicit instruction of a particular genre provides more room for teachers to scaffold their students' learning. Changpueng (2013) aimed at investigating the effect of using the genre-based approach on the writing achievement and attitudes of Thai engineering students. The writing ability of students significantly improved in all three groups of different levels after the experiment. The findings also showed that the students' attitudes were positive towards the teaching method, activities, and exercises. Moreover,

students felt more confident in writing. Arancon (2013) applied the SFL genre theory in analyzing the essays. He argues that genre-based instruction with the perspective of SFL is influential in reducing the difficulties an L2 goes through in Business English writing. Ahn (2012) studied the influence of using a genre-based approach to improve the writing ability of L2 primary school students. Consequently, his study showed that "the teacher's active scaffolding processes at the early stage of the cycle benefited students by making them aware of the different ways texts are organized for different communicative purposes". Furthermore, students were more confident and responded with a positive attitude towards the writing teaching.

Most of the published studies address the genre-based approach to teaching writing to students. By contrast, this research aims to focus on professional, working engineers who write technical work instruction documents in English on a regular basis, while taking into account their background experience and their level of English proficiency.

Learning Language in Systemic Functional Linguistics Perspective on Genre

Systemic functional Linguistics (SFL) is one genre-based approach implemented in courses for adult immigrants and pre-university learners, and it originated from Michael Halliday's SFL paper (Hyland, 2007). This theory implies that genre is text-type with a textual orientation which has a consistent pattern and performs certain social purposes. Halliday (1994); Halliday & Hasan (1989), the linguists, developed this model of genre in order to create a genre-based pedagogy. This concept of genre indicates that texts are culturally understood as purposeful, social processes. Genres provide opportunities for choices in language use which serve social communicative purposes such as recount, procedure, narrative, description, report, explanation or exposition writing. As a result, language users select one genre among various perspectives in a particular context in response to particular social purposes in regard to field (topic of language), tenor (community relationship) and mode(the organization of text), which motivate particular language choices within the language system at the level of grammar and lexis. Genre in SFL can be described as "a staged, goal-orientated, and purposeful social activity that people engage in as members of their culture" and emphasizes the purpose and character order of different types of links between language and context in a systematic way (Martin, 1992, p.505). Genres are considered not only patterns of texts, but also the situational and cultural contexts where a particular genre occurs (Martin & Rose, 2003).

Learning will happen effectively if the teacher is clear about why the students are studying and what to expect the students to be able to do at the end of the course. The knowledge and skills should be listed, in what Bernstein (1990, p.73) calls a ''visible pedagogy''. Teachers have to work with the students to define what should be taught, how the students should be assessed and then provide the knowledge to achieve the outcomes

The Teaching-Learning Cycle: Genre and Systemic Functional Linguistics (SFL)

The teaching and learning cycle is a systematic functional linguistics approach to the process of teaching; it helps students engage with and create texts using a genre-based

teaching pattern. One of the best-known representations of this cycle of SFL perspectives on genre is given by Feeze (1998), as shown in Figure 1.
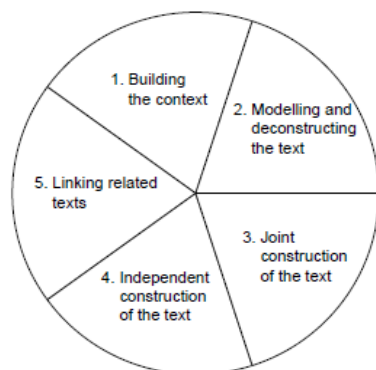

Figure 1
The Teaching-Learning Cycle (Feeze, 1998, p.28)

The main objective of the teaching-learning cycle is to follow the process of learning a genre in a series of linked stages. Teachers provide the instructional planning of classroom activities and the initial explicit knowledge, then guide practice by developing understanding of texts (Hyland, 2004) while giving encouragement to the learners; finally, the teachers gradually withdraw their help until the learner is able to work alone. The cycle is designed for flexible use. Learners are allowed to step into the process at any stage, depending on their existing knowledge of the genre, and teachers can return to previous stages of the cycle if their students need it. Hyland (2007) emphasized a main key objective of the teaching-learning cycle is that learners are able to participate in various activities to ensure that opportunities are repeated.

Technical Writing

Technical writing is generally the term used to describe writing about technical subjects, such as engine/ machinery, computers, or equipment/devices. This is the type of writing one sees in procedures, instruction manuals, product specifications and reference materials. This is a rather narrow technical writing definition. Schneider S (2005) defines technical writing as technical communication, used in technical disciplines. It always deals with itself to a certain extent with what it means to communicate within the technical context and technical development. The purpose of technical writing is to convey scientific and technical information clearly and without ambiguity (O. V. Lubianova, 2015). Work instructions are the major means of communication between manufacturing process builders and their audiences. It describes in detail the steps necessary to assemble a product, build a system, or follow process in a linear format. To write procedures effectively when compiling content it is often necessary to use illustrations or diagrams. Examples of these are standard process flow charts, workflow, process mapping, symbols, illustrations, graphics, and flow diagrams; they can present the information of tasks or operations in a meaningful format that sheds light on the

process, product, and/or information flow. Process instructions relate events step-by-step, and instructions are geared specially for persons who need to follow the procedure on their own. There are three significant attributes employed in most categories of all technical documentation: accurate and complete technical content; clear presentation; and precise and unambiguous language.

METHOD

Research Questions and Hypotheses

RQ1: What effects does the genre-based writing approach have on Thai-engineers' work instructions writing?

RQ2: What are Thai engineers' attitudes towards the genre-based approach to learning to write work instructions?

Based on the above questions the following hypotheses are suggested:

H0: There is no significant effect on Thai engineers' ability to write good work instructions after undergoing a genre-based instruction approach

(Null hypothesis H0: $\mu1-\mu2 \leq 0$).

HA: There is a significant effect on Thai engineers' ability to write good work instructions after undergoing a genre-based instruction approach (Alternative hypothesis (Alternative hypothesis HA: $\mu1-\mu2 > 0$).

Participants

The participants of the study were ten Thai engineers of mixed English proficiency, all colleagues in the same electronics company. Five (three females and two males) are electrical engineers and five (three females and two males) are electronics engineers, forming a homogeneous group from one discipline or profession; namely, process/test engineers. Their ages ranged from 24-36 years. The researcher designed a course to use the genre-based teaching methodology to instruct the engineers in the specific skill of writing good work instructions. These engineers followed the course for two hours per week for 8 weeks.

Research Instrument

The instrument prepared for this study was a quasi-experiment where participants were studied before and after the experimental manipulation. The experimental design involved a pre-test and post-test to evaluate the technical instruction writing ability using a rubric score. The type of text used in the pre-test and post-test were a particular type of technical writing called a work instruction document. A work instruction document is a step-by-step guide for factory assembly workers to correctly assemble an industrial product. The effectiveness of the training was measured by comparing the scores of the pre-test, administered before the intensive course, and the post-test, administered after the 8 weeks of intensive genre-based teaching. The difference between the two scores indicates how much the engineers improved after attending the genre-based teaching

course. The researchers used an integrated type of interview which is a semi-structured interview, after the completion of the training in order to determine the attitude of engineers towards the genre-based approach to teaching. Through the content analysis, the researcher carried out the interviews in the Thai language which were recorded with note taking and then transcribed in English. Four Thai engineers were selected and asked the questions. Content analysis was chosen as it focuses on how the content of oral and written data is analyzed. The content analysis helps the researcher to identify the common themes contained within the collected data. It also assisted with the interpretation of the spoken data. Coding theme/categories were derived directly from the text data.

The lesson plan was designed in accordance with a genre-based approach to language learning in the stages based on Feeze's (1998) teaching and learning cycle (TLC): building knowledge of the field, modeling, joint construction, independent construction, and linking related texts based on pedagogical principles drawn from the systemic functional linguistics (SFL) of genre pedagogy. The approach was taught during 8 weeks of 3 hours to give engineers efficient strategies to improve their writing ability.

Procedure

The procedures of this study have been divided into four phases. The first phase is the development of the lesson plan. The second phase is running the pilot. The third phase consists of the assessment of the engineers' improvement after training. The last phase is the conducting of an overall attitude interview. The paired t- test was used to analyze the pre-test and post-test results by comparing one sample mean to a null hypothesis value. The paired t-test simply calculates the difference between paired observations (e.g., before and after) and then performs a 1-sample t-test on the differences. The compositions were rated using the technical writing rubric. An analytic rubric includes a more detailed analysis, based on content, presentation and language skills. A semi-structured interview was conducted after the completion of training in order to determine the attitude of engineers towards the genre-based approach method. Two interviewees were selected from cluster H who had a high % improvement and two interviewees were selected from cluster L who had a low % improvement. The interview spoken data was transcribed and categorized by theme.

FINDINGS

The Results of Genre-Based Writing Approach

The results of a genre-based writing approach indicate that there was a significant improvement in the engineers' ability to write good work instructions after the training, as shown in the difference between the pre-test and post-test scores. The results revealed that the null hypothesis was rejected (H0) and the alternative hypothesis was accepted (HA). Using the engineers't-test to compare the two scores, a p value < .05 (p=0.002) was calculated, see in Table 1

Table 1
Paired t for Total Pre-Test - Total Post-Test

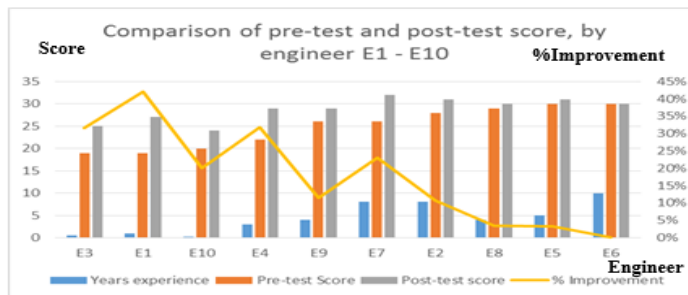| Engineer	Years' experience	Pre-test Score	Post-test Score	% Improvement		
E1	1	19	27	42.11%		
E2	8	28	31	10.71%		
E3	0.5	19	25	31.58%		
E4	3	22	29	31.82%		
E5	5	30	31	3.33%		
E6	10	30	30	0.00%		
E7	8	26	32	23.08%		
E8	4	29	30	3.45%		
E9	4	26	29	11.54%		
E10	0.2	20	24	20.00%		
				Difference	T-value	P-Value
	Mean	24.90	28.80	-3.900		
	StDev	4.51	2.66	2.767		
	SE Mean	1.43	0.84	0.875		
					-4.46	0.002

Figure 2
Pre-Test and Post-Test Comparison with Years' Experience

Table 1 also shows a range of improvement from 0% to 42% among the engineers. The reason for the wide range in improvement can be seen in Figure 2 – the engineers with a low pre-test score improved the most, whereas the engineers who already scored close to the maximum improved the least. The scatter plot in Figure 3 shows this very clearly; there is a moderately strong, negative, linear relationship between the pre-test score and the percent of improvement of the engineers who took the genre based teaching course. The diagram shows two distinct clusters of data. Four engineers who had low pre-test scores (average 63%) had a high percent of improvement at 31%. Meanwhile, the other 6 engineers who had high pre-test scores (average 88%) had a low percent of improvement at 9%.
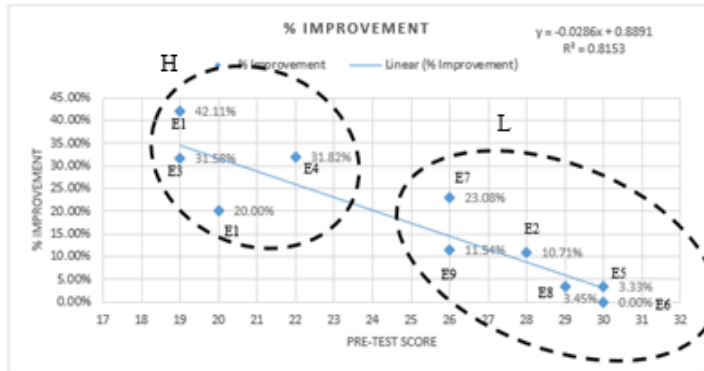
Figure 3
Scatter Diagram-Pre-Test and Post-Test Comparison

The Results of the Interviews

The first question the participants were asked was to score the difficulty of the following parts of work instruction writing by assigning them a score from 1 (very easy) to 5 (the most difficult). The results are shown in Table 2.

Table 2
Summary of Interview Question 1: Opinion of the Difficulty of Each Element of Work Instruction Writing

Year experiences	1	3	8	10	Years
Difficulty parts/ Engineer	E1	E2	E3	E4	Mean
understanding	4	5	5	3	4.5
objectives	2	2	4	4	4
being concise	3	4	4	4	4
being clear	2	2	4	4	4
being ambiguous	3	3	3	5	3
using visual aids	1	2	3	1	2
writing English	4	5	5	3	4.5

The second question the participants were asked was to share their opinion about whether the teaching method can help them understand how to write work instructions. (Teaching method). All engineers stated that this teaching method was more understandable than other methods they had learned when it comes to how to write work instructions. The following notion from engineers illustrated what engineers had learnt:

The answers to the second question (whether the teaching method can help them understand how to write work instructions) were categorized into five themes, as shown in Table 3.

Table 3
Theme of the Second Question

Theme	Frequency	% Frequency
1 Learn the right sequence	IIII	100%
2 Use the language better (Grammar, vocabulary, phrases)	IIII	100%
3 Write more clearly and without ambiguity	II	50%
4 Understand the importance of each part	I	25%
5 Layout of the instructions	I	25%

Participants were asked in the third question to share an opinion about whether practicing with exercises can improve their writing ability (Teaching activities and achievements). There were categorized into three themes, as shown in Table 4.

Table 4
Theme of the Third Question

Theme	Frequency	% Frequency
1 Adapt and update the knowledge in the next work instructions	IIII	100%
2 Improve our skills by learning from good and bad examples	II	50%
3 Working in pairs helps us to think	I	25%

Participants were asked in the fourth question about what they will do if they cannot think of words or phrases to write. These were categorized into four themes, as shown in Table 5.

Table 5
Theme of the Fourth Question

Theme	Frequency	% Frequency
1 Use a dictionary / online dictionary	III	75%
2 Use translation tool (Google translate)	III	50%
3 Use pictures instead of using words and phrases such as 'follow the picture' or 'see the picture'.	II	50%
4 Ask my colleague or boss who knows Ask or consult with colleagues who are native speakers or who have prior experience.	II	50%

Participants were asked in the last question to share an opinion about whether after this course they will be able to use more appropriate language (Language use). Their answers to the fifth question were categorized into five themes, as shown in Table 6.

Table 6
Theme of the Fifth Question

Theme	Frequency	% Frequency
1 Verb use has improved.	II	50%
2 Vocabulary has improved.	I	25%
3 Know how to copy phrases from other work instructions	I	25%
4 Use simple words that are easier to understand	I	25%
5 Adverbs has improved.	I	25%

DISCUSSION

The effect of a genre-based approach to teaching Thai engineers to write work instructions is seen in the difference between the pre-test and post-test scores. It was found that the post-test score increased significantly, with a p value < .05 (p= 0.002). This suggests that an explicit understanding of how target texts are structured is an important advantage in genre-based teaching, as it makes clear the language pattern, and empowers both teacher and engineers. This is consistent with the findings of the study conducted by Narges Rashidi, Golnar Mazdayasna. (2016), and Albino, G. (2015), which showed the benefits of genre-based teaching on improving writing content, organization, vocabulary, language use, and mechanics. Moreover, this is in line with the concept of visible pedagogy. It also suggests that the teacher plays a central role in scaffolding engineers' learning by using a variety of exercises and providing a coherent framework for both language and context. This reinforces the findings of the study by Sara Salehpour, Mahnaz Saeidi (2014) and Ahn (2012), pointing towards the efficacy of taking a genre-based approach to teaching writing by scaffolding instruction. This method also increases the teacher's awareness of the genre, thereby enabling the teacher to give clear directions to the engineers. The improvement of writing ability shows two distinct clusters of data. The group of four engineers who have a high percent of improvement, was observed to have three years or less working experience, ranging from 0.2 to 3 years. Three points above the trend line would suggest that engineers are more likely to improve, while one point below the trend line would suggest that an engineer has some difficulties that would be something to further investigate. One such finding from examining the specific work instructions of these four engineers was the difficulty and the complexity of the process that they had to describe. The greater the difficulty and complexity, the more writers must be aware of organization and language use. Furthermore, six of them who showed a low percent of improvement were found to have more than four years working experience, ranging from 4 to 10 years. The markedly small improvement or no improvement could be due to those engineers already mastering the genre, and with a high pre-test score there would be hardly room to improve. The experience would be one factor to improve writing ability. Moreover, the difficulty and the complexity would be another factor. Van Laan and Julian (2001:55) stated that the writers improve at different rates depending on the structure or pattern of the document, the complexity of the language, and the difficulty of the subject.

The results of the genre-based teaching approach showed the improvement of work instructions writing on engineers as they had the chance to use the language in daily work. The result also shows the mean of technical content and presentation measurement was higher than the language skills measurement. Before the training, the engineers might not have been aware of the importance of a particular language feature or they lacked proficiency in language skill. It seems that grammatical features were adapted to be more focused for the next step. This is consistent with what Dare and Polias (2001) observed in ESL classrooms in Australia that students need to learn not only the cultural and situational context, but also the lexico-grammatical resources. A

lesson plan was prepared based on material taken from a text book, but the course can be adapted as needed to make it suitable for the participants.

As Hyon, (1996); Paltridge, (2001) supported that the TLC principles lessons should be clear, should be flexibly modified by scrutinizing the progress of students and their needs. GBA was started to implement with the TLC. GBA teaching required the cooperation of both teachers and learners. The concept of teaching technical writing using a genre-based approach as used in this study, can be considered as a guide line teaching method which can create standardized work instructions writing courses for both teachers and learners. Furthermore, the same approach can produce a pattern and improve the language features of writers in ESL/EFL. Nevertheless, Myers (2000) argued that the genres are only models and not set patterns of form. Hence, the teacher should have a clear understanding of the settings, functions and communicative purpose of particular genres. This is also consistent with the study by Nagao, (2018), which found that the TLC had the potential to enhance EFL students' awareness of generic structure and interpersonal meaning in writing.

The second objective was to investigate attitudes of Thai engineers towards the genre-based writing approach to writing works instruction. Four engineers participated in individual interviews with five questions in a semi-structured interview after training. Two engineers (E3, E4) had one- to two-years' experience and the other two engineers had greater than 8 years' experience (E2, E6). The genre-based approach encouraged a positive response towards writing.

The first question asked the engineers to score the difficulty of the parts of work instruction writing. The answers showed that the two parts they apparently had most difficulty coping with were a) understanding the process of writing work instructions and b) writing in English. If they use the language appropriately with knowing the technical content, they are able to write in a way that makes understanding easy for the users. Conversely, if they write without understanding the process, then they use the language inappropriately. It indicates that the lesson plan can be adjusted to compensate for any lack in the engineers' knowledge.

Engineers also gave positive responses to the second question about the teaching method. From the content analysis, the most frequent responses were for theme 1 (that the engineers felt that they learned in the right sequence) and theme 2 (that they better understand how to write work instructions). They said that the training provided a systematic way to understand how a text moves and the structure of writing work instruction. Engineers responded that the knowledge and techniques learnt from this training were very useful and they would be able to apply them to their processes. Theme 3 (writing clearly and unambiguously), theme 4 (understanding the importance of each part), and theme 5 (the pattern or organization) were also mentioned to be very useful.

Engineers also gave positive responses to the third question, about the activities and exercises in this course which provided opportunities to practice written English (theme 1). Moreover, learning from good and bad examples of context was useful (theme 2).

Most of the engineers expressed their appreciation for the chance to participate in paired work tasks (theme 3). They can help each other to share ideas for those engineers who have less experience than others. Some feedback was also stated by some engineers; for example, two engineers argued that the exercise was quite difficult because they did not know the vocabulary.

In answer to the fourth question, three strategies to be used when engineers cannot think of words or phrases to write were considered as follows; theme 1, by looking up in a dictionary; theme 2, by using a translation tool; and theme 3, by asking more experienced engineers.

Most engineers gave positive responses that after this course they are able to use more appropriate language in the future (fifth question). From the content analysis, the most frequent response was that they could use verbs better was largely due to them being provided with a verb corpus list during the class to explain how to use the most common verbs in work instructions. Theme 2 was that they use more vocabulary. Theme 3 was that they imitate the phrases from other work instructions. Theme 4 was that using simple words is easier when writing, and theme 5 was that they could now better use adverbs in work instructions.

Most engineers viewed this training as being very helpful, as it developed their work instruction writing ability in terms of both organization and language use. Additionally, the training helped the engineers to develop the skills to successfully analyze both the texts and characteristics of technical writing.

CONCLUSION

Where the focus is on a teaching approach, the teacher's knowledge and skills, the engineers' background, and the awareness of GBAs are probably considered as the first priority. Therefore, the key aspects on the adoption of a GBA are a) the linguistic knowledge regarding the move and structure of genres, and b) the teaching skills, including the selection of materials. The strategies of GBA and materials used need to be prepared for engineers who have different backgrounds and different levels of English proficiency. The TLC implementation in a GBA can be strongly recommended on the basis of this study, recognizing that the teaching and processes are flexible, and can be recycled at any time. Having said that, it is the teacher's responsibility to provide strategies for the engineers to analyze the technical content, presentation and language features to serve their process. Traditional grammar instruction is also necessary, but needs to be based on the particular language features essential to the genre. This has the added benefit of increasing the engineers' ability to use the language.

This study strongly supports the use of a GBA for teaching work instruction writing, which is a type of technical writing, in order to enhance the teacher's knowledge, experience and skills in teaching and improve the learning of Thai engineers. As the result of the study, this work has delivered useful material and engineers will use it to develop their writing, which is in line with the notion of appropriate pedagogy.

It is clear that there is no single approach or best method which is appropriate for all learning styles in teaching and learning English, and there is no one teaching method which is inherently superior to the others. However, the researcher selected the genre-based approach because the focus is specifically on the expected audience and the text is to be constructed to serve a particular communicative purpose. The GBA, to a large extent, also envisages an end product which resembles model texts of a particular genre or text type. This can be perceived through the principle of explicit assessment, which is in line with the concept of visible pedagogy.

In conclusion, the study shows that the genre-based approach apparently provides a helpful method for Thai engineers to learn how to write work instructions, a kind of technical writing. It enables engineers to better understand the move and structure of how to write work instructions with a) an accurate, concise and unambiguous technical content, b) an easy to follow presentation and c) an accurate use of English grammar, spelling and punctuation. It supports engineers to use written English language and results in promoting the engineers' writing ability. Engineers are able to manipulate the genre no matter what their background or English proficiency level. The result can support that a genre-based approach empowers engineers to perceive the social purpose of context setting and move structure and, additionally, become aware of the necessary information required in a specific genre such as work instruction writing. With the specific content in an engineering field, this approach showed significant improvement in the part of technical content, presentation characteristics and language skills. In this sense, the study exposed that a genre-based approach could expand the ability to engage Thai engineers to help them to think positively about getting more involved in their field career. It was learnt from the interviews, additionally, that this approach provides engineers with a comprehensive way to approach content by doing some exercises and studying an example of work instructions from others in the classroom activities. They discussed and analyzed the context of work instruction writing in a concrete way in line with their experience.

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