

การพัฒนารายวิชาการเขียนภาษาอังกฤษแบบเน้นประเภทของงานเขียนสำหรับนักศึกษา
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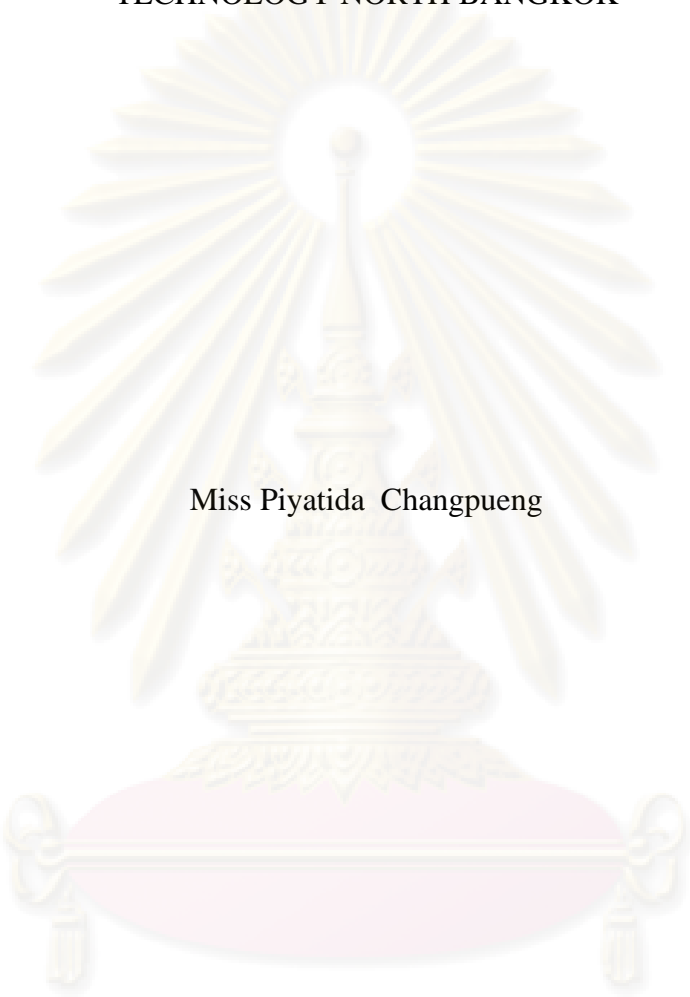
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THE DEVELOPMENT OF AN ENGLISH WRITING COURSE BASED ON THE
GENRE-BASED APPROACH FOR UNDERGRADUATE ENGINEERING STUDENTS
AT KING MONGKUT'S UNIVERSITY OF
TECHNOLOGY NORTH BANGKOK



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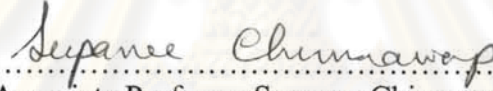
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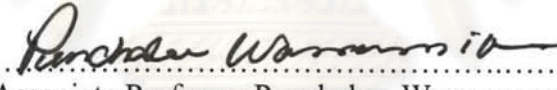
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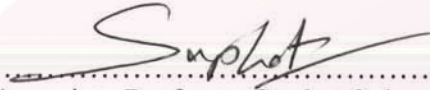
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ปิยะธิดา ช้างพัง: การพัฒนารายวิชาการเขียนภาษาอังกฤษแบบเน้นประเภทของงานเขียนสำหรับนักศึกษาวิศวกรรมศาสตร์ระดับปริญญาตรี มหาวิทยาลัยเทคโนโลยีพระจอมเกล้าพระนครเหนือ. (THE DEVELOPMENT OF AN ENGLISH WRITING COURSE BASED ON THE GENRE-BASED APPROACH FOR UNDERGRADUATE ENGINEERING STUDENTS AT KING MONGKUT'S UNIVERSITY OF TECHNOLOGY NORTH BANGKOK)

อ. ที่ปรึกษาวิทยานิพนธ์หลัก : รศ. ดร. ปิยะชลิ วัฒนสมสิทธิ์, 308 หน้า.

งานวิจัยนี้จัดทำขึ้นโดยมีวัตถุประสงค์ 4 ประการคือ (1) เพื่อสำรวจความต้องการของวิศวกรในระดับบริหารและปฏิบัติงานในเรื่องของทักษะการเขียนภาษาอังกฤษที่จำเป็นต้องใช้ในการทำงาน (2) เพื่อพัฒนารายวิชาการเขียนภาษาอังกฤษแบบเน้นประเภทของงานเขียนสำหรับนักศึกษาวิศวกรรมศาสตร์เพื่อช่วยพัฒนาความสามารถในการเขียนของนักศึกษาระดับปริญญาตรี (3) เพื่อประเมินประสิทธิภาพของรายวิชาการเขียนภาษาอังกฤษแบบเน้นประเภทของงานเขียน (4) เพื่อสำรวจทัศนคติของนักศึกษาที่มีต่อรายวิชาการเขียนภาษาอังกฤษแบบเน้นประเภทของงานเขียน

งานวิจัยนี้เป็นงานวิจัยเชิงสำรวจและงานวิจัยเชิงทดลองซึ่งประกอบด้วย 3 ขั้นตอนหลักคือการสำรวจความต้องการของวิศวกร การพัฒนารายวิชาการสอนรายวิชา ในการสำรวจความต้องการนั้นใช้แบบสอบถามและการสัมภาษณ์เป็นเครื่องมือในการเก็บข้อมูล โดยแบบสอบถามดังกล่าวใช้เก็บข้อมูลกับ 3 กลุ่มตัวอย่างคือ วิศวกรจำนวน 129 คน นักศึกษาวิศวกรรมศาสตร์จำนวน 354 คน และอาจารย์สอนรายวิชาภาษาอังกฤษเพื่อจุ่มงหมายเฉพาะจำนวน 31 คน ผลจากการวิเคราะห์แบบสอบถามแสดงให้เห็นว่าประเภทของงานเขียนที่ใช้ในการทำงานของวิศวกรซึ่งกลุ่มตัวอย่างทั้ง 3 กลุ่มเห็นว่าสำคัญ 3 ประเภทแรกคือ การเขียนจดหมายอิเล็กทรอนิกส์เพื่อขอเรื่องในประเด็นต่างๆ เพื่อถามคำถามต่างๆ และการเขียนรายงานเพื่อหาข้อเท็จจริง สำหรับการสัมภาษณ์นั้นได้สัมภาษณ์วิศวกรทั้งสองระดับเพื่อหาข้อมูลเชิงลึกในเรื่องของบริบทและสถานการณ์ในการเขียนของงานเขียนทั้ง 3 ประเภท หลังจากนั้นจึงพัฒนาบทเรียนด้วยวิธีเน้นประเภทของงานเขียน โดยใช้ข้อมูลที่ได้จากขั้นตอนการสำรวจความต้องการการพัฒนาวิชาเป็นพื้นฐานในการสร้าง บทเรียนดังกล่าวใช้สอนนักศึกษาวิศวกรรมศาสตร์จำนวน 25 คนเป็นเวลา 12 สัปดาห์ ซึ่งพบว่าคะแนนสอบของนักศึกษาที่ได้หลังเรียนจบบทเรียนเพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติ และจากการให้ตอบแบบสอบถาม การสัมภาษณ์ และการเขียนแสดงความคิดเห็นที่มีต่อรายวิชาพบว่า นักศึกษามีทัศนคติทางบวกต่อรายวิชาการเขียนภาษาอังกฤษสำหรับวิศวกร จากผลการศึกษาดังกล่าวสรุปได้ว่าการพัฒนารายวิชาการเขียนภาษาอังกฤษแบบเน้นประเภทของงานเขียนช่วยให้ผู้เรียนพัฒนาความสามารถทางการเขียนได้ ดังนั้นจึงควรให้มีการพัฒนารายวิชาภาษาอังกฤษที่สร้างด้วยวิธีเน้นประเภทของงานสำหรับนักศึกษาวิศวกรรมศาสตร์เพิ่มมากขึ้น

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 KEYWORDS: ENGLISH FOR SPECIFIC PURPOSES/ GENRE-BASED APPROACH/
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PIYATIDA CHANGPUENG: THE DEVELOPMENT OF AN ENGLISH WRITING
 COURSE BASED ON THE GENRE-BASED APPROACH FOR
 UNDERGRADUATE ENGINEERING STUDENTS AT KING MONGKUT'S
 UNIVERSITY OF TECHNOLOGY NORTH BANGKOK. THESIS ADVISOR:
 ASSOC. PROF. PUNCHALEE WASANASOMSITHI, PHD., 308 pp.

The study objectives were (1) to investigate the needs of English writing skills of operational and managerial engineers, (2) to develop an English writing course based on the genre-based approach to enhance English writing achievement of undergraduate engineering students, (3) to determine the effectiveness of the English writing course developed based on the genre-based approach, and (4) to explore the engineering students' attitudes toward the developed English writing course.

The study was descriptive and experimental research involving three phases: needs analysis, course development, and course implementation. The needs analysis was conducted using a questionnaire and an interview protocol as the research instruments. In the first phase, the questionnaires were distributed to the three groups of subject, namely, 129 engineers, 354 engineering students, and 31 ESP teachers. The results revealed three genres were most required in engineering work (request e-mails, enquiry e-mails, and investigation reports). Next, two managerial engineers and ten operational engineers were interviewed to gather in-depth information about writing contexts and situations of engineering associated with each required genre. In the second phase, the course was developed based on the GBA course development stages and the data derived from the needs analysis. In the third phase, the course was implemented for 12 weeks with 25 undergraduate engineering students who were enrolled in the English for Engineers course at King Mongkut's University of Technology North Bangkok. To examine the effectiveness of the course, pre-test and post-test scores were compared. Also, the students were interviewed. The attitude questionnaire and student logs were used to determine the students' attitude toward the developed course. The findings revealed that the course was effective since it was found that the post-test scores of the students were significantly higher than the pre-test scores. In addition, the students also had positive attitudes toward the course. Based on the findings of the study, it is recommended that more genre-based English courses for engineering students and students in other disciplines should be developed.

Field of Study : English as an International Language

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Student's Signature

Advisor's Signature

ปิยตติดา ช่างพวง

Punchalee Wasanasomsithi

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ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

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CHAPTER I

INTRODUCTION

1.1 Background of the study

With the expansion in international business, English has become the lingua franca for people all over the world, including engineers. More and more people study English for purposes ranging from traveling to business, and from socializing to professional work. In addition, English is also important in terms of education because it helps people gain access to knowledge from all over the world. Kachru and Nelson (2001) point out that it is clear that English is the most widely taught, read, and spoken language ever known. Non-English speakers realize that learning English is useful not only for studying cultures but also for receiving the benefits of international technology and commerce. English is taught in countries which use English as a second language, as an official language, or as a foreign language. Thus, many developing countries encourage their population to study and use English, including Thailand.

English has been made a compulsory subject for decades in Thailand. The official English curriculum for students in primary and secondary education has been changed several times to meet international standards in English. With the transition of Thailand from an agricultural to an industrialized country, science and technology have become important areas of study. However, there are few English programs and textbooks that are designed specifically to cater to such needs. This calls for the development of specific English teaching programs in science and technology. Keot-poka (1994) claims that students, teachers, and course planners have begun to realize that English language learning and teaching can be done without an immersion in literary studies, but the focus needs to be shifted to the roles of science and technology. Because of these reasons, ESP programs, whose main purpose is to teach English to a particular group of learners to meet their specific needs, have emerged.

1.2 Rationale

Engineering students are one such group of people who study English. They need English as a tool to help them read academic and technical books and papers in English and to help them communicate in various situations with colleagues, teachers,

classmates, and individuals whose work relate to engineering. Additionally, English is also crucial for their future careers. At present, many manufacturing companies are fully or partly foreign owned and/or managed, so engineering students need to learn how to use English to work with foreigners after graduation. Even when the companies are not international companies, engineers still inevitably need English to communicate with their colleagues, clients, and suppliers. As engineers always need to use English to write, read, and speak with colleagues, customers, subcontractors, suppliers, and other related people, it is necessary for teachers and course planners to design effective English courses to help engineering students meet the needs of the industrial sector.

One of the objectives of the current national education plan (2002-2016) focuses on effective human development, especially workers in the field of science and technology. It aims to enable workers to be skillful and knowledgeable in their work in order to compete with counterparts in foreign countries. As a state university, King Mongkut's University of Technology, North Bangkok (KMUTNB) has a responsibility to teach science and technology students, especially engineering students. One of the policies of the university is to enable students to meet the needs of private sector, engineers, scientists, and employers (KMUTNB, 2005). Thus, it is imperative that the needs of those employers and stakeholders be made known in order to design courses which will enable students to fulfill their professional requirements once they have graduated.

According to the 2001 policy of the Higher Education Commission, Ministry of Education, all undergraduate students have to study English and complete at least 12 credits before graduation: two fundamental English courses and the other two English elective courses. The Language Department, Faculty of Applied Arts at KMUTNB, has developed courses to serve the requirements of the Ministry of Education. One of the elective courses is English for Engineers course (a specific purpose course), which was first launched in 2002. The course was revised in 2006, and one of the agreements after the revision was to develop more English for specific purpose courses for engineering students to better serve their needs, since there have been only a few courses particularly designed for them. The development should expand from the existing course, English for engineers, by dividing it into English for Engineers I and II. Moreover, the content of the course must focus more on all four language skills and also based on the needs of engineering students, professional engineers, employers, the

policy of KMUTNB, and the policy of the national educational plan. Therefore, developing English courses for engineering students which focus on different language skills need to be undertaken.

The language needs for engineers have been investigated in several other countries. Silyn-Roberts (1997 cited in Silyn-Roberts, 1998) investigated the specific professional workplace environment defined by the great majority of his engineer participants. He reports that on average engineers spent between 30% and 95% of their time on writing. He also adds that professional engineers at all levels of experience noticed that they now spent more time on writing. In addition, he points out that many engineers at all levels of experience reflected that when they were undergraduate engineering students, they had not realized that engineers spent so much of their professional life writing (Silyn-Roberts, 1998). According to Silyn-Roberts, writing is one of the most required language skills for engineers. This means that engineering students should also learn to write well in order to work effectively in the future. Similarly, Beer (2005) argues that over 40% of the working time of engineers is spent on writing, and ranks the ability to write as the most important skill in engineers' success. Further, Ostheimer and White (2005), who explored a portfolio assessment for American engineering colleges, cite the results of studies done by the Department of Electronic and Computer Engineering (ECE) at the University of Arizona which showed that engineering firms, as well as ECE graduates, ranked writing as the most important skill in determining engineers' success. However, the studies of Silyn-Roberts and the ECE were conducted in a context where English was used as the native language. Whether the needs of Thai engineers are similar or different still needs further investigation.

Wattanasakulpusakorn (1996) examined the ability of the engineering students at Rajamangala Institute of Technology to use technical English by developing a standardized test to evaluate the students' abilities. The results revealed that the undergraduate engineering students had limited writing ability because 179 engineering students (71.6%) from the total sample of 250 could not pass the writing exam. This study showed that the writing ability of many, if not, most engineering students could not meet the standard, although writing is an important and required language skill in the engineering profession.

In another study conducted in Thailand, Jiranapakul (1996) analyzed the needs among various fields of operational and managerial engineers in order to shed light on the kinds of language skills and contents that were needed most in actual working situations. It was found that reading and listening were highly needed for operational engineers (mean = 2.6), while writing was almost equally needed (mean = 2.5). In addition, listening and writing were needed by managerial engineers (mean = 2.7 and 2.6, respectively). Also, most of the engineers agreed that most Thai universities do not prepare engineering students well enough in both oral and written English. New engineers do not have adequate language ability to be able to perform job-related activities. Moreover, the study also suggested that English core courses should be developed for first- and second- year students to make students more confident. For third- and fourth- year students, English elective courses should be provided. The context should be based on activities in real working situations.

From the work of Jiranapakul and Wattanasakulpusakorn, it can be concluded that writing is an essential language skill for engineering work. Additionally, these writers have shown that Thai engineering students' writing competence does not meet the required standard since most of the subjects of their studies were not able to pass the writing exam (Wattanasakulpusakorn, 1996). It is therefore possible that these engineering students may face problems in their future careers when they have to write. Thus, it is imperative that English writing courses for undergraduate engineering students be developed. Before doing so, a needs analysis of engineering students, professional engineers, and ESP teachers need to be carried out as the first stage of a course design. One of the reasons why the findings of the aforementioned studies could not be used is that they have already been outdated after a decade has passed. Possibly, the needed language skills may have changed due to various factors such as advances in global communication and technological advancement.

To gather more up-to-date data that are more insightful and accurate, the researcher of the present study needs to initially find out what kind of language skills are needed most for engineering work. In 2007, the researcher undertook a preliminary survey on the most required language skill for engineers among 15 engineers from different industrial fields: fuel, cement, automotive parts, construction, and electronics, following the criteria of the Federation of Thai Industries (FTI). These engineers also worked in different areas in Thailand. The survey was done by phone interviews due to

the long distances involved. The results revealed that 80% of the engineers (11 subjects) used writing most in their work (writing e-mails, reports, agendas etc.), while 0.13% of them (two subjects) used both writing and reading equally. Another 0.13% of them (two subjects) used both speaking and writing equally as well. According to the survey results, it can be concluded that these engineers saw writing as the most important language skill in their line of work. In addition, they also mentioned that they were not aware before graduation that they had to spend quite a long time on writing each working day. This is similar to what Silyn-Roberts (1998) and the ECE reported in their studies. Thai engineers who were interviewed in the preliminary survey also pointed out that it was difficult for them to write at the beginning of their career because they were not trained with specific skills that were needed in their line of work such as writing e-mail memos and complaint letters, etc. There were no writing courses related to such contents. As the results of the researcher's survey confirmed the findings reported in studies conducted both in Thailand and abroad, it helps confirm the need to develop an English writing course to serve the needs of undergraduate engineering students at KMUTNB in order to enable them to work more effectively in the future.

Designing a course and a curriculum is an important educational task. It is done before deciding on the appropriate teaching methods. There are various patterns of course or curriculum design such as subject-centered design, learner-centered design, and problem-based design. Choosing an appropriate one depends on the course objectives as explained in the course description. Dhumrong Buasri (2542) claims that teaching and learning will be successful if both students and teachers have suitable guidelines. The guidelines in this case are course outlines. Thus, deciding to use a particular course design pattern is an important step in helping learners to achieve their goals. Possibly, a course can fail if it is designed without an appropriate course design pattern. Selecting an appropriate course design can help teachers narrow the scope, the content, and the sequence of the course. Only after that can a suitable teaching method be selected and adopted.

With respect to the ESP course development under which this present course is included, course designs have been developed for various groups of students in Thailand. For example, Vasavakul (2006) designed a specific speaking course for bank officers. Meksophawannagul and Hirunburana (2005) also developed a course to serve bank officers in the form of web-based e-learning. Supatakulrat and Wasanasomsithi

(2005) developed a course to teach engineers in Saraburi province for 20 sessions with a focus on their workplace contexts, namely in a cement company. In addition, Tubtintong (1994) developed an English course for graduate science and technology students at Chulalongkorn University. These courses were developed based on different approaches or patterns of course design such as the communicative approach, competency-based approach, and context-based approach. This is because each course design approach serves different contexts and purposes of learning and teaching. Thus, it is necessary to find a course design approach which best suit engineering students' contexts and needs.

The Genre Based Approach

In recent years, there have been extensive discussions about using the genre-based approach (GBA) to teach writing. Also, the genre-based approach or genre-based instruction can be an alternative framework for course development, especially for a writing course (Hyland, 2003b). In 1996, Jiranapakul reported that the writing requirements of most of the engineers in Thailand seem similar to the requirement of those in the field of business, including reports, memorandums, minutes, agendas, and business letters, each of which has their own specific writing patterns and linguistic features. It is in this respect that the GBA is worth exploring.

In one of the definitions of the GBA, it refers to teaching students how to use language patterns to accomplish coherent and purposeful prose (Hyland, 2003a). That is, the GBA helps students understand how the target texts are organized and why they are written in the ways they are. Also, the GBA emphasizes the relationship between the text and its context. Thus, it provides systematic explanations of how written or spoken texts are organized in different social and cultural contexts (Kongpetch, 2006). Importantly, its key concept, as well as texts and their rhetorical structure, is understood to have specific social functions, namely the realization of meaning through grammar choices, which can be implemented in English writing lessons designed specially for engineering students. According to the characteristics of the GBA and the writing requirement of engineers, it seems that the GBA is a suitable method in teaching writing that should be employed in this present study.

To be clearer, it is necessary to understand what genre is and what the characteristics of the genre-based approach are.

Many scholars have offered definitions of genre. In the field of literary studies, the term 'genre' has long been used to categorize the different kinds of writing or text types such as novels, short stories, and science fiction (Gee, 1997 cited in Kongpetch, 2007). In the field of ESP work, genre is defined as a class of communicative event, such as a seminar presentation, a university lecture, or an academic essay (Paltridge, 2004). Genre has also been defined in the systematic functional genre view (SFL genre or Sydney school genre). This aspect is proposed by Martin, Christie, and Rothery (2001) as follows:

Genres are referred to as social processes, because members of a culture interact with each other to achieve them; as goal-oriented, because they have evolved to get things done; and as staged, because it usually takes more than one step for participants to achieve their goals. (Martin and Rothery, 1980-1981 cited in Painter, 2001: 167)

According to the aforementioned definition, this means that genre focuses on the way people achieve their social purpose, which they usually do in more way than one.

Bhatia, whose work focuses more on ESP and genre analysis of texts such as sales promotion letters and job application letters, explains genre based on the aspect of ESP genre in the following description:

Taking genre, after Swales (1981, 1990), it is a recognizable communicative event characterized by a set of communicative purpose(s) identified and mutually understood by the members of the professional or academic community in which it regularly occurs. Most often it is highly structured and conventionalized, with constraints on allowable contributions in terms of their intent, positioning, form, and functional value. These constraints, however, are often exploited by the expert members of the discourse community to achieve private intentions within the framework of socially recognized purpose(s).
(Bhatia, 1993a: 134)

For Bhatia, it seems that each genre is a successful achievement of a specific communicative purpose using conventionalized knowledge of linguistic and discursive resources which are imposed by the writer who is a member of the professional or academic community. This present study is going to follow Bhatia's view regarding definition of the ESP genre because the present study focused on an English course for engineering students whose required contents are related to the English for professional purposes area which is under the category of English for Specific Purposes (ESP). Furthermore, the contents of the present course were relevant to the communicative events characterized by a set of communicative purposes, and identified by engineers

who were members of engineering community. Also, the communicative events or the contents of the present course are structured and conventionalized according to the constraints by engineers in the community. Bhatia also offers some suggestions of how to teach using genre analysis by giving explanations and examples of genre-based grammatical explanations in ESP, genre-based language curricula, text-task relationships in English for legal purposes, genre-based ESP materials, and genre analyses and assessments. According to some suggestions from Bhatia, they are suitable to employ to this present course because they can be guidelines on designing materials and activities, designing course, creating teaching procedures, doing genre analysis, and creating assessment criteria.

The characteristic of the GBA is another important concept that needs clarification. GBA refers to teaching learners how to use language patterns to accomplish coherent and purposeful prose. This means that writing does not mean only to write but it refers to writing something to achieve specific purposes, for example, writing to request document or to complain noise pollution (Hyland, 2003a). Also, the GBA emphasizes the relation between text and its context. Thus, it provides a systematic way to understand how written or spoken texts are organized in different social and cultural contexts (Kongpetch, 2006). Importantly, the focal point, which is the notion of text (rhetorical structure) and its specific social function, is applied to writing for specific purposes in specific forms (realization of structures through grammar choices). According to the aforementioned characteristics of GBA, it seems that GBA differs from other EFL approaches in that it takes into account language at the level of whole text and clause, as well as sentence (Derewianka, 1990).

Based on the above characteristics of GBA, what teachers need to do to teach writing with the GBA is to identify the kinds of texts and their components (genre analysis) that students will have to write in their target occupational, academic, or social contexts and to organize their courses to meet such needs. Techniques in genre analysis will be explained in more detail in the literature review section.

There are several reasons that make the GBA a very useful approach to designing a writing course. First of all, the GBA is explicit. This means that the GBA offers writers an explicit understanding of how target texts are structured and why they are written in the ways they are. This idea helps teachers to bridge the gap in students cultural, social, and linguistic background to help them to write effectively English for

English audiences (Hyland, 2007b; Kongpetch, 2007; Hammond and Mackin-Horarick, 1999 cited in Paltridge, 2004; Wennerstrom, 2006).

Secondly, the GBA systematically addresses texts and contexts. That is, a genre orientation involves both discourse and context aspects of language use. These may be neglected when attending only to structure or processes. This reason is important because in order to create a well-formed and effective text, usually students need to know how such texts are organized and which grammar patterns are typically used to express meaning in specific genre. Moreover, learners also need to become aware of the social purposes of text types and situations for language use to be appropriate (Hyland, 2007a; Wennerstrom, 2006; Paltridge, 2004).

Thirdly, the GBA is based on the needs of the writer. This is important because the GBA offers a way to determine the contents and organization of a course based on the students' needs. These needs can be needs in the future after graduation. This means that the GBA may help students to find learning more meaningful and motivating, and to pay more attention to instruction and practice. In doing so, they may become more successful at writing (Hyland, 2007a; Gee, 1997 cited in Paltridge, 2004).

The fourth reason for using the GBA is that it is supportive. This is because the GBA provides support to writers as they gradually develop control of a genre. The GBA is underpinned by Vygotsky's ideas of interactive collaboration between teachers and students which is commonly known as 'scaffolding.' Based on the concept of scaffolding, students gradually move toward their potential level of performance and develop the confidence to do independent writing. Teachers help by guiding students to move step by step (Srirattanakul, 1997; Gee, 1997 cited in Paltridge, 2004; Hyland 2007a).

The fifth reason is the GBA is empowering. This is because GBA helps learners gain admission to particular discourse communities, to operate successfully in them, and to develop an informed creativity in using these discourses (Hyland, 2007a). The study of such target texts enhances learners' abilities to manage the appropriate linguistic and rhetorical tools to gain access to the powerful genres of mainstream culture. It does this by revealing why writers use certain linguistic and rhetorical choices.

The sixth reason is the GBA facilitates critical understanding. Clearly, genre approaches also have the potential to lead students to reflect on and critique the ways that knowledge and information are organized and constructed in written words

(Hammond and Mackin-Horarick, 1997 cited in Paltridge, 2004; Wonnerstrom, 2006; Hyland, 2007a). This is good for them because the GBA sheds light on various methods or strategies people use in order to be successful in their composition of a text.

The seventh reason is the GBA improves students' writing skill. According to Kongpech (2007), knowledge about genre helps EFL students develop their writing skills such as using appropriate generic structure and grammar. In particular, it helps them achieve their communicative purposes more systematically and effectively. This conclusion comes from the results of studies carried out by Dang (2002) and Kongpech (2003) which found that students who studied how to write based on the genre-based approach were able to write texts that resembled successful discussion models of argumentative writing. Their texts showed good control of the generic structure of the discussion, consisting of a thesis statement, arguments, and recommendation. In addition, they were able to effectively use language features (e.g. nouns, verbs, conjunctions, etc.) relevant to the genre.

Finally, the GBA assists in teacher development. That is because when teachers teach through the GBA, they also need to consider how a text actually works to communicate its message. Teachers need to categorize the texts they ask students to write, consider how these texts are similar to each other or different from each other, identify purposes they serve for writers, analyze the forms that structure them, and understand the context they are used in. With all these in mind, teachers can do well in designing activities, materials, and exercises suitable for the students and to provide informed feedback in writing (Hyland, 2007a; Kongpech, 2007).

Not surprisingly, several researchers have attempted to employ and subsequently determine the effectiveness of the GBA with various groups of students and in various contexts. However, work in this area is still rare. As mentioned earlier, the important point in using the GBA is that teachers and students need to learn to analyze text types, that is, analyze genres. Therefore, most of the studies in this area are based on genre analysis, focusing on analyzing different kinds of texts so as to highlight the structures and content organization of various genres. For example, Bhatia (1993a) analyzed job applications composed by South Asians. Nuch-Ngon (1990 cited in Hirunburana, 1996) analyzed sales promotional letters written by Thai employees and discovered the pattern of obligation and option in the business letter. Finally, Flowerdew and Wan (2006) explored the specific discourse community of tax accountants in Hong Kong.

Another aspect of genre analysis research is based on ESP instruction. It is noteworthy that there are only a few studies on this aspect. For instance, Henry and Roseberry (1998) examined how genre-based instruction and materials improved learners' capacity to produce effective tokens of the genre of tourist brochures. Three measures (motivation, move, and texture) were used as the criteria to evaluate students' improvement in achieving the communicative goals of the genre, in generating the allowable move structure, and in text texture. The study was undertaken with two groups of students: genre and non-genre groups. It was found that the GBA helped learners with better texture in their writing and in achieving their communicative goals. However, there was no statistically significant improvement in the move structure of their texts. Unfortunately, the researcher did not explain what could be the reasons for this. Moreover, it was also revealed that students enjoyed writing with the GBA and as such it can be said that it helped to increase the motivation to write.

A more recent study was done by Pang (2002). A writing-strategy questionnaire and an assessment form were employed to study the impact of genre-based teaching on undergraduate students' writing of film reviews. Pang collected information on two issues, namely, context awareness and textual analysis. The results showed that the contextual awareness building and textual analysis activities in class yielded almost equal results in the quality of the students' writings.

These studies all highlight how learners at different levels respond to the ESP genre-based approach. However, the GBA is also useful for general English writing courses. Udomyamokkul (2004) investigated whether the use of the GBA, including explicit instruction of rhetorical patterns of English argument discourse was effective in helping students gain control of academic argumentative genre in comparison with the effects of controlled treatment, which focuses more on teaching of the writing process. His subjects were 55 non-randomized L1-Thai undergraduates enrolled in an Argumentation Academic Writing course at Suranaree University of Technology. The results showed that the group which was trained with the genre-based approach outperformed the control group with significantly higher gain scores awarded on the first draft development and organization of claims. However, given the opportunities for multiple drafting, revising, and editing, both groups were equivalent in their final-draft performance. It was also found that the GBA had positive effects on the development of the students' attitudes toward English writing.

Kongpech (2006) also adopted the GBA in an exposition writing class at Khon Kaen University. Her research sheds light on the impact of the GBA on students' writing and the implications of applying it in other Thai educational contexts. Based on the results of her study, she concluded that the GBA has a significant impact on students' writing. This is because analyses of students' final drafts showed that their control of generic structure conformed to that which is typical of the exposition (thesis statement, preview, argument, and conclusion). Moreover, it was found that writing through the GBA provided positive feedback since students felt their writing experience was worthwhile and as a result they developed a healthy attitude toward the program. In brief, the program enabled them to learn not only how to write but also to write better, including to like writing more as well.

From the previously discussed studies of the GBA, it can be concluded that the GBA is very useful since it helps students learn to write both in ESP courses and general English courses. Students are successful in learning to write and enjoy writing through the GBA. This confirms that the GBA is a valuable method to teach writing.

In the Thai context, it seems that the GBA is a suitable teaching approach for teaching writing to most Thai learners who use English as a foreign language. As English is not their first or second language, most of them study English only three hours a week and have few opportunities to use English after class, especially learners who live in rural areas where it is difficult to access to English. In addition, English is taught as a separate subject rather than being used as the medium of communication. That is, although most Thai learners have studied English for about 12 years as a compulsory course in school, their English language ability still does not compare well with other Asian students. Komin (1998) claims that the English proficiency of Thai students, even at the tertiary level, is always less than satisfactory. Similarly, Prapphal (2001) states that the majority of the students who take Chulalongkorn University's English Proficiency Test (CU-TEP) cannot meet the standard required to study at the graduate level at Chulalongkorn University. Thus, it can be inferred that most Thai learners are beginning or intermediate language learners who are likely to have difficulties in writing English. These difficulties include choosing appropriate vocabulary, organizing the structure, and using correct grammar (Kongpech, 2006).

Many scholars argue that teaching writing through the GBA fits the beginner and intermediate language learners more than advanced learners since learning to write

based on the GBA makes beginner and intermediate learners more confident (Kay and Dudley Evan, 1998; Kim, 2007). This is because they can use the model texts as reference for any kind of genre. Moreover, many scholars mention that one of the problems in the writing of students from ESL and EFL countries is inadequate understanding of how texts are organized (Hyland, 1990; Mckay, 1993 cited in Kongpech, 2006; Kim, 2007). It seems that the GBA can fill this gap since one important principle of teaching writing through the GBA is emphasizing the organization of genres. Also, as a result of emphasis the lessons on the social context and the linguistic features in each written text learners become aware of why texts are composed the way they are. This helps learners use appropriate language in terms of grammar, structures, and social contexts, which leads to successful communication. Finally, learning writing through the GBA fosters learners' critical skills since the learners are asked to analyze the text's organization and the writer's composition strategies. Critical skills are important since they have been identified as one of the educational goals in the foreign language learning strand in Thailand's fundamental educational curriculum (Wongchalard, 2004). Critical skills are important because they enable learners to analyze the cause of problems and find effective solutions (Wongchareunsuk, 2001). It can therefore be said that employing the GBA in the Thai context is an effective method to teach writing since the characteristics of the GBA can fill the existing gaps in teaching writing in the Thai context. It enhances critical skills, promotes more confidence in writing, and helps learners to use appropriate language, as well as including understanding the organization of texts.

Despite the fact that there are several advantages to using the GBA in writing instruction, there are a few drawbacks to the GBA, as highlighted by Widdowson (1983) and Sawyer and Watson (1987 cited in Hiranburana, 1996), for instance. The first concern is that genre analysis focuses only on the product. Possibly, students will only learn to remember the letter patterns, for example, and ignore the real communication procedures behind them. In other words, with the GBA, learners are not empowered to create their own writing using language suitable to the reader outside class but are taught to copy the writing patterns they have learned and memorized, Widdowson (1983) points out:

The danger of such analysis is that in revealing typical textualisations, it might lead us to suppose that form-function correlations are fixed and can be learned as formulae, and so to minimize the importance of the procedural aspect of language use and learning.

(Widdowson, 1983: 102)

Besides, Emilia (2005) and Raimes (1991) expressed a similar concern about the danger of formulaic patterns. It is also possible that the GBA may bring about a constriction of students' learning and thinking process (Sawyer & Watson, 1987 cited in Hiranburana, 1996). To cope with this drawback, Hyland (2002) suggests that instead of modeling the practices of experts, it would be more beneficial to offer students a guiding framework for producing texts by raising their awareness of the connection among forms, purposes, and participants' roles in specific social contexts. In contrast, Udomyamokkul (2004) and Kay and Dudley-Evans (1998) argue that it might not be easy for students to avoid excessive repetition of key lexical phrases or sentences presented in the sample texts because of lack of knowledge and skills of using the language to talk about texts. Students have to understand that the model texts are just possible patterns that make up the genre, not set patterns of form, and students should be exposed to more varied patterns of language input. When they understand this, then they should be able to create their own writing based on the context, not just copy the writing model. For them, despite the drawbacks, genre provides a useful framework for language learning in the classroom.

Another drawback of the GBA comes from its own theory which focuses on the known purposes of social situations or control by social norms. In fact, authentic communication interactants do not rely only on prior knowledge or conventions, but can also draw on negotiation of meanings with others, overtly and covertly, to attain their goals. This means that normally communication is not strict but dynamic in nature (Breen et al, 1980 cited in Hiranburana, 1996). It seems that the GBA does not touch on this procedural or interactive aspect of communication which is the most important aspect of language use (Hiranburana, 1996). Thus, students may not understand clearly how to communicate, and therefore the goal of communication may not be sufficiently achieved.

Due to these drawbacks, teachers must be careful when designing tasks, materials, and activities based on the GBA. Also, flexibility is required. This is to minimize the weaknesses of the GBA. For example, teachers should provide two-way

communication as writing prompts to help students see the clear target situations (e.g. communicative goals, the audience's socio-cultural identity and needs, etc.). This is because students would be able to see the dynamic aspect of discourse processing and what elements should be taken into consideration in order to be successful in communication. In addition, designing activities or exercises that provide opportunities for students to think, plan, and write by themselves are important since these activities help students do not only stick to the writing patterns.

In brief, it is clear that designing an English writing course for engineering students is necessary, and the GBA offers a suitable framework for the proposed course because it has advantages in terms of effective writing instruction. Furthermore, there is ample research confirming that the GBA is at least workable, if not ideal, for ESP writing courses. Research has also revealed that students enjoy writing through the GBA. They learn critical skills, gain motivation to write, and have positive feedback through studying with the GBA. Thus, developing an English writing course for undergraduate engineering students using the GBA as the underlying principle may be a valuable and useful conduct. Of course, the effectiveness of the course will be determined through various instruments such as the results of the achievement tests and the findings from attitude questionnaires.

This present course is different from other courses previously designed in other studies for two reasons. First of all, the course is designed based on the concept of the ESP genre, while most of the courses in other studies were designed based on the SFL genre (Sydney school genre). Secondly, in the Thai context, most of the GBA English writing courses are designed for the general academic English writing courses, while this present course is developed for engineering students as an English writing for specific purposes course.

1.3 Research questions

The study aimed to answer the following research questions:

1. What English writing skills are needed by operational and managerial engineers?
2. How can an English writing course based on the GBA be developed to enhance the English writing achievement of undergraduate engineering students?
3. What is the effectiveness of the English writing course for engineers developed based on the GBA?
4. What are the attitudes of the students toward an English writing course developed based on the GBA?

1.4 Objectives of the study

The objectives of the study are as follows:

1. To investigate the needs of English writing skills of operational and managerial engineers
2. To develop an English writing course based on the GBA for engineering students to enhance English writing achievement of undergraduate engineering students
3. To evaluate the effectiveness of the English writing course developed based on the GBA
4. To explore the engineering students' attitudes toward the English writing course developed based on the GBA

1.5 Statements of the hypothesis

Based on an extensive review of literature (Henry and Roseberry, 1998; Pang, 2002; Udomyamokkul, 2004; Emilia, 2005 and Kongpech, 2007, to name just a few), it can be concluded that teaching English based on the genre-based approach helps increase learning achievement. Also, the learners have positive attitudes toward the writing course developed based on the genre-based approach. Thus, the hypotheses of this study are as follows:

1. The writing achievement scores in the post-test of the engineering students who are taught with the GBA course will be significantly higher than those obtained in the pre-test.

2. The results of the end-of-the-course questionnaire survey will be greater than 3.50 which indicate positive attitudes of the students toward the overall course at the end of the course implementation.

1.6 Scope of the study

This present study was quasi-experimental research with the one-group pre-test and post-test design. It aimed at investigating the effectiveness of an English writing course for engineers developed based on the GBA. The study samples were composed of 25 undergraduate engineering students who have passed the compulsory fundamental courses, namely English I and English II, and were enrolled in the English for Engineers course in the first semester of the academic year 2009 at KMUTNB. Data from the main study were gathered by using the pre-test and post-test, a semi-structured interview protocol, and student logs. Descriptive statistics of percentage, mean, and standard deviation, as well as dependent t-test, were used to analyze quantitative data, while content analysis and categorization were used to analyze qualitative data.

1.7 Limitation of study

The present study employed a one-group pre-test post-test design, which is considered a rather weak because uncontrolled-for threats to internal validity exist and may explain the finding of the post-test, including history, instrument decay, data collector bias, attitudes of subjects, etc. In addition, the subjects of the study consisted of an intact group of 25 KMUTNB engineering students, so it was considered a rather small sample size.

1.8 Definition of terms

Genres

Bhatia (1993a) defines the term “genre” as recognizable communicative events characterized by a set of communicative purpose identified and mutually understood by the members of the professional or academic community in which a genre regularly occurs. Most often, genres are highly structured and conventionalized with constraints on allowable contributions in terms of their intent, positioning, form, and functional value. These constraints, however, are often exploited by the expert members of the

discourse community to achieve private intentions within the framework of socially recognized purpose(s). In this study, genre is seen as a recognizable and recurring written pattern that meets the various communication needs and purposes of members of the engineering community. Its conventional linguistic and rhetorical features reflect the functions, purposes, contexts, and sociolinguistic knowledge of the engineering community that produce them. These contextual and cultural constraints are recognized by members of the engineering community.

Genre-based approach

A Genre-based approach (GBA) is a method to teach writing. It is concerned with what learners do when they write as well as teaching learners how to use language patterns to compose coherent, purposeful prose (Hyland, 2003a). According to Kay and Dudley-Evans (1998), teaching through the GBA emphasizes three parts. First of all, the emphasis is on making the learners aware of the structure and purpose of texts belonging to different genres, the linguistic features, appropriate sociolinguistic knowledge according to the relationship between readers and writers, and empowering students in writing with using strategies necessary to replicate these linguistic features in their own production. Secondly, a genre based approach requires using genre analysis results and giving prominence to genres in teaching/learning. In addition, understanding texts not only as linguistic features but also as socially meaningful constructs and balancing the mastery of textual forms with the understanding of the process by which they are composed are fundamental to the genre based approach. In this study, the genre based approach is defined as a method to teach writing; it focuses on making students aware of the purposes of written texts, linguistic features, relationship between the linguistic features and the purpose of each move, organization of genres, sociolinguistic knowledge, and writing strategies. Moreover, the content of a genre-based course is derived from the results of the genre analysis of a specific set of writing.

English writing course developed based on the genre-based approach

The English writing course in this study is a course whose teaching approach is the genre-based approach. In this study, the course is offered by KMUTNB as an elective course. It consists of about 17 sessions in a three-credit elective course with three hours per session. Twelve out of 17 sessions were developed based on the genre-based approach. The lessons were created based on the teaching and learning cycle

(Feez, 2002) and the genre analysis concept (Swales, 1991; Bhatia, 1993a), while the materials and exercises were developed based on actual working situations of engineers and samples of their written work which were received from the stage of needs analysis. The content of the course covered three types of genres: request e-mails, enquiry e-mails, and reports. The content was derived from the needs analysis results. In addition, appropriateness according to the social contexts of engineers was also required in the course. This was because the results from the needs analysis showed that engineers paid attention to this when they were writing to readers. Therefore, various social contexts and situations were provided the written assignments. In the remaining five sessions of the course, the first two weeks were used for introduction to the course and pre-test, where as the other three weeks were reserved for the mid-term exam, post-test, and report writing test.

English writing skills

English writing skills refer to knowledge and ability to write any kind of written text in English consisting of command of English grammar, strategic competence, sociolinguistic knowledge, and discourse competence (Rebecca and Oxford, 1992). To be more exact, in this study, it refers to the required genres for working situations of operational and managerial engineers (target language use and language use tasks), knowledge and ability necessary to produce writing in various genres based on the target language use and language use tasks. This includes the ability to write required genres with appropriate grammar, pattern (organization of genres), linguistic features, sociolinguistic knowledge, etc. English writing skills data were derived from the needs analysis. Details of the English writing skills are essential because they were utilized as content, activities, and exercises in the course lessons.

Writing achievement

Writing achievement refers to writing ability of engineering students after attending the English writing courses. To be more exact, in this study, writing achievement refers to the engineering students' ability to write required genres appropriately in engineering social contexts after attending the course as specified in the objectives of the course. It was measured by comparing a pre-test score and a post-test score after the test. T-test was employed in order to evaluate the significance of the differences between the pre-test and post-test scores, while effect size was utilized to determine whether the magnitude of the difference was large or medium.

Engineering students

Engineering students were students who were enrolled in the English for Engineers course at KMUTNB. The students consisted of both males and females and came from different majors, namely, mechanical, chemical, industrial, production, civil, and electrical engineering departments. They were second, third, fourth, fifth, and sixth-year students who had already passed the fundamental level English courses, English I and II, which focused on integrated language skills. Their level of English proficiency on average was pre-intermediate.

Engineers

Engineers are persons trained in any branch of the profession of engineering (Collins English Dictionary, 2003). Engineering is the profession of applying scientific principles to the design, construct, and maintenance of engines, cars, machines, buildings, bridges, roads, electrical machines and communication systems, chemical plants and machinery, aircraft, etc. (Collins English Dictionary, 2003). In this study, two groups of engineers were the subjects in the needs analysis phase, namely, operational and managerial engineers.

Operational engineers are engineers who have graduated with a B.Sc. in Engineering from the Faculty of Engineering at a Thai or foreign tertiary institution. They can work in any field of engineering such as mechanical and industrial engineers, but they must be working for at least one year to be included in the category. One year of experience is considered sufficient for an engineer to understand the nature of their work and to have gained some insights into the types of communication required in their profession. They may work in any department but not in administrative positions.

Managerial engineers are senior engineers who supervise operational engineers. They are engineers who have graduated with at least a B.Sc. in Engineering from the Faculty of Engineering of a Thai or foreign tertiary institution. They have been in the profession for at least five years. This is because five years of experience is long enough for them to understand and use of English in the work of engineer such as in e-mails, in reports, and in meetings. Their responsibility are mainly for planning and managing the organization's operations. Moreover, five years is also long enough to move up from the operational position. What makes managerial engineers different from operational engineers is that they work as the supervisors of operational engineers. They therefore have a clear understanding of the writing skills they want from

operational engineers and the writing problems operational engineers may have. Moreover, their longer working experience means that they should be able to explain the language forms, situations, and writing organization they normally use in writing.

Effectiveness of the course

Effectiveness of the course is characteristics of the course that achieve the intention in designing it (Graves, 2000). How effective the course is can be measured by evaluation and the evaluation can be both formative and summative (Brown, 1995). In this study, to determine the effectiveness of the piloted lesson, an Effectiveness Index (EI) was required. The EI was set based on the formative and summative scores. Scores required to show that the students had passed the formative and summative tests were set at 70/60. As for the present course, the effectiveness of the course referred to the quality of the present course that met the objectives in designing it. The effectiveness was determined by three criteria. First of all, the post-test score must be significantly higher than the pre-test score by comparing the pre-test and post-test score using t-test ($p < 0.05$). The value of effect size must also be calculated, and the magnitude of the effect was expected to be at least $= 0.5$ which could be accepted as it indicated a medium effect size. Secondly, the students who attended the course had positive attitudes toward the course. This could be assessed by analyzing the attitude questionnaires, student logs, and student interviews. Finally, students who attended the course should receive the gain score higher than 60%, which meant that they passed the course.

1.9 Significance of the study

It is anticipated that the study's findings will be useful in the following ways:

1. The insights into the needs of English writing skills for professional engineers can be used as a basis to design other English writing course for engineering students based on the GBA.
2. Teachers, language departments, and the university will have a course that more directly serves the needs of engineering students and employers.
3. The developed course can be used as a guideline for developing other courses based on the GBA.
4. Students will have a useful writing course that directly equips them with the language skills necessary for their future careers.

CHAPTER II

LITERATURE REVIEW

In order to develop an English course based on the Genre-Based Approach (GBA) principles for engineering students, a review of the literature was conducted consisting of the concepts of English for Specific Purposes (ESP), needs analysis, teaching writing approaches, the Genre-Based Approach (GBA), genre analysis, and course evaluation.

2.1 English for Specific Purposes (ESP)

In the global village, English has become the *lingua franca* of business and international communication. In order to gain access to much of the world's information and knowledge, one must use English. For this reason, it is necessary for educators and scholars to try to find effective English teaching methods, and this also has led to the development of English Language Teaching (ELT). One of the results of this development is English for Specific Purposes (ESP). Since the term first emerged in the 1960s, ESP has consistently been fostered in both theory development and innovative practice in teaching English as a second/foreign language (Hyland, 2002). Hutchinson and Water (1987) and Deekawong (2000) add that the growth of ESP continues as a result of three important factors: first, the increase in demand for English to suit particular needs; second, the developments in the field of linguistics and educational psychology; and finally, the transmission of science and technology information. Many writers have attempted to define the term ESP, and following are some illustrations.

2.1.1 Definition of ESP

Stevens (1982) characterizes ESP as English language instruction that is devised to meet learners' particular needs. Simply put, themes or topics of the instruction relate to an occupation or area of study. Appropriate language contents following the needs of learners are required.

Robinson (1980) also proposes a similar definition. An ESP course is purposeful and is aimed at the successful performance of occupational skills. This should be based on the vigorous needs analysis of learners and should be tailor-made to serve the identified needs.

Dudley-Evans and St. John (1998: 4-5) define ESP in a narrower aspect, focusing more on the teaching aspect. They define ESP according to its absolute and variable characteristics as follows:

Absolute characteristics:

1. ESP must be designed to meet the specific needs of the learners;
2. ESP's emphasis is on the use of the underlying methodology and activities of the disciplines it serves; and,
3. ESP is focused on the language, skills, discourse, and genres appropriate to these activities.

Variable characteristics:

1. ESP may be related to the design of specific disciplines;
2. ESP may use, in a specific teaching situation, a different methodology from that of general English;
3. ESP is likely to be designed for adult learners, either at a tertiary level institution or in a professional work situation. It could, however, be used for learners at the secondary school level;
4. ESP is generally designed for intermediate or advanced students.

Another aspect of ESP is emphasized by Hutchinson and Water (1987). They see ESP as a branch of EFL/ESL. They conclude that ESP should properly be seen not as any particular language product, but as an approach to language teaching which is directed by specific and apparent reasons for learning.

Therefore, it can be concluded that there are two similar characteristics that all the ESP definitions share; namely, learners and needs. Simply put, learners and needs are outstanding vital components of ESP. Based on the notion that learners' needs are the heart of ESP, teaching methodologies, activities, materials, and other related elements need to be designed specifically and appropriately to serve all those needs.

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2.1.2 Types of ESP

According to Robinson (1991), ESP can be divided into various subgroups.

This can be seen in the following figures.

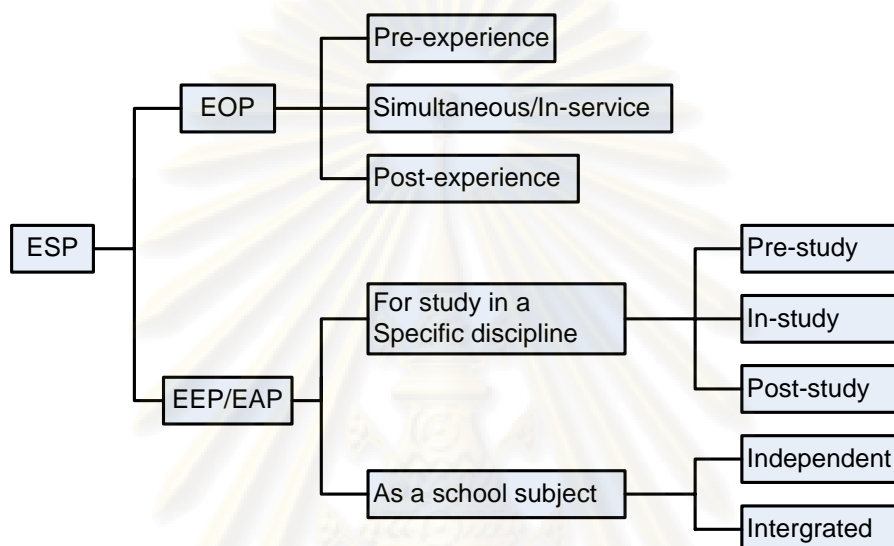


Figure 2.1: ESP classification (Robinson, 1991: 3)

The classification of ESP can also be defined based on types of professional and academic areas, which can be seen in Figure 2.2.

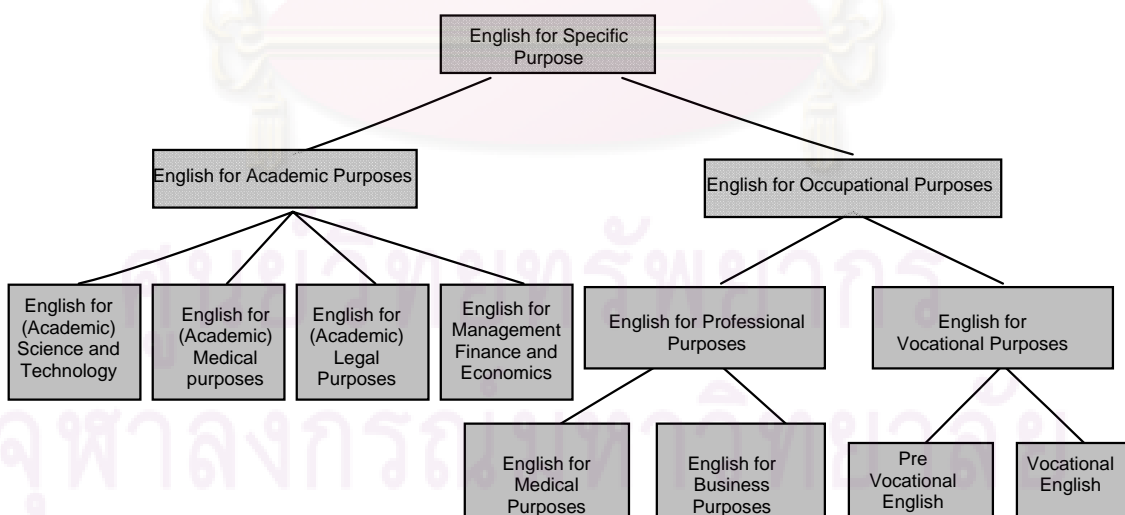


Figure 2.2: ESP classification by professional areas (Dudley-Evans and St. John, 1998: 4)

According to the two figures above, it can be stated that ESP consists of two main subgroups: English for Academic Purposes (EAP) and English for Occupational Purposes (EOP). Although ESP can be divided into these two groups, a distinct line between them is not clear-cut. This is because working and studying can occur simultaneously. Moreover, it is possible that language learned for immediate use in a study environment will be used later when the students begin to work (Flowerdew and Peacock, 2001; Hutchinson and Walter, 1987).

The term EOP refers to English that is not for academic purposes; it involves professional purposes such as in administration, medicine, law, and business; and vocational purposes for non-professionals in work or pre-work situations (Dudley-Evans and St. John, 1998). However, EOP does not focus only on a specific job discipline, but emphasizes more general basics required by students in order to prepare them for the workforce (Stapa and Jais, 2005). This is similar to the EOP definition defined by Flowerdew and Peacock (2001) in that a great deal of work conducted in the academic area is in fact preparation for the professional occupations that learners are likely to go into when they graduate and might therefore be classified as EOP. This definition of the EOP is also similar to a type of EOP, pre-experience, classified by Robinson (Robinson, 1991); see figure 1. In addition, EOP can be defined as “the portion of the curriculum which prepares students for gainful employment in occupation ranging from low skill to sophisticated job in technical field” (Anthony, 1997 cited in Stapa and Jais, 2005:2). Most EOP classes will usually expose students to sufficient training in the language skills of reading, writing, speaking, and listening (Spada and Jais, 2005).

Another term referring to EOP is English for Academic Purposes (EAP), which is a part of ESP as well. EAP can be defined as any English teaching related to a study purpose. Dominguez and Rokowski (2002) point out that EAP refers to teaching English for study in universities as well as at the post-secondary or even secondary level as a school subject. In addition, Robinson (1991) and Kennedy and Bolitho (1985) contend that EAP encompasses academic study needs.

Regarding the English writing instruction under the ESP concept, Stapa and Jais (2005) claim that an EOP writing course is more concerned with content and format, while an EAP writing course focuses more on writing techniques such as process and

development of ideas and logic, including writing ranging from sentences to short paragraphs to essays to even research papers. Additionally, in an EOP context, emphasizing the differences in writing processes and text structures is vital so as to match the requirements of workplace skills. According to the definition of both EAP and EOP, the appropriate term to call this English writing course is an EAP/EOP course (Belcher, 2004) since the course concerns the target context and format that match workplace skills. In addition, the course is planned for classes at the university level.

In conclusion, ESP is designed to meet the particular needs of learners. It can be divided into two main parts: EAP and EOP. This study combines the characteristics of both EAP and EOP based on the belief that in doing so, it will lead to an appropriate English writing course for students. The course pays attention to training and familiarizing students with structures, contexts, and contents of the workplace that match the needs of the learners for their future career.

2.1.3 ESP course design

Designing a course is a fundamental educational activity. It is a matter of asking the right questions in order to provide a reasonable basis for course design, which consists of syllabus design, materials writing, classroom teaching, and evaluation.

ESP was developed as a major reform in English teaching. It contrasts with general English teaching in terms of syllabus design and material production (Zhang, 2007). This can be seen from Munby's (1978) definition of ESP courses. These ESP courses are defined as those where the syllabi and materials are imposed in all essentials by the analysis of the communication needs of the learner rather than by non-learner-centered needs, such as the teacher's predetermined preferences for general English.

As for ESP course design, Hutchinson and Waters (1987) mention three factors such design: needs analysis, teaching methodology, and language description. Based on the needs analysis, the nature of particular targets and learning situations is what the designers need to know, while the results of the language description become the syllabus of the course.

Hutchinson and Waters (1987) also propose three course design approaches: language-centered, skills-centered, and learning-centered approaches, which focus on the learners at the different stages of the ESP course design. In addition, Hutchinson and Waters also reveal that these three approaches share the same course design

processes, which consist of needs analysis (identifying and analyzing target and learning situations), syllabus writing, materials writing, teaching activities, and achievement evaluation.

There are educators that suggest information about ESP course characteristics that course designers should focus on. For example, for ESP course design, it is not necessary to include special language or content. What is more important are the activities that students engage in, and these activities are guided by the needs analysis results (Robinson, 1991). Munby (1978) also states that ESP courses are those where the syllabus and materials are imposed by the prior analysis of the communication needs of the learners. In addition, Gatehouse (2001) explains further characteristics of ESP course design that involve authentic materials (both modified or unmodified versions), purpose-related orientation (simulation of communication tasks required of the target setting), and self-directed learning (having freedom to decide when, what, and how they will study and teach how to use learning strategies). Carter (1983) suggests that teaching learning strategies as part of the course are necessary to help learners to be self-directed. In addition, another concept concerning ESP course design is called the parameter of course design proposed by Dudley-Evans and St. John in 1998. In order to develop an ESP course, the course designer should answer the following questions clearly:

- Should the course be intensive or extensive?
- Should the learners' performance be assessed or non-assessed?
- Should the course deal with immediate needs or with delayed needs?
- Should the role of the teacher be that of the provider of knowledge and activities, or should it be that of a facilitator of activities arising from learners' expressed wants?
- Should a course have a broad or narrow focus?
- Should the course be pre-study or pre-experience or run parallel with the study or experience?
- Should the material be common-core or specific to learners' study or work?
- Should the group taking the course be homogeneous or should it be heterogeneous?
- Should the course design be worked out by the language teacher after consultation with the learners and the institution, or should it be subject to a process of negotiation with the learners?

Answering these questions will help course designers develop an effective ESP course to meet the needs of the learners, stakeholders, and other related parties. Moreover, designing a course also depends upon the real environment of learning and teaching.

Another point that the course developer should emphasize relates to the key issues in ESP curriculum design proposed by Gatehouse (2001). The details are as follows:

1. Abilities required for successful communication in occupational settings

These abilities encompass the ability to use the particular jargon characteristic of that specific occupational context, ability to use a more generalized set of academic skills, such as responding to memoranda, and finally the ability to use the language of everyday informal language to communicate effectively. What the ESP developer needs to do is to ensure that all three of these abilities are integrated into the curriculum.

2. Content language acquisition versus general language acquisition

The task for the ESP developer is to plan how to separate time for both content knowledge and general language learning. The teacher should not teach them separately.

3. Heterogeneous learner group versus homogeneous learner group

What the ESP developer should do is to establish a strict, minimum entrance standard in terms of language level. This is because students may encounter language problems together with problems of content knowledge and this can overwhelm their learning.

4. Materials development

According to Gatehouse (2001), it is possible to compile materials from various resources; it is not necessary to emphasize only ESP materials. Some are borrowed, and others are designed specifically. They can be a combination of authentic materials, ESL materials, ESP materials, and teacher-generated materials.

Furthermore, Offord-Gray and Aldred (1998) propose a principled approach to ESP course design. The principles are developed based on the results of the needs analysis conducted by Nunan and Forey (1996), entitled “*Communication in the Professional Workplace.*” The principles are listed as follows:

1. Teaching and learning materials should reflect needs as perceived by the discourse community.
2. Teaching and learning materials need to be based on knowledge of what is regarded as effective written communication in the discourse community.
3. Teaching and learning materials need to reflect the communicative purposes for which the discourse community produces written texts.
4. The forms and functions that characterize the internal linguistic structure of the texts need to be made explicit in the course materials.
5. The course materials need to go beyond making the language explicit but provide a means by which learners can engage in a process of reconstruction of meaning.
6. Teaching and learning materials need to engage learners in a process of developing skills for evaluating their own writing and becoming independent learners in the workplace.
7. The methodology and content of the teaching and learning materials need to be sensitive to learners' previous learning experience.

It can be concluded that the results of a needs analysis lead to developing materials and activities that reflect the communicative purposes of the discourse community. Also, the focus of the course is on the explicit linguistic structure of the texts and materials. It is important to engage learners in the process of the reconstruction of learning and in becoming independent learners. However, learners' previous learning experience is what the course developer should keep in mind as well, since their language ability may not be sufficient to understand the content and materials of the course.

Studies relating to ESP have been undertaken in various aspects. For instance, Kaur (2007) has examined the English language needs of 15 Malay administrative staff members in two departments at the University Sains Malaysia in an ESP course using a semi-structured interview. Volunteer ESP students were also interviewed. The aim of the interview was to investigate the communicative skills that the staff frequently used in their workplace, while the learners were asked to express their views about the type of ESP course they were keen to follow. The findings from the needs analysis led to designing a six-week course, entitled "Conversation English ESP Course."

In the Thai context, Sunthornwattanasiri (2000) has developed an English writing course called English Writing for Business based on outcome-based education principles for 36 Business English major students at Rajamangala Institute of Technology. The content of the course focused not only on the business area, but also on high-order outcomes; namely, critical thinking, language communication, cooperative working, self learning, and responsibilities. The results showed that there was a significant increase in the writing ability of the subjects. In addition, the students' scores in communicative ability, self-learning, and critical thinking after the course were higher at the significance level of .05.

Vasavakul (2006) has designed and evaluated a methodology for developing an English course for business oral communication of customer service staff in international banks by translating the actual learners' needs into course development. It was found that learners gained higher levels of English oral proficiency, showed increased use of observed banking vocabulary in context, and had increased confidence in speaking English at a significance level of 0.05.

In conclusion, ESP course design has its own characteristics which course designers should be aware of. It is worth noting that the process of ESP course design focuses more on the needs analysis process, especially analyzing the target situation, authentic materials, purpose-related orientation, and self-directed learning. Critical issues should also be kept in mind, such as immediate or delayed needs, pre-study or pre-experience or run parallel course, and strict entrance standards regarding student language ability. In addition, suggestions and comments from experts in certain professions are also important in order to ensure that the course has appropriate content and materials. It can be said that ESP course design is needed since it leads to designing courses that serve the needs of professionals, including students that are studying courses relevant to such professional areas as tourism, nursing, and vocational field (Kaur, 2007; Vasavakul, 2006; and Sunthornwanasiri, 2000).

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2.2 Needs analysis

It is imperative to discuss the term “need” before discussing further the needs analysis because this term is confusing (Dudley-Evans and St. John, 1998; Richterich, 1983 cited in West, 1994) and also relates to the needs analysis concept. This is because its meaning varies from educator to educator. It depends on the factors and perspectives those educators would like to study. Robinson (1991), for example, reviewed various types of needs and their definitions. For instance, needs refer to students’ studies or job requirements; that is, what they must be able to do at the end of their language course. This is what people call a goal-oriented definition of needs. Needs can also mean what the learner needs to do to acquire the language. This can be called a process-oriented need and relates to transitional behavior, the medium of learning (Rungnirundorn and Rongsa-ard, 2005). Two other types of need widely recognized are target needs and learning needs (Water and Hutchinson, 1987). The details of these two types of the needs will be explained later in this section. Since there are various types of needs, the researchers need to select carefully what types of needs they require so that they can design a needs analysis plan properly.

There are two similar characteristics which all ESP definitions share; namely, learners and needs. Simply put, learners and needs are outstanding vital components of ESP. Based on the notion that learners’ needs are at the heart of ESP, teaching methodologies, activities, materials, and other related elements are needed to be designed appropriately to serve all those needs.

Needs analysis is not a difficult process, yet it is quite complicated. Therefore, in order to obtain sufficient required information for any particular teaching purposes, it is necessary to plan the needs analysis carefully. The terms and concepts of the needs analysis vary from researcher to researcher.

In general, needs analysis can be defined as identifying “what learners will be required to do with the foreign language in the target situation, and how learners might best master the target language during the period of training” (West, 1994: 2).

Hutchinson and Waters (1987) provide more details on the term, stating that a needs analysis is the process of determining the needs for which learners or groups of learners require a language, and arranging the needs according to priorities. In addition, needs analysis can be used as a basis for setting the goals and objectives of the course.

The term “needs analysis” is part of curriculum development and is normally required before a syllabus is designed for language teaching.

Graves (2000) offers a definition of needs analysis which focuses on process. According to Grave, needs analysis is a systematic and ongoing process of collecting information about the students’ needs and preferences, information interpretation, and designing the course based on the results of the needs analysis. According to Graves’ definition, the needs analysis can be conducted not only before starting the course, but it can be undertaken during the course as well. This is because a needs analysis can be used with different aims. It is possible that teachers may need to know, for example, the needs of students before developing the course in order to develop the course to serve their lacks, necessities, and wants. Also, teachers may require the results of the needs analysis in the middle of the course so as to determine the attitude of students toward the course and to find out what students need more so that adjustment of the remaining of the course can be appropriately done.

A needs analysis in language teaching can be used for a number of purposes, for example, to examine what language skills a learner needs in order to perform a particular role, such as a tour guide or a public relations officer, to help determine if an existing course adequately addresses the needs of potential students, and to collect information about a particular problem learners are experiencing (Richards, 2001). It depends on the teachers to choose at least one of these purposes to fulfill their own goals.

Regarding ESP courses, an important principle of ESP approaches to language teaching focuses on learners’ needs rather than on a syllabus reflecting the structure of general English. Dudley-Evans and St. John (1998) emphasize that a needs analysis is the cornerstone of ESP, as it leads to a very focused course. The ESP approach normally starts with an analysis of learners’ needs rather than an analysis of the language (Richards, 2001). This is because advocates of ESP courses believe that different types of students have different language needs and what they are taught should focus on what they need. More importantly, Robinson (1980) points out that the needs of ESP learners should be described in terms of performance (specific tasks) or what learners will be able to do with the language at the end of the course of study. In contrast, in a general English course, the goal is usually an overall mastery of the

language that can be tested on a global language test (Richards, 2001). Thus, as this present course is an ESP course, it is imperative to conduct a needs analysis in order to determine the specific tasks students need to perform with the language.

In order to determine the learners' needs as the starting point for developing an ESP course, a number of models have been suggested. In Munby (1978), the theoretical basic of his model is on the nature of communicative competence. This model emphasizes the functions and situations of communication as a fundamental factor of language teaching (Dudley-Evans and St. John, 1998), and it encompasses two dimensions of needs analysis: the procedures used to specify the target-level communicative competence of students and procedures for turning the information to generate an ESP syllabus (Munby, 1978; Richards, 2001). Although Munby's model is quite famous and widely recognized, it is not without limitations. Four issues of the constraint are pointed out by West (1994). First of all, the model is complex, so it takes time and it is difficult to handle. Moreover, it lacks real learner-centeredness, so it seems that the model collects data *about* the learners rather than *from* the learners. Thirdly, Munby sees some constraints (e.g. sociopolitical and psycho-pedagogic factors) as a matter that should be considered after the needs analysis procedure is completed. Actually, these constraints should be emphasized at the beginning of the needs analysis process as well as the target needs. This is because those factors also influence the course design process. They should be surveyed together with the target analysis. However, it is worth noting that Munby fails to provide a procedure for converting the learner profiles into a language syllabus, which is necessary. If the language syllabus is not clear, how will the course be developed? It should be noted that the ESP language functions used in the language syllabus are different from those derived from general discourse (Candlin, 1976 cited in West, 1994).

Another widely accepted model of the needs analysis belongs to Hutchinson and Water (1987). Their framework focuses on target needs (Target Situation Analysis: TSA) and learning needs (Learning Situation Analysis: LSA). Target needs encompass three factors: *necessities*, *lacks*, and *wants*—*necessities* being what the learners have to know to function effectively in the target situation, *lacks* being the information that the researcher needs to know about the learners' previous knowledge to practice what they lack, and *want* being a subjective idea of what learners need to know. In order to obtain

information about these three factors together with information about learners' needs, it is necessary to follow questions based on a target situation analysis framework and a framework for analyzing learning needs (Rungnirundorn and Rongsa-ard, 2005).

* **A target situation analysis framework:** Why is the language needed?, How will the language be used?, What will the content areas be?, Who will the learner use the language with?, and Where will the language be used?

* **A framework for analysis of learning needs:** Why are the learners taking the course?, How do the learners learn?, What resources are available?, Who are the learners?, Where will the ESP course take place?, and When will the ESP course take place?

Based on the two models above, it seems that there is more information that course designers should be aware of, such as a present situation analysis (PSA) and a means analysis. Dudley-Evans and St. John (1998: 125) provide a current concept of needs analysis from various points of view, some of which may overlap with the details of the two models above. At the same time, the concept also underlines what the two models lack. They are as follows:

Target situation analysis/objective needs: this means that we need to know information about learners and the tasks and activities in which learners will be using English.

A. Objective needs and target situation analysis: this is professional information about the learners (task and activities learners will use English for)

B. Wants/means/subjective needs: this is personal information about the learners, such as factors which may affect the way they learn and reasons for attending the course.

C. Present situation analysis: this is English language information about learners (their current skills and language use).

D. Lack: this means what the learners lack (gap between A and C).

E. Learning needs: language learning information: this means effective ways of learning skills and language in (D).

F. Linguistic analysis/discourse analysis/genre analysis: this is communication information about knowledge of how language and skills are used in the target situation.

G. Expectation: This is what learners want from the course.

H. Means analysis: This involves information about the environment in which the course will be run.

Concerning the approach of Dudley-Evans and St. John toward needs analysis, it can be seen that what the first two models lack are present situation analysis, linguistic analysis, expectation, and mean analysis. Thus, there are more needs that the course designer should be aware of, and he or she should decide which need is suitable for the required course.

Based on the information of needs analysis gleaned from the two models, including the needs analysis concept of Dudley-Evan and St. John, there are more questions that the course designers should keep in mind in order to conduct a needs analysis, because the factors in the following questions also affect the process of conducting the needs analysis. The following guided questions proposed by West (1994) reflect some of the factors that affect the process of conducting the needs analysis:

1. What and why: information of necessities, lacks, wants, learning strategies, and constraints
2. When: when the needs analysis should be conducted (in advance, first day, and ongoing)
3. Who: who should decide what the language needs are (teacher, student, sponsor, specialist, former student, etc.)
4. For whom: who is going to be the user of the information
5. How: there are a number of ways in which information can be gathered about the needs; namely, questionnaires, interviews, observation, data collection, including gathering texts, informal consultations with sponsors, learners, and others (Hutchinson and Water, 1987: 58; Brown, 1995).
6. How long: the length of time to carry out a needs analysis

Similar to the two aforementioned concepts of the needs analysis in terms of information about necessities, lacks, wants, learning strategies, and constraints, West's questions are, however, different from those previous models in some aspects; namely, when the needs analysis should be conducted, who should decide what the language needs are, how data should be collected, and how long a needs analysis needs to be

carried out. Therefore, the researcher needs to be aware of all of the factors surrounding those models previously discussed in order to prepare an effective needs analysis plan.

The next aspect of the needs analysis that should be taken into consideration is how to conduct one. The processes of the needs analysis cannot begin from only selecting types of information and knowing who is going to be involved in the process. The processes of a needs analysis are more complex and involve six steps, as listed below (Graves, 2000):

1. Deciding on information to gather and why
2. Deciding on the best way to gather it: when, how, and from whom
3. Gathering the information
4. Interpreting the information
5. Acting on the information
6. Deciding to gather new information

According to the list above, a step that is quite complicated and needs to be planned for carefully is interpreting the information. Richards (2001) suggests some categories that are useful to classify the gathered information, such as situations in which English is frequently used, situations in which difficulties are encountered, comments most often made by people on learners' performance, perceived difficulties with different aspects of language use, and frequencies of errors made in different types of situations or activities.

There are many studies based on needs analysis in various fields of studies which are used as a guideline for a course design. For example, Koetpo-kha (1994) investigated the needs and problems in English for science and technology at Silapakorn University at the Sanamchan campus. The results revealed that ESP courses should be designed for occupational uses and academic studies. Moreover, the courses should focus on four skills using the communicative teaching method, and English should be used as the medium of teaching. Finally, students' desire for all four English language skills similar to their work, study, and social life should be served.

Another work relating to the needs analysis of students in order to develop an English course was reported by Deekawong (2000). He proposed an English syllabus for the aeronautical engineering students at the Air Technical Training School (ATTS) based on the results of the needs assessment. It was found that students wanted four

skills respectively: reading, listening, speaking, and writing. Also, the teaching methodology should focus on communication and interaction, so the syllabus should be activity-and-task-based.

Some needs analysis was conducted in workplaces. Li So-mui and Mead (2000) investigated the needs of merchandisers. The subjects encompassed 360 graduates from two universities in Hongkong (300 = Hongkong Poly technic, 60 = Kwun Tong Technical institute or KTTI) who had been working as merchandisers for at least one year. Questionnaires and telephone interviews were used as the research instruments. The study showed that the subjects respectively ranked the skills most needed as writing and fax was the most common channel of communication. The country that they most frequently mentioned in the survey was China followed by the USA. The main purposes for the use of written communication were following up the order, advising updated order status, and clarifying order queries respectively. Also, they used abbreviations in written message. As for the telephone interview, the interviews were used to follow up on the questionnaire responses. The researchers interviewed 18 KTTI graduates and 15 supervisors. It was found that English was the main language for written communication in the workplace. The merchandisers also expressed their concern about the need for grammatical accuracy. Moreover, the supervisor showed that they were satisfied with the graduates' language and communication skills. However, the merchandisers needed to be improved about writing techniques and better command in English. Unlike the graduates, the supervisors thought that correctness of content and using of appropriate tone were more important for effective communication. They do not concern about grammatical errors if they did not seriously affect the reader's comprehension.

Another research was reported by Jiranapakul (1996). She conducted a needs analysis to survey the language needs for communication by 21 operational engineers and 21 managerial engineers of 21 sampled companies in Thailand. The instrument used was an interview. The results revealed that four skills of English were required. They perceived that their reading skill was better than listening, speaking, or writing. The operational engineers thought that English skills ranked in order of importance were reading (2.7), listening (2.6), speaking (2.6), and writing (2.5), respectively. As for the managerial engineers, they perceived listening (2.8), speaking (2.7), writing (2.7), and reading (2.5) as the important English skills respectively. Especially

concerning the skill of writing, operational engineers agreed that business letters and faxes (2.4), office forms (2.1), weekly and monthly reports (1.9), and memos (1.9) were their writing requirements in the working context. Similarly, managerial engineers revealed that business letters and faxes (2.4), office forms (2.0), weekly and monthly reports (1.9), and memos (1.8) were their English writing activities in their working contexts.

Recently, Stapa and Jais (2005) conducted a survey of writing needs and expectations of hotel management and tourism students so as to prepare them for the workplace in the future. The 50 subjects were selected from three different institutions in Malaysia. They studied an EOP writing course as part of the program as well. They all had undergone their practical training at several hotels in Malaysia. A questionnaire was used as the instrument of the study. It was found that they needed to write formal letters (98%) as well as reports (98%). The next two important writing skills were writing memos and summaries. Also, most of the students felt that they were not well-equipped with the skills necessary to enter the workforce. In addition, it was revealed that the current writing course did not relate to the workplace functions, the course focused too much on grammar, and it was boring and not challenging in the students' view.

In conclusion, a needs analysis is an important component of the processes of a course design. A needs analysis provides the needed information gathered from learners, stakeholders, the institution, etc. It is difficult for a course designer to design a course without carrying out a needs analysis because he or she may not have enough required and important information, such as what the learners need from the course, what the target situations are like, and what the students lack. The needs analysis covers language needs, learning needs, and target situation needs, among others. Therefore, the present study focuses on target situation needs, learning needs, and a present situation analysis. The needs analysis was planned to be carried out before the development of the course by using a questionnaire and semi-structured interview protocols as the data collection instruments. The data were collected from the three groups of stakeholders; namely, engineering students, engineers, and ESP teachers, within 1.5 months. Then, the results of the needs analysis process were utilized in the process of the course development, which will be discussed in the next section.

2.3 Course development

Course development process

Designing a language course involves several components and steps. Taba (1962) points out that the components of the courses before designing the course need to be understood. These components consist of objectives, program evaluation, selection of content, organization of the content, information about learning, the nature of learners, and the nature of knowledge and specific characteristics. Apart from the course or curriculum components, Taba (1962: 12) also proposes an order of classical curriculum development process as follows:

1. Diagnosis of needs
2. Formulation of objectives
3. Selection of contents
4. Organization of context
5. Selection of learning experience
6. Organization of teaching experience
7. Determination of what to evaluate and of the ways and means of doing it

Taba's model seems to emphasize conducting courses in a predetermined order. The course designers should follow the order so as to achieve an effective course.

Another interesting model of a course design has been proposed by Graves (2000). Graves's framework is not a linear list like Taba's model, but it is a flow chart which reveals that it is not necessary to design a course in specific order (see Figure: 2.3).

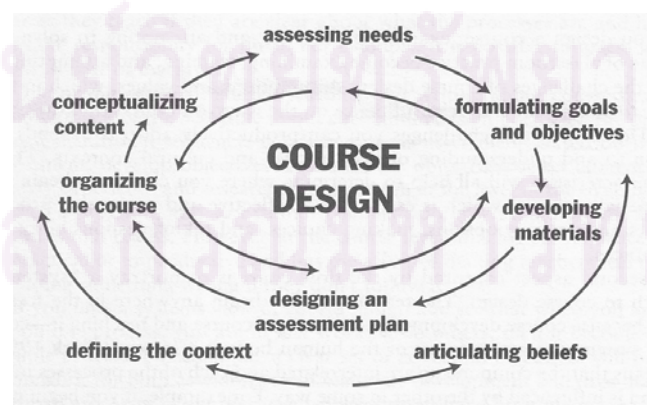


Figure 2.3 A Framework of course development process (Graves, 2000: 3)

The emphasis of Graves' model is placed on the two interesting aspects of course design. The first one is that there is no hierarchy in the process, so the course designers can begin anywhere in the framework as long as it makes sense. This depends on the course designers' beliefs, understanding, and necessity of teachers or students.

The second aspect concerns a system for the course design. This means that the components of the course design are interrelated and that the processes influence one another in some way. Moreover, Graves also focuses on the belief of the designer and the context of the course. It can be concluded that this model is also similar to Taba's course design processes in that Graves' model also consists of a needs analysis, formulating goals and objectives, and choosing and organizing course content and evaluation. However, in Graves' model, it is not necessary to develop the content of the course in the specific order.

In brief, there are a number of scholars that have proposed the processes of a course design. However, their frameworks vary as these scholars have their own way of making the frameworks as effective as possible. Regardless of such variations, it can be said that those course design processes share some similar characteristics, which can be imposed as the standard processes of the course design. These standard processes involve assessing needs, formulating course objectives, organizing and planning the course contents, developing the teaching methodology, and planning the evaluation.

2.4 Teaching writing approaches

The previous sections provide details of the course development process in general and also of ESP course design. In order to design an English writing course for engineers, it is necessary to explore the kinds of teaching writing approaches in order to choose one of them as the foundation of the course development process. In order to identify the teaching approach in this study, this section discusses the definitions and characteristics of teaching writing approaches, such as the product-based approach and the content-based approach, including the genre-based approach (GBA), GBA's differences from other teaching writing approaches, and why the GBA is suitable to use in this study. As noted before, it is assumed that the GBA is the most suitable approach to teach writing to undergraduate engineering students.

Writing can be defined as the production of written words that results in a text, with the assumption that the text will be read and comprehended (Celce-Murcia and

Olshtain, 2000). Instruction in writing is assuming an increasing role in both second and foreign language education. However, it is not easy to determine what the best way to teach writing is because different teaching contexts require different teaching methods. Therefore, in order to teach writing effectively, it is necessary to understand the main approaches to teaching writing, as this can help teachers to choose the approach that best suits the context.

2.4.1 Focus on language structures

This approach focuses mainly on the end product of writing, so it can be characterized as a product-based approach. The assumption behind this approach is that writers need to produce a piece of writing reflecting linguistic knowledge, vocabulary choices, syntactic patterns, and cohesive devices that comprise the essential components of texts (Hyland, 2003a; Ferris and Hedgecock, 2005; Renandya, 2004). According to Pincas (1982), learners should internalize fixed patterns of smaller components in sentences before using them in larger units of composition in order to avoid grammatical errors. In this case, writing is seen as a product constructed from the writer's command of grammatical and lexical knowledge. Writing development is a result of imitating and manipulating the models provided by the teacher. The assumption is that once writers accept the rhetorical framework, they will be able to use the same patterns appropriately in future writing (Shih, 1986). Kaur (2005) adds that for the product-based approach, focusing on the imposition of form on the written text is more salient than focusing on the effective communication. Richards (1999) identifies the main assumptions and features of the product-based approach in second language teaching as follows:

1. Learners have specific writing needs, either for institutional writing or personal writing.
2. Teaching students to be able to produce the kinds of written texts they will frequently encounter in educational, institutional, and personal contexts is the goal of the writing program. The program will emphasize patterns and forms of organization used in different kinds of written texts.
3. The rhetorical patterns and grammatical rules used in different kinds of texts are presented in model composition. The model illustrates the rules that learners should use in their own writing.
4. Correct sentence structure is an essential component of writing.

5. Errors in writing are avoided by giving learners models to follow or by guiding learners in what they write to prevent them from making errors.

6. The mechanics of writing are also taught.

Considering these assumptions and features of the product approach, it can be concluded that the primary emphasis of the product approach is placed on producing different kinds of texts. In addition, it is important to prevent students from producing errors. Thus, instead of allowing students to create their own writing, techniques for guided writing or controlled writing are needed.

An emphasis on language structure as the basis for teaching writing has a four-stage teaching process: familiarization (learners are taught certain grammar and vocabulary), controlled writing (learners manipulate fixed patterns), guided writing (learners imitate model texts), and free writing (learners use the patterns they have developed to write essays, letters, and so forth) (Hyland, 2003a). Therefore, there are learning activities at each teaching stage, such as “slot and filter” frameworks, filling in the blanks, completing sentences, transforming tenses or personal pronouns, and other exercises that focus on achieving accuracy and avoiding errors. These activities are useful in terms of the four stages in teaching.

One strength of the product-based approach is that the need for learners to be given linguistic knowledge about texts is recognized. Learners also understand that imitation is one way in which people learn (Badger and White, 2000). However, although a number of L2 students learn to write with this approach, the product-oriented approach also has problems. For example, with this approach learning to write consists mainly of mastering grammar items, so the learner’s creativity is given little consideration. Additionally, the text to be produced is determined only by the teacher. Together these make learning to write less interesting and more difficult to learn (Kaur, 2005).

In conclusion, the product-based approach sees writing as mainly concerned with knowledge about the structure of language, and writing development as mainly the result of imitation of inputs. The writing process in this context is a linear process, moving from one stage to the next.

2.4.2 Focus on the writing process

The second orientation, the process approach, sees writers as independent producers of texts. The process approach is based on the process adults or expert writers go through when they produce a piece of writing (Renandya, 2004). This is because it is believed that focusing on the form and structure of writing is not enough to teach students to write well. There is also a need to emphasize the composing process of good writers since good writers use different composing processes from less experienced ones (Supanee Chinnawongs, 2543). During the writing process, what the writers do while writing is planning, drafting, revising, rewriting, editing, and publishing.

Zamel (1983) believes that the strength of this teaching approach involves non-linear, exploratory, and generative processes whereby writers discover and reformulate their ideas as they attempt to approximate meaning. In addition, the process approach emphasizes composing as a recursive process, rather than a left to right process (prewriting → writing → postwriting activities) (Emig, 1983). This approach to teaching writing sees writing as an individual problem-solving process. Students need to generate solutions and translate them into written texts (Kaur, 2005). Thus, the approach is a cognitive model of what writers do when they write. Also, this approach emphasizes the complexity of planning, the value of task, and the value of guiding novices to greater competence by awareness of expert strategies (Hyland, 2003b).

Brown (2001) presents the characteristics of the process approach to writing as follows:

- a. focus on the process of writing that leads to the final written products;
- b. help students writers to understand their own composing process;
- c. help them to build repertoires of strategies for prewriting, drafting, and rewriting;
- d. give students time to write and rewrite;
- e. place central importance on the process of revision;
- f. let students discover what they want to say as they write;
- g. give students feedback throughout the composing process as they attempt to bring their expression closer and closer to intention;
- h. encourage feedback from both the instructors and peers; and
- i. include individual conferences between teachers and students during the process of composition.

(Brown, 2001: 35)

Hyland (2003a) also suggests a process model of writing instruction. This model is similar to Brown's but focuses more on systematic teaching stages. The model is presented in Figure 1 below.

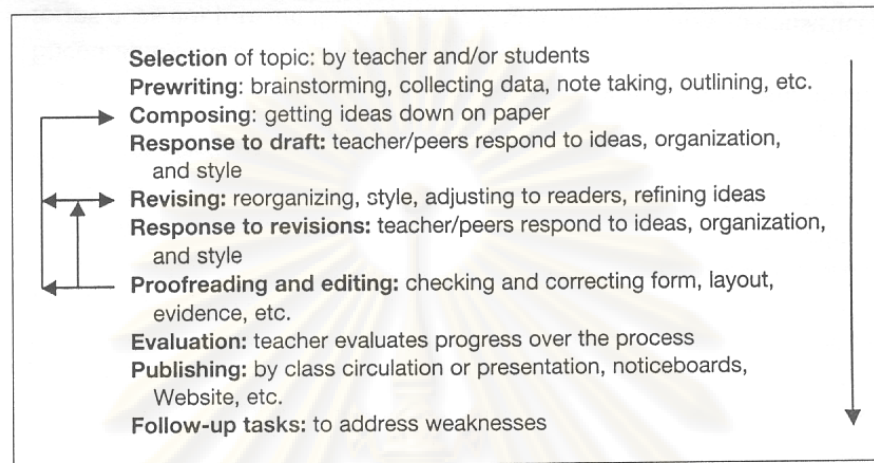


Figure 2.4: Process writing instruction model (Hyland, 2003a: 11)

As seen in Figure 4, the process approach is non-linear. The writer can jump backwards or forwards to any of these activities, such as returning to the library for more data, revising the plan for new ideas, or rewriting for readability after peer feedback. The teacher's roles are guiding learners through the writing process, avoiding an emphasis on form to help them develop strategies for generating, drafting, refining ideas, and giving feedback. Teachers act as facilitators, organizing writing experiences that enable learners to develop effective composing strategies (Hyland, 2003a). In addition, time allocation is not restricted, as writing is a recursive activity. As for learners, they have more chances for meaningful writing, are less dependent on the teacher, and can work together with other learners to make (Richards, 1999).

The process approach has features which can address the limitations of the product-based approach. This is evident in the fact that the process approach encourages learners to think, solve problems, and be interested in practice writing (Kaur, 2005; Supanee Chinnawongs, 2543). Badger and White (2000) add that the strength of the process approach lies in identifying the skills involved in writing and in recognizing that what learners bring to the writing classroom also contributes to the development of their writing ability.

Nevertheless, the process approach also has limitations. For example, this teaching approach is time-consuming for both teachers and learners since teachers need to not only teach but also evaluate learners' progress. That is, teachers must be a part of each step, such as asking questions, proofreading, and explaining writing problems (Supanee Chinnawongs, 2543). Students also need to work hard because they have to give feedback to their peers, write their own work, and edit the work at least several times. All these activities can make both teachers and students tired or bored and not want to practice writing.

In addition, Hyland (2003b) suggests that the process approach fails to consider the forces outside the individual which help guide the purpose of writing, create relationships, and ultimately shape writing, since the teaching approach does not focus much on the ways meaning is socially constructed. Horowitz (1986) adds that teaching writing through the process approach cannot be utilized with some academic writing, such as essays for examinations, because in this context learners have a limited time in which to write. It is impossible to edit or receive feedback from peers in an exam context. Also, some types of academic writing (e.g. report writing) cannot be taught with the process approach since it requires a top-down process before writing, such as searching, criticizing, and reviewing. Practicing this type of academic writing requires awareness of accepted patterns of writing, but the process writing approach, which focuses on brainstorming, cannot help learners succeed in this. Finally, the process approach regards all writing as being produced by the same set of processes. Thus, this approach gives insufficient attention to the kind of written texts produced and the reasons why such texts are produced. Besides this, this approach may not offer learners input, particularly in terms of linguistic knowledge, if the teachers do not comment on texts (Badger and White, 2000).

In conclusion, the process approach regards writing primarily as an exercise of writing skills, such as planning and drafting, and writing development as an unconscious process, which happens when teachers facilitate the exercise of writing skills. In addition, writing, according to this view, essentially involves thinking skills and knowledge of various stages so that information and ideas can be transformed into coherently written texts.

2.4.3 Focus on writing content

Another approach to writing can be called the content-based approach. This approach emphasizes content and focuses on what students are required to write about, not the process of writing. Shih (1986) concludes that the content-based writing approach is connected to the study of subject matter in one or more academic disciplines. It can be said that learners write about materials they are currently studying in an academic course or that a language or composition course itself stimulates the academic process (e.g. mini-lectures, reading, and discussion of a topic leading into writing). Moreover, learners are exposed to writing a variety of forms, such as essay tests, summaries, and critiques to reveal their understanding of the subject matter.

This approach includes a set of themes or topics of interest that establish the coherence and purpose of the course (Hyland, 2003a). Typically, themes and topics form the basis of process courses, where writing activities are often created around social issues such as pollution, relationships, stress, crime, and smoking, to name just a few.

It seems that this writing approach is based on the reasoning that academic writing requires more complex processes. This is because writing is required to demonstrate knowledge of academic fields. The instructors also use writing as an instrument to prompt and promote independent thinking, researching, and learning (e.g. research paper) (Shih, 1986).

The content-based approach is different from the process approach in a number of ways. The content-based approach does not focus on the experience of the writers, but emphasizes writing from sources (readings, lectures, discussion, etc.). Content is the highlight of this approach, not its process. Therefore, the teacher must be knowledgeable in the topics or themes (Supanee Chinnawongs, 2543). In addition, skills are integrated as in university courses: learners listen to, discuss, and read the topic before writing about it.

What teachers should do in class is to activate the schema or knowledge of topics and vocabulary which learners need in order to create effective texts. Additionally, content-oriented courses can be tailored to students at different proficiency levels. This can be accomplished by supplying different levels of content that match the different language levels of learners (Hyland, 2003a). Group work is frequently a main element of these classes. This is because cooperation among learners

in generating ideas, gathering information, and focusing on priorities provides a practical purpose for communication (Hyland, 2003a).

In short, the content-based approach focuses on writing that is connected to the study of specific academic subjects and is viewed as a means of promoting understanding of the content. It is developed to serve the requirements of academic writing of university students who need to do various kinds of written assignments.

2.4.4 Focus on genre

Another way to teach writing is called the genre-based approach (GBA). This teaching method is quite similar to the product approach; it can even be stated that it is an extension of the product approach (Badger and White, 2000). Teachers that believe in this concept look beyond subject content, composing processes, and textual forms to see writing as attempts to communicate with readers.

From the perspective of genre, people that work in the same community will understand each other quite easily since they share the same language and communication patterns of the genre. This is because a genre normally has quite specific patterns. For example, Hopkins and Dudley-Evans (1988 cited in Dudley-Evans and St. John, 1998) agree that writing articles or dissertations should involve these components: information, statements of results, findings, expected outcomes, references to previous research, explanations, claims, limitations, and recommendations.

The GBA focuses on how to utilize language patterns to accomplish coherent and purposeful prose. This means that writing not only means “to write,” but it also refers to writing to achieve some specific purposes (Hyland, 2003a). The definition of the GBA involves three parts (Kay and Dudley-Evans, 1998). First of all, it aims to make the learners aware of the structure and purpose of the texts of different genres—the significant features—and to empower them with the strategies necessary to replicate these features in their own compositions. Secondly, the GBA uses the results from the genre analysis as an example for teaching and learning. Finally, understanding texts in terms of linguistics is not enough; understanding the accompanying social context is also needed. Kim (2007), an advocate of the GBA, points out that the genre teaching framework supports students’ writing with generalized, systematic guiding principles about how to produce meaningful passages. In the GBA, the structural features of genres consist of standards of organizational structure (rhetorical structures) and linguistic features (Kim, 2007). These standards of organizational structure refer to

how text is sequenced, while the linguistic features can constitute a text. This means that the text types have similarities in organization. Also, their particular linguistic structures reflect the purpose of each part of each type of genre, such as recipes, scientific papers, and news articles. Based on the two structural features of genre, it is necessary for the course designer to focus on both organizational structure and on the linguistic aspects of the lesson. Moreover, Bhatia (1999) identifies four major elements of any successful construction, interpretation, and use of a professional genre: generic integrity, discursive process, generic purpose and intention, and genre participants. More details are given below.

Generic integrity: This is the most important element of the GBA because members of the professional community should recognize it as a valid instance of the genre. It is the reflection of the form-function relationship which often characterizes a generic construct. This relationship reflects the specific cognitive structuring and purpose(s) that the genre tends to serve. There are three notable indicators of generic integrity: the context in which the genre is situated, the communicative purpose, and the cognitive structure that it is meant to represent. The cognitive structure constitutes a strategy since it consists of the tactics that writers use to succeed in communication (Bhatia, 1993b).

Discursive process: This is the product of a set of established procedures that form an important part of the disciplinary outline within a profession. The product is a result of a set of conventionalized discursive practices that professionals are routinely engaged in as a part of their daily work.

Generic purposes and intentions: This element is also crucial since a genre is identified in reference to the communicative purpose that it is intended to serve.

Participants: Participants in this case mean both readers and writer. Bhatia (1999) believes that the elements that help make communication successful are the manipulation and exploitation of readers and writers, rather than strict rules. This can be seen, for example, in the differences between documents written for subordinates and document written for supervisors. It is also evident in the differences between written works constructed for outside clients and for insiders. Kongpetch (2006) adds the idea of social context to the text-context characteristics of the GBA. Thus, the GBA provides a systematic explanation of how written or spoken texts are organized in different social and cultural contexts.

In the classroom, teachers emphasize aspects of a text by pointing out the linguistic patterns and their context beyond the page. At the same time, teachers need to reveal the range of social constraints and choices that operate on writers in a particular context. In addition, the writer is seen as having specific goals and intentions to communicate via the forms of a text (Hyland, 2003a). Cope and Kalantziz (1993 cited in Badger and White, 2000: 155-156) propose three phases of teaching genres: modeling the target genre, construction of text by the teacher and learners, and finally, independent construction of texts by learners.

The advantages of teaching writing with the GBA are that people acknowledge that writing takes place in a social situation, it is a reflection of a particular purpose, and learning can happen consciously through imitation and analysis (Badger and White, 2000). The GBA also has potentials for leading students to reflect on and critique the ways in which knowledge and information are organized and created using written words (Hammond and Mackin-Horarick, 1997 cited in Paltridge, 2004).

Although the GBA has advantages, it is necessary to note its limitation. The genre-based approach undervalues the skill needed to produce a text and sees learners as largely passive (Badger and White, 2000). Explicit teaching of genres may lead to restrictive formulae, which can reduce creativity through conformity and prescriptivism (Dixon, 1987; Raimes, 1991 cited in Hyland, 2003b).

In conclusion, the GBA offers writers an explicit understanding of how texts in target genres are structured and why they are written in the way they are, including their linguistic forms and social context. That is, the form and function correlation, and the social context, must be highlighted in teaching. Therefore, there are five points that the teacher needs to emphasize in designing lessons for the GBA-based course. They are as follows:

1. Genre analysis results or structural organization (rhetorical structures) of each type of genre
2. Linguistic features in each move or step (reflect function and purpose of each move)
3. Sociolinguistic knowledge (relationship between reader and writer, writing situations)
4. Writing tactics
5. Not being so strict about structural organization

2.4.5 Summary of the principal orientations of teaching L2 writing

The investigation of the writing approaches shows that each approach has its own outstanding characteristics. Some of these characteristics are common, while others are unique. They all are useful in terms of practicing writing, but they also have limitations. However, it seems that they supplement and support one another. A comparison of these approaches is illustrated in Table 2.1 below.

Table 2.1: A comparison of L2 teaching writing approaches (Hyland, 2003a:23)

Orientation	Emphasis	Goals	Main pedagogical techniques
Structure (product-based)	Language form	Grammatical accuracy, vocabulary building L2 proficiency	Controlled composition, gap-fill, substitution, error avoidance, indirect assessment
Process	Writer	Control of technique	Brain-storming, planning, multiple drafting, peer collaboration, delayed editing
Content	Subject matter	Writing through relevant content and reading	Extensive and intensive reading, group research project, process of structure emphasis
Genre	Text and social context	Control of rhetorical structure of specific text type	Modeling-negotiation-construction cycle (rhetorical consciousness-raising)

According to the aforementioned discussion, what is clear is that each writing approach has a different orientation, and therefore the teaching techniques are different. For example, despite its similarities with the product-based approach, the genre-based approach places much more emphasis on the social context in which writing is produced (Badger and White, 2000). Also, Bhatia (1993a) argues that what makes the GBA different from the product approach is that the GBA focuses on using strategies in writing in order to be successful in communication, while the product approach does not address this. Writing strategies in this sense mean what writers generally use in order to make the writing more effective, bearing in mind any special requirements, considerations arising from use of a different medium or constraints imposed by organizational and other factors.

In addition, despite the fact that both the content-based and genre-based approaches emphasize text, they are different, as the texts for the genre-based approach are related to the professional area, whereas texts for the content-based approach concern subject matter more appropriate for learners.

Concerning the process approach and genre-based approach, the process approach emphasizes the practice of the writer. Encouraging cognitive processes in writing is employed in the process approach, while the genre-based approach does not place these limits on writers. The genre-based approach focuses more on the purposes of the writers and the context of writing (Hyland, 2003b). The process approach pays attention to the creative process, while the genre-based approach emphasizes readers' expectations and the end product (Hyland, 2003a). Moreover, unlike the genre-based approach, there is no explicit teaching of linguistic knowledge in the process approach.

Finally, what clearly makes the genre-based approach different from the others is the emphasis on context, the relationship between form and function, the purposes of writing (function), cognitive structure, the relationship between readers and writers, and the conventions of writing deriving from the agreement of "experts" in each community. Kaur (2005) mentions that the process approach does not adequately address the issue of the reader, especially when the form of the text expected is convention- and context-specific.

In sum, the GBA seems more suitable for this proposed course for several reasons. First of all, it is a product-driven course, which is the main characteristic of the GBA. Secondly, writing in the engineering field involves technical reports, enquiry, letters of complaints, requests, etc., all of which exhibit specific patterns and conventions. The GBA encourages learners to recognize these text types and their writing patterns and conventions. It is believed that learners can write well when they understand and recognize these writing patterns and organization. In addition, the professional field is a dynamic context, so it is unpredictable. Thus, the writers need to think of situations, purposes, contexts, cognitive structures, relationships between form and function, writing strategies, and relationships between readers and writers in order to write effectively. These issues are all addressed by the GBA.

2.5. Definition of genre

As this study aims at designing an English writing course for engineering students based on the GBA, it is vital to be clear on the definition of genre. Genre is not a new concept. Rather, researchers and scholars have studied this concept for quite a long time. The concept of genre helps us locate what is particular to each type of writing and what skills and knowledge students require in order to be able to

communicate effectively (Bazerman, 1999). Each genre expresses a different set of rhetorical choices, from lexicon and grammar to format, content, and organization (Wennerstrom, 2006).

Traditionally, the term “genre” has been commonly used to refer to particular kinds of literature or other media of creative expression, such as art or film (Hammond and Derewianka, 2002). In general, however, in the field of literary studies, the term “genre” has long been used to categorize the different kinds of writing (text type), such as novels, short stories, and science fiction (Gee, 1997 cited in Kongpetch, 2007: 89). In addition, as a cognitive and cultural concept, genre usually refers to the abstract, goal-oriented, staged, and socially recognized ways of using language delimited by communicative purposes, performed social interactions within rhetorical contexts, and formal properties (structure, style, and content) (Bhatia, 1993a; Swales, 1990, 2004 cited in Cheng, 2006: 77). Put another way, the characteristic features of a genre tend to reflect the social purposes and cultural ideologies behind its production.

Until recent years, genre has been used in educational contexts to refer not only to types of literary text, but also to the predictable and recurring texts that are a part of everyday life, such as work and study (Hammond and Derewianka, 2002). The impact of genre in the educational context is evident in three main areas; namely, English for Specific Purposes (ESP), New Rhetoric (NR), and Systemic Functional Linguistics (SFL) (Hyon, 1996).

However, Flowerdew (2002) does not agree with this classification. He divides genres into two aspects: New Rhetoric and ESP. In his view, both ESP and the SFL (Australian School) are similar. They take a linguistic approach, applying theories of functional grammar and discourse, concentrating on lexico-grammar and rhetorical structure, and paying more attention to situational context than to new rhetoric.

These different theoretical perspectives are reflected in the genre-based teaching application developed within each of the three types of genre (Hyon, 1996). Information about each theory of genre, together with the definition of the genre employed in this study, is discussed in the next section.

2.5.1 Genre as social purpose: Systemic Functional Linguistics (SFL)

This perspective is known as the Australian Work or Sydney School. Its origin is from the theory of Michael Halliday, which is concerned with the relationship between language and its functions in social settings (Halliday, 1978 cited in Hyon,

1996: 696). That is, any text can only be understood in relation to its contexts, specifically the context of situations and the context of cultures (Halliday, 1994 cited in Kongpetch, 2007). Halliday believes that the forms of language are said to be shaped by key features of the surrounding social context, which consists of *field* (the activity going on), *tenor* (the relationship between participants), and *mode* (the channel of communication). These variables are collectively referred to as a register (Martin, 2001).

Martin, one of Halliday's students, has developed a theory of genre within a systemic functional framework based on Halliday's theory. He defines genre as "a staged, goal-oriented social process" (Martin, 2001: 163). It emphasizes the purposeful, interactive, and sequential character of different genres and the ways in which language is systematically linked to a context. Clearly, genres are social processes since members of a culture interact to achieve them, they are goal-oriented, and they are staged since meanings are made in steps and it normally takes writers more than one step to reach their goals. In addition, it can be concluded that when a set of texts share the same purpose, they will often share the same structure, and thus they belong to the same genre (Hyland, 2007a). The relationship of texts and contexts is the core of the framework, as interactions can only be understood by seeing them against their social setting. Otherwise, it may lead to miscommunication or impolite communication. The samples of types of genre in the SFL School include recount, persuasion, and instruction.

2.5.2 Genre as situated action: The New Rhetoric (NR)

New Rhetoric (NR) is similar to SFL since both of them recognize the importance of context and the social nature of genres. The NR genre is seen as a form of social action whose focus is not on form or substance but on the action that is used to achieve the goal of communication (Miller, 1994 cited in Hyon, 1996: 698). Miller also adds that in this approach genres are relatively unstable rhetorical forms that have to be studied in their context of use and in relation to the goals that they are used to accomplish in a specific discourse community. This is because successful communication is only possible if participants share a socially-created rhetorical situation (Luzon, 2005). What makes NR different from ESP is that it focuses more on situational contexts in which it occurs. Also, its focus is placed on the social purposes or actions (Hyon, 1996). Moreover, NR places less emphasis on the genre theory of

teaching text form but pays more attention to helping native or L1 university students and novice professionals understand the social functions of genre and the contexts in which these genres are used (Hyon, 1996).

2.5.3 Genre as professional competence: English for Specific Purposes (ESP)

The English for Specific Purposes (ESP) genre aims to help learners succeed with the English language demands they encounter in their studies or professions, i.e. to help them recognize and learn the patterns of language required in various academic and professional contexts (Hammond and Derewianka, 2002). The ESP genre is more linguistic in orientation than the two others mentioned above (Hyland, 2007b).

Swales (1991), who is a pioneer in the field of the ESP genre (genre analysis) and who works on discourse structure and linguistic features of scientific reports, sees genres as a class of communicative events with some shared sets of communicative purposes recognized by the members of a particular community. Swales defines genre in the following way:

A genre comprises a class of communicative events, the members of which share some set of communicative purposes. These purposes are recognized by the expert member of the parent discourse community and thereby constitute the rationale for the genre. This rationale shapes the schematic structure of the discourse and influences and constrains choice of content and style.

(Swales, 1991: 58)

The quotation illustrates Swales' idea that if the participants in a communicative event share a common focus on purposes and then the event shapes the schematic structure, including its constraint, these events represent a genre. These purposes are the rationale of the genre, and they help focus its structures and the choices of content and style it makes available (Johns, 1997). Moreover, Swales adds that genre is a crucial concept in professional communication since members of individual professions, or discourse communities, will share common purposes of communication or genres (Swales, 1991).

In addition, a second and less broadly focused study on ESP genre, V. K. Bhatia's *Analysis Genre: Language Use in Professional Settings*, has also contributed to genre's growing identity and centrality. Swales's work presents the whole panorama, but Bhatia has focused on some of the details (Atkinson, 1996). Bhatia believes that communicative events or activities can only be called a genre if the participants

understand its purpose and accept its conventions and constraints as their communicative patterns (Thaweewong, 2006). His definition of the ESP genre is as follows:

Taking genre after Swales (1990), genres are a recognizable communicative events characterized by a set of communicative purpose(s) identified and mutually understood by the member of the professional or academic community in which it regularly occurs. Most often it is highly structured and conventionalized with constraints on allowable contributions in terms of their intent, positioning, form and functional value. These constraints, however, are often exploited by the expert members of the discourse community to achieve private intentions within the framework of socially recognized purpose(s).

(Bhatia, 1993a: 134)

According to Bhatia's definition, an important characteristic which helps clarify each type of genre is its purpose (function), which can be expressed through forms. The constraints are shared by the experts of the community. Since the early 1980s, communicative goals or purposes have normally been used as a main criterion for categorizing genre (Askehave and Swales, 2001). However, using only purpose as the criterion to categorize genre may present problems because a genre may consist of more than one communicative purpose (multi-function) (Bhatia, 1999). Askehave (1999) suggests that another point that should be considered as a criterion to identify the purpose of a text is context. This is because context can help readers and writers communicate effectively within each type of genre.

The definitions of both Swales and Bhatia have been influential on genre analysis (ESP genre) and also have led to the teaching of ESP and the teaching of academic writing to ESL students (Paltridge, 2004). Hammond and Derewianka (2002) add that "the overall concern of ESP is to assist students to gain access to the English language demands they encounter in their studies or professions."

The ESP genre is different from the Australian genre or SFL in that it does not see genres as linguistic strategies to achieve general rhetorical goals, but it focuses on the communicative needs of particular academic and professional groups that lead them to pay attention to what people in those group use writing for (Hyland, 2007a; Platridge, 2004). That is, ESP genres refer to the purposive social action usually used and recognized by community members to achieve a particular objective, written for a particular audience, and employed in particular contexts. Moreover, what makes SFL differ from ESP and NR is its focus on primary and secondary school students' written

work and non-professional workplace text more than on university and professional writing (Joyce, 1992 cited in Hyon, 1996: 697). To be clearer, the differences in their characteristics can be summarized in Table 2.2 below.

Table 2.2: Perspectives on Genre (Hyland, 2007a: 50)

Orientation	Primary Focus	Intellectual Roots	Pedagogy	Education context	Sample genres
SFL	Discourse structure and features	Systemic linguistics	Vygotsky (ZPD) teaching-learning cycle	L1 school, adult migrants	Narrative, reports, recount
NR	Social purposes, context	Post-structuralism	Heuristics, general formats	L1 university composition	Political briefs, patents, medical records
ESP	Discourse structure and features	SFL, CLT, pragmatics	Consciousness raising, needs analysis	Occupational and academic training	Articles, memo, sales letters

As for ESP genre course design, needs analysis and genre analysis are important terms as the results from these two stages help provide necessary information for determine the objectives and contents of the course. Hyland (2007a) adds that needs analysis and genre analysis reveal the constraints of social context on language use, and the way students gain control over these involve a commitment between the ESP genre and language education research. Thus, most of the work from this perspective of genre involves genre as a tool for understanding and teaching the kinds of writing required for non-native speakers in academic and professional contexts. This kind of genre also considers cross-cultural aspects and L2 dimensions of writing instruction, while the first two types of genre may not address much of this (Hyland, 2007a).

In brief, the characteristics of genre can be classified into three groups that focus on different perspectives: Systemic Functional Linguistics (SFL), New Rhetoric (NR), and English for Specific Purposes (ESP). However, some parts of their characteristics overlap one another as well. For example, both SFL and ESP focus on the purpose of communication, discourse structure, and features, while NR and SFL emphasize the contexts of writing.

According to the definitions of those three groups of genre, it can be stated that this study is going to focus on the ESP genre. This is because the subjects in this study, undergraduate engineering students, are non-native English speakers. Also, they are

engineering students who are going to work as engineers in the future in the professional community of engineers, so they need to be familiar with the communicative events characterized by the set of communicative goals identified and recognized by the members of the engineering community.

The aim of this study was to design a course to prepare undergraduate engineering students for their future career, and the concept of genre used in this study was ESP. Thus, the researcher of this study determined that genre in this study was a recognizable and recurring written pattern that meets the various communicative needs and purposes of members of the engineering community. Its certain conventional, linguistic, and rhetorical features reflect the function, purpose, context, and sociolinguistics of the engineering community that produces them. These contextual and sociolinguistic constraints are recognized and shared by members of the engineering community.

2.6 Organizing a genre-based writing course

According to the processes of general English course development and ESP course design stated previously, it can be said that some parts of the process of developing a genre-based writing course are similar to the process of developing general English and ESP courses, but a GBA course focuses more on the details of needs analysis, sociolinguistic knowledge, and genre analysis steps, which will be explained in the next section. Burns and Joyce (1997 cited in Paltridge, 2004; Hyland, 2007a) suggest the stages that are involved in designing a genre-based course outlined as follows:

1. Identifying the overall contexts in which the language will be used

Context in this sense is information concerning two concepts: the present situation and target situation needs. A needs analysis is the main instrument of this step, and it can be conducted in many ways in order to collect information, such as with questionnaires and interviews. For the present situation need, teachers need to determine who the learners are, how they learn, why they are taking the writing course, and what they know about writing. In terms of the target situation, it is necessary to find out why the learners need to write, what the content area is, what genre will be used, what the structures of these genres are, who the learners will communicate with, and where they will use the language (Hyland, 2007a, 2003b).

2. Developing course goals based on the context of use

This step can be undertaken after the results of the needs analysis are concluded based on the questions above. In the GBA, goals normally describe the competencies that learners will be expected to master using appropriate knowledge and language features to construct particular kinds of texts. Objectives will then be created based on such goals.

3. Noting the sequence of language events within the context

Steps three and four can be conducted simultaneously. Language events within the context can be, for example, enrolling at a university, writing essays, and writing reports. In addition, Hyland (2007a) adds that sequencing genres in a writing course can be done based on various principles. For instance, teachers can begin with topics or situations that are concrete and relate to students' prior background knowledge before gradually moving on to the applied topic, or they can begin with topics that are relatively simple and that allow learners to progress to more advanced activities.

4. Listing the genre used in this sequence

The genres in step four must be congruent with language events in step three, such as enrollment forms, writing, and reading texts.

5. Outlining the sociolinguistic knowledge learners need to participate in the context

Awareness of the connections between different genres is important for L2 writers, but it is also helpful if learners understand the sociolinguistic context in which those genres occur (Hyland, 2007a), such as the degree of formality, authority, intimacy, and other interpersonal aspects associated with it, including who typically uses the genre and whom they use it with. Encouraging learners to be aware of sociolinguistic knowledge provides advantages (Hyland, 2007a). For example, awareness of sociolinguistic knowledge assists in the development of learners' genre knowledge and helps them to see that written genres have consequences for users. In addition, awareness of sociolinguistic knowledge allows learners to analyze the events that occur in target contexts so that they can understand how genres interact with each other and what part they should play in constructing contexts and identities.

6. Gathering and analyzing samples of texts

This step is another important step of the GBA because good examples of the genre which are close to the target contexts are necessary for the course. Hyland

(2007a) mentions that collecting and analyzing samples of authentic texts supply crucial information about relevant contents, formats, and language for teaching while simultaneously presenting a basis for the choice of appropriate readings, text models, language inputs, and discussion topics for the course. What teachers really need to focus on in analyzing texts involves patterns in texts, moves, and key language features (including vocabulary), as well as determining required sociolinguistic knowledge. More information about analyzing genre is explained more in the next topic.

7. Developing units of work related to these genres and developing the learning objectives to be achieved

After the genres and topics are selected, organizing these into an appropriate sequence must be considered. Richards (2001) offers five factors that need to be taken into account: appropriate length, development (one activity leading to the next one in a logical way), coherence, pacing (each activity moving along and no activity being longer than the others), and outcomes (learners knowing how to complete a related series of things at the end of the course). Moreover, the learning objectives of each unit are created according to the selected topics.

In conclusion, developing a writing course based on the GBA is not so different from organizing general English courses; the only difference lies in the fact that the GBA courses emphasize the results of the needs analysis and social context. Moreover, the GBA courses need to collect sample texts as authentic materials and also analyze these texts (genre analysis). The results of the analysis must be presented in class since this helps learners see explicitly the organization of each type of genre. Moreover, encouraging learners to be aware of sociolinguistic knowledge is also necessary and useful, as it helps learners to use language accurately and appropriately based on politeness and formality in writing.

2.7. Genre-based pedagogy

As stated previously, teaching writing through the GBA emphasizes the text and context of each type of genre. However, there are no clear teaching stages or methods for teaching the ESP genre (Hyon, 1996). Also, there is no explicit language learning theory underlining the GBA (Badger and White, 2000). However, some scholars suggest activities which can be used in teaching the ESP genre, such as reordering paragraphs, doing genre analysis, completing gap filling, gradual approximation, and

rhetorical consciousness raising (Flowerdew, 1993; Xu, 2005; Hyland, 2007b). The present study has attempted to apply a language acquisition theory (social constructivism), a genre-based teaching concept (explicit teaching), and a pattern of teaching stages, (the teaching and learning cycle) in order to design appropriate teaching procedures, materials, and activities for the ESP genre course following the characteristics of the target subjects and the GBA concept. The details of three main salient factors (social constructivism, explicit teaching concept, and the teaching and learning cycle) are explained below.

2.7.1 Social constructivism

It was in the 1930s that Vygotsky developed his theory, constructivism. He was a contemporary of Piaget, and like him, his work was also a reaction to behaviourism. However, their views are often contrasted (Foley and Thomson, 2002). For this study, the theory of language learning (language acquisition theory) will be based on Vygotsky's concept.

According to Mace (1994), the major theme of Vygotsky's theory is that social interaction plays a fundamental role in the process of cognitive development. Foley and Thomson (2002) argue that Vygotsky's theory is based on the fundamental premise that development occurs on a social level within a cultural context. He links the person to the environment in which they are living and learning. He also presents the idea that language is inextricably tied to cognitive and behavior. He describes languages as interacting with the individual's cognitive and social development and serving their continuous development. When learners encounter something new, they have to reconcile it with their previous knowledge and experience. Possibly, learners may change what they believe, or may discard the new information as irrelevant. In any case, learners are active creators of their own language. To do this, learners have to ask questions, explore, and assess what they know. It can be said that constructivism transfers the student from a passive learner of information to an active learner in the learning process.

Vygotsky (1978) believes that this long process of development depends on social interaction and that social learning actually leads to cognitive development. This process of learning is called the Zone of Proximal Development (ZPD). The ZPD is described as the distance between the actual development level as determined by independent problem solving and the level of potential development as determined

through problem solving under adult guidance or in collaboration with more capable peers (Vygotsky, 1978 in Riddle and Dabbagh, 1999). It means that a student can perform a task under adult guidance or with peer cooperation that could not be achievable alone. Put another way, the ZPD bridges the gap between what is known and what can be known, so learning occurs in this zone. What helps bridge the gap between learners in these two levels is the interaction with peers and with experienced individuals, especially teachers. The notion of ZPD is applied to pedagogy through the concept of scaffolding (Bruner, 1990), a concept that mainly supports the SFL genre approach or Sydney School to language instruction, which claims that employing scaffolding in lessons is necessary since learners can write better with learning and practicing with teachers and friends (Emilia, 2005; Kongpech, 2006). Also, scaffolding can be employed with ESP genre teaching, whose emphasis is placed on providing learners with the means to understand and then create new texts independently by a process of “gradual approximation” and consciousness raising (Hyland, 2007a).

As for the concepts of gradual approximation and consciousness raising, they are a variation of Vygotsky’s idea (Hyland, 2007a), helping learners to create their own writing skills. Gradual approximation refers to the view that learning becomes successful through modeling, guided practice, and then independent construction or performance of new text (Paltridge, 2004). Consciousness raising is a way for teachers to encourage learners to explore grammatical, lexical, and rhetorical features of the samples of target genres (Hyland, 2007b; 2008). Thus, students should be asked to conduct mini-analyses of the genre they have to write.

Various definitions of scaffolding have been proposed. For example, it has been suggested that scaffolding is a dynamic and situated act that is responsive to a particular set of circumstances in a particular classroom context (WestEd, 2003 cited in Pongsurapipat and Faktornngpan, 2007). Maybin’s (1992 cited in Gibbons, 2006) definition of scaffolding emphasizes the results for learners. In the classroom, scaffolding means the temporary but essential assistance that supports apprentice learners in acquiring new skills, concepts, or levels of understanding (Maybin, 1992 cited in Gibbons, 2006). In addition, two criteria for determining if an activity can be defined as scaffolding are suggested. There must be evidence of a learner successfully completing the task with the teacher’s help, and evidence of the learner having achieved

a greater level of independent competence as a result of the scaffolding experience (Maybin et al., 1987 cited in Gibbons, 2006).

Also, van Lier (2008) proposes six conditions in designing tasks for pedagogical scaffolding, including continuity (task repetition, connection, and variation), contextual support (safe and supportive environment), intersubjectivity (mutual engagement and encouragement), contingency (task procedure depending on actions of learners), handover/takeover (increasing role of learners), and flow (skills and challenge in balance and participants who are in tune). Finally, Gibbons (2006) provides five stages of teaching and learning activities based on the scaffolding concept: orientation, setting up the new task, carrying out the task, reflection on the task, and written work.

From these definitions and characteristics of scaffolding, it can be concluded that the initial stage of teaching should be the orientation of the lesson. What teachers need to do is to gradually support students from their own writing ability level to the level of potential performance using various tasks based on the above six conditions and stages, for example, by having students analyze many written samples of genre (consciousness raising), including various types of genres, then asking them to do exercises to help familiarize them with the organization of the genre. However, before asking them to do these activities or exercises, the teacher needs to show them how to analyze and do exercises explicitly first, and then encourage them to do the same thing in groups many times until they have understanding and are able to do it independently.

Some studies have documented learning gain when applying scaffolding in the writing class. For instance, Srirattanakul (1997) investigated the effects of scaffolding guidance on students' writing, specifically whether scaffolded guidance could help students write freely and effectively. The study was undertaken with 44 Mattayomsuksa 5 students at an Islamic College in Thailand. The results of this research revealed that scaffolded guidance could improve students' writing holistically. Moreover, in terms of analytic effects, it was found that scaffolded guidance worked very well with the lower-level cognitive skills, such as spelling and punctuation. Another study carried out by Liu and Chai (2009) investigated the attitude of advance-level undergraduate EFL learners toward and reaction to peer review and their correlation with the learners' writing performance. The results showed that scaffolding through peer review benefited the students because they received suggestions and

comments from high ability students in terms of linguistic and non-linguistic knowledge such as in organization of paragraphs, vocabulary, and grammar.

2.7.2 Explicit teaching

As stated previously, teaching with the GBA provides a contextual framework for writing that emphasizes the meaning and text-type. Therefore, offering the students an explicit understanding of how texts in target genre are structured and why they are written in certain ways to achieve their communicative social purpose are required (Hyland, 2003b). In addition, students have to know the lexico-grammatical patterns that are typically used to express meanings in the genre in order to create a well-formed and effective text (Hyland, 2007a). Therefore, the teacher's task is to assist students an awareness of target genres and an explicit grammar of linguistic choice. Moreover, teachers have to encourage students to investigate the texts and its social contexts in terms of social purposes, kinds of situation in which its use is appropriate, who the probable reader is, what readers would like to know, and the relationships between readers and writers etc. (Hyland, 2007a).

In conclusion, explicit teaching is a genre-based teaching concept focusing on clear explanation of how texts are structured and they are written in the way they are. Thus, teacher has to prepare activities to help students see how each text type is organized and why it is structured the ways they are in the teaching stages, including exploring the social purpose of the text type. How to apply this concept to use in this study is explained in the next topic, teaching and learning cycle, below.

2.7.3 Teaching and learning cycle

The teaching and learning cycle is a teaching stage designed for teaching writing based on the GBA, especially for the Sydney School or SFL genre (Burns, 2007). Although the teaching and learning cycle is developed for the "SFL genre," it is believed that it can also be employed with the "ESP genre." The reasons for this are explained at the end of this section. The cycle provides the planning of classroom activities by showing the process of learning a genre as a series of linked stages. Scholars have constructed a teaching model which is called the teaching and learning cycle, with the notion of scaffolding used as the theory underpinning this cycle (Feez, 2000; Hammond, 1992 cited in Kongpetch, 2006: 11). One of the most straightforward representations of this cycle has been proposed by Feez (2002) and is shown in Figure. 2.5.

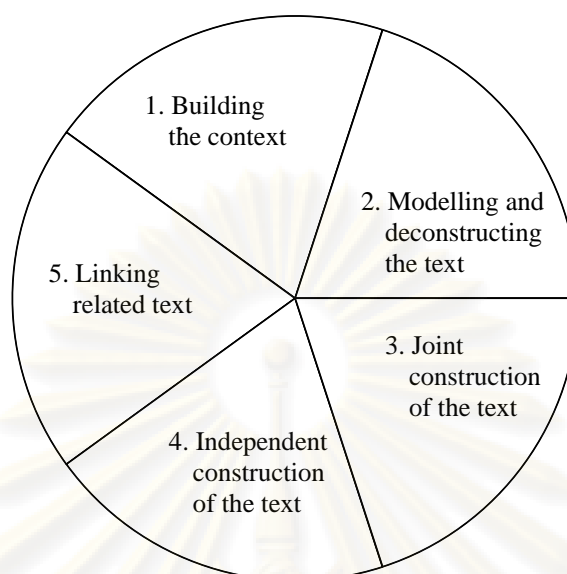


Figure 2.5: Stages of the teaching and learning cycle (Feez, 2002)

The main purpose of the cycle is to ensure repeated opportunities for learners to be engaged in activities that require them to reflect on and critique their learning by developing understanding of texts (Hyland, 2007b). The details of each teaching stage and some samples of activities that can be used to meet the details of each teaching stage, the details of explicit teaching concept, and some suggested teaching activities for the ESP genre are explained below (Feez, 2002; Hyland, 2007a).

1. Building the context

This stage reveals the purpose of a genre and the setting in which it is commonly used. Also, as a part of the explicit teaching concept, the emphasis of this step is placed on the functions of language and how meaning works in context. Thus, teachers have to understand the key aspects of the sociolinguistic context and raise learners' awareness of questions relevant to the social purpose of the genre, such as, "what is the text about?," "what purpose does it serve?," "who produced the text," "what choices does the writer have in format, vocabulary, and topic," and "who is the intended audience?" That is, learners need to know much more than vocabulary and formulaic phrases in order to communicate successfully in such contexts.

Some possible class activities have been suggested (Hyland, 2007a; Flowerdew, 1993). For example, some learners are required to present and discuss context through pictures, films, and guest speakers, and the teachers provide learners with the analytical

tasks requiring them to interrogate a text to reveal aspects of its cultural context. Therefore, the initial tasks of this writing course can be to ask learners read the sample text, and then ask them to answer questions. Questions should lead learners to think about the context of the written text, such as what is the purpose of this text?, who are the writer and intended reader of this text?, Do you think the writer is a senior, junior or approximately equal to the reader?, and Which parts of the text indicate this?

2. Modeling and deconstructing the text

This step focuses on involving teachers and learners in discussing and exploring the whole text (clauses and expressions) of the genre and its key grammatical and rhetorical features as the explicit teaching stage together with the concepts of gradual approximation and consciousness raising. Samples of the target genre are analyzed, compared, and manipulated. Teachers need to help learners understand key issues, including the stages of the text and the functions served by each step, the language features that help express these functions, how to know what the text is about, the social relationship between the reader and writer, and the main language features of the genre. In order to help learners understand key issues, teachers can ask learners to do many activities, such as sequencing, rearranging, matching, and labeling text components, and reorganizing or rewriting scrambled or unfinished paragraphs. Activities focusing on a set of cohesive devices, such as sets of related lexical items, conjunctions, modality, and reference are recommended, e.g. doing cloze exercises. Flowerdew (1993) points out that the important point is that the models of genres presented in the classroom should not be treated as fixed, rule-governed patterns but as prototypes that allow for individual variation. Additionally, Burgess (1997 cited in Paltridge, 2004: 60) advises that learners should engage in genre analysis as a partner with their instructor to arrive at heightened awareness of discourse norms and the social purposes these norms fulfill.

3. Joint construction of the text

This stage is normally conducted with the entire class. Teachers and learners work together to construct the required types of genre. The concept of explicit teaching is still also provided at this stage. Teachers should work less as facilitators and should gradually reduce their contribution as the learners gain greater control over their writing. Therefore, suggested class activities are, such as, teacher-led, whole class construction on the overhead projector and creation of parallel texts following a given mode. Skeleton texts, jigsaws and information gap activities, small group construction

of texts, and peer- and self-assessment are suggested. However, teachers should be careful at this stage because it may not be successfully applied in the Thai context because some Thai students may not express their ideas or even say anything during the process of joint construction. They may feel shy, reluctant, or lazy to share their ideas to help the classmates write the required genres. For example, Kongpetch (2006) investigated whether the GBA could be applied in writing instruction with Mattayomsuksa 6 students in Khonkan province. It was reported that the majority of subjects could not work well at the joint construction step when they did group work. They felt bored because some group members did not want to share their ideas nor did they want to think. Thus, the idea of writing together may come from only a few students. Also, this result might have stemmed from the fact that the students were not familiar with working at the group level or with sharing their opinions with the teacher. In contrast, Udomyamokkul (2004) was successful in applying the GBA at the joint construction step. He suggested that using an overhead projector and the teacher's think-aloud technique could help students work well at this stage of the process. This might be because students saw a model of how to think and express the ideas via the thinking aloud technique. The projector was used as a means to display the model, and this helped students see how to think explicitly before they were asked to work in groups. Moreover, some activities supporting students' writing tactics or strategies are recommended in this step, for example, asking students to discuss the writing tactics they should use in writing e-mail in groups after they read the samples of the writing situations.

4. Independent construction of the text

Independent writing is the ultimate goal of the L2 writing class. The purpose of this step is for learners to apply what they have learned to the writing of a text independently, while the teachers supervise and offer advice. Moreover, this step also provides teachers with a means of determining whether learners have been successful with a needed level of competency in the genre. Some independent construction activities are suggested, such as practicing a range of pre-writing activities, outlining, writing a draft based on pre-writing activities, and revising the draft in response to others' comments.

5. Linking related texts

This final stage provides learners with opportunities to investigate how the genre they have been studying is related to other texts that occur in the same or a similar context, to other genres they have studied, and to issues of interpersonal and institutional power and ideology. This can be conducted after learners have learned and understood the target genre provided in the classrooms so that they have a means of helping them to make a comparison. Some key activities include studying how the staging of information changes when written for different readers or purposes, and how to rewrite the text to achieve a different rhetorical purpose.

According to the aforementioned explanation of the teaching and learning cycle, it can be seen that the teaching at each stage requires a variety of activities. The teacher needs to create activities and materials carefully in order to match the requirement of each step of the cycle and the concept of explicit teaching. Xu (2005) suggests that the teaching of writing be based on the genre-based approach, which consists of two categories. The first category emphasizes the modes for presenting to learners the findings of the genre analysis, and the other category encompasses task-based activities to familiarize students with the genre. It seems that this idea can be employed in the modeling step of the teaching and learning cycle. In addition, Flowerdew (1993) recommends that activities be based on the educating process, which is individual oriented. Learners are educated to be independent learners; that is, to have the ability to generate their own learning as needed. The focus here is on the process, not the product. Samples of activities consist of using the results of genre analysis, talking about instances of genres, learning and doing their own genre analysis, concordancing, doing on-line genre analysis, and understanding a translation based on a sample or a given genre.

In conclusion, the teaching and learning cycle involves five stages: building the context, modeling and deconstructing the text, joint construction of the text, independent construction of the text, and linking related texts. Since this is a cycle, it is possible to start teaching and learning at any stage and to go back and forth between stages, depending on the teacher and the learners' writing ability (Hammond et al., 1992). Various activities are recommended that can be used to meet the details of each teaching stage, details of explicit teaching, including the recommended ESP genre teaching activities.

As previously mentioned, the teaching and learning cycle was developed to teach students the SFL genre, but it was implicit in much ESP genre instruction (Widdowson, 1978). However, it is believed that the cycle could be used for this study for two reasons. First of all, both the SFL and ESP genres rely on the concept of scaffolding. Widdowson (1978) argues that the concept of scaffolding is implicit in much of the ESP genre teaching, suggesting that students be taught about the ESP genre via a “gradual approximation” process. This process entails providing learners with the means to understand and then create new texts (Widdowson, 1978). Some common activities which can be done in class as activities in the gradual approximation process involve asking students to analyze, compare, and manipulate representative samples in order to increase their awareness as explicit teaching activities. These activities are similar to the teaching activities in the “building context” stage of the teaching and learning cycle. Students are encouraged to analyze the context of writing samples by looking for such features as purpose of the text and the relationship between the reader and writer. This stage is also a compulsory stage in the ESP genre, especially regarding the professional genre (Bhatia, 1999).

The second reason is that genre analysis, which is the core of the ESP genre, is also a part of the modeling and deconstructing stage of the teaching cycle. However, specific details relating to genre analysis in the SFL and ESP genres may be somewhat different. For example, the ESP genre can be analyzed in terms of move analysis (the top-down approach), while the SFL genre can be analyzed based on the bottom-up perspective (Kanoksilapatham, 2009). However, the other teaching stages, namely, joint construction, independent construction of the text, and links of the text, can also be used in teaching the ESP genre. As previously discussed, in the teaching cycle, the joint construction of texts, their independent construction, and links with others texts require that the teacher ask students to practice writing together, first as a whole class activity, and then in groups, until the teacher is satisfied that students can write independently. The final stage is for students to compare the target genre with other types of genre. These activities can also be employed in the ESP genre as well. Apparently, many activities suggested in the ESP class are similar to some of those in the teaching and learning cycle framework; that is, the SFL genre.

In sum, in order to use the GBA in teaching students, the teacher needs to understand the concepts of scaffolding, genre analysis, explicit teaching, and it is

necessary to follow the steps in the teaching and learning cycle when designing lessons for the students in the course. This necessarily includes incorporating appropriate activities and materials in each different teaching stage. However, structuring a lesson around the teaching and learning cycle alone may not be enough. It would be more effective if the teacher made use of the idea of dynamic social actions when planning the lesson. This can be done by providing two-way communication samples. Focusing on the social context is in fact one of the characteristics of the GBA which makes the GBA different from other teaching-writing approaches. In order to make group activities more meaningful, it is also best if the teacher employs activities from the process approach, such as brainstorming, drafting, editing, and revising. This is because, generally, the GBA does not adequately address learning as a process.

2.8 Genre analysis

Previous discussions have focused on the areas of the theoretical and practical relevance of the GBA, why it is useful, and how it has been applied in writing classrooms. Another important concept is how to analyze the text or genre so as to help the teacher and learners understand the ways in which genres are constructed and used. Also, genre analysis is a part of the GBA course development processes.

Genre analysis is a branch of discourse analysis that explores specific uses of language. Understanding the communicative characters of discourse by examining how individuals use the language to engage in particular communication is required (Hyland, 2007a). Also, Hyland (2003b) argues that genre analysis, in linguistics, relates to describing the higher level organization and structures of written and spoken texts. The objective of genre analysis is to find the link between the linguistic features of a genre and the action they perform (functions, purposes). The general aim of a genre analysis is to identify the moves and strategies of a genre, the allowable order, and the key linguistic features (Henry and Roseberry, 2001). Swales, who is a pioneer in genre analysis, has developed a technique to analyze genres (genre analysis) into a hierarchical schematic structure of move-step (Swales, 1991, 2004). Swales (2004) argues that certain genres consist of specific moves and structures. That is, each genre has a typical rhetorical structure, and this structure consists of a number of specific moves (Kankoksilpatham, 2009). Based on linguistic features, the moves and structures within a text can be isolated and examined. These are the principles of genre analysis.

Since moves are examined, sometimes it can be called move analysis (Cheng, 2006). Swales (1991) and Wennerstrom (2006) emphasize that the sets of move (models) are not fixed, rules-governed patterns, but rather prototypes that depend on individual variation. Dudley-Evans (1998) uses the term “move cycle” to reflect the notion that subsets of two or more moves can recur as a unit.

A “move” is an important concept relevant to genre analysis. A move refers to a unit relating both to the writer’s purpose and to the content that he/she wishes to communicate (St. John and Dudley-Evans, 1998). Similarly, a move can be defined as a discursal segment (oral/written) that performs a particular communicative function and can be defined by linguistic clues (Swales, 1981 cited in Kanoksilapatham, 2007: 1). Another definition of a move is provided; it refers to a defined and bounded communicative act that is designed to achieve one main communicative objective and as the lexico-grammatical realizations of a move (Swales, 1991; Swales and Feak, 2000). Another definition is from Vergaro (2004), who emphasizes the linguistic forms and members of the community. A move is a meaningful unit that expresses a linguistic (lexico-grammatical) form and is related to the communicative purpose of the activity in which members of the community are engaged. In conclusion, a move is a unit that performs a communicative function to serve the members’ writing purposes in the particular community. There is no fix order for it. A move can be identified by linguistic clues.

Another important term is the “step” or strategies coined by Bhatia (Bhatia, 1993b; Kanoksillapathum, 2009). A step is a lower-level text unit than the move that provides a detailed perspective on the options open to the writer in setting out the moves (St. John & Dudley-Evans, 1998). According to Bhatia, steps can be defined as non-discriminating since they do not affect the overall communicative purpose of the genre but document the detailed information of the moves (Bhatia, 1993b).

What one receives from the move-step model is how forms and functions are linked to achieve the writer’s communicative goals. In genre analysis, the analysis can be conducted at two levels: the macro level (formatting convention/ organization/ move and step) and the micro level (lexico-grammar) (Wennerstrom, 2006). This is similar to what Kim (2007) mentions. According to Kim, the structural features of a genre involve organizational structure (rhetorical structures) and linguistic features. For this reason, genre analysis is a powerful tool that can help instructors uncover connections

between language and types of texts and between forms and functions, enabling teachers to provide students with information and activities that raise their awareness of genres and perhaps make them better writers also (Hyland, 2007a).

In order to elucidate what will be analyzed under the process of genre analysis, Kanoksilapatham (2007) points out two typical characteristics of genre analysis, some parts of which are similar to what Wennerstrom mentioned previously, i.e. the micro and macro levels of genre analysis. These are explained below.

A: Move analysis (top-down approach)

1. Rhetorical organization/ structural organization
2. Two levels of analysis: move and step status of a move/step: obligatory and optional
3. Sequence of moves (opening and closing moves)
4. Recursiveness or cyclicity of moves

B: Linguistic features (bottom-up approach)

1. A cluster of linguistic features (e.g., grammatical and lexical features and constructions) co-occurring to perform a communicative function
2. A move can be a phrase, a sentence, a group of sentences, or even a paragraph
3. Commonly used features in each move

(Kanoksilapatham, 2007: 2; 2009: 2)

Moreover, according to Kanoksilapatham (2007), there are two issues that should be noted in analyzing genre. First of all, the corpus compilation must be sizable and representative. The second point is that move boundaries must be verified with experts and an expert informant concerning the specific information required.

As for Bhatia's genre analysis (1993b), his work follows Swales's concept of genre analysis (move and step). However, he places his focus more on the professional genres (e.g. sales letter, legal cases, etc.), while most of Swales's work emphasizes academic genres (e.g. introductions to articles, abstracts etc.). Thus, Bhatia adds concepts that will be useful for analyzing professional genres and applying the results to classroom instruction. Bhatia's genre analysis is based on three orientations: linguistic, sociological, and psychological (Bhatia, 1993b). This means that one needs to analyze genres on the linguistic level. Also, one needs to be aware of how a particular genre defines, organizes, and communicates social reality because it is believed that the text itself cannot complete the purpose on its own. It needs an ongoing process of negotiation with the context. Finally, one should pay attention to the tactical aspects of genre construction (psychology). It is these tactical choices or strategies that the writer

uses in order to make the writing more effective. The main purpose of genre analysis is to study how the communicative goals of professional communities are achieved in specific rhetorical contexts using structural forms appropriate to specific content (Bhatia, 1999).

According to the three orientations, Bhatia proposes steps for conducting genre analysis which have been summarized by Hyland (Hyland, 2007a) below. It is not necessary to consider all of the steps; it depends on the purpose of the analysis.

1. Select a text that seems representative of the genre the teacher intends to teach;
2. Place the text in a situational context—i.e., use the reader's background knowledge and text clues to understand where the genre is used, who uses it, and why it is written in that way;
3. Search the research literature or textbooks for ideas and insights into the working of the genre and the way it is conventionally structured and written;
4. Refine the situation analysis on the basis of this reading to more clearly identify users' goals, who the writer and reader are, the network of the surrounding text, and the context in which the genre is used;
5. Compare the text with other similar texts to ensure that it broadly represents the genre;
6. Study the institutional context in which the genre is used to better understand the conventions that text users often follow;
7. Select one or more levels of analysis (looking at common vocabulary and grammar, types of cohesion, move structure, and so on) and analyze the key features;
8. Gather information from specialist informants, if possible, to confirm your findings and insights and to add the psychological reality to the analysis.

According to Bhatia's view, the stages of genre analysis in general are similar to Swales's genre analysis, especially the seventh step (analysis of move structure, etc.). What Bhatia focuses more on are the contexts of writing, writing situations, specialist informants, and writing strategies. Clear understanding of what Bhatia focuses on would help learners see each type of genre explicitly, and as a result they may write more skillfully. As for this study, the genre analysis stage, which is employed as an activity at the teaching stage of the teaching and learning cycle, combines both

frameworks of Swales and Bhatia because their frameworks are similar. That is Bhatia follows Swales' genre analysis (move and step), but Bhatia also emphasizes on contexts of writing, writing situations, specialist informants, and writing strategies which are important for ESP genre. To make them easier to use, the stages can be summarized as follows:

1. Collect samples of required genres;
2. Examine the understanding of those who write and read the genre and the writing situations of each sample;
3. Identify how texts are structured in terms of functional stages or moves;
4. Identify the features that characterize texts and that help realize their communicative purposes;
5. Analyze language at the level of linguistics (lexis, grammar, and syntax);
6. Examine the understanding of social, cultural, and psychological contexts and explain the writers' language choices.

In conclusion, genre analysis is an important concept for teaching writing based on the GBA since the results of genre analysis are applied in the lessons. One famous genre analysis framework belongs to Swales. The core of his framework is the move and step analysis (text organization). Another framework has been created by Bhatia. His framework also follows Swales idea, but Bhatia pays more attention to professional genres and his analysis concept focuses on writing contexts, writing situations, specialist informants, writing strategies, and analysis at the linguistic level.

2.9 Related research

There has been a great deal of research relating to the ESP genre which can be divided into two groups: academic and professional genres. This study emphasizes the professional genre because this present study is planned for engineering students with content relevant to actual engineering professional work. However, research on the SFL genre or the Sydney School is also reviewed since the teaching and learning cycle concept underlining the SFL genre as a teaching procedure is planned to be used as the teaching stages in this present course. The related research reviewed here can be divided into two main groups: the genre analysis and the application of the analysis results in actual instruction.

2.9.1. Genre analysis

Regarding genre analysis, Bhatia (1993a), for example, analyzed both sales letters and application letters of South Asians. Based on Swales and his framework of genre analysis, it was revealed that both types of letters shared seven similar moves, comprising the following: Move 1: establishing credential; Move 2: introducing the offer; Move 3: offering incentives; Move 4: enclosing document; Move 5: soliciting responses; Move 6: using pressure tactics; and Move 7: ending politely. According to Bhatia, Moves 1, 2, and 5 are obligatory in sales promotion letters and letters of application since the letter aims at building goodwill to convince the reader. Moves 3, 4, 6, and 7, on the other hand are optional. However, it is not explained that why it is the case. Based on the results of this research, it could be stated that different moves provide different purposes and that they are not equally important.

Also, Henry and Roseberry (2001) have analyzed letters of application, but their work focused on the corpus of native speaker letters of application in order to determine what discourse and linguistic features they had in common by using a computer program. Particularly, the study identified the moves of application letters, the allowable move order, and the strategies used to realize the moves. This study differed from Bhatia's work (1993) in that Bhatia did not analyze a corpus of native speaker letters, nor did he attempt to identify the strategies. The results indicated that there were 11 moves of a letter of application: Move 1: opening; Move 2: referring to a job advertisement; Move 3: offering candidature; Move 4: stating reasons for applying; Move 5: stating availability; Move 6: promoting the candidate; Move 7: stipulating terms and conditions of employment; Move 8: naming referees; Move 9: enclosing documents; Move 10: polite ending; and Move 11: signing off. It was also revealed that three of the moves—Move 1: opening, Move 2: polite ending, and Move 3: signing off—were common to all business letters. The most wide-ranging move in terms of linguistic features was the promotion move. Different strategies were applied to accomplish the communication, especially in the promotion and polite ending moves. What can be learned from this research is that the analysis results of the same genre can vary from analyst to analyst and also among different communities of people who use such kinds of genre. Simply put, the analysis results of the same type of genre can provide different results if that type of genre is used in different communities.

Van Mulken and Van der Meer (2005) analyzed 40 reply-to customer enquiry e-mails from American and Dutch companies in order to explore the rhetorical structures and interpersonal strategies used in those e-mails. The nature of electronic communication and the transcendence of cultural boundaries were highlighted. The results revealed that American companies were usually quite careless in their response policy. American producers more often expressed gratitude and Dutch producers were more often sorry to decline a request. The results of the move analysis were composed of four moves; namely, Move 1: salutation; Move 2: answer; Move 3: further contact; and Move 4: close. These moves were non-optional elements that characterized the rhetorical structure of the genre and were presented in more than 75% of all replied samples. Besides this, salutation sometimes also involved subsidiary moves: presentation of self and thanks, while justification could also be a subsidiary move of answer. Based on the results of this study, it can be said that the definition and boundary of each move depends on the notion of the analysts.

Another research study relevant to e-mail analysis belongs to Thaweewong (2006). Thaweewong was interested in examining business e-mails. Her work focused on intercultural communication between Thais and Germans in profit and non-profit organizations. Three hundred and twenty seven samples of authentic English business e-mail messages written by Thais and Germans were analyzed. The results revealed that these business e-mails consisted of seven moves; namely, Move 1: opening salutation; Move 2: establishing correspondence chain; Move 3: introducing purposes; Move 4: attaching document; Move 5: soliciting response; Move 6: ending positively; and Move 7: closing salutation. It was concluded that Thais and Germans followed the same sequence of moves, but at different frequency of occurrences. The move structures of the e-mail messages pointed out the national cultures of the e-mail composers, which were governed by the corporate cultures because different organizations had different norms in achieving their communicative goals. This study also shows the language forms supporting each move to serve different functions. The politeness strategies are also pointed out. Concerning Thaweewong's results, it can be stated that adapting the analyzing model of her work as a guideline for genre analysis can be a choice for this study since the model is derived from an analysis of business e-mails which are similar to parts of the written samples of this study. Moreover, the detail of the politeness strategies of Thaweewong's work can be a guideline for creating

interview questions for interviewing engineers in order to create the content of the lessons. Also, the analysis results of the linguistic structure have revealed how to analyze the language forms of the request in Move 3, introducing purpose.

Another work is similar to Thaweewong's in terms of analyzing a request for a written sample and its linguistic forms, but this work focuses on the letter form and persuasive strategies. Chakorn (2006) sheds light on the rhetoric of cross-cultural letters of request in the Thai business contact. Her work emphasizes the contrastive analysis of 80 authentic letters of request written in English by Thai speakers and native English speakers. The corpus involved 38 Thai letters and 42 Non-Thai letters. The cross-cultural variation as well as contrastive text linguistics and pragmatics were investigated. The text linguistics were used to examine the rhetorical structures in letters of request and the linguistic realization, while the pragmatics were used to examine the persuasive strategies. The model for analyzing the request letters in this study was adapted from the model of Bargiela-Chiappinin and Harris (1996). The new pattern consists of: Move 1: Salutation; Move 2: Introduction; background information, reference (to create attention); Move 3: Pre-request; Move 4: Request; Move 5: Post-request; and Move 6: Complimentary close and signature. It was found that delayed introduction of purpose was a unique hedging strategy found in the Thai letters, while the native speaker letters were more direct. Moreover, Thai speakers' letters used more negative politeness, including more indirect, deferential, and self-effacing strategies. As for the textual features and linguistic realization results of request, it can be concluded that there were four mood types, including their own linguistic forms expressing request: declarative mood (need and wish statement), imperative mood, polar interrogative mood, and modal initial interrogative mood. According to these findings, it is also possible to adapt the model of Chakorn's genre analysis to analyze the sample written texts. Moreover, analyzing on the linguistic level is necessary and useful so that the teacher can teach any kind of genre.

2.9.2. Genre and teaching application

The other group of research is the application of genre analysis in instruction. For example, Pang (2002) investigated the impact of genre-based teaching on undergraduate students' writing of film reviews, which is a unit of the course entitled "Model of Speech and Writing." The subjects were 39 first-year students at Lingnan University, Hong Kong, and were divided into two groups. The first group was

introduced to genre through contextual awareness building, and the other group through textual analysis. Each group had to study through its own model. A writing-strategy questionnaire and an assessment form were adopted as the research instruments. The results revealed that both groups made progress since these two approaches yielded almost equal results in the quality of the writing products. However, it seems that the subjects preferred the textual analysis approach, as evidenced in the interview results. The students said that the lesson enhanced their awareness of either textual or contextual factors in writing. Based on the research results, it can be assumed that the GBA or textual based approach in this study was a useful method for teaching writing since learners were able to write film reviews after studying with the method. Also, students enjoyed the method.

Henry and Roseberry (1998) have also applied the GBA to teach writing with a focus on both ESP and EAP writing. Thirty-four subjects were assigned to two groups, the genre group and the non-genre group. Each group was given a pretest followed by six hours of teaching over a three-week period. The genre group used genre-based materials (structural move analysis activities), while the non-genre group used a more traditional approach model (grammar oriented activities). The genre was tourist information. They used three measures (motivation, move, and texture) to evaluate the subjects' improvement in achieving the goals of the genre. A pretest and posttest were used to compare the move scores designed to quantify how well the students conformed to the allowable move structure. It was found that a genre-based approach helped students to create better textured writing and to achieve the communicative goals. However, there was no statistically significant improvement in the move accuracy score between the two groups. Both groups of students said that they enjoyed learning to write in this kind of genre and could see the importance of it. As for students that studied in the genre group, they reported that they enjoyed studying with the GBA approach because it differed from the method they employed in secondary school. They indicated that it improved their motivation to write by showing them clearly their progress in achieving the purpose of the genre. This result yields support to the claim that teaching through the GBA is a key to learners' success in improving their writing ability since learners have more motivation and write well in terms of texture level. However, the results have also shown that both the GBA and traditional approach help students to

write in the sense of move structure. Thus, it is interesting to find out how the students learn in order to identify and recognize the rhetorical organization of genres.

Another study has demonstrated more complicated results of teaching genre forms. This study was undertaken by Mustafa at the University of Jordan in 1995. It was found that students that had taken a term paper writing course were made aware of term paper conventions more often than those that had not taken the course. In contrast, the results of the analysis of the students' term paper showed that students did not follow the basic conventions or macrostructure of the term paper appropriately. Their writing also showed problems with organization, heading, quotation, and plagiarism. Simply put, the results demonstrated that there is a gap between what students may become aware of via the GBA and how they actually performed in their writing.

Also, Zhu (2000 cited in Thaweewong, 2006: 28) investigated ESP writing instruction. A combination of genre analysis and schema theory was used as the principle of teaching. The four-stage approach to teaching the cross-cultural sales genre was also introduced. The approach consisted of a comparison of social and cultural contexts, communicative purposes of genres, text structures, and implications of genre comparisons. Forty authentic Chinese and English sales letters were used as the materials of the study. They were analyzed in terms of moves, text structure, and politeness strategies. It was discovered that teaching the communicative purpose was the most important process and such an approach was effective when teaching students how to write sales letters in English and Chinese. According to the results, this means that the course designer has to point out communicative purpose as a part of the lesson.

There are still very few substantial discussions of learners' learning in the English for specific purpose genre (ESPG) instructional framework. Specifically, various aspects of explicit learning and teaching characterize this framework.

Recently, Cheng (2006) has reported interesting research results explaining how learners develop generic awareness in the ESP genre-based writing pedagogical framework and whether this generic awareness becomes part of their own writing. Specifically, various aspects of explicit learning and teaching characterize this framework. Her work presents how learners learn to identify the structure organization of moves. The study was conducted with 22 advanced Chinese-speaking graduate students in electrical engineering who were enrolled in an English academic writing course in a large American state university. Students came from various countries, such

as China and Korea. They were asked to analyze genre exemplars in preparation for writing. Class discussion was a teaching technique of this study employed to help students heighten their awareness of the functions of the generic features in the samples. Also, they were asked to read and analyze the introduction of the research articles they chose by themselves as the out-of-class tasks. Writing assignment was also a part of the activities. Text-based interviewing and analyzing the writing assignment were used as the experimental tools to collect the data. It was found that genre analysis, as a tool of learning, encouraged students to notice various genre-identifying features, such as the influence of a move on the patterns and purposes of subsequent moves and the various ways of strengthening the connection among moves. More importantly, learners developed their generic awareness through a deepened understanding of how writer, reader, and purpose interact in a piece of text that results in the use of certain generic features. Also, the process of learning is strongly driven by individuals' needs and objectives. Furthermore, the development of a responsive notion of text can be seen in their writing assignments. Moreover, the lesson would be designed to help students see the relationship and interaction among the writer, readers, and the purpose of communication since uncovering these factors can lead to the development of generic awareness of learners. Asking students to analyze genres themselves would be a part of the lesson as well. Therefore, having students analyze genres should be employed in this present course. The results of this study yield support to the claim that students can write after studying through the GBA.

As for the Thai context, Honsa and Clark (2004) summarized the results of teaching academic paragraph writing through the GBA (ESP genre) with first-year medical students at Mahidol University. The purpose of the study was to determine whether first-year students should be taught how to write an opinion paragraph using a move-step/genre approach before asking them to write opinion paragraph. There were two phases of teaching. The first phase was undertaken with 45 students, divided into three groups (A, B, and C) equally and systematically. Group A was given sample paragraphs together with explanations from the teacher, whereas group B was given a sample paragraph, but no explanation about the moves or steps was given to them. The students in group C were only instructed to write a paragraph in English showing their opinion. All three groups were provided the same topic. The results showed that 40% of the students in group A got the highest scores, while 73% of the students from group

C got the lowest scores. Interestingly, the students in Group A had a lower English proficiency in their introductory University English course. In the second phase, 72 medical students, whose English scores from the National Entrance Examination were 85 or above, were the participants in the study. All students were given a model paragraph to study on their own and then they were asked to write an opinion paragraph on the same topic. It was found that the outcome confirmed the results of the first phase. Thus, it can be concluded that medical students should be taught how to write an opinion paragraph before they are asked to write to express their opinion. In brief, the GBA is an effective way of teaching.

Most of the cited research at the beginning of this section on genre and teaching application concerns the ESP genre, but the pedagogical concept of genre from the “Sydney School” (teaching and learning cycle) can also be applied to the course. For example, Emilia (2005) reports on the effectiveness of using a critical genre-based approach (GBA) in teaching academic English writing (argumentative) to student teachers who were learning English as a foreign language in a state university in West Java, Indonesia. The GBA model was adopted from Rothery (1996) and others relevant to the study following the concept of the Sydney School. The study was conducted during an 11-week period and adopted classroom observation together with analyzing the collection of samples of students’ texts at various stages of the teaching program as the research instruments. The findings showed that the teaching program was successful in the Indonesian EFL tertiary teaching context. Moreover, the students’ argumentative writing skills in English improved. This was because students achieved enhanced control of the target argumentative genre, at greater length, with clear semantic structure, and with improved use of evidence and information in support of their argument. Moreover, the evidence revealed that students developed critical thinking and critical literacy as well. According to the students’ perception of the teaching program which was collected by interviews, most students thought that the program was useful and enjoyable, even if one of the students indicated that studying through the GBA gave him a heavy burden because the GBA took up a great deal of time. However, most of the students saw the value of the interaction between the teacher and students in class during the teaching stage.

Similarly, Udomyamokkul (2004) used a similar teaching pattern developed based on the argumentative genre perspective of the SFL or Sydney School. This

research was done with 55 Thai undergraduates from various majors, such as applied science and engineering students at Suranaree University of Technology, Thailand, and they were divided into two groups. The first group, or the experimental group, was taught through genre-based instruction, while the control group adopted the process writing approach as the teaching method. The results were reported into two parts. First, the experimental group outperformed the control group, as indicated by the significantly higher gain scores awarded on the first drafts' development. Second, given opportunities for multiple drafting, revision, and editing, both groups were equivalent in their final draft performance. The results also indicated that students liked to study through the GBA since they perceived the facilitative benefits of the lesson and classroom activities which can be seen through their attitude toward the EFL academic writing. After learning, they understood, read with purpose, and wrote with much greater ease. According to the results, it can be said that teaching argumentative writing through the GBA was successful. However, teaching argumentative writing through the process approach is also possible but students may need to do multiple drafting, revising, and editing. Therefore, employing the activities of the process approach should also be carried out.

Kongpetch (2006) has also adopted the Sydney School GBA teaching pattern to investigate students' writing performance in expository writing. The goal of this research was to describe learners' responses to this approach and the effects it had on their writing. The teaching approach was implemented in the essay writing course for 45 English major and minor students at the Department of Foreign Languages, Khon Kaen University. The class was conducted over a 15-week semester. The results revealed that the genre-based approach had a significant impact on students' writing. In particular, students were able to use appropriate language features for written exposition. Furthermore, students found that the GBA had valuable effects on their learning experience. The students' views that the GBA helped them to write better were demonstrated by an analysis of their expositions. It can be concluded then that teaching expository writing through the GBA can be made possible with satisfactory outcomes.

To summarize, there is a great number of research studies relating to the GBA. Some of them focus directly on genre analysis, while other studies apply genre analysis in writing instruction. The existing research results have shown that the GBA is an effective writing instruction method that enables learners to develop their writing ability

by using their knowledge of linguistic and rhetorical organization. In addition, research findings have revealed that learners also have positive attitudes toward the GBA. Some learners have more motivation to write since the GBA is different from the methods generally employed in secondary schools and studying through the GBA makes them become aware of the progress in writing genres. Moreover, the results show that learners also like to study through the GBA since they perceive the facilitative benefits of the lessons and classroom activities. It is also worth noting that their studies were conducted in the L1 or L2 contexts and the results were satisfactory. There are others that have confirmed that the GBA can also be successfully used in a foreign language context, such as Thailand, specifically in the context of engineering work for undergraduate engineering students. Therefore, it was hypothesized as follows:

(1) the writing achievement scores in the post-test of the engineering students who are taught with the GBA course will be significantly higher than those obtained in the pre-test.

(2) the results of the end-of-the-course questionnaire survey will be greater than 3.5 which indicate positive attitudes of the students toward the overall of the course.

This study, therefore, has emerged to fill this gap by trying to develop an English writing course for undergraduate engineering students. The aim of the course is to prepare undergraduate engineering students to become familiar with the written works, writing contexts, and situations that they are going to face when they work in the future.

2.10 Course evaluation

Course evaluation is another important element of the course development process. The results of course evaluation lead to the direction of course improvement in various aspects, such as objectives, materials, and lesson plans. Course evaluation can be conducted by using various frameworks; it depends on the purposes of the course planners.

Evaluation can be defined as the systematic collection and analysis of all relevant information necessary to promote the improvement of a curriculum and to assess its effectiveness within the context of the institution (Brown, 1995). Weir and Robert (1994 cited in Richards, 2001) explain the difference between two major

purposes of language program evaluation. The first purpose is program accountability, which refers to the quality of the program at significant end points of the education cycle. The other one is program development, which focuses on improvement of the quality of the course as it is implemented. However, as an ESP course, course evaluation helps showing how well the course is actually fulfilling the needs of learners and whether the course is meeting its aims (Hutchinson and Waters, 1987)

Knowing the purposes of course evaluation and its meaning is not enough to evaluate a course, however. In order to evaluate a course appropriately, course evaluation frameworks must be considered as a criterion in order to examine why most students like such courses, and whether they learn well after the course, among others. More importantly, even if their learning achievement increases dramatically, it does not mean that they like the course. Graves (2001) proposes a framework of course evaluation involving three elements: assessing needs, assessing students' learning, and evaluating the course. This section is going to discuss only the second and third elements since the assessing needs elements has already been discussed in detail in the needs analysis section.

As for assessing students' learning, there are six questions the course designer should take into careful consideration. The questions and their explanations are described below.

1. Who assesses students' learning?

Possible answers are teachers, students, and institutions.

2. What is it assessed?

This can be either global or specific answers. Global assessment can be done by assessing the students' performance based on the objectives and the contents of the course. Regarding the specific assessment, this is a characteristic that the teacher assesses specifically on some factors, such as the materials or activities of each unit.

3. Why is students' learning assessed?

There are various purposes of assessment; it depends on the teachers. They consist of assessing proficiency, diagnosing ability/needs, assessing progress, assessing achievement, etc. (Bailey, 1998).

4. How can the teacher assess students' learning?

There are a number of instruments to help the teacher collect the data in order to see whether students have improved their learning, such as observation, task completion, and testing. This depends on the objectives of the assessment the teacher requires. Using various instruments in order to answer the same question is necessary since it helps the teacher cross-check the answers.

5. When can the assessment of students' learning take place?

The answers to this question depend upon the contexts of the course, such as how long the course is and how the course units are constructed.

6. What is done with the results of the assessment?

The answers to this question depend upon the answers to question 3 since their answers normally seem to be connected.

With respect to the final element of Graves' framework, evaluating the course, six other questions must be considered as well.

1. Who evaluates the course?

It can be both the teacher and students if the evaluation occurs during the course, but if the evaluation occurs at the end of the course, the persons that are in charge may be teachers or institutions.

2. What can be evaluated?

Various aspects can be evaluated. They involve goals and objectives, course contents, needs assessment, the way in which the course is organized, materials and teaching methods, the lesson plans, the learning assessment plan, and the course evaluation plan.

3. Why does the course need to be evaluated?

If the evaluation occurs during the teaching, the reasons are to evaluate its effectiveness and to change what is not effective so as to meet the needs of the students. However, if the evaluation is undertaken at the end of the course, it helps the teacher make decisions concerning whether the course should continue or not and also provides information for the redesign of the course.

4. How can the course be evaluated?

Various instruments can be employed at this stage, such as giving feedback, questionnaires, and observation.

5. When can the course be evaluated?

It can be at any time during the course, such as at the midterm, when problems arise, and at the end of the course.

6. What is done with the result of the evaluation?

The information obtained can be utilized based on the purposes and duration of the evaluation. For instance, if the evaluation occurs during the course, the information can be used to retain effective aspects of the course and to change what is ineffective in the course.

Graves' course evaluation framework is useful, as it covers important points that teachers should consider, but there are still other factors that teachers should be aware of as well. Another view of the course evaluation framework is that of Brown (1995), who proposes three dimensions of course evaluation: the purpose of the information (formative evaluation and summative evaluation), types of information (process evaluation and product evaluation), and types of data and analysis (quantitative and qualitative data).

Regarding the *formative evaluation*, it takes place during the ongoing curriculum development processes. The aims of it are to find out what is working well, what is not, and what the problems are in order to improve the courses (Richards, 2001). The samples of typical questions relating to formative evaluation can be seen as follows:

* Has enough time been spent on particular objectives?

* Are students enjoying the program? If not, what can be done to improve their motivation?

In order to answer these questions, the teacher needs to consider whether the students are enjoying the class. If this is not the case, how to motivate them must be considered. Moreover, each objective of the course requires different lengths of time for teaching, but the teacher can check both the appropriate length of teaching time and the enjoyment of students during the pilot teaching and adjust the time for actual teaching.

In contrast, the *summative evaluation* occurs at the end of the course. The purpose of this evaluation is to determine whether the program has been successful,

efficient, and effective (Richards, 2001). The results of this evaluation lead to decision making about whether the course should continue or not, and to provide information for redesign (Graves, 2000). The samples of the questions are listed below.

How effective was the course? Did it achieve its goals?

What did the students learn?

How well was the course received by students and teachers?

The second dimension, which is also important to course evaluation, is the types of information (product and process evaluation). Brown (1995) defines the concept of *process evaluation* as any evaluation which focuses on the working of a program (processes), while he defines the concept of *product evaluation* as the evaluation which specifies whether the goals (products) of the program are being achieved. Stufflebeam (2003 cited in Sowell, 2005) and Hutchinson and Waters (1987) also offer quite a clear definition of process and product evaluations. Process evaluation can describe how well the plans are carried out, and product evaluation can show the results of using the plans in terms of meeting the students' needs. This means that the teacher should take note after teaching in order to see whether all of the teaching plans went well. For example, the teacher should check whether the order of activities is clear and appropriate for the students' language ability. Furthermore, in order to check whether what the students learned meet their needs, the teacher can interview them both during and at the end of the course.

The last dimension is the types of data and analyses that involve qualitative data and quantitative data. Quantitative data are countable information, which is normally collected in numbers, while qualitative data are focused on more holistic information based on observation or judgment. The samples of qualitative data might include teacher journals, student logs, students' self-assessment forms, etc. The samples of quantitative instruments are tests, grades, checklists, and surveys which provide the results in numbers (Browns, 1995; Richards, 2001). In general, both types of data are deemed important in course evaluation. This is because showing only one type of data is not sufficient to reflect whether the course is effective.

Apart from the three dimensions of course evaluation, Brown (1995) adds another concept, "attitude," which is also important for course evaluation. This can be the attitudes of teachers, students, and administrators, depending on the purposes of the courses. The term "attitude," in general, means a tendency to react favorably or

unfavorably toward a class of stimuli, such as a national or ethnic group, a custom, or an institution (Anastasia, 1988). Attitude is therefore a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor (Eagly and Chaiken, 1993 cited in Oskamp and Schultz, 2005). For Brown (1995), attitudes are just opinions, and opinions can change. For the present study, attitudes refers to the likes or dislikes revealed in course evaluations. Expressing one's opinion about the course is similar to expressing one's attitude towards the course. Therefore, evaluation questions and statements can be written in the form of opinions as well. For instance, "How useful do you think the course has been for your studies,?" Has your English writing improved after the midterm exam,? What are the students,' teachers,' and administrators' attitudes and feelings about the usefulness of the tests originally developed,? Before the program? After?, and What are the students,' teachers,' and administrators' attitudes and feelings about the materials as originally adopted and developed?

Graves' and Brown's frameworks are similar in terms of covering the ground of the course design process and focusing on more than one dimension of the course evaluation process. However, Brown's work focuses more on the duration of evaluating the course and the characteristics of qualitative and quantitative data, and this leads to the employment of various instruments in order to attain the results both in numbers and in words.

As for an ESP course, Alderson and Waters (1983 cited in Hutchinson and Walter 1987) suggest four main aspects of ESP course evaluation to be considered:

- * What should be evaluated? (focusing on the needs analysis and the course design process)
- * How can ESP courses be evaluated? (instruments)
- * Who should be involved in the evaluation?
- * When (and how often) should evaluation take place?

Based on Alderson and Water's discussion, it can be seen that their aspects of course evaluation are similar to the frameworks of Graves and Brown. However, a highlight of Hutchinson and Waters' work is placed on the question of the students' needs: "Is the course fulfilling the learners' learning needs,?" If not, "What areas of the need have not been fulfilled,?" and "Were the unfulfilled needs identified during the course design process?" If not, "why not?"

In brief, course evaluation can be undertaken based on the frameworks of the course evaluation of general courses by Graves and Brown are similar to the framework of ESP courses, but the ESP course framework focuses more on needs analysis—whether the course meets the needs of the learners. Moreover, it is necessary to evaluate the course in various dimensions and with various instruments in order to cover all necessary elements, including the characteristics of the data. The results derived from the course evaluation can then be used to improve the quality of the course in aspects such as objectives, lesson plans, and course organization.

2.11 How the engineering English writing course is developed

As for the conceptual framework in designing this course, six main concepts are employed: ESP, needs analysis, genre-based approach (GBA), social constructivism, teaching and learning cycle, and course evaluation. As this course aims at teaching undergraduate engineering students about the writing contexts and situations they are going to face in the future, the concept of ESP must be employed. According to the review, an ESP course emphasizes learners and their needs. Therefore, it is vital to conduct a needs analysis as the first step of the course development process so as to gain the insight needed to design the course. Based on the results of the needs analysis, the objectives, goals, and contents of the course can then be determined.

The GBA is a teaching writing method emphasizing text and context. The course developed in present study was designed following the GBA concept. Thus, the concept of the ESP genre, the GBA course development process, and genre analysis were emphasized. The results of the genre analysis were the core of this study since its results comprised the details of the content of this course, while the GBA course development process pointed out that making a list of writing situations, contexts, and sociolinguistic knowledge was necessary. This list was used as a part of the content and to make the lesson more meaningful.

According to the application the concept of both ESP and GBA to the course development process, the details of the objectives, goals, and contents of the course were be derived. Then, the procedures and stages of instruction were designed with the application of the concept of social constructivism, is a language acquisition theory which emphasizes that social interaction leads to learning and cognitive development. Therefore, its main concept, scaffolding, is also implemented in the lessons of this

study. The teaching and learning cycle that was developed following the scaffolding concept was employed as the teaching stages or procedures of this study. According to the cycle, learners would learn from scaffolding by working with the teacher and their classmates.

After that, the course was verified by experts and pilot teaching. The effectiveness of the course was evaluated again after the actual teaching had completed.

Figure 2.6 illustrates the conceptual framework in designing the course in this study.



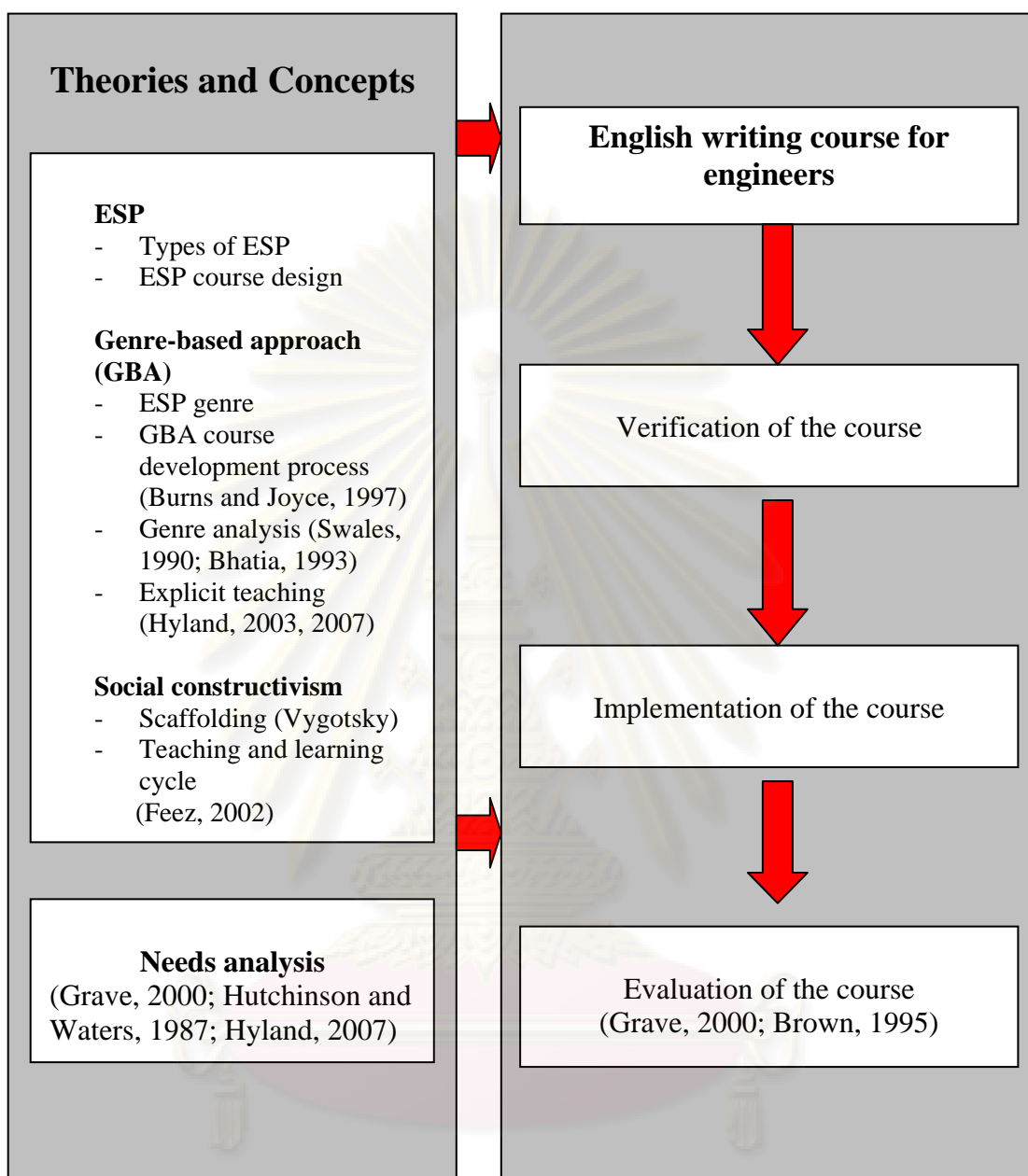


Figure 2.6: Conceptual framework of the study

CHAPTER III

RESEARCH METHODOLOGY

Chapter Three describes the research methodology of this study. The research procedures were divided into three main phases: needs analysis, course development process and implementation, and determination of the effectiveness of the course.

3.1. Needs analysis

The needs analysis was carried out to determine the English writing skills needed by the operational engineers, managerial engineers, engineering students, and English for specific purposes teachers. The results were then translated into the lessons of the course.

Population

There were three groups of population in this study: managerial and operational engineers that worked in Thailand, 1,853 KMUTNB undergraduate engineering students (second-, third-, and fourth-year engineering students), and ESP teachers that taught English to engineering students from ten universities which were located on Bangkok and its vicinity and provided English courses for engineering students. All populations were Thai nationals.

Subjects

The Details of each group of subjects are explained below.

Group I: One-hundred operational engineers and 15 managerial engineers in Thailand were the first group of subjects in this study. The sample size was selected following the suggestion by Fraenkel and Wallen (2000 cited in Wasanasomsithi, 2004) that at least 100 subjects are the minimum number suitable for descriptive studies. The number of operational engineers was higher than that of managerial engineers since normally there are more operational engineers than managerial engineers in a workplace. Moreover, this course also aimed at developing the course content for novice operational engineers so more number of operational engineers was suitable. These groups of individuals were recruited by means of purposive sampling method because it was necessary that these engineers had information needed and that they met a set of recruitment criteria which was imposed by the researcher of this study. That is, first of all, they could be any engineers that worked in companies or factories that were a part of the

five groups of industries based on the criteria of the Federation of Thai Industries (FTI).

The five industrial groups are automobile, electronics and electricity, material, petroleum, and mechanics industries. Secondly, they were engineers who had at least one year of working experience. This is because, according to the interview with engineers by the researcher of this study, it was found that usually engineers takes about one year in order to learn the kinds of work in the engineering field. Finally, engineers were willing to participate as the subjects of the needs analysis stage since engineers generally have a busy schedule and their time is restricted. It is quite difficult for them to spend time as the subjects of this study, so only engineers who were willing to participate with this study were recruited. Thus, three managerial engineers and 20 operational engineers were selected as the representatives from each group.

Group II: This group of subjects included 333 engineering students from six engineering departments (electrical, civil, mechanic, industrial, chemical, and productive). They were second-, third-, and fourth-year students. The sample size was derived from Yamane's sample size table (Yamane, 1967). According to the sample size table of Yamane (for precision of $\pm 5\%$), when the number of population is about 1,500, the sample size is 316. Moreover, when the population is 2,000, the sample size is 333. For this study, there were 1,853 engineering students at KMUTNB in 2008. Thus, the sample size was between 316 and 333. However, the sample size of this study was 333 because a larger sample size was supposed to provide more reliable results.

Group III: The subjects in this group were derived by means of purposive sampling because only teachers who taught English courses to engineering students were recruited. The number of population as well as the sample size of this group of subjects was 37 ESP teachers. The number of them was derived from surveying nine universities providing ESP courses to engineering students in Bangkok and its vicinity by the researcher. The number of population was the same as the sample size. Since the number of the population was quite small, it was necessary to recruit all the population to be the subjects of this study. The subjects were teachers who had experience in teaching English courses provided for engineering students for at least one year. They have been working in government and private universities.

Instruments

A questionnaire and an interview protocol were used as the instruments in the needs analysis.

1. Questionnaire (Appendix A)

The questionnaire was written in Thai in order to prevent language barriers. Three sets of questionnaires were used to collect data from different groups of subjects. In order to design the questionnaires, the researcher gathered information by reviewing existing theories and related research, including interviewed three managerial and 12 operational engineers. The data collected from those sources were used to develop the questionnaire in parts I, II, and III, including the interview questions. Those engineers were approached through introduction by friends, colleagues, and former students of the researcher (convenience sampling method). These engineers were interviewed since they worked directly in the field of engineering. Thus, it was assumed that they should be able to explain the types of written work and writing situations that are required in the engineering field. These people worked in various fields of engineering, such as civil, mechanical, and electrical engineering, and they worked in different types of industry as well, such as electronic, cement, and fuel. Their companies were located in various provinces in Thailand such as Phatumthani, Saraburi, and Chonburi provinces. Moreover, two English teachers were interviewed in order to learn about the students' writing ability, their writing problems, and course descriptions and details of the English for Engineers course at KMUTNB.

Then, based on the information collected, the questionnaire covering four parts was constructed based on the needs analysis model of Hutchinson and Waters (1987) and Dudley-Evans and St. John (1998) as well as the concept of needs analysis for genre-based writing courses by Hyland (2007a). The reason was that the combination of the models of Hutchinson and Waters, Dudley-Evans, and Hyland covers the required and necessary information for developing writing content and exercises.

The questionnaire was divided into four parts as follows:

Part I: Demographic characteristics of the subjects

This part of the questionnaire focused on general information of each group of subjects. The subjects needed to identify various information, such as their workplace, position, and gender. Moreover, details of their education, writing experiences, number of years of working, and background information about their English proficiency were also elicited. Checklist, five-point Likert scales (“very good,” “good,” “fair,” “poor,” and “very poor”), and gap filling items were used as the form of responses in part I.

The questions in those three sets of questionnaires were similar, but more information about their working situations was also required from the engineers.

Part II: Required English writing content and situations for engineer working contexts and writing problems

The aim of this part was to determine the English writing content that most engineers need for communication in their professional community, including their writing problems, both in general and in the professional areas. In order to obtain this information, this part was divided into five components: problem areas in writing English in general, importance of genres in the engineering contexts, writing problems associated with different genres in engineering contexts, significance of English writing in the engineering contexts, and lack of knowledge in English writing in the engineering contexts. Part II was designed using a five-point Likert scale (“very important” (4.5-5.0), “important” (3.5-4.49), “quite important” (2.5-3.49), “not so important” (1.5-2.49), and “not important at all” (1.0-1.49) with all sections. Writing content was provided as choices, namely, e-mails (e.g. complaints, inquiry, and request), memoranda, minutes of meetings, agendas, instructions, and reports.

Part III: Opinions about developing an English writing course for engineers

The purpose of this part was to survey the opinion of groups of the subjects about the appropriateness of teaching and learning methodology since it is necessary to design activities and teaching methods based on the students’ preferences. Part III was created using a five-point Likert scale (“strongly agree” (4.5-5.0), “agree” (3.5-4.49), “neutral” (2.5-3.49), “disagree” (1.5-2.49), and “strongly disagree” (1.0-1.49)).

Part IV: Suggestions and expectations regarding an English writing course for engineers

One open-ended question was provided in this part to give the subjects opportunities to express their suggestions and expectations about desirable English writing courses for engineers in Thailand.

Validation

The content validity of the questionnaire was examined by three experts in the field of engineering, language assessment and evaluation, and business English. All of them had working experience of more than 10 years. The index of item objective congruence (IOC index) was employed before the questionnaire was used in the pilot study. A checklist marking agreeable, not sure, and disagreeable was distributed to the

experts. Then the IOC index was used to calculate the content validity of the questionnaire as shown in the following formula. Agreement of at least two of the experts was needed in order for the questionnaire to be considered valid (Booncherd Pinyoanantapong, 2526). That is, the score from the validation must be equal or higher than 0.5.

$$IOC = \frac{\sum R}{N}$$

IOC = Index of item congruence

$\sum R$ = Total score from responding to the test items of three experts

N = Number of experts

(Booncherd Pinyoanantapong, 2526)

Based on the results of the IOC calculation, it was revealed that the three experts accepted all questions. Overall, the result showed that the content validity was 0.93. Then, the questionnaire was revised based on the comment and suggestions of the experts. Three experts suggested adding more information to some questions, rearranging the order of some questions, and adjusting the layout of the typing to make it more concise and clearer. The suggestions for each part of the questionnaire from those three experts are summarized below.

Part I: As for the questionnaire for the engineers, two items (“studying abroad” and “training from company”) would be added to the section of English writing experience for engineers. Additionally, another item, “to follow up after having the telephone conversation,” would also be added to the section concerning working contexts.

Part II: The terms in the section of the general writing problems in all sets of the questionnaire were translated into English to make them consistent with other terms in other sections. In addition, reordering the items in question 6 (“problems in writing process”) was required to make them more logical. Therefore, the order of the items was changed from “writing,” “searching,” “outlining,” and “editing” to “searching,” “outlining,” “writing,” and “editing, respectively.”

Part III: The item “teaching through e-learning as a teaching medium” would be added to the questionnaire. Moreover, more items or choices about teaching activities were required, e.g. “provide a writing model before doing exercises,” “point

out engineer working situations,” and then “students search for relevant content themselves,” “edit their friend” and their own writing,” and “practice writing in real working situations.” All of the items in part III should cover the necessary teaching and learning factors involving the objectives of teaching, activities, materials and teaching aids, the language used in teaching, and evaluation.

Part IV: The sample of how to answer the question would be cut, because it is not necessary to provide that part as the respondents should know what to write. Then, the part of instructions would be highlighted in bold and enlarged its size. This is because bold and larger sizes of instruction help the reader read the instruction easily.

Three approved sets of questionnaire were distributed to two groups of subjects: engineering students (41) and engineers (39), at the beginning of June 2008 in order to determine the reliability of the questionnaire in the questionnaire pilot study. The reliability of the questionnaire was verified by using Cronbach’s Alpha Coefficient because this formula can be employed with rating scale information (Prakong Kunnasut, 2535). The reliability of the questionnaire for engineers and engineering students was .89 and .93, respectively. The reliability of the engineers’ questionnaire was adopted for the questionnaire for the ESP teachers. This was because there were only 37 ESP teachers teaching courses that were similar to the English for Engineers course in nine universities in Bangkok and its vicinity. The number of the subjects was too little to be separated for use as samples to determine the reliability of the questionnaire. However, it was possible to assume that the reliability of the engineers’ questionnaire was the same as the ESP teachers’ questionnaire since both of these two groups had work experience and shared similar experience in working relating to engineers. According to the reliability results, the three sets of questionnaires were found to be reliable and could therefore be used to collect the data in this study.

2. Interview protocol (Appendix B)

The interview protocol was used to gather in-depth information only from the two groups of engineers, managerial and operational engineers, after they had completed the questionnaire. This was because the aim of the interview was to gather in-depth information about writing contexts and situations of engineers, including sociolinguistic knowledge in the workplace. Thus, the engineers were able to provide the required information because they had direct experience, whereas the engineering students and ESP teachers would not have that kind of information because they did not

have direct experience about the work of engineers. The semi-structured interview technique was employed. The interviews were conducted in a relaxed manner with questions allowing the subjects to respond freely and openly. The interview questions were pretty similar to the questions in the questionnaire in terms of the topics in forming questions such as writing context based on the required genre and sociolinguistic knowledge used in writing the target e-mail and report, but the researcher probed for further information as seen necessary in the topics. The questions concerned the details of the required writing content, target language use, and the target situations in the workplace, including sociolinguistic knowledge. For the sociolinguistic knowledge, the questions elicited information regarding the degree of formality, authority, intimacy, and other interpersonal aspects associated with that information, and the meaning that a genre had for those who use it. Most questions for operational and managerial engineers were similar, with slight variations in terms of the managerial engineers' opinions about their subordinates in the aspect of their writing ability and cultural knowledge (see Appendix B).

Validation

The interview questions were validated by the three experts (two English teachers who worked in the field of English business correspondence and in the field of language assessment, and an engineer). All of them had working experience of more than 10 years.

A checklist (to be marked agreeable, not sure, and disagreeable) was submitted to the experts. Then the IOC index was used to calculate the content validity of the interview question. The agreement of at least two of the experts was needed for the interview questions to be considered valid (Booncherd Pinyoananphong, 2526). That is, the score from the validation must be higher than 0.5. The value of IOC was 0.9. Then, the interview questions were revised based on the comments and suggestions of the experts. Based on the results of the IOC calculation, it was revealed that the three experts accepted all of the questions. However, three experts also suggested adjusting some parts of the questions in order to improve its clarity and correction of typographic mistakes.

Data collection procedure

1. The questionnaires were distributed to the three groups of subjects. Three hundred and sixty questionnaires were distributed to engineering students at KMUTNB by the random sampling method. In the end, 354 questionnaires (98.3 %) were returned. That is, 60 questionnaires were distributed by the researcher of this study to engineering students in different six departments (20 questionnaires for each three different years of students in each department). With respect to the ESP teachers, 37 questionnaires were distributed by mail and in person to the nine target universities, and 31 questionnaires (83.7 %) were returned. Finally, 230 questionnaires were distributed to engineers by mail. Only 129 questionnaires were returned, and two of them were excluded since they were not completed. Therefore, the total number of questionnaires for the engineers was 127 (55.2%). It is noteworthy that the number of returned questionnaire was accepted because the sample size was still higher than 100 (Fraenkel and Wallen cited in Wasanasomsithi, 2004). Most of the engineers worked in Pratumthani, Rayong, Chonburi, and Nakornratchasima.

2. After analyzing the questionnaires of those three groups of subjects, an interview was conducted with two groups of engineers. It is worth noting that the interview aimed at attaining breadth and depth of the information obtained from the structured questionnaire, such as working situations and sociolinguistic knowledge. However, after the conversations with some of the engineers, it was found that not all engineers could be the interviewees because most of them were busy, and they could not explain clearly what they thought about and how they wrote required genres for engineers. Therefore, the purposive sampling technique was used in order to select the interviewees. The engineers who were recruited were the engineers who were willing to participate in the interview because most managerial and operational engineers were professional, so not all of them were willing to provide information due to the time constraints and busy schedule; it was difficult to make an appointment with them. Moreover, not all engineers could share the required information since some engineers had limited contexts and situations to write genre relating to their work. Thus, the engineers who were interviewed were selected based on their knowledge, time, and ability to share information. The details of the number of the subjects are described below.

1. Ten percent of 15 managerial engineers (two subjects)
2. Ten percent of 100 operational engineers (ten subjects)

The number of ten subjects was derived from two representatives from five areas of industry based on the criteria of the Federation of the Industries (FTI): fuel, cement, automotive parts, construction, and electronics. The number of operational engineers (10) was higher because the aim of this study was to develop an English writing course for operational engineers, especially novice operational engineers that were new to the engineering field. The information obtained from the managerial engineers was only to be used as additional information to complete the lessons. This was because normally operational engineers may not know what their managers require from them. In addition, the number of managerial engineers was usually less than the number of operational engineers in each actual workplace, so the number of engineers in the two groups was considered suitable.

The interview was undertaken in factories and companies in four provinces in Thailand—Patumthani, Chonburi, Bangkok, and Rayong provinces in July and August 2008 because industrial areas were located in those provinces. The interviews were carried out by making appointments with engineers who were willing to participate and were able to share their working experience. Each interview lasted about 20-30 minutes. The interview data was collected using an electronic voice recorder.

Data analysis

Questionnaire

The data obtained were calculated by using SPSS and content analysis. The content analysis was used to analyze the data gathered from the questionnaire in part IV. As for parts I, II, and III, the data were calculated by using statistical devices. The statistical devices used in the present study were as follows:

1. Percentage and frequency count were used in the analysis of the response concerning background information.
2. Arithmetic mean was used to calculate the average level of the importance of each written text type, writing problems associated with each text type, English writing problems in general, opinions about the importance of writing knowledge, and opinions about designing English writing courses.
3. Homogeneity of variances was checked to determine if a parametric test could be used or not.

4. An F-test or One-way ANOVA was used to investigate the significance of the differences in opinion among the engineering students, ESP teachers, and engineers when the results of the Homogeneity of variance showed that the parametric test could be used.

5. ANOVA (Welsch's) would be used when the results of the variance indicated that the variances of the groups were not significantly equal.

Interview

Content analysis was used to analyze the data from the interviews. Counting frequencies of occurrence (existing words in the collected data: writing situations, forms and functions, writing contexts, and sociolinguistic knowledge) were employed as a tactic for generating meaning from the collected data for this study (Miles and Huberman, 1994 cited in Cohen et al., 2007).

Thus, after the interview session was conducted, the data from the audio tape recording were first transcribed and then categorized based on the results of each interview question. For example, interview question 2 was analyzed based on the criteria to choose between formal and informal e-mail (status of readers, the relationship between the readers and writers, the topics of writing, and the objectives of writing. Interview question 4 focused on choosing language to show e-mail is formal or informal. Therefore, the data were analyzed into 4 parts (opening salutation, body, closing salutation, and closing correspondence). After that, the differences and similarities of the responses toward those questions were tallied and reported.

A list of the research instruments employed in the first phase, the needs analysis, is presented in the table below.

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Table 3.1: Instruments for data collection during the needs analysis phase

Instruments	Purpose	Validation	Methods of analysis
1.Questionnaire	To survey the needed English writing skills of operational engineers, managerial engineers, engineering students, and their needs as perceived by ESP teachers	<ol style="list-style-type: none"> 1. Have three experts validate the questionnaire (a language testing expert, a business English teaching expert, and an engineer) 2.Pilot the questionnaire with 30 subjects (each group) whose characteristics are similar to those of each target group 3. Verify the reliability of the questionnaire by using Cronbach's Alpha Coefficient 	<ol style="list-style-type: none"> 1. Mean, SD, percentage, homogeneity of variances, F-test (for rating the scale section) 2. Content analysis (for the open-ended section)
2.Interview questions	To gather more in-depth information from the operational and managerial engineers	<ol style="list-style-type: none"> 1. Have three experts validate the interview protocols 	Content analysis

3.2. Course development process

The purpose of this phase was to answer Research Question 2: development of an English writing course based on the GBA. In order to answer the question, the researcher needed to follow the GBA course development processes (Burns and Joyce, 1997 cited in Paltridge, 2004; Hyland, 2007a) and the principles of ESP course design. The results of the needs analysis phase were interpreted and transferred into the course goals, objectives, description, content, and teaching activities. Then, lesson plans were created based on the combination of the concepts of genre analysis, explicit teaching, and the teaching and learning cycle, consisting of five teaching stages (Feez, 2002).

Authentic materials and occupational settings were provided in each lesson as a characteristic of an ESP course design.

The process of the GBA course development of this study consisted of a number of steps as follows:

GBA course development process

- 3.2.1.1 Identifying contexts
- 3.2.1.2 Generating course objectives and goals
- 3.2.1.3 Noting the sequence of language events within the context
- 3.2.1.4 Listing the genre used in this sequence
- 3.2.1.5 Outlining the sociolinguistic knowledge
- 3.2.1.6 Collecting and analyzing genre samples
- 3.2.1.7 Developing units of work

The details of each step are explained in Chapter four in the section on Research Question 2.

Lesson plan (Appendix E)

The lesson plan was the outcome or the last stage of the course development process phase. It was designed based on the information gathered from the GBA course development process mentioned previously. According to the details of teaching within the ESP genre, it seems that there are no clear detailed instructional methodologies for presenting the lessons in the classroom (Hyon, 1996). Therefore, it was imperative to create a teaching procedure in order to construct lesson plans suiting the ESP teaching and learning context. The lesson plan of this study was created based on a combination of Feez's teaching and learning cycle concept, explicit teaching concept, and Swales and Bhatia's genre analysis concept. Thus, the lesson plans of this course involved five stages of the teaching and learning cycle (Feez, 2002), namely, building the context, modeling and deconstruction, joint construction of the text, independent construction of the text, and linking related text. The results of the genre analysis that were analyzed based on the concept of Swales (1991) and Bhatia (1993b) were presented as activities in the modeling and deconstruction teaching stage of the teaching and learning cycle. Moreover, some activities in the first three teaching stages were created based on the explicit teaching concept such as genre analysis activities and linguistic features analysis.

The lesson plans were created for twelve sessions (three hours each). Three types of genres, namely request e-mails, inquiry e-mails, and reports, were covered in three units. Sociolinguistic knowledge was also focused on in each lesson by asking students to analyze the ways in which the writer used his or her sociolinguistic knowledge in writing moves based on the relationship between readers and writers. The activities in each teaching stage of the teaching and learning cycle were similar in each lesson. The details of the teaching activities are summarized in Chapter 4 in the section on Research Question 2. Also, authentic materials were provided in each lesson, including exercises created based on authentic materials and writing situations. For the details of the lesson plans, see Appendix E.

Validation

In order to ensure the content validity of the lesson plan, the other parts of the course components, consisting of course objectives, course description, materials, exercises, activities, and assessment plans, were also validated by a panel of three experts (a business writing correspondence teacher, a language teacher, and an engineer). The evaluation was undertaken using a checklist (marked agreeable, not sure, and disagreeable). Then IOC index was used to calculate the content validity of the course components. The agreement of at least two of the experts was needed for the course components to be considered valid (Booncherd Pinyoanunthaphong, 2526). That is, the score from the validation must be higher than 0.5. Then, the course components were revised based on the comments and suggestions of the experts. Based on the results of the IOC calculation, generally, the three experts agreed that all the course components and lesson plans were suitable for this course. The content validity was 0.82. However, the three experts also agreed that some activities and exercises should be adjusted. Regarding the lesson, some exercises needed to be adjusted because they were created for passive students and did not show clearly the sociolinguistic knowledge that students should be aware of. Sequencing of some activities should also be adjusted. As for course description, they suggested to write the course description in the form of noun. Finally, ordering of the performance objectives in each unit would match the order of the assessment plan associated with each performance objectives. Using appropriate words for each performance objective, such as explain, tell, specify, and identify was required as well.

The rest of the course components were appropriate for use in this course. Then, the lessons were adjusted following the suggestion of the experts and one of them, request e-mail, was tried out as a pilot teaching to see if the lesson was suitable for the course. Only the lesson of request e-mail was tried out because it was the first lesson of the course, and the lesson was tried out in the English for work course which focused on teaching four language skills. According to the time constraint, it was found that the time for teaching writing skill was available for only teaching one genre.

Pilot teaching

A pilot teaching was carried out during the second semester of the academic year 2008 by the researcher of this study. The first lesson, request e-mail, was tried out for four sessions (three hours each session) as part of an elective course: the English for Work course. This was because the target course, English for Engineers course, was not offered in the second semester. Moreover, a part of the contents of the English for Work course related to writing request, so it was possible to do pilot teaching in the English for Work course. There were 50 engineering students from two majors, chemical and industrial engineering, in the beginning of the semester, but there were only 38 students left at the end of the course. Students that withdrew from the course said that they were interested in the course but that they had to withdraw from it. They were worried that they might not get an A grade because the course seemed difficult and demanding for them.

In order to determine the effectiveness of the piloted lesson (Effectiveness Index: EI), summative and formative tests were required. Thus, two quizzes for the formative tests (20 points) and one test as the summative test (20 points) were created.

Two quizzes (formative test) were established after the lesson about linguistic features in writing request e-mail and about sociolinguistic knowledge were implemented. Therefore, one of the tests was designed to determine the sociolinguistic knowledge and the other test was designed to determine the knowledge about the linguistic features in writing request e-mails. As for the summative test, it was designed to check whether the students can write request e-mail at the end of the lesson.

Two raters were required to evaluate the students' written work. One of the raters was the researcher of this study, while the other one was her colleague who got a doctoral degree and had experience in teaching writing and ESP courses for about eight years. The inter-rater reliability was .969. Moreover, the inter-rater reliability of an item of the

test was also calculated using t-test. It was found that there was no significant difference in grading between the two raters (See Appendix L). This meant that their grading was acceptable.

As the summative test is an achievement test a cut-off score is required to show how much students have learned from the lesson. The cut-off score can be set at 60 or 70 percent (Brown, 2005). Thus, in this study the scores required to show that the students had passed the formative and summative tests were set at 70/60 below. This is because writing takes time to practice and to become successful, especially for engineering students, who do not study English as their major. Possibly, it is difficult for them to gain higher scores in such a short time. Therefore, 70 and 60 was seen as suitable for this lesson.

$$\frac{EI \text{ formative}}{EI \text{ summative}} = \frac{70}{60} .$$

The result of the quizzes and test showed that students gained 90.6% and 66% on the formative and summative test, respectively. This meant that the piloted lesson was effective.

According to the results of the effectiveness index, it can be seen that the percentage of the formative test was much higher than what the researcher expected. This was, perhaps, because the tests were administered one week after the sections of sociolinguistic knowledge and linguistic features in writing request e-mails were implemented. Thus, the students still remembered the content of such lessons.

Moreover, the effectiveness of the pilot lesson was also shown from the analysis results of the attitude questionnaires and student interviews which revealed that the students had positive attitudes toward the pilot lesson. This could be seen from the results of the mean score which was higher than 3.5 in each item. However, the results also showed that the lesson still needed to be improved. There were three parts of the lesson which should be adjusted, namely, instruction, activities, and materials. As for the Instruction, inviting an engineer who was an ex-engineering student of KMUTNB to talk to the students about his working experience, especially the importance of writing in engineering work, at the beginning of the course was arranged in order to increase motivation of the students. Extra activities after some groups finished providing

feedback to their friends' written assignments, while other groups are still working with peers, should be prepared. This was because students may feel bored and start talking about something else if they have to wait for their friends without having to do anything. Regarding the activities, a plan to train how to work in group was arranged since some students did not like doing group work activities, so they did not participate well. However, in particular working in group was required in studying writing through the GBA. In addition, only group cross-editing was arranged in the part of editing because some students had limited English background knowledge, so peer review was omitted. As for the materials, the materials showing the differences between formal and informal language were needed to be created. The conclusion forms of linguistic features and sociolinguistic knowledge to be used in each move should also be added. This was important since it helped the students see the overall picture of the linguistic features of each move, including the sociolinguistic knowledge that they must be aware of. Finally, the teaching period had to be extended from four sessions to five sessions for the first lesson, request e-mail. This was because the original specified time was not enough for teaching five stages completely.

In brief, the findings from the pilot study led to certain revision and improvement in the lessons regarding the instruction, activities, materials, and length of time of the course.

Course implementation

The main study was conducted in the first semester of the academic year 2009 at KMUTNB. The course was employed with 26 third-, fourth-, fifth-, and sixth-year engineering students who were enrolled in the English for Engineers course as their elective course. However, one of the students did not attend the final exam (post-test), so the number of students at the end of the course was 25. The course was a 12-week course with three hours in each session. The class met every Thursday afternoon. A quite well-equipped classroom with air-conditioners, overhead projector, lecture desks that were easy to move around, and a big space for group work were arranged. The researcher was the instructor of the course. The details of teaching each session are explained in Chapter Four in the section on Research Question 2.

3.3 Evaluating the effectiveness of the course

According to Graves's framework of course design assessment, three factors should be considered, namely, assessing learners' needs, assessing students' learning, and evaluating the course (Graves, 2000). However, assessing learners' needs has already been conducted in the needs analysis phase, so this phase emphasized only assessing the learners' learning and evaluating the course.

As for assessing the students' learning or cognitive domain, the teacher was the main person that assessed the students' learning. The purpose of the assessment was to assess the writing achievement of the students after attending the course. Thus, the assessment was undertaken at the end of the course as a summative assessment. The pre-test and post-test were utilized as the instruments. Steps involved in assessing the course, students' learning, and designing the instruments are discussed below.

With respect to evaluating the course or affective domain, students were the individuals that evaluated the course. Many factors were involved in this evaluation, namely, the objectives of the course, the course content, the activities, the materials and teaching methodology, teacher, writing achievement, the evaluation criteria, and additional information (Chairinkum, 2003). Therefore, the attitude of the students toward those factors were assessed. The purpose of this evaluation was to check whether the students were satisfied with the course and also to provide information on how the course should be adjusted. The evaluation was conducted at the end of the course using student log, attitude evaluation form (questionnaire), and student attitude interview as the data collection instruments. Details on how to evaluate the course and how to create the instruments are explained below.

In conclusion, in order to evaluate the effectiveness of this present English writing course for engineers, two criteria were used: assessing the students' learning (writing achievement) and evaluating students' attitudes toward the course.

Details of how to evaluate the course and how to create the instruments are shown below.

Population: The population was second-, third-, fourth-, fifth-, and sixth-year engineering students that had passed the fundamental level English courses, English I and English II, at KMUTNB. The English proficiency level of most of them was low intermediate to intermediate.

Subjects: The subjects were 25 engineering students from one section that were enrolled in one section of the course as an elective. It is worth noting that the number of subjects in the main study was less than the number of the subject in the pilot study. This was because a few elective courses were offered in the second semester in the academic year 2008, so many engineering students enrolled in the English for Work course which was used for the pilot teaching. In contrast, many elective courses were offered in the first semester in the academic year 2009, so engineering students had more choices. Most of them were enrolled in the courses that did not seem difficult or demanding. As this present course focused on writing skills, writing assignments were required. Therefore, there were only 25 subjects in the main study (English for Engineers course).

Instruments: According to the triangulation technique, various instruments are needed to collect the data to confirm the accuracy of the data obtained with these instruments. The instruments consisted of an attitude evaluation form (questionnaire), an interview, pre- and post-tests, and student logs. The data obtained were used for the course evaluation. Details on the design of each instrument and their validation processes are described below.

1. Pre-test and Post-test (Appendix C)

In order to prove the effectiveness of the course in terms of student learning, the students needed to complete the pre-test and post-test as an achievement test to reveal how much they had improved after attending the course. The pre-test and post-test were designed in an equivalent form using the goals and objectives of the course as the scope of the tests.

The test was subjective (a criterion-referenced test). The purpose of the test was to assess the amount of knowledge or skill learned by each student, directly relating to writing various contents concerning engineering work, namely, request e-mails, enquiry e-mails, and investigation reports. Thus, the test consisted of three items that asked the students to write in the required genres based on their engineering work situations (request and enquiry e-mails and reports).

The pre-test and post-test were exactly the same because the practice effect should not be a problem of the test. A practice effect should not occur if the length of time of instruction is long enough. In this study, the experiment was undertaken for 12 weeks, which was considered a long enough interval. Thus, it was suitable to use the

equivalent form of the pre-test and post-test. Moreover, the test was subjective, so it should not have been easy for students to memorize the test and its answer. The test lasted for two hours.

As the test was a criterion referenced test (CRT), a cut-off score was required to show how much the students had learned from the course. The cut-off score should be set at 60% or 70% (Brown, 2005). The cut-off score of the test of this study was set at 60%. This cut-off score was appropriate since this course was a writing course that was carried out for quite a short duration, 12 sessions, with three hours per each session. Writing is commonly a difficult activity for most people both in L1 and in a foreign language (Byne, 1982), and the writing process is complex. It involves moving from concepts, thoughts, and ideas to written texts (Richards, 1999). Byne (1982) points out three aspects that make writing difficult: psychological, linguistic, and cognitive. That is, writing is a solitary activity, so the writer does not have the benefit of feedback. The writer has to master the written form of the language and learn certain structures that are important for effective communication in writing. Also, the writer has to learn how to organize ideas in a way that they can be understood by a reader that is not present. According to the stated information, it can be seen that effective writing is not easy to develop. It takes time to learn and practice, especially if the learners do not have previous background knowledge about writing. As for the subjects of this study, they were engineering students that had studied English as compulsory courses (English I and II), three hours a week, when they were first-year students. Mostly, the content in the English I and II was about grammar points, practicing reading skill, and language functions. As for the writing skill, the students practiced writing only in the sentence level. Thus, they may not be good at English, and also do not have enough background knowledge in writing English. It may take time for them to develop their writing skill to meet the objectives of the course. Thus, setting the cut-off score at 60% was deemed appropriate for this study. The process of test construction and validation are explained below.

Test construction

As this course was an ESP course, a specific language test was required. Douglas (2000) defines the definition of a specific purpose language test as a test in which the test content and the method to designing the test are received from an analysis of a specific purpose target language use situation (TLU). Thus, the test tasks allow for

an interaction between the test takers' language ability and specific purpose content knowledge, on one hand, and the test tasks, on the other.

According to Douglas's definition about the ESP test, analysis of TLU is important and also is the first thing needed to conduct. Then, the test tasks are designed. In designing the test tasks, what should be aware of are the test tasks allowing for an interaction between the test takers' language ability and their specific purpose content knowledge (background knowledge about the content), including the interaction between test takers' language ability and the test tasks. Therefore, there are three components in designing the ESP test, namely, TLU, language ability, and background knowledge. As for the information of TLU, it was collected from the needs analysis stage, whereas the information concerning background knowledge was derived from the analysis of TLU. In case of language ability, Bachman and Palmer (1996) offer the areas of language ability which should be measured in order to prove whether students learn from language courses. The areas consist of organizational knowledge (grammatical knowledge and textual knowledge) and pragmatic knowledge (functional knowledge and sociolinguistic knowledge).

In this study, the construct of the present test was set based on the components of the ESP test (i.e TLU, language ability, and background knowledge) and the GBA principle (Bachman and Plamer, 1996; Douglas, 2000; Hyland, 2007). Therefore, all the areas of language ability and background knowledge were chosen as the constructs of the test. The definition of each construct in the test of this present study is explained below.

Background knowledge

Knowledge of how to provide information which is understandable, logical and reasonable based on engineering background knowledge and following the prompt provided

Functional knowledge

Knowledge of how to state the purpose using accurate forms in each type of genre based on the writing situations

Textual knowledge

Knowledge of cohesion and knowledge of rhetorical organization: e-mail components (opening salutation, body, and closing salutation) and investigation report writing (background of problem, containment, cause of problem, and countermeasure)

Sociolinguistic knowledge

Knowledge of how to state the purpose of writing using appropriate forms in each type of genre based on writing situations (e.g. polite, formal, and informal)

Grammatical knowledge

Knowledge of mechanics, range of vocabulary, and word choices (using appropriate vocabulary, general vocabulary, and technical vocabulary, based on the situations provided), morpheme, and syntax

In order to construct the test, a systematic test development process had to be followed. The test development process consists of three main stages: the design stage, the operationalization stage, and the administration stage (Bachman and Palmer, 1996; Weigle, 2002). See the test and the details of test structure (design stage and operational stage) which were developed based on the framework for developing ESP test by Douglas in Appendix C. Details and results of the administration stage are explained below.

Test validation

The test validation process was carried out after the test was created. Its aim was to determine the usefulness (quality) of the test (Bachman and Palmer, 1996). This process can be conducted before (*priori*) and after the test is tried out (*posteriori*) (Weir, 1988 cited in McNamara, 1996). Thus, measuring construct and content validity (*priori* construct validity) was undertaken before trying out the achievement test (test administration). Then, the item analysis (*posteriori*) was carried out to measure the difficulty of the test. This refers to the meaningfulness and appropriateness of the interpretations that are made on the basis of the test scores (Bachman and Palmer, 1996).

The content validation process involves determining whether a test is actually measuring what it is intended to measure (Weigle, 2000). The definition of the construct of this test was syllabus-based (Bachman and Palmer, 1996) since the focus of this course was on the writing achievement of students after attending the course. As

for the content validity, it was measured by inviting a panel of three experts to assess the test.

The panel of three experts of this proposed test consisted of an engineer, a business English writing teacher, and a language assessment specialist. All of them had working experience of more than ten years. The content validity result was then computed using the IOC index formula (Booncherd Pinyoanathapong, 2526). Agreement of at least two of the experts was needed for the test to be considered valid. That is, the score from the validation must be higher than 0.5. It was found that the three experts agreed to accept all of the test items, but they also provided useful suggestions to make the test complete. Overall, the result showed that the content validity was 0.84. Following this, the experts' suggestions were used to modify some of the test items and to improve its quality. The suggestions from the three experts were about the terms which were used in the construct. They should be common technical terms in the field of language assessment, such as background knowledge instead of topical knowledge. The definition of each construct should be provided clearly. As for the layout of the test, the working situations required to test should be put before the instruction of each item.

The test was then revised and tried out (test administration) with 35 engineering students whose language ability was similar to that of the target participants.

Posteriori construct validity was employed after the test administration stage. This refers to the empirical and statistical validation of the constructs posited at the earlier stage using test performance data (Tsai, 2002). The students' scores were arranged from highest to lowest, and these scores were calculated in order to ascertain the inter-rater reliability of the test and the item analysis.

The inter-rater reliability had to be considered since there were two raters that marked this test (Alderson, 1996). The reliability of the two raters could be assessed by correlating the marks given by two or more raters for the same students. The results of their grading were then calculated using Pearson's Product Moment Correlation Coefficient (Prakhong Kunasut, 2535) and independent samples t-test. The correlation value between the two raters of the test (items 1-3) was .96, .98, and .94, respectively. The acceptable value was between 0.5 and 1 (Sirichai Kanchanawasri, 2548). Moreover, the inter-rater reliability of the three items of the test was also calculated

using t-test. It was found that there was no significant difference in grading between the two raters (See Appendix K). This meant that their gradings were acceptable.

With respect to the item analysis, the appropriate selection and arrangement of suitable items on the test could best be accomplished by measuring items against item difficulty. The test results were arranged from the highest to the lowest scores. The item analysis process of this study was explained in terms of item difficulty only because this test was a criterion-referenced test, so it was not necessary to calculate the discrimination.

Subjective test

$$\text{Index of difficulty} = \frac{S_H + S_L - [(n_T)(X \text{ min})]}{n_T (X \text{ max} - X \text{ min})}$$

(Scannell and Tracel, 1975)

S_H = Sum of the frequency score multiply it frequency for the high scoring group

S_L = Sum of the frequency score multiply it frequency for the low scoring group

X_{max} = Maximum possible score on the item

X_{min} = Minimum possible score on the item

n_T = Total number of papers in the combined high and low groups

The meaning of the index of difficulty (IDiff) is the degree of difficulty for the group of the test takers. If the test items are too easy or too difficult, they have to be adjusted or deleted from the test (Brown, 2003). In this study, the IDiff of the test (items 1-3) was .37, .58, and .45, respectively. The appropriate IDiff index range is between .20 and .80. (Supat Sukamolson, 2548). Thus, all three items were acceptable. Although the results showed that the test items were acceptable, some of the items were modified again in order to make them clearer. According to the interview with the test takers, it was found that the instruction part of all items had to be modified.

Scoring scheme (Appendix C)

Grading criteria (scoring scheme) of this study were adapted from a rubric for business letter available online at the website of Bernardsboe,

<http://www.bernardsboe.com/wams/Academics/issacs/computers7/busletrubric.html>

The scoring scheme was designed by using analytic scoring, which was also adapted from the genre analysis principle, ESP test construction (Douglas, 2000), and language ability concept (Bachman and Palmer, 1996). Therefore, the criteria for setting the scoring scheme covered the construct of the test: background knowledge, functional knowledge and textual knowledge, grammatical knowledge, word choice, and sociolinguistic knowledge. See the details of scoring scheme in Appendix C. Analytical scoring was employed because it is more reliable (Ferris and Hedgecock, 2005; Cohen, 1994; Weigle, 2002). Using analytical scoring was reasonable since the course was designed based on the GBA focusing on various aspects in teaching and learning; namely, sociolinguistic, functional, textual, grammatical knowledge, and word choices (Bhatia, 1993; Bachman and Palmer, 1996, Swales, 1990). Accordingly, the researcher could explicitly assign extra weight to certain assessment criteria (Cohen, 1994; Weigle, 2002). Also, analytic scoring is easier for training raters (Cohen, 1994). This was useful for this study since teaching writing through the GBA was a new experience for the researcher, so relatively simple training was carried out.

The marking scheme was validated by the same three experts as well. It was found that two experts did not agree with the explanation of the different score levels of each criterion. They thought that some wording was not clear enough. For this reason, the researcher needed to revise the explanation of those criteria. Moreover, another expert did not agree with setting the score of each criterion in range since doing this was difficult to evaluate and provide explanation. A single score was recommended. Finally, the scoring was changed to single scoring (1-4) with five criteria: background knowledge, functional and textual knowledge, sociolinguistic knowledge, word choice and grammatical knowledge (See Appendix C).

2. Attitude questionnaire (Appendix F)

The attitude evaluation form (questionnaires) was designed to evaluate the final factor, evaluation of the course, by the researcher. The form was written in the form of a questionnaire in Thai in order to prevent a language barrier. Then it was verified by a panel of three experts. Students who were enrolled in the course were asked to express their attitudes toward the course at the end of the course. See details of the attitude questionnaire in Appendix F. The questionnaire was divided into three parts, as follows:

Part I: EFL writing experience before attending the course

This part was designed to obtain information on the students' EFL writing experience before attending the course and their attitudes toward English language learning, particularly writing. Filling in the gap and checklists were utilized as types of items.

Part II: Attitudes of students after attending the course

Part II was created in order to evaluate various aspects of the course after the students attended the course. The questions covered six components, namely, objectives and content of the course, teaching methodology and activities, teacher, evaluation criteria, writing achievement, and additional information (Chairinkum, 2003). A five-point Likert scale ("strongly agree," "agree," "undecided," "disagree," and "strongly disagree") were employed. The questions were written in the form of statements.

Part III: Opinions and suggestions about the English writing course

This part of the questionnaire contained one open-ended question for the subjects to comment and to give suggestions, or even to make complaints and express opinions related to the conduct of the class, the way they were taught, or the writing problems they encountered during the course, for example.

Validation

The questionnaire was validated by a panel of three experts. Three of them had a doctoral degree in teaching English. The first one had more than ten years of experience in teaching ESP. The second one had more than ten years of experience in teaching English and the last one was an expert on language teaching assessment. The evaluation was undertaken using a checklist (marked agreeable, not sure, and disagreeable). Then the IOC index was used to calculate the content validity of the attitude questionnaire. The agreement of at least two of the experts was needed for the attitude questionnaire to be considered valid (Booncherd Pinyoanunthaphong, 2526). That is, the score from the validation must be higher than 0.5. It was found that all of the experts agreed on the use of the questionnaire to evaluate the attitudes of students. The value of IOC value was 0.9. Also, they provided useful comments and suggestions. In the end, the typing format and clearness of language needed to be adjusted to make the questionnaire clearer and cover other important contents.

In order to be certain that the evaluation form was suitable and clear for use, the form was piloted with 30 KMUTNB engineering students that had passed the fundamental English courses but that did not take the English for engineer course. These students were similar to the subjects of the main study because they were engineering students who passed the two fundamental courses. The number of students was considered suitable because it was sufficient to analyze the reliability of the form using Cornbach's Alpha Coefficient. The reliability of the questionnaire was .84.

3. Attitude interview (Appendix H)

The interview questions were somewhat similar to the questions in the questionnaire in terms of the topics of forming questions consisting of six components: objectives and content, teaching methodology and activities, teacher, assessment criteria, writing achievement, and additional information, but in-depth information about the attitudes toward the course in each component was elicited. See more details in Appendix H.

Validation

The interview questions were validated by the same panel of three experts who validated the attitude questionnaire. The evaluation was undertaken using a checklist (marked agreeable, not sure, and disagreeable). Then the IOC index was used to calculate the content validity of the interview questions. The agreement of at least two of the experts was needed for the interview questions to be considered valid (Booncherd Pinyoanunthaphong, 2526). That is, the score from the validation must be higher than 0.5. The experts agreed to accept the questions. The value of IOC value was 0.86. However, they also suggested adjusting some parts of the questions to make them clearer for students and to help the researcher obtain more information. The suggestions were about forming interview questions. Thus, the researcher of this study added questions concerning the details of each teaching activity and teaching stages because it was necessary to know which activities or teaching stages the students were satisfied or dissatisfied with. In addition, the researcher added some specific words in the questions, such as "like/don't like" or "satisfied/unsatisfied" because these words were keywords for the subjects to make more easily a decision about their attitude toward each component of the course.

Then, the questions were adjusted according to the suggestions. The questions were tried out with the students that had attended the pilot lesson. It was found that the students understood all of the questions.

4. Student log (Appendix G)

Students were asked to record their attitudes towards the course in a log. This instrument was created in order to triangulate the results from the attitude questionnaires and student interviews. Thus, the content of the log included open-ended questions covering the same six components which were also determined in the attitude questionnaire and interview, namely, objectives and content, activities and teaching methodology, teacher, writing achievement, evaluation criteria, and additional information. Since the researcher did not want to burden the students, they were asked to write on their logs only one time at the end of the course. The researcher wanted to see feedback or comments from students about the course in order to determine the quality of the course for subsequent improvement. In addition, students could write either in English or in Thai since the researcher would like to avoid language barriers. The structure and the content of the log were validated by the three experts. For more details, see Appendix G.

Validation

The same three experts who evaluate the attitude questionnaire and interview questions were invited to validate the instrument. The evaluation was undertaken using a checklist (marked agreeable, not sure, and disagreeable). Then the IOC index was used to calculate the content validity of the student log. The agreement of at least two of the experts was needed for student log to be considered valid (Booncherd Pinyoanunyhaphong, 2526). That is, the score from the validation must be higher than 0.5. After the log was validated by the three experts, it was found that the questions were acceptable. Overall, the result showed that the content validity was 0.9. Also, the experts suggested adjusting three items out of the 12 items included in the log. They suggested that some specific words be added to make the questions clearer. Therefore, needed words “like” or “do not like” and “why” needed to be added in items 2, 3, and 5 in the student logs. Item 2, 3 and 5 asked about the teaching methodology and activities, so using such words would be clearer for the reader to decide about their attitudes toward each item. Moreover, the details of teaching, such as teaching method, speaking, and explanation of the teacher were to be added to item no.5. This was

because item 5 was about the attitude of the students toward the teacher, so providing them some topics such as speaking and explanation would help them express their attitude more easily.

Data collection procedure

1. The pre-tests and post-test were administered at the beginning and at the end of the course. The test lasted two hours, during which the students were required to write three genres. The post-test was carried out two weeks after the last session.

2. Students were asked to provide written feedback about the course via student logs at the end of the course (on the last session). It took about 10-15 minutes.

3. Interviews were employed at the end of the course with ten percent of the subjects (three students). The number of interview participants was deemed suitable because it was found that the information collected from them was enough to allow the information to be analyzed so as to see the attitudes of the participants. The subjects were selected by using the random sampling technique. The interview was carried out one day after the last session because the subjects' impression of the course should still be fresh in their memories. Each interview lasted 30-40 minutes. The interview data were recorded using the electronic voice recorder.

Data analysis

1. Pre-test and post-test

In order to determine the effectiveness of the course, the scores from the pre-test and post-test were compared by using a dependent samples t-test in order to examine the extent to which the English writing course for engineers could enhance undergraduate engineering students' writing achievement. However, since there were fewer subjects than 30 in this study, it was necessary to check whether the t-test sample dependent could be used in this study. This could be undertaken by calculating the subjects' pre-test score with Kolmogorov-Smirnov Test in order to see if the pre-test score results in a normal distribution (see Appendix J). If it is, this means that the dependent samples t-test can be used in this study. According to the results of the test, it showed that the dependent samples t-test could be employed in this course.

Effect size was also employed to determine the relative magnitude of treatment to measure the effectiveness of the course. This is because the higher post-test score does not necessarily prove that the course is effective. Effect size measurement was employed in this study after the t-test and the descriptive statistics were calculated in

order to see the magnitude of the effect. The Effect sizes calculated by using the repeated measure method as this method was suitable for one group study like this study. Hugh's formula, which is represented by 'g' is suggested by Barnett (2006). As for the magnitude of the effect, 0.20 was considered to be a small, 0.5 a medium, and 0.8 a strong or greater (Cohen, 1992; Thalheimer and Cook, 2002). In this study, the magnitude of the effect was expected to be at least 0.5 which can be accepted as it indicated a medium effect. In addition, the gain scores of the student must be higher than the cut-off score which was set at 60 as mentioned previously. The students could pass this present course when they derived the gain score higher than 60.

2. Attitude questionnaire

Percentage, mean, S.D., CV, and one sample t-test were used to analyze the data from the attitude questionnaire. The acceptable value of the mean represents a positive attitude and an effective course has to be higher than 3.5, both in each question of the questionnaire and in the entire picture of the questionnaire (Prakhong Kunnasut, 2535).

3. Student log

The results from the student logs were analyzed using content analysis. The counting frequency of occurrence (such as their feelings and problems) was counted as a tactic for generating meaning from the collected data for this study (Miles and Huberman, 1994 cited in Cohen et al., 2007).

The data from the student logs were analyzed and presented in accordance with six headings which were the same six headings of questions in the questionnaire. The headings involved objectives and contents of the course; teaching methodology, activities and exercises; evaluation criteria; the teacher; writing achievement; and additional suggestions.

Then, the differences and similarities of the attitudes toward those six headings were tallied, calculated, and reported in terms of frequency. There were two raters to verify the analysis results. One of the rater was the researcher of this study, while the other one was an English instructor who had been teaching for about six years and also had experience in analyzing interviews. To assess the inter-rater reliability of the content analysis, Correlation Coefficient and Independent t-test were used for calculation. It was found that the Correlation Coefficient was .931, which was considered rather high, and the difference was not significant. This implied that they mostly agreed on the items. As for the details of t-test, see Appendix M.

4. Interview

The answers from the respondents were analyzed by using content analysis. The counting frequency of occurrence (such as their feelings and problems) was counted as a tactic for generating meaning from the collected data for this study (Miles and Huberman, 1994 cited in Cohen, et al., 2007).

Thus, after the interview session was conducted, the data from the audio tape recording were first transcribed and then categorized into six headings which were the same as the headings in the questionnaire. The headings involved objectives and contents of the course; teaching methodology, activities and exercises; evaluation criteria; the teacher; writing achievement; and additional suggestions.

There were two raters who verified the analysis results of the interviews. One rater was the researcher of this study. The other one was an English teacher who had experience in doing research, teaching English for about 15 years, and analyzing interviews. To assess the inter-rater reliability of the content analysis, Correlation Coefficient and Sign test were used for calculation. It was found that the Correlation Coefficient was .89, which was considered rather high and the difference was not significant. This implied that they mostly agree on the items. As for the details of Sign test, see Appendix N.

The explanation of data analysis is listed in the table below.

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Table 3.2: Instruments for gathering data to determine the effectiveness of the course

Instruments	When	Research question	Validation	Methods of Analysis
Pre-test & Post-test	To measure the students' writing achievement before and after the treatment	To answer Research Question 3	<ol style="list-style-type: none"> 1. Have the test and the marking scheme validated by three experts (an engineer, a business writing teacher, and assessment specialists) 2. Pilot the test with 35 engineering students who did not participate in the main study 3. Verify the difficulty level of the test 4. Verify the inter-rater reliability in marking by using Pearson's Product Moment Correlation Coefficient 	Dependent samples t-test, effect size
Attitude questionnaire	To measure the students' attitudes toward the English writing course based on the GBA at the end of the	To answer Research Question 4	<ol style="list-style-type: none"> 1. Have the questionnaire validated by three experts (two business English writing instructors and one educational measurement and evaluation expert) 	Percentage, mean, SD, CV, one sample t-test

Table 3.2: Instruments for gathering data to determine the effectiveness of the course (continue)

Instruments	When	Research question	Validation	Methods of Analysis
			<p>2. Pilot the questionnaire with 30 engineering students that did not participate in the main study</p> <p>3. Verify the reliability of the test by using Cronbach Alpha Coefficient</p>	
Attitude interview	To gather more in-depth information about the attitudes toward the course from the students at the end of the course	To answer Research Question 4	<p>1. Have the interview questions validated by three experts (two business English writing instruction experts and one educational measurement and evaluation expert)</p> <p>2. Pilot the attitude interview with four engineering students who did not participate in the main study</p>	Content analysis
Student log	To collect students' self-report toward the English writing course at the end of the course	To answer Research Question 4	Have the log validated by three experts (two business English writing instruction experts and one educational measurement and evaluation expert)	Content analysis

3.4 Conclusion

The research methodology covered three main parts: needs analysis, development of the course, and implementation and establishment of the effectiveness of the course. Questionnaires and interview protocols were utilized as the instruments for the needs analysis. The course development was developed based on the results of the needs analysis. The instruments used to determine the effectiveness of the course consisted of the pre-test, post-test, an attitude evaluation form, attitude interview protocols, and a student log.



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CHAPTER IV

RESULTS

Chapter four reports on the results of the study in accordance with the five research questions.

1. The need for English writing skills of engineers
2. Development of an English writing course based on the GBA
3. Effectiveness of the course
4. Attitude of students toward the course

4.1 The needs for English writing skills of engineers

Research question 1: What English writing skills are needed by operational and managerial engineers?

The results of the question were to be used as the content, activities, and exercises in the course. Three sets of questionnaires and an interview protocol were used as the instruments to find the answer to the questions. There were four groups of subjects involving 354 engineering students, 31 ESP teachers, 110 operational engineers and 17 managerial engineers who completed the instruments. For this section, the number of engineers was separated since the researcher of this study believed that managerial engineers might have different opinions in terms of genres they use in engineering work, including writing problems associated with those genres. The details regarding the results of the questionnaire and interview are explained below.

1. Questionnaire

Part I: Demographic characteristics data

1. Engineering students

Most of the subjects were male (72.3% or 256). As for age, 58.7% or 208 were between 21 and 23 years old, followed by 38.1% or 135 of them were between 18 and 20 years old, and 2.5% or 9 who were between 24 and 25 years old. About half of the subjects were fourth-year students (50.3% or 178), while 27.4% or 97 and 18.1% or 64 were third- and second-year students, respectively. Only 3.4% or 12 were fifth-year students. They were representatives from all engineering majors in similar numbers: mechanical engineering (17.5% or 62), electrical engineering (18.9% or 67), productive engineering (15.5% or 22), civil engineering (15.5% or 22), chemical engineering (16.9% or 60), and industrial engineering (14.4% or 52). The subjects graduated from

secondary school and vocational education in similar percentage (48.3% or 171 and 50.3% or 178). Less than half of the subjects (36.2% or 128) had studied English for 11-15 years, while 29.4% of them, or 104, had studied English for more than 15 years. Moreover, 28.5% of the subjects, or 101, had studied English for about six to ten years. Only 4.5%, or 16, had studied English for about three to five years.

With respect to their grades in English I (the compulsory course), it could be said that about one-fourth of the students got a B grade (25.4% or 90). Similar percentages of engineering students received A and B+ grades (22.3% or 79 and 20.1% or 71), respectively, while 13.6% or 48, 15.8% or 56, and 1.1% or 4 of the subjects obtained C+, C, D+, and D grades, respectively. As for the grade from the English II course, the results were similar to the grades which they received from the English I course. In addition, 24.9% of the subjects, or 88, earned the B grade, while the number of subjects who got A and B+ grades were (21.5% or 76 and 20.6% or 73). The rest of the subjects received C+ (16.1% or 57), C (13.8% or 49), D+ (1.1% or 4), and D (0.6% or 2), respectively.

Approximately three quarters of the students had experience in attending English writing course (73.4% or 260), while 26% of them, or 92, had never had attended English writing course before.

As for their ability in English writing, the students rated themselves as poor writers (37%), fair writers (32.5% or 115), good writer (3.1% or 11), very good writers (.3% or 1), and very poor writers (16.4 % or 58). The demographic characteristics data are summarized in Table 4.1.

Table 4.1: Demographic characteristics of the engineering students

Demographic Characteristics Data	Number	Percentage
Sex		
Male	256	72.3
Female	98	27.7
Age (years)		
18-20 years	135	38.1
21-23 years	208	58.7
24-25 years	9	2.5
Academic year		
2 nd year	64	18.1
3 rd year	97	27.4
4 th year	178	50.3
5 th year	12	3.4
Major		
Mechanical engineering	62	17.5
Electrical engineering	67	18.9
Production engineering	55	15.5
Chemical engineering	55	16.9
Industrial engineering	60	14.4
Highest level of education before attending the course		
Secondary school	171	48.3
Vocational education	178	50.3
Number of years studying English		
3-5 years	16	4.5
6-10 years	101	28.5
11-15 years	128	36.2
More than 15 years	104	29.4

Table 4.1: Demographic characteristics of the engineering students (continued)

Demographic Characteristics Data	Number	Percentage
English I course grade		
A	79	22.3
B+	71	20.1
B	90	25.4
C+	48	13.6
C	56	15.8
D+	4	1.1
D	1	0.3
English II course grade		
A	76	21.5
B+	73	20.6
B	88	24.9
C+	57	16.1
C	49	13.8
D+	4	1.1
D	2	0.6
Experience in attending English writing course		
Yes	260	73.4
No	92	26.0
Self-rated ability in English writing		
Very good	1	0.3
Good	11	3.1
Fair	115	32.5
Poor	131	37.0
Very poor	58	16.4

2. ESP teachers

The data showed that 25.8%, or 8, of ESP teachers were males and 74.2%, or 23, were females. As for the age, 29.1%, or 9, of the ESP teachers were between 30 and 39 years old, and 29%, or 9 were 46-50 years old. Moreover, 22.5%, or 7, were 40-45 years old and 12.8%, or 4, were 51-58 years old. Most of the ESP teachers graduated with a master's degree (87.1% or 27), while 9.7%, or 3, graduated with a doctoral degree. They had teaching experience in general English for more than 12 years (51.6% or 16), and 16.1% or 5, 22.6% or 7, 6.5% or 2 of them had 9-12 years, 4-8 years, and 1-3 years of experience in teaching English, respectively. In addition, more than half of the ESP teachers (58.1% or 18) had experience in teaching ESP courses for more than five years, while 22.6% or 7, 9.7% or 3, and 6.5% or 2 of them had 3-5 years, 1-3 years, and less than one year experience in teaching ESP courses, respectively.

Regarding their students' writing ability, it was found that the teachers thought that their students' writing abilities were "poor" (25.8% or 8) and "very poor" (25.8% or 8). ESP teachers agreed that 16.1% of the students' writing ability was "fair," and 9.7% or 3 was "good." No one considered their students' writing ability to be "very good." The results of ESP teachers' demographics data are presented in Table 4.2 below.

Table 4.2: Demographic characteristics of the ESP teachers

Demographic Characteristics Data	Number	Percentage
Sex		
Male	8	25.8
Female	23	74.2
Age (years)		
30-39 years	135	38.1
40-45 years	208	58.7
46-50 years	9	29.0
51-58	4	12.8
Educational Background		
Master's degree	27	87.1
Doctoral degree	3	9.7
Experience Teaching general English		
1-3 years	2	6.5
4-8 years	7	22.6
9-12 years	5	16.1
More than 12 years	16	51.6
Experience Teaching ESP		
Less than 1 year	2	6.5
1-3 years	7	22.6
3-5 years	3	9.7
More than 5 years	18	58.1
Opinion toward Students' writing ability		
Very good	0	0
Good	3	9.7
Fair	5	16.1
Poor	8	25.8
Very poor	8	25.8

3. Managerial and operational engineers

The results in this section are divided into two parts: the demographic characteristics of managerial and operational engineers, and their opinion about English writing.

Concerning the demographic characteristics, the results in each category of the two groups showed the same direction. Engineers (both operational and managerial) graduated with a bachelor's degree (74.5% or 82 and 52.9% or 9). More than half of them had not previously attended an English writing course for engineers (59.1% or 65 of operational engineers and 76.5% or 13 of managerial engineers). As for engineers who had attended the English writing course before, most of them had attended the course at a university (16.4% or 18 operational engineers and 23.5% or 4 managerial engineers).

With respect to why English was used in communication, the results from those two groups of engineers were similar. The major reasons for using English in communication within the sample companies were because they were international companies (70.9% or 78 of operational engineers and 82.4% or 14 of managerial engineers). The second and third reasons were because their companies had subsidiaries in other countries and they had multi-nationality employees. The data regarding operational and managerial engineers' demographics data are presented in Table 4.3 below.

Table 4.3: Demographic characteristics of managerial and operational engineers

Information	Operational (N=110)		Managerial (N=17)	
	Number	Percent	Number	Percent
Education				
Bachelor's degree	82	74.5	9	52.9
Master's degree	26	23.6	7	41.2
Doctoral degree	1	.9	1	5.9
Attending English writing course for engineers				
No	65	59.1	13	76.5
Yes	43	39.1	4	23.5
Place studied English writing course for engineers				
University	18	16.4	4	23.5
Cram school	-	-	-	-
Previous company	-	-	-	-
Current company	-	-	-	-
Training	3	2.7	-	-
Study abroad	1	.9	-	-
Reasons why English is used for internal communication				
The company is a subsidiary of a foreign company.	68	61.8	8	52.9
The company is supported by a foreign investor.	51	46.4	8	52.9
The company has a foreign owner.	62	56.4	7	41.2
The company hires foreign supervisors.	55	50	6	35.3
The company has a subsidiary in other countries.	73	66.4	12	70.6
The company has international standards.	78	70.9	14	82.4
The company has multi-national employees.	68	61.8	11	64.7

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As for the information concerning the opinion of managerial and operational engineers about English writing, it was found that almost half of the operational and managerial engineers agreed that their writing abilities were “fair” (48.2% or 53 and 41.2% or 7, respectively). Seventy-eight operational engineers (70.9%) reported that they had writing problems during the first few years of work, while ten managerial engineers (58.8%) stated they also had writing problems at the beginning of work. Also, the results showed that 62.7%, or 69, of operational engineers, and 35.3% of the managerial engineers, or six, had writing problems.

With respect to the frequency of writing of engineers each day, it was found that, on average, most of the engineers from these two groups wrote 1-5 pieces per day relating to the work of engineer (72.7% or 80 of operational engineers, 76.4% or 13 of managerial engineers). Moreover, most of their written texts were in the form of formal and informal e-mails. Seventy percent or 77 operational engineers wrote formal e-mails whereas 82.4% or 14 of the managerial engineers wrote formal e-mails. 51.4%, or 56, operational engineers wrote informal e-mails, and 58.8% or 10 of the managerial engineers wrote informal e-mails.

The first three countries which engineers regularly contacted were the USA, Singapore, and Japan. As for the opinion concerning the content of the course, more than 80% of them agreed that a writing course should focus on students’ writing ability to cover required contents more than focusing only on correct grammar (89.1% or 98 of operational engineers and 100% or 17 of managerial engineers). This was different from normal English writing lessons focusing not only on correct grammar but also required contents. The information is summarized in Table 4.4 below.

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Table 4.4: Opinion about English writing of managerial and operational engineers

Information	Operation (N=110)		Managerial (N=17)	
	Number	Percent	Number	Percent
English writing ability				
Very good	3	2.7	1	5.9
Good	27	24.5	7	41.2
Fair	53	48.2	7	41.2
Poor	15	13.6	1	5.9
Very poor	3	2.7	-	-
Writing problems				
Had problems during the first few years of working	78	70.9	10	58.8
Still have problems until now	69	62.7	6	35.3
Frequency of writing in work situations each day (average)				
0	8	7.3	-	-
1-5	80	72.7	13	76.4
6-10	11	10	-	-
11-15	2	1.8	2	11.8
16-20	7	6.4	1	5.9
21-25	-	-	-	-
26-30	-	-	1	5.9
50	1	.9	-	-
Characteristics of writing				
Write or type on paper (formal content)	12	10.9	4	23.5
Write or type on paper (informal content)	14	12.7	3	17.6
Write e-mail (formal content)	77	70	14	82.4
Write e-mail (informal content)	56	50.9	10	58.8

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Table 4.4: Opinion about English writing of managerial and operational engineers (continued)

Information	Operation (N=110)		Managerial (N=17)	
	Number	Percent	Number	Percent
Contact countries				
USA	48	43.6	10	58.8
Japan	43	39.1	6	35.5
China	24	21.8	4	23.5
German	15	13.6	2	11.8
Great Britain	13	11.8	3	17.6
Taiwan	10	9.1	3	17.6
Korea	5	4.5	1	5.9
Singapore	46	41.8	8	47.1
Dubai	1	.9	1	5.9
Others	81	73.6	5	29.4
Opinion about writing				
Focusing on understanding content more than correct grammar	98	89.1	17	100
Focusing on correct grammar more than understanding content	13	11.8	1	5.9

In addition, it was found that English was used similarly by operational engineers and managerial engineers in various contexts and situations. The mean scores in Table 4.5 show that the two groups of engineers used English writing most with their headquarters (operational engineers = 3.55 and managerial engineers = 3.33), overseas companies (operational engineers = 3.31 and managerial engineers = 3.12), and between departments (operational engineers = 3.11 and managerial engineers 3.18). The summary results are illustrated in Table 4.5 below.

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Table 4.5: Description of usage of English writing for communication of operational and managerial engineers

Contexts	Operational engineers (Number=110)		Managerial engineers (Number=17)	
	Mean	S.D	Mean	S.D
Within each department	2.7	1.19	2.88	1.31
Between the departments	3.11	1.18	3.18	1.23
With other local companies	3.06	1.18	2.5	1.09
With their headquarters	3.55	1.46	3.33	1.63
With other overseas companies	3.31	1.36	3.12	1.40

In conclusion, the first part of the questionnaire reported information on the four groups of subjects in general. The information provided the overall picture of each group, such as education, work experience, writing problems, and experience in attending English writing courses.

Part II: Required English writing content and situations for the work contexts and writing problems of engineers

Part II involves five topics, namely, problem areas in writing English in general, importance of genres in the engineering contexts, writing problems associated with different genres in engineering contexts, significance of English writing in the engineering contexts, and lack of knowledge in English writing in the engineering contexts. The results of each topic are reported as follows:

1. Problem areas in writing English in general

It was found that engineering students, ESP teachers, and operational engineers considered grammar, structure, vocabulary, spelling, punctuation, and writing procedure to be their important problem areas in writing in English in general. These problem areas were not in a similar order. An important problem area for every group of subjects, except for managerial engineers, was grammar.

While engineering students rated their problems in most areas as only “quite important,” grammar was rated as “important.” However, ESP teachers thought that their engineering students had writing difficulties in most areas, except for spelling and punctuation, which they ranked as “quite an important problem.” The most important problem areas for the engineering students were vocabulary, grammar, structure, and

editing of their written work. As the results showed that grammar and structure were important problem areas for engineering students, the engineering students who enrolled in the current course were asked to attend four grammar and structure review lessons of two hours each. The review sessions were held on Saturdays. Only the students who had problems in grammar and structure, as revealed in the pre-test scores, were asked to attend the review sessions.

Moreover, operational engineers felt that most of their general problems in writing were “important”. Their most important problem area is grammar. As for managerial engineers, they rated most of their problems as “quite important” and “not so important,” respectively. Their most important problem area was outlining.

The mean scores of the problem areas in writing in English in general for the four groups of subjects were calculated using one-way ANOVA or F test. The result indicated that there was a significant difference among the four groups of subject at p value < .05 in four problem areas, namely, vocabulary, spelling, punctuation, and writing procedure. Also, it was found that three problem areas were common to all the groups were grammar, structure, outlining, and searching information. The findings are summarized in Table 4.6.



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Table 4.6: Problem areas in writing in general English

Content	Students (354)		Teachers (31)		Operational eng. (110)		Managerial eng. (17)		Variance	F	Welch's ANOVA
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
1. vocabulary	3.48	1.05	3.84	1.06	3.19	.63	2.65	1.11	2.54	7.17*	-
2. grammar	3.55	1.10	3.74	1.18	3.50	1.06	3.00	1.22	0.86	1.73	-
3. structure	3.42	1.06	3.77	1.17	3.32	1.00	2.65	1.05	0.73	4.39	-
4. spelling	3.04	1.08	3.32	1.10	2.80	1.02	2.12	0.99	0.30	6.17*	-
5. punctuation	2.81	1.05	3.45	1.23	2.62	.94	2.41	1.27	2.28	5.83*	-
6. writing procedures											
outlining	3.40	1.08	3.32	1.24	3.17	0.85	3.06	1.19	7.17	-	2.03
*searching information	3.10	1.08	3.65	1.17	2.80	0.89	2.47	0.80	1.52	7.49	-
writing	3.43	1.09	3.68	1.10	3.09	0.87	2.65	1.05	5.56	-	6.81*
editing	3.41	1.15	3.90	1.13	3.08	0.97	2.53	1.00	5.43	-	8.86*

p value < .05

2. Importance of genres in engineering contexts

It was found that inquiries (4.05), reports (4.07) and minutes of meetings (4.09) were the first three important genres in the aspect of engineering students. ESP teachers saw inquiries (3.93), memos (3.70), and reports (4.29) as the first three important genres. The first three important genres of operational engineers encompassed requests (3.63), inquiries (3.97), and reports (3.83), while the first three important genres of managerial engineers were also requests (3.69), inquiries (4.00), and reports (3.81).

With respect to the comparison among the four groups of subjects using the F test, it was found that there were only two genres, namely, requests and enquiries, which were not significantly different ($p < .05$). Simply put, these two genres were considered as “important” by the four groups of subjects. Findings on the importance of the genres are summarized in Table 4.7.

Table 4.7: Importance of genres in engineering contexts

Content	Students (354)		Teachers (31)		Operational eng. (110)		Managerial eng. (17)		Variance	F	Welch's ANOVA
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
1. complaints	3.7	.90	3.22	1.01	3.14	1.15	3.31	1.13	2.51	10.35*	-
2. requests	3.76	.89	3.56	.84	3.63	.95	3.69	.79	.74	.91	-
3. inquiries	4.05	.94	3.93	.95	3.97	.88	4.00	.7	2.32	.28	-
4. memos	3.75	.93	3.70	.99	3.10	1.09	3.21	.57	1.82	12.97*	-
5. reports	4.07	.90	4.29	1.08	3.83	.91	3.81	.91	.65	2.96*	-
6. minutes	4.09	.93	2.7	1.06	3.41	1.11	3.13	1.18	3.10*	-	24.47*
7. agenda	3.79	.95	2.37	.96	3.21	1.08	2.60	.82	.47	29.00*	-
8. Informative notes	3.84	.92	3.44	1.05	3.34	1.05	2.75	.85	1.27	12.98*	-

p value < .05

very important genre = 5 (4.5-5.0)

important genre = 4 (3.5-4.4)

quite an important genre = 3 (2.5-3.49)

not so important genre = 2 (1.5-2.49)

not important at all = 1 (1.0-1.49)

3. Writing problems associated with different genres in engineering contexts

Most of the engineering students thought that they had problems when they have to write different genres in engineering contexts. They rated minutes, agenda, and reports as the three most important writing problems with the mean scores of (3.7, 3.64, and 3.60 respectively). ESP teachers felt that students had problems in writing reports (3.86), minutes (3.59), and inquiries (3.58). As for operational engineers, most of their problems in writing different genre were considered as “quite important.” The first three important problems in writing different genres of operational engineer were complaints (3.10), reports (3.13), and minutes (3.11). In contrast, managerial engineers agreed that problems in writing different genres were not “so important.” The first three types of writing problems noted were writing requests, minutes, and agenda.

When calculating the mean scores using F test or One-way ANOVA, it was found that writing problems associated with different genres of the four groups of subjects differed significantly at the level of .05 ($p < .05$). In other words, these four groups of subjects had different problems when having to write different types of writing. Details on the writing problems are reported in Table 4.8.

Table 4.8: Writing problems associated with different genres in engineering contexts

Content	Students (354)		Teachers (31)		Operational eng. (110)		Managerial eng. (17)		Variance	F	Welch's ANOVA
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
1. complaints	3.61	.97	3.56	1.21	3.10	.98	2.38	1.12	2.39	11.79*	
2. requests	3.47	.97	3.52	1.08	2.96	.94	2.46	.877	1.88	10.67*	
3. inquiries	3.47	1.03	3.58	1.17	3.02	1.00	2.38	.961	1.91	8.80*	
4. memos	3.34	1.06	3.38	1.16	2.92	1.05	2.27	1.01	1.27	6.89*	
5. reports	3.60	1.07	3.86	1.04	3.13	.97	2.38	1.12	1.77	10.58*	
6. minutes	3.7	1.14	3.59	1.36	3.11	1.01	2.45	1.12	3.37*	-	10.31*
7. agenda	3.64	1.09	3.5	1.36	2.99	1.07	2.42	1.08	3.10*	-	10.53*
8. Informative notes	3.47	1.00	3.43	1.06	2.82	1.02	2.23	.927	.40	14.93*	

p value < .05

very important problem = 5 (4.5-5.0)

important problem = 4 (3.5-4.4)

quite an important problem = 3 (2.5-3.49)

not so important a problem = 2 (1.5-2.49)

no problem at all = 1 (1.0-1.49)

4. Significance of knowledge of English writing in engineering contexts

Three groups of subjects rated that all areas of the knowledge of writing English in the engineering context, namely, appropriateness of the relationship between readers and writers, relevance between content and context, logical knowledge, and appropriate layout were “important.” Only managerial engineers thought that appropriate layout was “quite important” (2.88).

When the means scores were tested with F test, it was found that the appropriateness in terms of relationship between the reader and the writer and appropriate layout were considered a significant difference at the p-value level $< .05$. In contrast, the relevance between content and context and logical knowledge were not perceived as a significant difference at the p-value level $< .05$. Put another way, the relevance between the content and context and logical knowledge were important in the aspect of the four groups of subjects. The findings are shown in Table 4.9.

Table 4.9: Significance of English writing in engineering contexts

Content	Students (354)		Teachers (31)		Operational eng. (110)		Managerial eng. (17)		Variance	F	Welch's ANOVA
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
1.Appropriateness in terms of relationship between reader and writer	3.95	.91	3.75	1.1	4.01	.76	3.24	.97	3.90*	-	3.48*
2.Relevance between the content and context	3.92	.86	4.07	.82	3.66	.82	3.59	.87	.31	3.67	-
3. Logical knowledge	3.97	.85	4.18	.86	3.82	.84	3.88	.99	.71	1.51	-
4. Appropriate layout	3.48	1.0	3.36	1.2	3.13	.90	2.88	.92	4.2*	-	5.18*

p value < .05 very important knowledge = 5 (4.5-5.0) important knowledge = 4 (3.5-4.4)
 quite an important knowledge = 3 (2.5-3.49) not so an important knowledge = 2 (1.5-2.49)
 not important at all = 1 (1.0-1.49)

5. Lack of knowledge in writing in English in engineering contexts

Engineering students considered all the problem areas as “quite important.” This meant that students knew that those writing problem areas affected their writing. ESP teachers thought that their students had difficulties in all problem areas, except for appropriate layout. With respect to operational and managerial engineers, all the problem areas were invariably perceived as “quite important.”

The results of the F test showed that all four groups had different opinions concerning lack of knowledge in writing in English at the level of p-value < .05. The exception to this was problems with the appropriate layout, which was not considered as a significant difference at the level of .05 ($p < .05$). In other words, appropriate layout was the only one problem area in writing English in the engineering contexts among the four groups of subjects. The lack of knowledge in writing in English in the engineering contexts is summarized in Table 4.10.

Table 4.10: Lack of knowledge in writing in English in the engineering contexts

Content	Students (354)		Teachers (31)		Operational eng. (110)		Managerial eng. (17)		Variance	F	Welch's ANOVA
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
1. Appropriateness of relationship between reader and writer	3.40	1.0	3.85	1.0	3.10	1.0	2.56	1.03	.31	7.32*	-
2. Relevance between the content and context	3.44	1.0	3.85	1.1	3.04	1.1	2.63	.957	.90	8.58*	-
3. Logical knowledge	3.39	1.0	3.73	1.0	3.01	.95	2.63	.719	4.62*	-	9.86*
4. Appropriate layout	3.39	1.1	3.27	1.1	2.89	1.0	2.44	.964	2.54	8.28	-

p value < .05

very important problem = 5 (4.5-5.0)

important problem = 4 (3.5-4.4)

quite an important problem = 3 (2.5-3.49)

not so important a problem = 2 (1.5-2.49)

no problem at all = 1 (1.0-1.49)

In conclusion, part II of the questionnaire reported data from the four groups of subjects regarding the results of the needs analysis in terms of problems in writing English in general, types of genre in the engineering contexts, problems in writing associated with types of genre in the engineering context, the significance of knowledge of writing in English in the engineering contexts, and their problems. These perceived needs results and opinion were subsequently changed into course descriptions, objectives, goals, and activities in the English writing course for engineers developed based on the GBA in this study.

Part III: Opinions about course component of an English writing course for engineers

Part III summarizes the opinion of the four groups of subjects regarding the course component of an English writing course for engineers.

Engineering students, ESP teachers, operational engineers, and managerial engineers had similar opinions about what should focus in developing an English writing course for engineer. They thought that a new English writing course should be designed based on various aspects such as “focusing on the objectives of the course for the engineering profession,” “asking students to do group works,” “pointing out necessary engineer working situations first and then having students search for content to write themselves, etc.”

When the mean scores from the four groups of subjects were tested by F test, it was found that 19 out of 25 items did not show a significant difference among the four groups at the level of P value < .05. This means that the course should be developed based on those 19 items as follows:

- item 3 (focusing on vocabulary and grammar)
- item 5 (using English in teaching)
- item 6 (using English more than Thai in teaching),
- item 8 (doing individual work),
- item 9 (doing group work),
- item 10 (doing pair work)
- item 12 (providing models of writing before doing exercises),
- item 13 (pointing out necessary engineer working situations in writing and then asking students to search for content to write themselves)
- item 14 (editing writing of their own)

- item 15 (practicing writing from real situations),
- item 16 (using commercial texts as the material)
- item 17 (using authentic materials),
- item 18 (using transparencies),
- item 19 (using VDO as a teaching aid),
- item 20 (using power-point as a teaching aid)
- item 21 (using E-learning as a teaching aid)
- item 23 (using writing tests as an evaluation form)
- item 24 (using portfolios as an evaluation form)
- item 25 (using group activities as an evaluation form).

There were six items that were left out; they were as follows:

- item 1 (focusing on the objectives of the course for engineering profession)
- item 2 (focusing on objectives of the course on academic)
- item 4 (using Thai in teaching)
- item 7 (using Thai more than English in teaching)
- item 11 (focusing on self study)
- item 22 (using exercises as an evaluation form)

To sum up, this part of the study explored the opinions about components of the course from the four groups of subjects. The results were translated into the course through teaching activities, course objectives, language in teaching, materials, and course evaluation. The information is concluded in Table 4.11.

Table 4.11: Opinions about the course components of an English writing course for engineers

Content	Students (354)		Teachers (31)		Operational eng. (110)		Managerial eng. (17)		Variance	F	Welch's ANOVA
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
1. Focus on the objectives of the course for engineering profession	4.75	.54	4.93	.25	4.70	.56	4.82	.39	7.41*	-	4.79*
2. Focus on objectives of the course on academics	3.67	1.01	3.40	1.38	3.27	1.06	3.12	1.26	3.10*	-	4.79*
3. Focus on vocabulary and grammar	4.07	.85	3.70	.95	3.72	.89	3.35	.70	.74	8.63	-
4. Use Thai in teaching	2.81	1.18	2.87	.68	2.44	1.13	2.41	.93	4.97*	-	3.84*
5. Use English in teaching	4.08	.99	3.50	.82	4.25	.88	4.00	.93	.14	4.81	-
6. Use English more than Thai in teaching	4.25	.95	4.10	.84	4.18	.92	3.88	1.40	2.53	1.02	-
7. Use Thai more than English in teaching	2.57	1.22	2.83	1.11	2.07	1.07	2.41	1.17	3.66*	-	6.68*

p value < .05

Table 4.11: Opinions about the course components of an English writing course for engineers (continued)

Content	Students (354)		Teachers (31)		Operational eng. (110)		Managerial eng. (17)		Variance	F	Welch's ANOVA
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
8. Ask students to do individual work	3.13	1.13	3.17	1.02	3.45	1.18	3.41	1.12	1.20	2.52	-
9. Ask students to do group work	3.82	.95	4.10	.71	3.85	1.02	3.94	.96	2.63*	-	1.33
10. Ask students to do pair work	3.83	.91	3.90	.80	3.73	1.02	3.82	1.01	1.12	.42	-
11. Focus on self-study	3.44	1.04	4.33	.80	4.03	.91	3.82	.80	6.17*	-	18.00*
12. Provide models of writing before doing exercises	3.73	.90	4.13	.97	3.85	.83	4.00	.70	2.97*	-	2.45

p value < .05

Table 4.11: Opinions about the course components of an English writing course for engineers (continued)

Content	Students (354)		Teachers (31)		Operational eng. (110)		Managerial eng. (17)		Variance	F	Welch's ANOVA
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
13. Point out necessary engineer work situations in writing and ask students to search for content to write themselves	3.93	.92	3.76	.78	4.15	.66	4.06	.74	5.77	2.57	-
14. Edit their own writing and their friends' writing	3.61	.89	3.93	.94	3.79	.91	3.65	.86	.53	2.01	-
15. Practice writing from real situations	4.44	.75	4.53	.62	4.62	.54	4.47	.80	6.59*	-	2.53
16. Use commercial texts as teaching material	3.72	1.00	3.93	.74	3.68	.88	3.41	.93	3.70*	-	1.47

Table 4.11: Opinions about the course components of an English writing course for engineers (continued)

Content	Students (354)		Teachers (31)		Operational eng. (110)		Managerial eng. (17)		Variance	F	Welch's ANOVA
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
17. Use real documents as teaching material	4.11	.86	4.20	.71	4.25	.78	4.12	.78	.84	.87	-
18. Use transparencies	2.80	1.17	3.27	1.01	2.96	1.02	2.71	1.21	3.12*	-	2.34
19. Use VDOs as a teaching aid	3.89	.95	3.97	.92	3.90	.98	3.94	1.08	.50	.08	-
20. Use Power Point as a teaching aid	3.37	1.05	3.93	.90	3.86	.90	3.88	1.11	2.43	9.15	-
21. Use E-learning as a teaching aid	3.62	1.06	3.27	.98	3.78	1.04	3.88	1.11	.43	2.24	-
22. Use exercises as an evaluation form	3.60	1.04	3.83	.83	3.62	.986	4.06	.55	5.38*	-	3.65*

p value < .05

Table 4.11: Opinions about the course components of an English writing course for engineers (continued)

Content	Students (354)		Teachers (31)		Operational eng. (110)		Managerial eng. (17)		Variance	F	Welch's ANOVA
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
23. Use writing tests as an evaluation form	3.70	1.08	4.07	.78	3.88	.96	3.59	.79	4.56*	-	2.69
24. Use portfolios as an evaluation form	3.47	1.04	3.87	.68	3.53	.96	3.53	.80	4.10*	-	2.79*
25. Use group activities as an evaluation form	3.85	.96	3.87	.86	3.79	.96	3.88	.85	.36	.14	-

p value < .

Part IV: Suggestions for and expectations of an English writing course for Engineers

Part IV of the questionnaire is an open-ended question explaining the expectations and suggestion to the course from the four groups of subjects. It aims to elicit data regarding the course components. The results are presented below.

1. ESP teachers

Their suggestions were mainly related to the course development process. Two teachers suggested ensuring that students have enough background knowledge in English, especially in reading, vocabulary, structure, and grammar before they were taught writing. This is because students cannot learn to write well if they do not have enough background knowledge in English, as described below:

Since Thai Engineers have problems with vocabulary and structure, it is difficult for them to write. To help them learn how to write, it is therefore, necessary to first help them improve their background knowledge in English. (Teacher #19)

Also, the ESP teachers thought that students should be able to write effectively at the end of the course. They should be able to organize their writing in a clear way and choose appropriate words and spell them correctly, as can be seen in the following sentiment:

Engineering students should be able to write well at the end of the course. At least, they should know how to organize their written work, including being able to choose appropriate words and spell them correctly. (Teacher #8)

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2. Managerial engineers

Most of the managerial engineers thought that students should be able to write well at the end of the course and work effectively in the future. In addition, students should also be able to use English appropriately in relation to their work contexts and situations. Also, students should be able to know how to write short sentences, paragraphs, and summaries. Moreover, they thought that authentic situations and materials were required. A sample of this line of thought can be found in an engineer's comment below:

Teaching with authentic situations and materials is better than teaching with general English textbooks because students can see authentic working situations. (Engineer #95)

Another engineer also thought that providing authentic situations and materials was important, but he had for different reasons, as he discussed:

Providing authentic situations and materials is crucial since it helps learners to obtain enough background knowledge about engineering contexts. (Engineer #56)

Moreover, the managerial engineers agreed that an effective approach to teaching writing should provide writing models of every kind of engineering texts.

3. Operational engineers

Operational engineers thought that the developed course should enable students to apply what they learned from the course to their working contexts and situations. Also, they thought that students should be able to write effectively at the end of the course. Moreover, the lessons would make it easy for students to learn how to write. What would be focused on in the course was helping students understand not only content, but also grammar. Finally, more English courses should be provided to give students opportunities to learn English.

Most operational engineers thought that using authentic situations and materials for the course is required, as one of the engineers discussed below:

Using authentic situations and materials is necessary because it helps students see actual working contexts and situations. Also, they will have a chance to learn vocabulary related to the work of engineers. (Engineers #8)

Even though engineers #114 and 107 also thought that using authentic situations and materials was required, they had a different reason from engineer #8 as took into account:

Providing authentic situations and materials is required, but it is necessary to present them in particular ways to motivate students to learn. It is believed that when students are motivated to study, they would pay attention to their study. (Engineer #114)

In addition, some of the engineers thought that teachers should point out the importance of the course to the students because this would help to motivate them to study. An engineer noted that:

Authentic situations and materials are important for English for engineering courses. Moreover, teachers should encourage students to be aware of why they need to study the course to help them pay attention to the course. Additionally, teachers should invite experienced engineers to share their work experience with students. (Engineer #107)

Although encouraging students to be aware of the importance of the course was important, it might not be enough. Teachers should also help students to feel confident to write by providing them with writing exercises that suited their background knowledge in English.

Operational engineers also suggested that if the students do not have enough background knowledge in English, teachers need to help them improve their background knowledge by teaching extra lessons as well. Providing vocabulary knowledge in the course was also necessary because this would help students obtain more background knowledge and ultimately to be able to write better. Moreover, they suggested that studying only in the class was not enough. Students should be trained from companies that they will work for. The reason was that they could see authentic situations and read engineering written works which helped them familiarize with the real working situations and contexts of engineers.

4. Engineering students

Students thought that the university should develop more English courses for engineering students since English was important. As for the writing course, they thought that an English writing course for engineers was useful and necessary for future engineers since the course could help them see the work of engineers. They could

prepare themselves to be ready to work. An extract from the interview description is noted below:

I thought that teachers should develop an English writing course for engineering students. I hope that the course will help engineering students improve their writing skill. (Engineering student #154)

In addition, students would like to have an English writing course that can support their work. A sample of a student's comment is shown below:

I would like to have some English courses that will help me in my work in the future. The course should also focus on grammar because this is a weak area for engineering students. (Engineering student # 222)

Engineering students thought that if they could write effectively, this would help them succeed in their careers. Also, the content of the developed course should also relate to outside of their work life. Therefore, the content should cover writing essays, resumes, application forms, minutes of meetings, business letters, and various kinds of reports. Furthermore, they thought that the developed course should be able to help them write fluently, correctly, and appropriately at the end of the course.

Moreover, the students thought that the developed course should emphasize teaching vocabulary both for general writing contexts and engineering contexts, as described below:

I think that learning vocabulary is required (both general vocabulary and technical terms). If engineering students do not have enough vocabulary, they cannot write effectively. (Engineering student #200)

In addition, they also thought that the teachers should design English courses that were easy to learn and understand. Moreover, finding ways to motivate students to study was necessary. Teachers should focus on helping students write with clear content before focusing on correct grammar. Providing feedback on the students' writing was also required, and speaking should also be a part of the course.

To sum up, the analysis of the information in Part IV revealed that all groups of the subjects thought that the course should help students learn English in order to work as engineers in the future. The content of the course should cover different kinds of genres concerning the work of engineers. The lessons should not focus only on the content, but also on using correct grammar. Authentic situations and materials were required. The developed course should help students write effectively and appropriately

at the end of the course. In addition, it is worth nothing that all groups of subject thought that more English courses were required. Finally, the course should also focus on building vocabulary.

2. Interview protocol

The aim of the interview is to gather in-depth information about the required genres that are used as the content of the course from the managerial and operational engineers and to confirm findings from the questionnaires. The interview was conducted with only two groups of engineers since they could provide details about engineering writing contexts and situations associated with each required genre. The target genres involved request e-mails, inquiry e-mails, and report writing. These three target genres were identified as the most three important genres of engineers by the four groups of subjects. The reasons why these three genres were chosen as the content of the course are explained in detail in the next chapter in the section on Research Question no. 2.

The semi-structure interview technique was employed to collect data to derive the expected information and more related information. The managerial and operational engineers were asked the same questions, except for the last two questions, which were created for interviewing only the managerial engineers. Thus, the answer to each question by those two groups of engineers was categorized and reported under the same heading below, while the answers to the last two questions were reported separately at the end of this section. The results are categorized as follows:

1. Forms of writing

All of the subjects replied that they often wrote e-mails, both informal and formal, to communicate with people in the engineering community and others. It was quite rare to write letters on paper or write letters in e-mail form. This was because communicating through e-mail is faster than communicating on paper. In addition, most of the companies used a paperless policy, so writing e-mail supported this policy.

2. Reasons to write formal or informal e-mails

As previously mentioned, all of the subjects used formal and informal e-mails. Thus, they had reasons to decide when to write formal or informal e-mails. The reasons of the subjects were similar. They involved the status of the readers, the relationship between the readers and writers, the topics of writing, and the objectives of writing. For example, when the readers were colleagues, supervisors, customers, suppliers, and

anyone with whom they were not familiar, they were supposed to write formal e-mails to them. If the objective of writing was to inform people in various departments and groups in the same companies, formal e-mail was also required. In addition, when the topics of writing were about assigning work or asking for information, formal e-mails were required. An engineer noted that:

Formal or informal e-mail can be determined by whether they are internal e-mails or not. Normally, external e-mails are formal e-mails. We must be neat, since it shows the quality of engineers in our company. (Engineer #4)

However, they also said that they normally wrote formal and polite e-mails even though they wrote to their friends since it was possible that the e-mails were forwarded to others who are related to their work. Those people might be their seniors. Therefore, they thought that it would be more appropriate to write formal e-mails any time they have to write e-mails. As for informal e-mails, they normally wrote when they wrote to colleagues who they were familiar with, and they ensured that the e-mails were not forwarded to others seniors.

3. Choosing between formal and informal e-mails

Operational and managerial engineers provided answers in the same direction. Formal and informal e-mails could be seen from the language they used in the parts of an e-mail, namely, opening salutation, body, closing salutation, and closing correspondence. It was interesting to see the criteria that these engineers used to distinguish between formal and informal emails.

In writing formal e-mails, in the opening salutation, they used “Dear + first name” and “Dear + surname” with Thai and foreign engineers whom they were not familiar with, or who were in a higher status,. In contrast, they used “Dear + nickname,” “Dear + first name,” “Hello + name,” and just “name” with anyone whom they were familiar with or who was of similar status. However, they normally used “Regards” or “Best regards” as the closing salutation with people they communicated with, regardless of familiarity or unfamiliarity.

As for closing correspondence, “Thanks,” “Thank you,” and sometimes nothing at all were used with informal e-mails, while “Thank you very much” or expressions showing closing correspondence such as “We are looking forward to hearing from you,” “Your urgent reply is appreciated,” and “Feel free to ask questions,” were used to show formality.

In addition, formal and informal e-mails could also be seen through the language in the body of the e-mail showing the functions of such e-mails, such as, “Could you please send me the data?” (formal request), and “Please send me the data” which were used in writing informal request.

Apart from this, some engineers also used different words (more formal vocabulary) in different registers to indicate formality or informality, such as “require” instead of “want” and “provide” instead of “give.” Introducing themselves was required when meeting for the first time since an introduction is a characteristic of formal e-mails. In addition, greeting expressions, such as “How are you?” and “Hello” were also used as a characteristic of informal e-mails because it showed that they were familiar with each other.

All of the interviewees were aware that paying more attention to mistakes in writing concerning the use of appropriate vocabulary, being correct and having clear content, and correctly spelling people’s names were important as characteristics to indicate formality. These criteria were very crucial when it was their first contact or when they had to write to other companies, supervisors, or customers. An example can be found in one subject’s comment:

I am not aware whether it is a formal or informal e-mail if it is an inner e-mail because my factory and bosses did not pay attention to this. However, writing an e-mail to people with whom we make first contact and people in other companies, we must be polite and careful to choose appropriate words. (Engineer #8)

4. Writing e-mails to foreign engineers

There were some issues engineers were aware of when they wrote to foreign engineers. A few of the subjects focused on sentence structures. They believed that writing with simple sentence structures was appropriate. This was because sometimes when engineers used more complicated structures, it possibly made the readers confused and miscommunication could occur. An extract from one interview is shown below.

I am quite careful about sentence structures because I found that the readers might be confused when I used the wrong structures. I had experience about this before. It caused me problems. (Engineer #1)

Some engineers also paid attention to the nationality of foreigners. They found that the cultures of different countries were different, so it was necessary to focus on

this. For example, Japanese and Chinese customers or engineers preferred very polite and formal communication. They started writing e-mails with an introduction, and then purpose or state the main point of writing. In contrast, American and European engineers preferred going to the main points of communication without introduction. Normally, this happened when they had already contacted each other a few times. Chinese engineers or suppliers sometimes did not provide information about things directly, especially when they made mistakes. They preferred indirect communication. In contrast, American and British engineers preferred direct communication. An example can be found in one subject's description below.

We need to use "Dear + surname," not "Hi" to make it formal and polite. It is better if you put the word "san" after the surname if they are Japanese. Also, Japanese engineers or customers are strict about time. We have to keep our promise when we deal with them on any matter such as exporting products. (Engineer #7)

5. Types of sentences

Most of the engineers used simple and compound sentences in their writing. However, they sometimes also used complex sentences. They used both passive and active voices as well. It was noteworthy that they did not try to write e-mails with complicated sentence structures, since it was possible to make mistakes and to miscommunication. Similar findings were found in the interview scripts shown below.

I normally use all types of sentences, but I do not try to write complicated sentences. I think it is easy to make people confused. (Engineer #2)

Usually, I use any kinds of sentences in writing. However, I prefer using simple sentences because I sometimes write to my staff, and the English of some of them could not meet the standard. Possibly, they may not understand what I write to them. (Engineer #5)

6. Using Vocabulary

Most of the engineers agreed that using technical terms, semi-technical terms, and general vocabulary depended on whom they were talking to and what the topics were. For example, when the readers were engineers, and the topics of writing regarded engineering work, they used technical terms. However, general vocabulary was always used as a part of their writing, as evidenced in the following extract:

I normally use general vocabulary because I do not only talk to engineers; I also have to talk to people from various departments who work with me, such as purchasing and maintenance departments. However, when I talk to engineers or

colleagues about engineering work, it is sure that I use technical or semi-technical terms. (Engineer #2)

7. Patterns of writing

Most engineers agreed that patterns of writing were not important since they thought that the complete content was more important. They used the patterns that they preferred and were familiar with. However, a few of them paid attention to the patterns, and some of them used Full-block form in writing. That was, the same left margin was used for every line. Another point that most of them agreed on was that they always used double spacing when they would like to start writing new topics or purposes. An example is given below:

In my view, I think that the pattern of writing is not important. We normally write what we are familiar with or follow what people always write to us. I often use the Full-block form with double spacing. I like this one because it is easy to use; we do not need to worry about tabing. Most of my friends or anyone who writes to me also use this. (Engineer #3)

8. Problems in writing English

There were various opinions from the interviewees when it came to the problem in writing English, such as not enough vocabulary or English background knowledge, as evidenced in the following statements.

Thai engineers do not have enough background knowledge in English (vocabulary, structure). Thus, they cannot write or read well. (Engineer #3)

At the beginning, we were not familiar with engineering working contexts, so we cannot write as engineers. This was because nobody taught us before and we also lacked practice. There were no specific English courses which prepared students to be engineers. (Engineer #5)

Finally, they hoped that the university would provide more English courses for engineers. The courses should be easy and practical, but cover the work contexts of engineers.

9. Engineer work contexts and situations for writing request e-mails and inquiry e-mails

It was found that most of the engineers agreed that the contexts and situations of those two genres were similar. Moreover, it was found that the writing contexts in which most of the engineers often wrote involved suppliers, colleagues, and

headquarters. This was similar to the results from the questionnaire. It could also be concluded that most of the request and inquiry writing situations involved requests for and inquiries about information and actions, as described in the following statements:

There are many writing situations engineers use when they write different kinds of genres, including different writing contexts. For example, I write a request e-mail to a colleague who works in the purchasing department and ask for a catalogue from her. Also, I write to the same person, but ask for ordering. Normally, we always request for information or actions. (Engineer #9)

More information concerning the working contexts and situations is reported in section 4.2 (course development process) in this chapter.

10. Types of report writing and their writing contexts and situations

It was found that engineers wrote many kinds of reports, such as accident reports, laboratory reports, investigation reports, and progress reports. These reports have different organizations. Moreover, these reports were organized differently based on the different criteria by each engineer. Also the frequency of writing these reports were based on each engineer, e.g. some engineers wrote reports every week, while others wrote them every month. Also, some of them wrote the reports when they finished each step of the project, and others only when they had problems. The characteristics of writing depended on the department and the company they worked for. However, it was found that an investigation report was a type of report that most engineers had to write. The writing situations were problems they faced in working concerning manpower, materials, products, and production process problems. They normally wrote to their supervisors and people whom they worked with. When the problems concerned products, they may also need to write to customers. One engineer explained the nature of his report writing below.

I do not write progress reports because my work does not relate to project work. I usually write investigation reports. I cannot conclude how often I write the reports; it depends on the problems we face each day. (Engineer #8)

Engineer #1's explanation was also similar to Engineer #8's, but Engineer #1 focused more on the characteristics of writing.

I usually write investigation reports because I work in the production department. Sometimes we need to write reports to explain problems that have occurred with the products. On average, I write one or two times a month. Also,

*I write weekly reports which emphasize what I have done during a week.
(Engineer #1)*

11: Necessary sociolinguistic knowledge in writing requests, inquiry e-mails, and reports

Request and inquiry e-mails

Most engineers agreed that they used “please...” and “could you please...?” and “would like...” to show politeness and formality in requests and inquiry e-mails. In addition, referring to previous contacts or events were characteristics to show politeness and formality. Using appropriate words was also a way to indicate politeness as well as using appropriate closing salutations and closing correspondence. For example, “regards” and “best regards” in a closing salutation could be used with any group of readers to show politeness. Moreover, it was appropriate to use expressions such as “urgent reply is appreciated” and “feel free to ask any questions” in closing correspondence.

Reports

As for the sociolinguistic knowledge of writing reports, it was clear that the language must be polite and formal, since engineers had to write to supervisors and customers. They did not use spoken language, contractions, exclamation marks, or personal pronouns which were common features in informal speech.

12. Writing tactics or strategies in writing requests, inquiry e-mails, and reports

Request and inquiry e-mails

It was found that writing strategies or tactics that were normally used in writing requests and inquiry e-mails varied according to the individual purposes of writing, such as providing clear and interesting heading of e-mails, using clear and concise vocabulary, itemizing topics for ease of reading and comprehension, beginning e-mails with problems to make them interesting, trying to write with a positive tone even though the readers might be the people that made the mistakes, highlighting important parts of e-mails, emphasizing closing salutations or closing correspondence to show that they really needed help or answers, trying to provide facts or description of serious situations, and trying to show what the writers have done and what the readers should

do to finish the project (compromise). However, two of the engineers said that they did not use any writing strategies. They only wrote the facts they should inform the readers. An example from an interview script is shown below.

What I always do to make my writing interesting is tell them my problem first and then ask them to help me. Also, I end the e-mail by using sentences to show how much I need their help. For example, "I'm looking forward to hearing from you" and "your quick response will be appreciated." (Engineer #5)

Reports

With respect to reports, it was found that there were no writing strategies for writing reports. The engineers only tried to inform the readers of the facts that were necessary to communicate. That is if the reports cover the necessary contents, it does not need to use strategies in writing reports.

Results of interviewing two managerial engineers

The previous section reports the results of interviewing ten operational engineers and two managerial engineers who were asked the same questions. This section emphasizes only the results of interviewing two managerial engineers who were asked two different questions. The questions were specific for engineers who work as supervisors. The results can be divided into two categories, as follows:

1. Expectations of writing ability and writing problems of engineers

The two managerial engineers thought that Thai engineers should write more fluently with good organization, structure, and appropriate vocabulary. As for writing problems, it was found that the writing problems consisted of using inappropriate vocabulary, unsuitable organization, and redundant writing. In addition, unclear and inconcise writing were also writing problems.

2. Writing competence and preparing engineering students

Generally, the English proficiency of novice engineers at present was better than engineers who graduated seven or ten years ago. However, training at the beginning of working was still required. Therefore, it should be better and useful if English for engineering courses are provided to students as part of their curriculum. For example, they should know the patterns or organization of writing. At the very least, they should also be able to write short, simple, and concise sentences.

In brief, information from the interviews showed that various writing skills, contexts, and writing situations were required in working as an engineer. It was necessary to know how to distinguish formal and informal e-mail, since engineers needed to communicate with people of different statuses and about various topics. Paying attention to the culture of each company or country was crucial as well since people in such companies or countries had their own way to communicate. Moreover, types of vocabulary engineers used depended on whom they were talking to and what topics were such as they use technical terms when the readers were engineers. The engineers preferred using simple and compound sentences to reduce the possibility to make mistakes. As for writing tactics, it was found that engineers normally used them according to individual purposes of writing such as using clear and concise vocabulary and beginning e-mails with problems to make them more interesting. Finally, the results also showed that there were problems with writing English such as not enough English background knowledge, including opinions from managerial engineers were reported.

4.2. Development of the English writing course based on the GBA

This section reports the details of the GBA course development process. **Research question 2:** How can an English writing course based on the genre-based approach be developed to enhance the English writing achievement of undergraduate engineering students?

To answer this question, it was necessary to review the theories and concepts of needs analysis, ESP (types of ESP and ESP course design), the genre-based approach (ESP genre), the GBA course development process, genre analysis, and social constructivism (scaffolding and the teaching and learning cycle). Burns and Joyce (1997 cited in Paltridge, 2004; Hyland, 2007) suggest the following stages involved in designing a genre-based course:

1. identifying the overall contexts in which the language will be used;
2. developing course goals based on the context of use;
3. noting the sequence of language events within the context;
4. listing the genre used in this sequence;
5. outlining the sociolinguistic knowledge learners need to participate in the context;

6. gathering and analyzing samples of texts; and
7. developing units of work related to these genres and develop learning objectives to be achieved.

Steps 3 and 4 are generally conducted concurrently since it is difficult to distinguish the language event in a context from the genres that comprise them.

In this study, the English writing course was designed based on the course designing stages above; the details of each stage are given below.

Stage1: Identifying the overall contexts in which the language will be used

Information on context was gathered through the needs analysis reported in Research Question 1. According to Hyland (2007), the information which is required to identify the overall contexts of the course involves the present situation and the target situation needs. In order to complete the picture in designing courses, a learning needs analysis is also required (Dudley-Evans and St. John, 1998). Based on the needs analysis results, therefore, the details of three types of needs, namely, present situation, target situation, and learning needs, are explained below.

1.1 Present situation

Present situation refers to information about the students' present abilities, their familiarity with writing processes and written genres, their skills, and perceptions. Also, an exploration of what they are able to do and why they are taking the course is needed (Hyland, 2007). The details on present situation are as follows:

1. Who are the learners?

The learners were undergraduate engineering students who were studying at King Mongkut's University of Technology North Bangkok. They were around 20-21 years old, and they were males and females. The language proficiency of most of them were lower-intermediate and intermediate.

2. How do learners learn?

They graduated from both secondary and Vocational education. Therefore, they had studied English for about 3-15 years. Most of them had experience with English writing, but they thought that they had poor English writing ability. As for learning styles, strategies, methodologies, and material preferences, the data were derived from the results of learning needs analysis which showed that e.g. students preferred doing group work, pair work, as well as, individual work. English was required to use in teaching. In

addition, they preferred providing models of writing before doing exercises and editing writing of their own.

3. Why are the learners taking the writing course?

Engineering students registered for the course as an elective course. They expected to apply what they learned in class to their work effectively in the future.

4. What do learners know about writing?

The English proficiency of most of the students was fair to poor. Also, most of the students had experience in writing, but they were not familiar with the writing genres which are required in engineering contexts. As for general writing problems, they had difficulties in many areas, namely, grammar, vocabulary, the writing process, structures, editing, and outlining. Also, they agreed that knowledge of writing in English in the engineering context was important. However, it was found that they had problems with knowledge, which, in the engineering context, involved choosing appropriate language according to the correspondence between content and context, and the relationship between readers and writers. Also, logical knowledge and appropriate layout were considered problematic. Moreover, it was also found that writing reports, minutes, and agenda were their most important writing problems, whereas the subjects also had problems with writing memos, informative notes, request e-mails, and inquiry e-mails.

1.2 Learning needs

Learning needs mean the effective ways of learning skills and language (Dudley-Evans and St. John, 1998). The details of the results of the learning needs required from the four groups of subjects were presented in the needs analysis results mentioned previously (Table 4.11). In this section, the results of the learning needs that were used to develop the course are summarized as follows:

1. the need to focus on vocabulary and grammar;
2. the need to use English more than Thai in teaching;
3. the need to provide group, pair, and individual work;
4. the need to provide models of writing before doing exercises;
5. the need to teach necessary situations in writing and then ask them to search content to write themselves;
6. the need to edit writing themselves;
7. the need to practice writing from real situations;
8. the need to use authentic materials;

9. the need to use transparencies, VDO, PowerPoint presentation, and E-learning in teaching; and
10. the need to use writing tests, portfolios, and group activities as evaluation methods.

The course was designed based on every item, except for item 5 (teaching necessary situations in writing and then asking them to search content to write themselves) and item 9 (using VDOs and e-learning). This was because it was difficult and took time to create VDO and E-learning teaching materials in this limited time. As for item 5, the reason for not using it was that it is difficult for students to search the required content to write themselves. The content and related situations for practicing writing are not easy to gather if the students do not know engineers who can supply them with the required information.

1.3 Target situation

The target situation is to identify the context in which students will use the language. This can be a specific field such as a particular workplace or academic field. The analysis concerns the learner's future roles and the linguistic skills and knowledge required to show ability in writing in this context. This involves identifying the context of language use, observing the language events, and listing the genres employed (Hyland, 2007). The details of the target situation are explained as follows:

1. Why did the learner need to write?

Students needed to write in order to work as engineers in the future.

2. What was the content area?

The content area concerned engineering work.

3. What genres were used?

The types of genres that were taught in this course were chosen from the results of the needs analysis. Based on the needs analysis results, the types of genres required by engineers encompassed complaints, requests, enquiries, memos, reports, minutes, agenda, and informative notes. However, there were only 12 sessions in teaching, so only three types of genres were chosen as the content of this course because practicing with each type of genre took quite a long time before the engineering students could produce the required texts. Thus, the three genres studied and mastered in a 12-week course were deemed appropriate and practical. The details of the criteria for choosing the genres to be taught were set by the researcher of this study based on the

researcher' belief in that engineer could provide information directly. This was because they had direct experience with working of engineers. The details of criteria are described below.

Criterion 1: The major criterion focused on the comparison of the mean scores of the importance of genres by the engineers. This was because engineers were in real working situations, so they had more direct experience with engineering texts than engineering students and ESP teachers.

Criterion 2: The results of the statistical analysis (F test) comprised the second criterion. Therefore, the mean scores of genres received from the first criterion were compared among the three groups of subjects (engineering students =354, engineers = 127, and ESP teachers =31) by using the F test. For this section, the number of engineers (110 managerial and 17 operational engineers) was combined because it was found from a result in the first research question that the two groups of engineers rated the importance of genres similarly (see Table 4.7). The similarity of the importance of genres among the three groups of subjects could be seen from the fact that the results of the comparison of the mean scores among them were not significantly different.

Based on the two criteria, it could be noted that all the content of this course was selected based on the first criterion because engineers already work in real working situations, so they had direct experience with engineering work and could provide more appropriate information. As for the content of the course, it was chosen from genres whose mean scores were highest. The second criterion was required in order to prove that the genres that were chosen according to the first criterion were also important for other two groups of subjects (engineering students and ESP teachers). The second criterion was considered by comparing the mean scores of the first three types of genre among the three groups of subjects using the F test or One-way ANOVA. The results of the comparison of the importance of each type of genre among the three groups of subjects are presented in Table 4.12.

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Table 4.12: Comparison of the importance of genres among engineering students, ESP teachers, and engineers

Content	Students (354)		Teachers (31)		Engineers (127)		Variance	F	Welch's ANOVA
	Mean	SD	Mean	SD	Mean	SD			
1. complaints	3.70	.90	3.22	1.01	3.16	1.15	4.08*	-	12.67*
2. requests	3.76	.89	3.56	.84	3.63	.93	0.34	1.34	-
3. inquiries	4.05	.94	3.93	.95	3.98	.86	2.94	.42	-
4. memos	3.75	.93	3.70	.99	3.12	1.04	0.10	19.41*	-
5. reports	4.07	.90	4.29	1.08	3.83	.91	0.97	4.44*	-
6. minutes	4.09	.93	2.70	1.06	3.38	1.12	4.70*	-	37.24*
7. agenda	3.79	.95	2.37	.96	3.13	1.07	0.20	40.62*	-
8. Informative notes	3.84	.92	3.44	1.05	3.26	1.05	1.29	16.71*	-

P value < .05

very important genre = 5 (4.5-5.0)

important genre = 4 (3.5-4.4)

quite an important genre = 3 (2.5-3.49)

not so an important genre = 2 (1.5-2.49)

not important at all = 1 (1.0-1.49)

Based on the aforementioned criteria and findings regarding comparison of the importance genres among engineers, ESP teachers, and engineering students, three written text types, namely, requests, inquiries, and reports, were chosen as the content of the target course. This can be explained as follows:

1. Engineers perceived reports (3.83), inquiries (3.98), and requests (3.63) as the first three most important types of genres in the engineering context, while ESP teachers thought that reports (4.29), inquiries (3.93), and memos (3.63) were the first three written requirements of engineers. For engineering students, writing minutes was given the most weight (4.09). The second and third ranks were reports (4.07) and inquiries (4.05).

Following the first criterion, focusing on the mean scores of engineers, reports, inquiries, and requests were chosen as the content of the course because they were the first three most important genres for engineers. The researcher of this study believed in the engineers' opinion because engineers had direct experience on engineering work more than ESP teachers and engineering students. However, in order to prove that all those three contents were also important among the other groups of subjects, this was explained through the second criterion.

2. The results of the comparison of the mean scores of request e-mails, inquiry e-mails, and reports among the three groups of subjects in Table 4.12, measured by One-way ANOVA, revealed that the importance of requests (1.34) and inquiries (0.42) did not differ significantly ($p < .05$) in the opinion of engineers, ESP teachers, and engineering students. Thus, this confirmed that inquiries and requests were important genres among the three groups of subjects. In contrast, each group of subjects' perception on writing reports was different. ESP teachers thought that writing report was the most important genre for engineering work, while engineering students and engineers thought writing reports were the second important genre for engineering work. However, reports were still a part of this course since it was a part of the top three required content of engineers, as mentioned previously in the first criterion.

In conclusion, writing reports, requests, and inquiries were chosen as the content of this course based on the two reasons mentioned above. Moreover, the contents were taught in the form of e-mail writing since it was also found that 71.1% and 52.0% of

written engineering texts were written in the form of formal and informal e-mails, respectively. Formal and informal letters on paper were 12.6% and 13.4%, respectively.

4. Who will the learners communicate with?

Engineers normally communicate with suppliers, headquarters, colleagues, networks or counterparts, customers, and supervisors in various situations, which are enumerated as follows:

1. within each department
2. with other local companies
3. between departments
4. with their headquarters
5. with other overseas companies

In brief, the first stage, identifying the overall contexts in which the language was used, provided information concerning the present situations of students involving the demographic information of students. As for target situations, the findings showed genres used as content of the course, the reasons why students needed to write, contexts, and the writing situations engineers faced. Finally, the findings regarding learning needs revealed useful information in order to design appropriate activities, teaching materials, and assessments of the course.

Stage 2: Developing course goals based on the context of use

According to the information of the required types of genres and contexts in writing received from the needs analysis stage, course goals were developed.

Course goal:

By the end of the course, students will be able to write requests and enquiry e-mails, including investigation reports, with appropriate use of language.

Then, the course objectives and course description were created based on the goals of the course.

Course objectives

By the end of the course, the students should be able to:

1. write request e-mails appropriately in the engineering social contexts
2. write enquiry e-mails appropriately in the engineering social contexts
3. write investigation reports appropriately in the engineering social contexts
4. edit their own written texts

Course description

Forms, organization, and composition of various types of written engineering texts are focused. The topics include request e-mails, enquiry e-mails, and investigation reports. Vocabulary relating to the topics and appropriate use of language depending on levels of formality is pointed out.

Stages 3 and 4: Note the sequence of language events within the context and list the genre used in this sequence

As previously mentioned, the contents of the course involved three genres, namely, requests, enquiry e-mails, and investigation reports, so more required information about language events or situations, and writing context concerning these three genres were collected from engineers through interviews. The details are summarized into two parts based on different writing contexts: asking for assistance and asking for information as follows:

1. Requests and enquiry e-mails:

Writing contexts	Writing situations/activities: Ask for or ask about
1. Suppliers	Asking for assistance (testing, supporting, fixing, training), Asking for information (such as down time, test results, package, pallet, appointment, quotation of cost, catalog, life time of goods, specification and additional information of devices, drawings, manuals, know-how, operational description sheets, spare parts, solving problems occurring with machines)
2. Headquarters	Asking for assistance (updating status of testing programs, approving documents, supporting), Asking for information (cause of problems, trouble shooting, work plan, training schedules, technical information, standard working processes, spare parts, reports of parts or analysis)
3. Colleagues (different departments)	Asking for assistance (providing facilities, providing information, determining the quality of products engineers ordered, free time to come and check the quality of products engineers produce, check safety after adjusting the layout of machine, survey and conclude the performance results,

	produce products based on the customers, ship products, inform customers) Asking for information (data, working area, any forms, drawings, working plans)
4. Colleagues (same department)	Asking for assistance (working, preparing hardware and manpower for the projects) Asking for information (updated work information or status of project, working plans)
5. Network/counterpart	Asking for assistance (sample testing) Asking for information (trouble shooting, additional information, manual)
6. Supervisor	Asking for assistance (Checking information from other departments or companies, approving information, support from other departments, doing OT)

2. Investigation reports:

Writing contexts: supervisors, colleagues, and customers

Writing situations: problems regarding production process, materials, manpower, machines and products

Stage 5: Outline the sociolinguistic knowledge students need to participate in this context

Since the course aimed at teaching how to write e-mails and reports, the sociolinguistic knowledge students required concerned appropriate knowledge in writing those genres.

Requests and enquiry e-mail

Appropriate sociolinguistic knowledge in writing requests and enquiry e-mails could be seen in different parts of an e-mail.

1. Appropriate language in opening salutation, closing salutation, and closing correspondence based on various contexts and situations of communication.

2. Appropriate language to show the degree of politeness or formality, such as using “please,” “could you please...?,” and “would you like...?” Using the word “san” at the end of the surname if the readers are Japanese was also a polite way of communication. Moreover, referring to previous contacts or events also a way to show

politeness. This could be done by using the phrases “referring to...” or according to...” at the beginning of the sentences in which the writer wanted to acknowledge previous contacts or events.

Investigation reports

As for report writing, the language must be polite and formal since they had to write to supervisors and customers. They did not use spoken language, contraction, exclamation, or personal references.

Stage 6: Gather and analyze samples of texts

Collecting and analyzing samples of texts supply salient information about relevant content, format, and language for teaching, and provide a basis for the choice of appropriate text models, language input, and text models (Hyland, 2007). In order to gather samples of texts, the following criteria for gathering samples of text were set by the researcher.

Requests and inquiry e-mails

1. The samples covered five groups of industrial areas involving fuel, cement, automotive parts, construction, and electronics based on the criteria of FTI (Federations of Thai Industries). They were written by both Thai and foreign engineers.
2. The samples covered the contexts and situations of the two types of e-mails reported in stages 3 and 4.

Investigation reports

1. The samples covered five groups of industrial areas involving fuel, cement, automotive parts, construction, and electronic based on the criteria of FTI (Federations of Thai Industries).
2. The samples provided various situations of problems according to the interviews. The problems were relevant to methods, materials, manpower, machines and products.

Analyzing samples was done based on Swales’ (1990) and Bhatia’s (1993) genre analysis concepts. Move structures and key linguistic features were analyzed. The analysis results of move structures and key linguistic features were the result of a set of conventionalized discursive practices that engineers were routinely engaged in as a part of their work. In addition, listing the expressions and vocabulary items that occurs in most samples and trying to tie them to their functions in the text is crucial (Hyland, 2007).

Thirty samples of each type of genre were analyzed. The number of samples of each type of genre was obtained from the five groups of engineers that were interviewed and not interviewed, but the researcher of this study knows them. Obligatory moves were classified by 60% of occurrence of such moves (Kanoksilpatham, 2007).

It is worth noting that some samples were adjusted before the analysis because some sentences had grammatical mistakes, such as subject and verb agreement, redundancies, and inappropriate structures. It was necessary to adjust these e-mails because some of them were used as samples in the lessons of this course. Thus, their grammar and structure had to be correct. However, organization, content, the linguistic features, and vocabulary were not adjusted since they determined the functions and purposes of different texts as the writing conventions of engineers. To be sure that the adjusted written samples did not have different meaning or move structures from the original ones, the adjusted texts were rechecked if the information had the same meaning provided by the engineers that gave the samples. Rechecking could be undertaken by asking the engineers who gave the samples to check the revised written texts. Moreover, the results of the move analysis or genre analysis were validated by three experts (a linguist, an engineer, and a business English teacher).

Genre analysis results

The analysis results of each type of genre are presented below. As for the request e-mails, it was found that there were six moves, namely, move 1 (opening salutation), move 2 (establishing correspondence chain), move 3 (introducing purposes), move 4 (attaching document), move 5 (closing correspondence chain), and move 6 (closing salutation). All the moves were obligatory, except for moves 2, 4, and 6, which were optional because these moves occurred less than 60% of all the number of samples. Move 2 consisted of three steps, while moves 3 and 5 involved two steps. The analysis results are presented in Table 4.13 below.

Table 4.13: List of moves and steps analysis of e-mail requests

Move 1 Opening salutation (obligatory)	
Move 2 Establishing correspondence chain (optional)	
<i>Any one of the following steps is acceptable; any combination of the following steps is possible.</i>	
	Step 1 referring to the event/ previous contact
	Step 2 introducing themselves
	Step 3 greeting
Move 3 Introducing purposes (obligatory)	
	Step 1 requesting
or/and	Step 2 providing information
Move 4 Attaching document (optional)	
Move 5 Closing correspondence chain (obligatory)	
<i>Any one of the following steps is acceptable; any combination of the following steps is possible.</i>	
	Step 1 soliciting response
or/and	Step 2 ending positively
Move 6 Closing salutation (obligatory)	
Note: Moves 3 and 4 are flexible; they can occur anywhere	

With respect to the inquiry e-mails, it was revealed that there were six moves that were similar to request e-mails: move 1 (opening salutation), move 2 (establishing correspondence chain), move 3 (introducing purposes), move 4 (attaching document), move 5 (closing correspondence chain), and move 6 (closing salutation). All the moves were obligatory, except for moves 2, 4, and 6, which were optional. Moves 2, 3, and move 5 were composed of three steps, while moves 1, 4, and 6 did not have any steps. The analysis results are presented in Table 4.14.

Table 4.14: List of moves and steps analysis of e-mail enquiries

Move 1 Opening salutation (obligatory)	
Move 2 Establishing correspondence chain (optional)	
<i>Any one of the following steps is acceptable; any combination of the following steps is possible.</i>	
	Step 1 referring to the event/ previous contact
	Step 2 greeting
Move 3 Introducing purposes (obligatory)	
	Step 1 asking questions
or/and	Step 2 providing information
or/and	Step 3 requesting
Move 4 Attaching document (optional)	
Move 5 Closing correspondence chain (obligatory)	
<i>Any one of the following steps is acceptable; any combination of the following steps is possible.</i>	
	Step 1 apologizing
	Step 2 soliciting response
	Step 3 ending positively
Move 6 Closing salutation (optional)	
Note: Moves 3 and 4 are flexible; they can occur anywhere	

Finally, the results of the move analysis showed that investigation reports encompassed four moves, namely, move 1 (statement of problem), move 2 (investigation process), move 3 (countermeasure), and move 4 (attachment). All of the moves were obligatory, and they consisted of two steps, except for move 4, which did

not show any step. The results of the analysis of the investigation reports are summarized in Table 4.15 below.

Table 4.15: List of move and step analysis of investigation reports

Move 1: Statement of the problem (obligatory)	
<i>Any one of the following steps is acceptable; any combination of the following steps is possible.</i>	
	Step 1 identifying the problem
or/and	Step 2 providing information
Move 2: Investigation process (obligatory)	
	Step 1 identifying the cause of the problem
or/ and	Step 2 investigation in action
Move 3: Countermeasure (obligatory)	
<i>Any one of the following steps is acceptable; any combination of the following steps is possible.</i>	
	Step 1: permanent countermeasure
or/ and	Step 2: immediate countermeasure
Move 4: Attachment (Optional)	
Note: Move 4 and Move 3 step 2 are flexible; it can occur anywhere	

Moreover, the linguistic features and vocabulary of the required genres were also analyzed. For the analysis results of linguistic features and vocabulary of the three required genres, see Appendix J.

Stage 7: Develop units of work related to required genres and develop learning objectives to be achieved

Developing units of work was carried out based on the information collected from the teaching stages (1 to 6) mentioned previously. Three units involving requests, enquiry e-mails, and investigation reports were developed. The sequence of units was

arranged according to the difficulty levels of types of writing genres of engineering students and the complication of the genre analysis results. The data about the difficulty levels of writing types of genre were collected during the needs analysis phase.

According to the needs analysis results, it was revealed that engineering students agreed that even though they had some difficulties in writing requests and enquiry e-mails, they had more difficulties in writing reports. In addition, based on the results of the move analysis, it was found that the move patterns of requests and enquiry e-mails were similar, but it seemed that the move structure of the enquiry e-mail was a bit more complicated than that of the request e-mails. This could be seen by the results of the move analysis of enquiry e-mails—that step 3 of move 3 was about requesting (see Table 4.14). That was, the writers who were able to write enquiry e-mails should also know how to write expressions showing request function. Thus, it should be possible to assume that if students can write a request e-mail, they should also be able to write an enquiry e-mail. Thus, request e-mail was taught as the first unit for five sessions and enquiry e-mail was the second unit for three sessions. Three sessions for teaching enquiry e-mails were also suitable because students were familiar with writing request e-mails that exhibited similar move analysis results. The last unit was investigation reports (four sessions) since their move analysis was completely different from those two types of e-mails. The details of the course outline are presented in Table 4.16 below.

Based on the needs analysis results mentioned previously in section 4.1 in this chapter, a 17-week course was created and is presented in Table 4.16 below. However, the real actual teaching writing contents developed based on the GBA was 12 weeks. This was because the first two weeks were used for introduction to the course and pre-test whereas the other three weeks were reserved for the mid-term exam, post-test, and report writing test.

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Table 4.16: Course outline

Session	Topics
1.	Introduction to the course
2.	Pretest, introduction to e-mail writing
3.	Unit1: Request 1
4.	Request 2
5.	Request 3
6.	Request 4
7.	Request 5
8.	Request testing, Unit2: Enquiry 1
9.	Mid-term
10.	Enquiry 2
11.	Enquiry 3
12.	Enquiry testing, Unit3: Report 1
13.	Report 2
14.	Report 3
15.	Report 4
16.	Report testing
17.	Final exam

In order to design the lessons according to the needs analysis results, the learning objectives of each unit were required to scope the activities, materials, and assessment plan of the lessons. The details of the unit objectives are presented below.

Unit 1: Request e-mail

By the end of the unit, students should be able to

1. write request e-mails appropriately in the engineering social context
2. edit their writing texts

Unit 2: Enquiry e-mail

By the end of the unit, students should be able to

1. write enquiry e-mail appropriately in the engineering social context
2. edit their writing texts

Unit 3: Investigation reports

By the end of the unit, students should be able to

1. write investigation reports appropriately in the engineering social context
2. edit their writing texts

The teaching stages of each unit were developed based on the teaching and learning cycle suggested by Feez (2002) involving five stages as follows:

1. Building the context

This stage aimed at revealing the purpose of a genre and the setting in which it was commonly used. The emphasis was placed on the function of language and how meaning works in context. Sociolinguistic context should also be pointed out at this stage.

2. Modeling and deconstructing the text

This teaching stage focused on explicit teaching concept. Therefore, discussing and exploring the whole text (organization, clauses, expression, key grammatical and distinguish linguistic features), sociolinguistic knowledge, and writing strategies were emphasized. Also, the results of genre analysis were presented at this stage.

3. Joint construction of the text

At this stage, teacher and students worked together to construct the required types of genre. Working together in group was also required.

4. Independent construction of the text

The purpose of this stage was for learners to apply what they have learned to the writing of a text independently, while the teacher supervised and offered advice.

5. Linking related texts

This stage aimed at providing learners with opportunities to investigate how the genre they have been studying was related to other texts that occurred in the same or similar context, to other genres they have studied, and to issues of interpersonal and institutional power and ideology.

In sum, the units were developed based on the details of information collected from the course development stages (stage 1-7), course outline, unit objectives, teaching stages (the teaching and learning cycle), and the principles of teaching writing through the GBA. Implementation of a sample unit, a request e-mail, is presented below. In this chapter, the explanation of lesson plan starts from session 3 since the first two sessions were devoted to introduction to the course and the pre-test.

Course implementation

The present course was implemented with 25 engineering students in the first semester of the academic year 2009 at KMUTNB. It was a 17-week course, but the real actual teaching lasted 12 weeks. This was because three weeks were used for report writing test, and the mid-term and final exams, whereas the other two weeks were reserved for introduction to the course and the pre-test. The details of course implementation are explained from the first session of the course.

Session 1

- The students were introduced into the course.
- The course description and syllabus were distributed and explained.
- The course materials were also distributed to the students.

Session 2

- The students were asked to complete the pre-tested.
- The teacher introduced the topic of the session and asked students to create a wedding invitation card in groups, and gave the presentation of their cards. The questions regarding how they know what kind of information should be included in the card were asked in order to introduce them to the word “genre,” “genre based approach,” and “engineering community.”
- The students were introduced to e-mail writing in general. The information about sociolinguistic knowledge was also explained.
- At the end of the session, the students did an exercise about sociolinguistic knowledge in writing e-mails in order to check whether they understood the first part of the lesson.

Note: GW is group work, CW is class work, PW is pair work, and IW is individual work.

Session 3: Request e-mail 1 (stage1 and 2)

Stage 1: Building context

Topic	Performance objectives	Activities	Materials	Assessment
Warm-up	Students will be able to 1. think about their background knowledge in terms of request e-mail writing	1. Class discussion		1. Showing their opinion
Introducing to request e-mail writing	1. identify the characteristic and format of request e-mail writing	1. Rearranging parts of e-mails ^(GW)	1. Request e-mail No. 1	1. Identifying the characteristics and format of a request e-mail
	2. guess the meaning of vocabulary	2. Skimming and scanning for comprehension ^(GW)		2. Guessing the meaning of vocabulary
	3. comprehend the message of request e-mail			3. Answering comprehension questions

- The first teaching stage of writing a request e-mail, building the context, was started. The students were asked to read e-mail No. 1, rearrange parts of the e-mail, and answer the comprehension questions.
- The language forms showing the request function of the sample were pointed out.

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Stage 2 part I: Modeling and deconstructing

Topic	Performance objectives	Activities	Materials	Assessment
Modeling part 1	Student will be able to 1. identify the components of request e-mail writing (textual knowledge: e-mail component)	1. Textual knowledge Identification ^(CW)	1. Request e-mail Nos.1A, 1B, and 2B 2. Exercise 1: vocabulary 3. Move and step list 4. Exercise 2: request expression 5. Exercise 3: Vocabulary review 6. Exercise 4: Grammar review (past and present participle)	1. Identifying the components of request e-mail
	2. analyze moves	2. Functional knowledge Identification: move analysis (move, steps, lexicogrammar, forms) ^(CW)		2. Analysing moves
	3. identify appropriate language choices in terms of polite, formal, and informal writing	3. Class discussion of sociolinguistic knowledge ^(CW)		3. Identifying appropriate language choices
	4. identify vocabulary in various situations of request	4. Vocabulary review ^(CW)		4. Identifying the meaning of vocabulary
	5. identify language used in the e-mail			5. Identifying language used in e-mail

- The next activity was a part of the second teaching stage, Modeling and Deconstructing. Thus, more questions were asked to encourage the students to think about sociolinguistic knowledge in e-mail No.1. Also, the students did an exercise related to sociolinguistic knowledge in writing request e-mails.
- The students matched the name of each move of a request e-mail with the e-mail components. Then, the details of the body of e-mail request

written by engineers (request e-mail move analysis results) were provided and explained.

- The words “move” and “step” were also introduced and explained. In addition, different moves of e-mail No.1 were pointed out again.
- The students did a vocabulary exercise related to introduction to e-mail No. 2 and answered questions related to e-mail No. 2.
- At the end of the session, the students analyzed request e-mail No. 2 using genre analysis results together with the teacher after the teacher had shown them how to do the analysis and asked them to practice analyzing e-mail No. 2.

Session 4: Request e-mail 2 (stage 2 continued)

Stage 2 part II: Modeling and deconstructing

Topic	Performance objectives	Activities	Materials	Assessment
Familiarization	Students will be able to 1. analyze moves of request e-mails	1. Move analysis ^(GW)	1. Request e-mail Nos. 3, 4, and 5	1. Analyzing moves
	2. recognize and familiarize themselves with moves of request e-mails	2. Move familiarization exercise ^(PW)	2. Worksheet Nos. 1, 2, and 3	2. Recognizing moves of request e-mail writing
		3. Grammar review exercise ^(IW)	3. Exercise 1: introduction vocabulary exercise for e-mail No. 3	
		4. Vocabulary review exercise ^(IW)	4. Exercises: 2, 3, and 4: move familiarization	
			5. Exercise 5: vocabulary Review	
			6. Exercise 6: grammar review	

- The activities in this session belonged to the second teaching stage, Modeling and Deconstructing. The teacher asked the student to review the request e-mail move analysis results.
- Then, the students were asked to do a vocabulary exercise related to the samples of request e-mail that they had to analyze in this session.

- Students were asked to analyze moves of more request e-mail samples in groups by using the worksheet as a guideline.
- Language forms and grammar points in each move in those e-mails samples were pointed out and explained. Students did more exercises to ensure familiarity with six moves of request e-mails.

Session 5: Request e-mail 3 (stage 2 continued)

Stage 2 part II: Modeling and deconstructing

Topic	Performance objectives	Activities	Materials	Assessment
Familiarization	3. identify using language choices in each move in terms of polite, formal and informal situations	5. Sociolinguistic knowledge conclusion (GW) 6. Writing strategy- brainstorming (GW) 7. Grammar identification- brainstorming (GW)	7. Sociolinguistic conclusion form 8. Grammar knowledge conclusion form 9. Exercise 8: brainstorming writing strategy	3. Identifying language choice in each move in terms of polite, formal, and informal situations
	4. create their writing strategies in different request situations.			4. Creating logical and reasonable writing strategies
	5. identify language knowledge used in each move			5. Identifying grammar used in each move

- The students concluded the characteristics of moves and the details of the written samples.
- After that, the students gathered language (in terms of sociolinguistics knowledge) in Move 1, Move 3 step 1, and Move 5, and fill that information in the form given (group work). The information was also divided into formal and informal forms.
- Later on, the students concluded grammatical knowledge and linguistic features used in each move, especially in moves 2, 3, and 4 from the exercises and e-mail explored previously, and they then put the gathered information on the form given.
- More information about grammar knowledge in each move was also added when it was found that the students missed some important parts.

- At the end of the session, the students created possible writing tactics or reasons they could use in order to make their request provided stronger reasons according to various situations and conditions.

Session 6: Request e-mail (stage 3)

Stage3: Joint Construction

Topic	Performance objectives	Activities	Materials	Assessment
Joint construction	Students will be able to			
	1. write request e-mail	1. Write a request e-mail in class and in groups.	1. Request e-mail No.6 2. Editing and revising checklist	1. Checking whether students can write a request e
	2. edit a request e-mail	2. Edit a request	3. A situation for writing 4. Controlled writing exercises Nos. 1 and 2	2. Checking whether students can edit a request e

- All the activities in this session were in the third stage, Joint construction. Revision of the move analysis results of a request e-mail, its linguistic feature, sociolinguistic knowledge, and grammatical knowledge was undertaken again and concluded at the beginning of this session.
- Practicing editing request e-mail samples was the first activity in this session.
- Then, the students wrote a request e-mail together in class. In doing so, the students needed to brainstorm and outline the details of their request e-mail together in group first.
- Each group presented their outline to the class, and feedback regarding the outline was given by the teacher.
- Their outline was adjusted if it was necessary.
- After that, the guided outline of writing the same e-mail (Teacher's version) was showed, and then the students wrote the e-mail together in

class based on the guided outline. In this stage, the think aloud technique was used to show what the teacher thought before writing. Therefore, the students could follow the teacher's modeling on how to think and write. Also, they could duplicate the same method used by the teacher to write their own work. Moreover, while the teacher showed what she thought, the teacher also needed to negotiate with the students what kind of information, structures, or grammatical points they should use in writing sentences.

- How to use the editing and revising checklist was explained.
- Later, the students wrote a request e-mail based on the outline of their groups. The editing and revising checklist was also used to edit and revise their work.
- At the end of this session, each group exchanged their work for editing. Their work was edited based on the suggestions from the other groups. Also, the teacher gave the student feedback on their revised version.

Session 7: Request e-mail (stage 4, stage 5)

Stage 4: Independent writing

Topic	Performance objectives	Activities	Materials	Assessment
Independent writing	Students will be able to			
	1. write request e-mail individually	1. Listen to a conversation	1. Tape script No.1	1. Understanding the conversation
	2. edit request e-mails	2. Write a request e-mail ^(PW) 3. Write a request e-mail ^(IW) 4. Edit a request e-mail ^(IW, PW)	2. Situations: 2 and 3 3. Editing checklist	2. Writing a request e-mail in pair and individually 3. Editing a request e-mail

Stage 5: Linking related texts

Topic	Performance objectives	Activities	Materials	Assessment
Comparing	Students will be able to 1. compare moves of request e-mail with other written works	1. Compare a request e-mail with an invitation wedding card (TW)	1. Situation 2. information (worksheet No.3, invitation wedding card from the second session).	1. Checking whether students can compare moves between writing request e-mail and an invitation wedding card

- A list of technical vocabulary and a list of linguistic features concerning language functions used in working situations of engineer were distributed and explained.
- Then, the students listened to a conversation between an engineer in Thailand and his supplier who worked in China about a request situation. The information from the conversation was a part of the writing situation between the engineer and his supplier for the pairs work writing assignment.
- The students wrote a request e-mail as their pair work in class.
- Moreover, they also wrote one more assignment (individual work) as their homework. They needed to submit two writing assignments through the Internet. The feedback was given back during the next teaching session.
- At the end of the session, the students compared the characteristic of moves between request e-mails and the invitation card that they created at the beginning of the course as the last stage of teaching, linking related text.

Session 8

- The students first did the formative test concerning writing a request e-mail which lasted 40 minutes.
- Then, the first teaching stage of writing an enquiry e-mail, building context, was started.

According to the sample of the session a request e-mail, the details of performance objectives, activities, materials, and assessment in each teaching session were shown (Refer to the details of the course structure and lesson plans in Appendices

D and E, respectively). The activities that were conducted in the eighth to 16th sessions were similar to the ones carried out in the third to seventh sessions. However, a number of activities concerning genre analysis in the enquiry e-mail lessons were reduced since the move analysis results in this lesson were similar to the result in the request e-mail. Thus, the students did not need to do genre analysis activities again. As for the fifth teaching stage of the enquiry e-mail lesson (linking related text), the students compared the characteristics of move in writing e-mail between request and enquiry e-mails. In the writing report lesson, the students compared characteristic of moves among writing reports, request e-mails, and enquiry e-mails at the stage of linking related text. Finally, the second and third formative tests were undertaken at the end of the enquiry e-mail and report writing lesson, respectively.

Another crucial part of this current writing course was giving feedback to the students. This was because it might improve their writing quality. The details of giving feedback are explained below.

Giving feedback

As for giving feedback on the students' written assignments, the students were informed and explained about the scoring scheme before writing the first assignment. Therefore, the students knew and understood the five areas of criteria assessment, namely, background knowledge, textual and functional knowledge, sociolinguistic knowledge, word choice, and grammatical knowledge. The teacher gave feedback on the students' written work. The students could see their writing achievement in general from the scores which separately showed what they had gain in five areas of writing ability as mentioned previously. Also, the comments on the parts of background knowledge and textual and functional knowledge were written down on each written work of the students in order to point out which part they needed to improve. Problems in grammar areas and word choices were showed by underlining and correcting the parts that needed to be adjusted. In addition, when it was found that the majority of the students made the same mistakes in some grammar areas, the instructor explained those mistakes again in class.

In brief, the findings of Research Question 2 showed details on the development processes of the GBA writing course involving seven stages. Also, details on the course description, goal, objectives, lesson plans, course implement, and giving feedback are explained here.

4.3 Students' writing ability after attending each lesson

Research question 3: What is the effectiveness of the English writing course for engineers developed based on the GBA?

In order to answer this question, it was necessary to determine how much the students learned from the course (learners' learning) as the cognitive criterion. Therefore, a comparison between the pre-test and post-test score of 25 students who were enrolled in this English writing course was required. The pre-test was carried out in the second teaching session, while the post-test was conducted about 15 weeks after the pre-test was done. There were two raters who rated the students' writing ability. The inter-rater reliability of the test (items 1 to 3) was .96, .98, and .94 respectively.

As the study employed a one group pre-test and post-test design, the comparison between the pre-test and post-test score was undertaken by using the dependent t-test. Although the number of the students was less than 30 in this study, t-test can also be used (Weaver, 2004). This was because the pre-test score was checked with Kolmogorov-Smirnov test, and it was found that the pre-test score resulted in a normal distribution. The results of the comparison between the mean score of pre-test and post-test are presented in Table 4.17 below.

Table 4.17: Comparison between the pre-test and post-test writing scores using t-test and their Effect-size

	N	Mean	S.D	t	g
Pre-test	25	26.28	8.00	5.82*	2.63
Post-test	25	43.34	4.49		

* $p < 0.05$, one tail test

Table 4.17 shows that the mean score of the post-test score was higher than that of the pre-test score. It was also found from the t-test results that the writing achievement scores in the pre-test of the engineering students who were taught with the GBA were significantly higher than those obtained in the pre-test ($p < 0.05$). As for the effect-size, it was found that the effect-size was 2.63 which was considered a large effect (Thalheimer and Cook, 2002).

Then, the first hypothesis of this study stating the writing achievement scores in the post-test of the engineering students who are taught with the GBA course will be

higher than those obtained in the pre-test was tested. According to the comparison between the pre-test and post-test scores results, the hypothesis of this study was accepted because it was found that the mean score of the post-test was higher than that of the pre-test. Moreover, t-score showed that there was significant improvement in the students' writing ability after attending the English writing course developed based on the GBA.

As for writing achievement of the students after attending the course, the cut-off point was set at 60%. It was found that the mean of the gain score of the students was 72%. This meant that most of the students passed the criteria of this course.

Therefore, it can be concluded that the English writing course for engineers developed based on the GBA was effective because the post-test scores were higher than the pre-test scores with statistical significance. Also, it was found that there was significant improvement in the students' writing ability with a large effect size.



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4.4 Attitude of students toward the course

Research question 4: What are the attitudes of the students toward an English writing course based on the genre-based approach?

In order to respond to Research Question 4, the findings from both the qualitative data (student logs and semi-structured interviews) and the quantitative data (questionnaires) were reported in order to show the students' attitude toward the course.

The analysis of the questionnaires revealed that the mean of the overall picture of the questionnaire was 4.12. This meant that most of the students were satisfied with this course because they agreed with most questions in the questionnaire. In the following section, the findings are reported in accordance with the six crucial components of course design which were adapted from the students' attitude questionnaire of Chairinkum, 2003 and Sirithararat, 2007: objectives and content of the course, teaching method and activities, teacher, writing achievement, evaluation criteria, and additional information.

1. Objectives and contents of the course

In order to design the course, the first component was determining the objectives of the course and then the contents were created to support those objectives. The first finding was a quantitative finding from the questionnaire concerning the objectives and the content of the course. The findings are reported in Table 4.18.

Table 4.18: The attitude toward objectives and content of the course

Questionnaire items	Mean	S.D.	CV (%)	Test value=3.5	
				t	df
1. Course objectives are suitable.	4.60	0.57	12.3	9.52*	24
2. The contents of the course in general are interesting.	4.32	0.62	14.3	6.53*	24
3. The difficulty level of the contents of the course suits my English background knowledge.	4.16	0.74	17.7	4.42*	24
4. The contents of the course in general are suitable for the teaching session (3 units for twelve sessions).	4.24	0.77	18.1	4.75*	24
5. The contents of the course meet my requirements.	4.36	0.81	18.5	5.30*	24
6. The contents of the course match the objectives of the course.	4.48	0.77	17.1	6.36*	24
7. The contents of the course can improve my writing ability in order to work as an engineer in the future.	4.56	0.65	14.2	8.14*	24
Total \bar{X}	4.39				

$p < .05$

4.5-5.0 = strongly agree, 3.5-4.4 = agree, 2.2-3.49 = neutral
 1.5-2.49 = disagree, 1.0-1.49 = strongly disagree

Table 4.18 shows the data regarding the objectives and contents of the course from the questionnaire. In the questionnaire, items 1-7 were constructed in order to explore the attitude of the students—whether they were satisfied with the course objectives and contents. Table 4.18 shows the students' satisfaction regarding the objectives and the contents of the course. This could be seen from the mean scores which were rated above 3.5. Interestingly, it was also found from the one sample t-test results that there was a significant difference between the mean scores of each item and the test value which was set at 3.5. It could be seen that the students were satisfied with the course objectives (item 1, mean = 4.60). They also revealed satisfaction with the contents of the course in general and with the difficulty level of the course (item 2, mean = 4.32 and item 3, mean = 4.16). In addition, the students thought that the contents were suitable for the 12 sessions of teaching (item 4, mean = 4.24), it met their requirements (item 5, mean = 4.36), matched the objectives of the course (item 6, mean = 4.48), and improved their writing ability to work as an engineers in the future (item 7,

mean = 4.56). The mean scores of items 1-7 was 4.39. This meant that most of the students had positive attitudes towards the objectives and content of the course. The percentage of the CV indicating the dispersion of the students' attitude towards each item shows that the mean scores was consistent. This means that the students' responses did not vary much (ranging from 12.3% - 18.5%).

In conclusion, most of the students agreed that the objectives and content of the course were suitable and interesting. The content of the course was appropriate their background knowledge in English and teaching for 12 sessions. The content of the course met their requirements to work as engineers in the future. The content also helped improve their writing ability.

This can be supported by the findings from the student logs. Most of the students thought that the objectives and the contents of the course were suitable since they covered the required writing contents of engineering work and they were also clear and easy to understand.

The following statements demonstrate some of the positive responses of the students.

*The objectives are fine since they cover the required content for engineers.
(Student #15)*

The contents of the course are suitable because the contents are really required in engineering work. (Student #11)

The course contents are ok because they were not too difficult to understand. The teaching method is also clear, so we can learn in order to meet the objectives of each lesson. (Student #6)

However, some of the students thought that it would be better if the course provided more contents, vocabulary and written samples, as illustrated in the following statements.

*The objectives are suitable but the teacher should provide more contents. However, we may need to study hard. Actually, what I am worrying about is whether we can write all types of genre well if we study more than three units.
(Student #1)*

*The contents are ok, but I prefer more technical vocabulary to use in work.
(Student #3)*

According to the results from the interview, it was also found that the interviewees agreed that the objectives and the contents of the course were suitable. Moreover, most of the interviewee thought that the difficulty level of the course was

suitable because the course was not too difficult or too easy. Some of which are shown below.

The objectives of the lesson are fine since there are not many of them. The objectives are enough and suitable to be covered in 12 sessions.

(Interviewee #3)

The contents of the course should be enough; the teacher doesn't need to add anything else. As for adding more samples, I agree with this, but it is not necessary to add more exercises from these new samples. I think that the exercises are enough for now. (Interviewee #2)

The course is not too difficult or too easy. It is suitable. (Interviewee #1)

However, some of the students thought that providing more content with various situations and providing more samples would be better. This was because they would like to learn a lot from samples and exercises.

Overall, the contents of the course are suitable, but adding two lessons should be better. I also think that we can write all of them well at the end of the course even though we have to learn two more lessons. However, if the course doesn't add more lessons, the course should provide more situations to help us see different problems in working. Maybe, a lot of samples are not necessary, but more situations are required. (Interviewee #1)

In conclusion, based on the findings from the questionnaires, student logs, and semi-structured interviews, it can be concluded that these three instruments showed similar findings. They indicated that most of the students were satisfied with the objectives and the contents of the course. They thought that the objectives were clear and covered the required content for engineers and were enough for the 12 sessions of the course. Also, they thought that the difficulty level of the course was suitable. However, some of the students agreed that they would like to have more contents and vocabulary added into the course because they would like to study all the required writing content for engineering work and related vocabulary as much as possible.

The next part of the questionnaire regards teaching methodology and activities. The results of the quantitative analysis are illustrated in Table 4.19 below.

2. Teaching methodology and activities

In developing a course, after creating the contents of the course and its objectives, it was necessary to design the teaching methodology and activities. Three

research instruments were implemented to investigate, insightfully, the students' attitude toward the teaching methodology and activities after attending the course.

In the attitude questionnaire, items 8-26 were constructed in order to determine the students' attitudes toward the teaching methodology and activities. The findings are illustrated in Table 4.19.

Table 4.19: The attitude for teaching methodology and activities

Questionnaire items	Mean	S.D.	CV (%)	Test value = 3.5	
				t	df
8. There is a wide variety of activities and exercises.	3.80	0.76	20.00	1.96	24
9. The activities and exercises in each unit can improve my writing ability in each type of genre.	4.21	0.65	15.44	5.27*	24
10. The activities and exercises of each unit in general are suitable.	4.16	0.74	17.71	4.42*	24
11. The activities and exercises of each unit are suitable for my English background knowledge.	4.12	0.60	14.54	5.16*	24
12. The teaching method of having students to analyze samples of written texts and then asking them to practice writing in class, in pairs, in groups, and individually, is suitable.	4.32	0.85	19.63	4.81*	24
13. I like studying with friends in a group.	3.96	0.79	19.91	2.91*	24
14. I learn and improve my writing ability through studying in a group.	3.96	0.88	22.26	2.58*	24
15. Studying through analyzing samples of genre before the independent writing stage helps me to write well.	4.52	0.77	17.00	6.62*	24
16. I learn how to write from pair work.	3.64	0.75	20.63	0.92	24
17. I feel uncomfortable when studying in a group.	2.40	1.55	64.5	3.53	24
18. I like the stage of independent writing.	3.79	1.38	10.02	1.03	23
19. I think that practicing writing in class is necessary.	4.04	0.79	19.52	3.42*	24
20. I can write because I understand and remember the genre analysis results.	4.12	0.88	21.34	3.51*	24
21. Awareness of the relationship between reader and writer helps me use language appropriately.	4.52	0.58	12.81	8.70*	24
22. Practicing thinking and using writing strategies are useful because they help the writer plan the organization and its details appropriately.	4.44	0.58	13.06	8.06*	24

Table 4.19: The attitude for teaching methodology and activities (continue)

Questionnaire items	Mean	S.D.	CV (%)	Test value = 3.5	
				t	df
23. This course provides enough opportunities to write.	4.64	0.70	15.08	8.14*	24
24. This course is learner-centered because students learn by doing activities and exercises themselves.	4.24	0.66	15.56	5.57*	24
25. I like the way that the teacher provides broad instruction because students are free to create the details of what they want to communicate.	4.60	0.57	12.39	9.52*	24
26. The stage of gene analysis is difficult.	2.44	4.89	44.2	44.2	24
Total \bar{X}	3.99				

$p < .05$

4.5-5.0 = strongly agree, 3.5-4.4 = agree, 2.2-3.49 = neutral
 1.5-2.49 = disagree, 1.0-1.49 = strongly disagree

Table 4.19 shows that the students were satisfied with the teaching methodology and activities of this course. This can be seen from the mean scores, which were higher than 3.5 in items (items 8-26), except for item 17, which was aimed at rechecking the subjects' attitudes in items 13 and 14 concerning studying in groups. This was because studying in groups is an important principle of the GBA. Interestingly, it was also found from the one sample t-test results that there was a significant difference between the mean scores of each item and the test value which was set at 3.5. The data presented can be divided into two main categories: activities and teaching methodology.

In terms of activities, the students agreed with most activities in this course. The students thought that there was a wide variety of activities and exercises and that the activities and exercises of each unit in general were suitable (item 8, mean = 3.80 and item 10, mean = 4.16). The students also agreed that the activities and exercises of each unit were suitable for their English background knowledge (item 11, mean = 4.12). These statements were confirmed when they agreed with the statement that the activities and exercises in each unit could improve their writing ability in each type of genre (item 9, mean = 4.21).

In terms of teaching methodology, the students agreed that the teaching method of having students analyze samples of written texts and then asking them to practice writing in class, in pairs, in groups, and individually, were suitable (item 12, mean = 4.32). This statement was confirmed when they strongly agreed with the statement that

studying through analyzing samples of genre before the independent writing stage helped them write well (item 15, mean = 4.52). Also, they agreed that they could write because they understood and remembered the genre analysis results (item 20, mean = 4.12). However, although they were able to write because they understood and remembered the genre analysis, they might have thought that the stage of genre analysis was difficult (item 26, mean = 2.44). Moreover, the statement (item 12) which related to having students analyze samples of written texts and then asking them to practice writing in class, in pairs, in group and individually was also confirmed when the students agreed with the statement that they liked studying with friends in a group and that they learned and improved their writing ability through studying in a group (item 13, mean = 3.96 and item 14, mean = 3.96). However, when asked again if they felt uncomfortable when studying in a group, they showed a neutral attitude (item 17, mean = 2.40). Besides this, the students thought that they liked the stage of independent writing and that practicing in class was necessary (item 18, mean = 3.79 and item 19, mean = 4.04).

In addition, the students strongly agreed that awareness of the relationship between the reader and the writer helped them to learn to use the language appropriately (item 21, mean = 4.52). They were also satisfied with the way in which the teacher provided broad instructions (item 25, mean = 4.60) by simulating engineering work situations and having the students write written texts based on those situations. This gave the students the freedom to create the details they wanted to communicate, including using the writing strategies they preferred. This finding was confirmed when the students strongly agreed with the statement that this course provided enough opportunities to write and that this course was learner-centered because students learned by doing activities and exercises themselves (item 3, mean = 4.64), (item 24, mean = 4.24), respectively. Further, they also agreed that practicing thinking and using writing strategies was useful because it helped the writer to plan the organization and its details appropriately (item 22, mean = 4.44). The mean scores of item 8-26 was 3.99. This

meant that the students had positive attitude toward the teaching methodology and activities of this course.

Regarding the percentage of CV showing consistency of the students' response, it could be said that most of the students' attitude exhibited a high consistency, meaning that the students' responses did not vary much. However, two of them had quite high percentages of CV (item 17 = 43%, item 26 = 30.3%). This was reflected less consistency in the mean score, meaning that the students' responses were widely different.

In conclusion, the results of the questionnaire revealed that most of the students satisfied with methodology and activities of the course. They thought that the teaching method of having students to analyze samples of written texts and then asking them to practice writing in class, in pairs, in groups, and individually, was suitable. The activities and exercises of each unit were suitable for their English background knowledge and helped them improve their writing ability. They learned from working in groups, pairs, class, and with the teacher. Also, they thought that awareness of the relationship between reader and writer helped them use language appropriately.

The findings from the questionnaires were supported by qualitative data from the student logs and semi-structured interviews. It was found that the findings from the student logs and semi-structured interviews reflected a similar attitude to the findings from the questionnaires.

The findings from the student logs showed that the students satisfied with the five teaching stages of the study. The samples of the students' attitudes are presented in the following statement:

The five teaching stages are suitable for this course because the stages are clear and are organized systematically. (Student #17)

Like Student #7, pointed out activities that were arranged systematically:

The five teaching stages were suitable since all activities were arranged systematically and this helps me learn how to write well. (Student #7)

Moreover, some students thought that the five teaching stages helped them understand how to write.

The five teaching stages were suitable because these teaching stages and activities help me understand the move analysis and remember it well. (Student #13)

In contrast, other students presented negative attitudes toward the teaching methodology, as illustrated below:

The five teaching stages are fine, but there is too much information. If the teacher can reduce some teaching activities or stages, it would be better. (Student #12)

As for kinds of activities they liked, it was found from the analysis that most of the students liked group work and they liked the different types of group work activities at each teaching stage. For example, about half of the students liked the genre analysis activity, while about five of them enjoyed building up the field knowledge activity. Also, some of them liked the grammar conclusion and sociolinguistic conclusion activities. Some of the students' reactions are summarized below.

I like the genre analysis stage since it is clear to see how to write each type of genre. (Student #5)

I like group work since we can brainstorm. Thus, we can see the way people think. I liked it when teacher asked each group to write their answer on the board. We can compare our work to other groups' work and we can see what people think. I like to learn from friends in class. (Student #7)

As for the activities that the students did not like, it was found that some students did not like some activities because of various reasons. For example, they were not familiar with the group members, and this made them difficult to study. Thus, they did not like group work. Some of them were not good in English, so they felt tired with studying grammar. Some students' attitudes are illustrated below:

I don't like group activities because I am not familiar with my group members. I feel shy to share my ideas. (Student #1)

I don't like the sociolinguistic knowledge conclusion activity because there are many things to be aware of. (Student #11)

As move analysis activity was an important activity of this course, it is important to investigate if the students like the activity or not. The results of the analysis showed that most students agreed that the move analysis activities were not difficult because they were easy to remember and that they were also suitable for engineering students. This could be seen from the statements below.

I think that remembering the move and step is not difficult. I think that it is good for engineering students because it is easy to remember. (Student #1)

Student #21, #14 and #3 also agreed that the move analysis was not difficult.

Moreover, they thought that the move analysis helped them to write better.

The move analysis is not difficult and it is suitable for engineers because understanding the move and step help us write easier. (Student #14)

It is not difficult to do the move analysis. Remembering the move and step can be used as a guideline to think and write. It helps us the write the required content. It is suitable for engineering students who sometimes do not think systematically. (Student #3)

However, some students did not want to do a lot of exercises in the move analysis activity.

It is easy to remember and it is suitable for engineering students because engineering students like to remember formula or rules. However, it shouldn't be too much. (Student #4)

Actually, the move analysis is not difficult, but sometimes I think that there were too many exercises about the analysis in the lessons. (Student #12)

The results from the interview showed that most of the interviewees liked the teaching through the GBA. Their attitudes were reflected in the following statements:

Teaching through the GBA is suitable for engineering students because remembering moves and steps is easy. This method helps me to think and organize systematically. (Interviewee #1)

This method is suitable for engineering students since engineering students like remembering formulas or patterns. Therefore, remembering the results of the move analysis is easy for us and we can apply the results to help us write. In the past, I didn't know what I should write or how to write. I only wrote what came to my mind at that time. Now I know the organization of each type of genre, so I can plan what I would like to write. It is easier for me. (Interviewee #2)

As for the five teaching stages, it seemed that most of the interviewees were satisfied with the five teaching stages. However, some of them suggested adjusting some parts of the activities:

Teaching with the five teaching stages is suitable. I like all of the activities and exercises. All of them help us see clearly how to write, while some of them help us review what we have learned, especially the genre analysis, the grammar conclusion, the move analysis review exercises, and writing strategy brainstorming. These activities and exercises help us remember the move analysis results and we can write. (Interviewee #1)

Interviewee #2 agreed with Interviewee #1, but they suggested reducing and adding some parts of the exercises and activities as described below:

Teaching with the five teaching stages is fine because all stages develop the writing ability step by step. All activities and exercises are designed appropriately. What I like most is writing in class, genre analysis (group work), and individual writing. However, I think that it would be better if the teacher reduces the number of questions in the move analysis form. There are too many questions in the form. Maybe, only asking about the move and step is enough. As for the grammar conclusion and sociolinguistic conclusion activities, I think that they are useful since we can see the picture in general and we receive a one-page of summary of the grammar and sociolinguistic knowledge, which is easy to remember to use at the end of the course. (Interviewee #2)

With respect to studying in groups, it seemed that they learned from group work some language features such as grammar and vocabulary. They also learned a lot from the teacher such as genre analysis results, grammar, and vocabulary. The responses are presented as follows:

I have learnt things from my group, such as grammar and vocabulary, but not so much. I did not talk a lot in my group discussion because my group leader is very smart, so I prefer listening to him to learn from him. Sometimes, I share my ideas; normally it is about the organization of writing and the reasons to support our request. As for learning from the teacher, I learnt a lot from her. What she explains in class about how to write is quite easy to follow and I like the way that she shows us her thought. I can duplicate the way she thinks and write it on the board. (Interviewee #1)

I have learnt many things from my group such as background knowledge, grammar, structure, and vocabulary. I love learning in a group. Maybe because I have good group members, so we share everything. I also learnt a lot from the teacher, especially grammar. (Interviewee #3)

In conclusion, the findings concerning the activities and teaching methodology from the three instruments (questionnaires, student logs, and interviews) were similar. It was indicated that most of the students were satisfied with the teaching methodology and activities of this course. They thought that the activities and exercises in each lesson could improve their writing ability and that those exercises and activities were not too difficult for them. Also, the students agreed that doing the genre analysis activities and practicing writing in class, in pairs, and individually were suitable. They thought that the genre analysis was not difficult for them and that it was suitable for engineering students. Moreover, teaching through the five teaching stages was good in terms of helping them learn to write, but some activities should be adjusted. The students learned a lot from the teacher at every teaching stage. Also, they learned from group activities, though some of them did not learn much.

The third component of the questionnaire concerned the teacher who designed and taught this course.

3. Teacher

In this study, the teacher was a factor influencing the attitudes of the students toward the course. Three research instruments were implemented to determine the attitudes of the students toward the instructor. The findings from the questionnaires are presented below.

In the questionnaire, items 27-29 were created to investigate the attitudes of the students toward the teacher who taught this course. The findings are reported in Table 4.20.

Table 4.20: The attitude toward teacher

Questionnaire items	Mean	S.D.	CV (%)	Test value = 3.5	
				t	df
27. The course contents and teaching aids are prepared suitably.	4.84	0.37	7.6	17.90*	24
28. Her teaching methodology helps students understand the lessons easily.	4.68	0.55	11.7	10.59*	24
29. Teacher is friendly and has a good relationship with students.	4.92	0.27	5.4	25.64*	24
Total \bar{X}	4.81				

$p < .05$

4.5-5.0 = strongly agree, 3.5-4.4 = agree, 2.2-3.49 = neutral
 1.5-2.49 = disagree, 1.0-1.49 = strongly disagree

As shown in Table 4.20, most students had positive attitudes toward the teacher. This could be seen from the mean scores which were rated above 3.5. Interestingly, it was also found from the one sample t-test results that there was a significant difference between the mean scores of each item and the test value which was set at 3.5. The students strongly agreed that the teacher prepared the course contents and teaching aids suitably and that the teacher's methodology helped the students understand the lessons easily (item 27, mean = 4.84 and item 28, mean = 4.68). The mean scores of item 27-29 were 4.81. This meant that the students had positive attitude toward the teacher. According to the percentages of CV showing the consistency in students' responses, it was found that the percentage of items was low. This represented the high

consistency of attitude toward each item, meaning that the students' responses did not vary much (ranging from 5.4% -11.7%).

In brief, the quantitative results from the questionnaire revealed that the students had positive attitude toward their teacher. They agreed that the teacher taught well. The lesson was easy to understand, and these helped them improve their writing ability.

The results of the questionnaire were supported by the qualitative findings from the student logs. The following statements showed that most of the students agreed that teacher could help them improve their writing ability.

The teacher is friendly and pays attention to all of the students. She can help students improve their ability in writing. (Student #5)

The teacher pays much attention to the students to help them improve their writing ability. This can be seen from higher scores of students. (Student #6)

Student #11 agreed with Students #2, #5 and #6, but he paid more attention to the teaching methodology of the teacher:

Her teaching is enjoyable and easy to understand. She is friendly, but sometimes she teaches in too details. (Student #11)

The results from the semi-structure also showed that the students had positive attitude toward the teacher. They thought that the teacher taught well, but they needed more various activities. This can be seen from the following samples:

The teacher is ok, but I think that adding more and various activities should make the course more enjoyable. (Interviewee #3)

I think that the teacher should add vocabulary games to the course to make it more interesting. Providing pictures in the teaching vocabulary stage should help us learn easily. (Interviewee #1)

Based on the results from the three sources (questionnaires, student logs, and interviews), it was found that the findings were similar. Most of the students agreed that the teacher prepared the course contents and the teaching aids well and that her teaching was easy to understand and was enjoyable. However, the students would like the teacher to add games and pictures to the lessons to make them more interesting and enjoyable.

The next part emphasizes the evaluation criteria of the course. The results of the quantitative data analysis are presented in Table 4.21.

4. Evaluation criteria

In order to determine how much the students had learned from the course, the test was used. Therefore, appropriate evaluation criteria or a scoring scheme were required. Three research instruments involving the questionnaires, student logs, and semi-structured interviews were used to investigate the students' attitudes toward the evaluation criteria. The quantitative findings are presented in Table 4.21.

Table 4.21: The attitude toward evaluation criteria

Questionnaire items	Mean	S.D.	CV (%)	Test value = 3.5	
				t	df
30. Explaining the evaluation criteria before evaluating writing achievement is suitable.	4.60	0.64	13.9	8.52*	24
31. The evaluation criteria are clear and suitable.	4.48	0.71	15.8	6.86*	24
32. Editing our own writing and our friends' writing is suitable.	4.64	0.70	15.0	8.14*	24
Total \bar{X}	4.57				

$p < .05$

4.5-5.0 = strongly agree, 3.5-4.4 = agree, 2.2-3.49 = neutral
 1.5-2.49 = disagree, 1.0-1.49 = strongly disagree

In the questionnaire, items 30 to 32 were constructed in order to investigate whether the students were satisfied with the evaluation criteria. Table 4.20 shows the attitude of the students toward the course evaluation. It was found that most students strongly agreed that the evaluation of this course was suitable. This could be seen from the high value of the mean score. The students strongly agreed that explaining the evaluation criteria before evaluating writing achievement was suitable (item 30, mean = 4.60). Moreover, they agreed that the evaluation criteria of this course were clear and suitable (item 31, mean = 4.48). Additionally, the students thought that editing their own writing and that of their friends was suitable (item 32, mean = 4.64). The mean scores of item 30-32 were 4.52. This meant that the students agreed that the evaluation criteria of the course were suitable. According to the percentages of CV, it was found that the percentage of items was low. This represented high consistency of the attitude of the students toward each item, meaning that the students' responses did not vary much (ranging from 13.9% -15.8%).

In conclusion, the students agreed with the evaluation criteria of this course since they were clear and suitable. Also, they thought that explaining the evaluation criteria before evaluating their achievement was suitable. Editing their own written texts and their peers' written texts were suitable as well.

The results were triangulated with the qualitative findings from the student logs and semi-structured interviews.

From the analysis of data obtained from the student logs, it was discovered that most students were satisfied with the evaluation criteria of the course. The following are samples of the students' attitudes:

I think the evaluation criteria are suitable because we can see our problems in writing clearly. (Student #17)

The evaluation criteria are clear and this helps learners know which parts we need to improve. (Student #11)

However, Student #3 still needed more help from the teacher as stated below:

The evaluation criteria cover important parts, but it would be better if teachers explain students' writing problem areas more than this. (Student #3)

The results from the semi-structure interview revealed that the students were satisfied with the scoring scheme or evaluation criteria. The samples of the students' attitudes are presented in the following statements:

The evaluation criteria are suitable because they are not too difficult or too easy. They are clear and help us see our problems in writing clearly. (Interviewee #1)

The criteria are clear, but some parts of them are difficult for me to reach a higher score. I need to practice writing more. (Interviewee #2)

Moreover, it seemed that the students were satisfied with being informed of the criteria before the test, as suggested below:

It is good because this helps us know how we should write to get good scores. (Interviewee #3)

I agreed with this since we can prepare ourselves. (Interviewee #2)

In conclusion, based on the findings from the questionnaires, student logs, and interviews, it was found that the findings were consistent. The students agreed with the evaluation criteria of the course since they were clear and not too difficult. Also, the

criteria helped the students see their problem areas in writing. They thought that explaining the criteria before testing was suitable.

The next part of the quantitative analysis concerns writing achievement.

5. Writing achievement

After the course was implemented, it was necessary to determine the writing achievement of the students. Three research instruments were employed to investigate insightfully, the writing achievement of the students. The first analysis was the quantitative analysis from the questionnaire.

In the attitude questionnaire, items 33 to 36 were created to examine the writing achievement of the students after attending the course. The findings are shown in Table 4.22.

Table 4.22: The attitude toward writing achievement

Questionnaire items	Mean	S.D.	CV (%)	Test value = 3.5	
				t	df
33. After attending this course, I didn't think that English writing is very difficult.	3.60	1.29	35.8	0.38	24
34. I think that I can write English better.	4.24	0.72	16.9	5.11*	24
35. I feel confident in working as an engineer in the future.	4.20	0.50	11.9	7.00*	24
36. I'm sure that I will not face difficulty in writing in the future.	3.32	1.03	31.0	0.87	24
Total \bar{X}	3.84				

$p < .05$

4.5-5.0 = strongly agree, 3.5-4.4 = agree, 2.2-3.49 = neutral
1.5-2.49 = disagree, 1.0-1.49 = strongly disagree

Table 4.22 shows that the students agreed that their writing achievement improved. This was because they thought that they could write English better (item 34, mean = 4.24) and this made them feel confident in working as an engineer in the future (item 35, mean = 4.20). Moreover, when asked again if they thought that English writing was very difficult, they disagreed that English writing was very difficult after attending this course (item 33, mean = 3.60). This was confirmed when they had a undecided attitude toward the statement that they would face difficulty in writing in the future (item 36, mean = 3.32). The total mean scores of items 33-36 were 3.84. This meant that the students satisfied with their writing achievement after attending the

course. Remarkably, the percentage of the CV of item 33 and 36 was very high. This represented less consistency of the students' attitude toward the writing achievement after attending the course, meaning that the subjects' responses varied much.

In conclusion, the results from the questionnaire showed that the students satisfied with their writing achievement. This was because some of them thought that they may not have difficulty in writing in the future. Also, they found that they could write better, so they felt confident in writing. The quantitative findings were triangulated with the qualitative analysis of the student logs and semi-structured interviews.

The results from the student logs supported the results from the questionnaire. Most of the students thought that they liked writing in English after attending this course. Also, they agreed that they could write better. For example:

I like writing in English after attending this course because I didn't know how to write before this. After practicing writing based on the GBA, I think that it is easier to write and I can write better. Also, I think that I can use it in the future. (Student #5)

I like writing in English now for many reasons. First of all, I can write better. Next, I know how to write based on the culture of the people who work in the engineering community. This is very important since it is new for me and makes me aware of using appropriate language. Also, I know more about grammar, vocabulary, and specific words about machines that engineers frequently use in writing. (Student #8)

Moreover, the findings from the analysis of the student logs indicated that most of the students thought that they were more confident in writing, as can be seen in the following extract:

I feel more confident to write because of understanding and remembering the move patterns of each type of genre. This helps me see clearly what kind of information and organization we need to write. (Student #24)

Student #2 also felt confident like Student #24, but he learned from his working experience.

I feel more confident because I know how to write and the organization of the writing each type of genre. After studying the lesson of writing request e-mails, I applied what I learnt from the lesson to request information from foreigners about my project. I could communicate with them quite well. This makes me feel confident to write. (Student #2)

The results from the semi-structured interviews revealed that the students felt more confident to write and spent less time in writing genres.

I think that writing is not too difficult now. I feel enjoyable in writing because I have to think of choosing appropriate words to use with different readers who are in different statuses. Now I can think, organize, and write faster. (Interviewee# 3)

I feel more confident because I know I can write. (Interviewee #3)

I feel more confident since I feel familiar with writing various genres and I know how to write. Moreover, I also know which one is correct or wrong. (Interviewee #1)

As for the improvement in the writing ability of the subjects, it seemed that the interviewees agreed that they were able to write better. The samples of responses are reported below:

My writing has improved quite a lot. I think I can write request and enquiry e-mails quite well, but I feel less confident in writing reports. Writing reports is difficult for me. From this course I learned more about choosing appropriate vocabulary and grammar. (Interviewee #2)

In conclusion, most of the students thought that their writing had improved. This was because they could write better and knew how to choose appropriate words in writing for different readers in the community of engineers. Also, they knew more about organization, structure, grammar, and vocabulary. All of these reasons made them feel more confident to write in English as engineers in the future. Moreover, they found that they used less time in writing various genres when compared to the time used at the beginning of the course.

The next part is the quantitative findings of the questionnaire concerning additional comments and suggestions.

6. Additional comments and suggestions

The last part of the attitude questionnaire aimed at investigating some important points that teacher should examine in order to improve the quality of the course. There were three instruments to determine the additional comments and suggestions offered by the students.

In the questionnaire, items 37 to 40 were constructed to determine the additional comments and suggestions of the students toward the course. The data are reported in Table 4.23.

Table 4.23: The attitude toward additional comments and suggestions

Questionnaire items	Mean	S.D.	CV (%)	Test value = 3.5	
				t	df
37. I'd love to recommend this course to my friends.	4.40	0.76	17.2	5.89*	24
38. I think that this course is useful for working as an engineer in the future.	4.68	0.69	14.7	8.54*	24
39. I think that it is good if the group changes after each unit.	2.72	1.42	52.2	2.72*	24
40. When I come across other genres, I think that I can apply what I learned from this course to the writing of other types of genres.	4.32	0.62	14.3	6.52*	24
Total \bar{X}	4.03				

$p < .05$

4.5-5.0 = strongly agree, 3.5-4.4 = agree, 2.2-3.49 = neutral
 1.5-2.49 = disagree, 1.0-1.49 = strongly disagree

Table 4.23 shows that the students strongly agreed that this course was useful for working as an engineer (item 38, mean = 4.68). Additionally, they agreed that they would like to recommend this course to their friend, and they could apply what they learned from this course to writing other types of genres when they came across them (item 37, mean = 4.40 and item 40, mean = 4.32). In addition, they had a neutral attitude toward changing groups after each unit (item 39, mean = 2.72). The total mean scores of items 37-40 were 4.03. This meant that the students had positive attitude toward the additional comment and suggestion. Regarding the percentage of the CV showing the consistency of the students' response, it could be seen that most the attitude in the items represented high consistency (items 37 = 17.2%, item 38 = 14.7%, and item 40 = 14.3%), meaning that the students' responses did not vary much (ranging from 14.3% -17.2%).

In conclusion, the results of the questionnaire showed that most of the students satisfied with this course since they would like to recommend this course to their friends. They also thought that this course was useful for working as an engineer in the

future. Moreover, they also thought that when they came across other genres, they could apply what they learned from the course to write those genres.

The information from the questionnaire was triangulated from the qualitative information from the student log and the semi-structured interview.

The results from the student logs illustrated that the students liked the course.

As for the satisfaction of the students toward the course, most of the students liked this course for various reasons, for example:

I like this course because it starts from providing background knowledge and then it provides more details about writing each type of genre. (Student #13)

What I like is the teaching method. The teacher teaches us patterns in writing (move analysis results) and this makes me feel easy to write. (Student #19)

This course provides the content that we really need to know in order to work as an engineer. (Student #15)

We can apply the content to working in the future. (Student #18)

Some students thought that this present course helped the students write better.

The lessons help us, who don't know how to write e-mail, to know how to write e-mails and can write better. (Student #17)

This course is easy to study and understand. It helps improve the students' writing ability clearly. (Student #7)

Although most students liked this course, some of them suggested improving some parts of the course, for example:

The course should provide more vocabulary since students don't have enough vocabulary knowledge. (Student #13)

Student #19 also had a similar thought to Student #13. In addition, Student # 5 paid attention to more written samples.

What I need is vocabulary knowledge because I don't have enough vocabulary knowledge. It is difficult for me to read written samples of lessons and this makes me feel bored. (Student #19)

I would like to have more samples, especially samples from different fields of engineering. (Student #5)

Regarding writing other types of genres, most of the subjects thought they could do so when they work in the future. This was because they agreed that what they

learned about move analysis from the course could become their background knowledge that they could apply in the future, as described below:

I think I can write when we come across new genres because what we learned from the course can be background knowledge for writing other genres. (Student #18)

I think I can do well since I have learnt the guideline of move analysis from the course. (Subject #3)

However, Student #4 was not sure about his writing ability:

I'm not sure. It depends on whether other types of genres have similar move analysis results as the e-mails that we learnt from the course. (Student #4)

The students' attitudes toward the additional information of the course were triangulated with the qualitative data from the semi-structured interview.

According to the findings from the semi-structure interview concerning the benefits of the course, it was found that the interviewees thought that they received benefits from the course, especially they knew how to write better and they could write the required genres of engineers. The responses are reported as follows:

I can write what I maybe could not write before this. I think that I can apply what I learnt to write other types of written texts. (Interviewee #2)

I'm aware of the importance of writing. Before this, I don't know that writing was important for engineers. I also don't know what genres engineers needed to write. Now I can write at the sentence level. I know how to write genres. I feel more confident. (Interviewee #3)

As for coming across other genres when the interviewees work in the future, they agreed that they could analyze other genres because they had enough background knowledge. The following statements are their responses:

I think I can write because I know quite enough to write different f genres and I also practice a lot. I feel confident. (Interviewee #1)

I think I can analyze those genres myself, but the results of the analysis may not be the same as what we do in the class. (Interviewee #2)

Based on the findings from the three sources (questionnaires, student logs, and semi-structure interview), most of the students thought that this course was useful for working as an engineer in the future. They learned how to write by remembering the

move analysis results of each type of genre and became aware of the importance of writing. However, some of them would like to have more content, vocabulary knowledge, and samples of e-mails and reports. Also, they would like to recommend this course to their friends. Furthermore, they thought that if they came across other genres, they could also apply what they had learned from the course to writing in these genres because of their improved writing ability.

7. Qualitative findings from the open-ended question of the questionnaires

This part of the questionnaire investigated additional students' attitudes toward the course. It was found that most students liked the present course because they found it to be useful. They thought that the course provided the content necessary and suitable for engineering work and this helped them see the writing situations of engineers. Also, the students improved their writing ability after studying in the course. Examples of the students' views can be seen in the following statements.

I like this course since I learnt many things from the course. (Student #11)

This course provides the things that we need to know in order to write effectively in working as engineers (Student #23).

This course is interesting because it provides us with background knowledge in writing in engineering work. (Student #6)

The course is useful since we can use what we learnt from the course in our professional lives. (Student #18).

I think that I have poor background knowledge in English, but after attending this course I think that I can write better. However, I still need more practice. (Student #19)

This course is very good. This course helps me to write texts required by engineers. I can say that I can write better and I learnt many useful things from the course. (Student #4)

Even though most of the students were satisfied with the present course, they also suggested improving some parts of the course by adding more vocabulary, activities, and written samples, For example,

We need more vocabulary related to the work of engineers. (Students# 24, 21, 16, 2)

The teacher should provide more written samples since we can also learn from studying samples. (Students #25, 9)

We prefer more varied activities. (Student #8)

Students #14 and #13 also shared a similar thought to student #8, but they suggested a sample of activity.

As for group activities, I would like to add role play as a part of the activity. Each group should be set as a company. The group members work as engineers in different positions and departments, but we need to write to each other. This allows us to practice writing similar to real working situations. (Student #13)

The teacher should provide more varied activities. Role play activities are recommended. This can be conducted by assigning different students to work in different positions, and they need to contact each other. (Student #14)

In addition, a student thought that the lesson offered too many similar activities.

The course offers too many similar activities. (Student #24)

Finally, a student suggested changing groups because he thought that he would like to learn more from other friends and to make friends with other classmates.

I think that we should change groups every two weeks. This would help us to make friends with our classmates who may come from different majors. (Student #8)

In conclusion, the findings from the open-ended question showed that the students liked this course because of various reasons, while some of them suggested adjusting things. They liked the course since the course was useful in terms of the contents which they needed to know to work as engineers. That is, they felt they could use what they learned from the course in their professional life. However, they thought that it would be better if the course added more vocabulary, activities, and written samples.

To answer Research Question 4, namely, the attitudes of students toward the course, questionnaires were used to collect quantitative data. In addition, student logs and semi-structured interviews were used to gather qualitative data. The analysis of the data was outlined based on six components. These were considered as important factors to form the course. They include the objectives and contents of the course, teaching methodology and activities, the teacher, evaluation criteria, writing achievement, and additional information and suggestions. The findings from the questionnaire on the six components indicated that the students were satisfied with the course, even though some students might think that some parts of the course should be changed. Moreover, the one open-ended question in the questionnaire, the student logs, and the semi-structured

interviews revealed most students enjoyed the course. This could be seen from the data which showed that they were satisfied with all six components of the course.

Although the data showed that most of the students were satisfied and enjoyed the course, some of the students suggested changing some things. Some of them preferred to have more lessons. They also wanted to have some of the activities adjusted at each teaching stage. Some thought that the teacher should add games and pictures into the lessons. Moreover, most of the students would like to have more vocabulary knowledge and samples of e-mail and reports in various situations because they found that the course did not provide much of this.

The second hypothesis of this study stating the scores of the end-of-the-course questionnaire survey will be greater than 3.50 which indicate positive attitude of the students toward the overall course at the end of the course implement was tested. According to the analysis results of the questionnaire, the second hypothesis of this study was accepted because it was found that the overall scores of the end-of the-course questionnaire survey were greater than 3.50. Moreover, the scores of each component of the questionnaire survey were also greater than 3.50.



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4.5 Summary report of the results

In order to design, implement, and determine the effectiveness of the English writing course for engineers based on the GBA, quantitative and qualitative data were collected from various research instruments. The results of the finding are summarized according to each research question below.

1. What English writing skills are needed by operational and managerial engineers?

It was discovered from the needs analysis that an important problem area for all groups of subjects, except for managerial engineers, was grammar.

The results from the survey also indicated the three genres most required for engineers were enquiry e-mails, request e-mails, and reports. These were used as the content of the course. However, not all the three types of genre exhibited problems in writing among engineering students. The engineering students thought that minutes of meeting, agendas, and reports were their most important writing problems.

Also, the subjects rated the appropriateness of the relationship between readers and writers, the relevance between the content and context, logical knowledge, and appropriate layout as important for writing English. Moreover, among four groups of subjects, it was found that appropriate layout was only one problem of knowledge in writing English in engineering contexts.

As for opinions about developing an English writing course for engineers, it was reported that the course should be developed based on 19 items consisting of vocabulary and grammar, using English in teaching, using English more than Thai in teaching, doing individual work, doing group work, doing pair work, providing models of writing before doing exercises, pointing out necessary engineering working situations in writing and then asking students to search for content to write themselves, editing writing of their own, practicing writing from real situations, using commercial texts as the materials, using authentic materials, using transparencies, using VDOs as a teaching aid, using Power-Point presentation as a teaching aid, using E-learning as a teaching aid, using writing tests as an evaluation, using portfolios as an evaluation, and using group activities as an evaluation.

The results concerning the suggestion and expectation for the course revealed that all groups of the subjects thought that the course would help students learn English related to working as engineers in the future. They believed the content of the course should cover different kinds of genres concerning the work of engineers and that the lessons should focus on both the content and the grammar. As for the materials and exercises, authentic situations and materials were suggested. In addition, the developed course should be able to help students write the required contents effectively and appropriately.

As for the interview results, it was found that formal and informal e-mails were required in the engineering community. The reasons for writing either formal or informal e-mails were based on the status of the recipients, the relationship between recipients and senders, the topics, and objectives. Writing formal or informal e-mails was evident in the language they used in parts of the e-mails; namely, opening salutation, body, closing salutation, and closing correspondence. Some Thai engineers were aware of sentence structure when they wrote e-mail to foreign engineers. Thus, they tried to use simple and compound sentences in their writing to minimize their mistakes. In addition, most of the engineers agreed that the decision to use technical terms, semi-technical terms, and general vocabulary depended on whom they were talking to and what the topics were. Interestingly, most engineers thought that the formats of their writing were not important. They simply used the formats they preferred. It was also revealed that engineers had different writing problems such as not enough vocabulary and English background knowledge. The results also showed that the writing contact persons in which most engineers wrote encompassed suppliers, colleagues, and headquarters. Sociolinguistic knowledge in writing request and enquiry e-mails and reports were therefore necessary for appropriate communication. In addition, it was found that the writing strategies or tactics varied according to the individual purpose of writing. The needs analysis results were translated into the content of the course.

2. How can an English writing course based on the genre-based approach be developed to enhance the English writing achievement of undergraduate engineering students?

The course was designed based on the principles of ESP course design and GBA course design. Burns and Joyce (1997 cited in Paltridge, 2004; Hyland, 2007) suggest the following stages involved in designing a genre-based course:

1. identifying the overall contexts in which the language will be used;
2. developing course goals based on the context of use;
3. noting the sequence of language events within the context;
4. listing the genre used in this sequence;
5. outlining the sociolinguistic knowledge learners need to participate in the context;
6. gathering and analyzing samples of texts; and
7. developing units of work related to these genres and develop learning objectives to be achieved.

The sixth stage, analyzing samples of texts, was carried out based on the ESP genre analysis concept (Swales, 1990; Bhatia, 1993) since this course was aimed at developing an English writing course for engineering students. The content focuses on the professional contexts and issues in order to prepare engineering students by equipping them with the tools they need to work as engineers in the future.

Moreover, this course created lessons based on the teaching and learning cycle (Feez, 2002) which consists of the following five stages:

1. Building the context
2. Modelling and deconstructing the text
3. Joint construction of the text
4. Independent construction of the text
5. Linking related texts

Based on the needs analysis results, the concept of GBA course development process and the concept of teaching and learning cycle, a 17-week course was created. However, the real actual teaching writing contents developed based on the GBA was 12 weeks. This was because the first two weeks were used for introduction to the course and

pre-test whereas the other three weeks were reserved for midterm exam, post-test and report writing testing. Three genres were chosen as the contents of the course: writing request e-mails, inquiry e-mails, and reports.

Request e-mail was taught as the first unit for five sessions and enquiry e-mail was the second unit (3 sessions). Three sessions for teaching enquiry e-mails were also suitable because students were familiar with writing request e-mails that exhibited similar move analysis results. The last unit was investigation reports (4 sessions) since their move analysis was completely different from those two types of e-mails. The present course was implemented with 25 engineering students in the first semester of the 2009 academic year at KMUTNB. After the course was implemented, the next stage was examining the effectiveness of the course. The summary is explained in the next section.

3. What is the effectiveness of the English writing course for engineers developed based on the genre-based approach?

It was found that the writing course developed based on the genre-based approach was effective. This could be seen from the post-test scores on the students' writing achievement which was higher than the pre-test scores. Also, it was discovered from the t-test results that the students' writing achievement scores who were taught with the GBA were significantly higher than those obtained in the pre-test ($p < 0.05$) after attending the course with large effect. Based on the results of Research Question 3, the first hypothesis of this study stating the writing achievement scores in the post-test of the engineering students who are taught with the GBA course will be higher than those obtained in the pre-test was accepted.

4. What are the attitudes of the students toward an English writing course based on the genre-based approach?

Based on the results of Research Question 4, it can be summarized that most of the students who were enrolled in this course were satisfied with this course in six aspects: objectives and contents of the course, teaching methodology and activities, teacher, writing achievement, assessment criteria, and additional information. This was because the findings showed that the scores of the end-of-the course questionnaire survey were greater

than 3.50. That is the second hypothesis of this study stating the scores of the end-of-the-course questionnaire survey will be greater than 3.50 was accepted. However, it was also found from the student logs and interview that they needed more content, samples of written texts, and technical vocabulary. As for the teaching methodology and activities, they thought that they were suitable, but some of them did not want to do many exercises in genre analysis because they thought that they could remember the organization form (genre analysis results) of genres even though they do only a few genre analysis exercises. Also, they thought that teaching writing through the GBA was suitable for engineering students since it was found that they could write better and knew how to organize their written work systematically because of the GBA. They also enjoyed studying with the five teaching stages, but some of the students did not like group work because it seemed that they did not learn from group work. In addition, they thought that they learned many things from the teacher. Finally, they felt more confident in writing after attending the course.



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CHAPTER V

SUMMARY, DISCUSSION OF THE RESULTS, AND RECOMMENDATIONS

This final chapter encompasses a summary of the research, conclusions from the findings, discussion of the results, and recommendations for future studies. It aims at providing the overall picture of the experiment and its findings in brief, including practical and theoretical justifications for such outcomes of teaching writing through the genre-based approach (GBA). It also elaborates on how the findings can contribute to the improvements of the writing abilities of EFL learners in particular and on issues that need further investigation.

5.1 Summary of the study findings in accordance with the research objectives

This study has clear relevance at the national policy level and at the level of KMUTNB. According to the policy of the Higher Education Commission, all undergraduate students have to study English and complete at least 12 credits. To address this, the Language Department at KMUTNB has had to provide more elective courses. More specifically, it has had to meet the requirement for more elective courses for engineering students as most of the students at KMUTNB are engineering students. These courses also have also helped the university meet the needs of the private sector, scientists and engineers. In addition, this study was conducted because of the deficiency in writing instruction in preparing engineering students to work efficiently and effectively as professional engineers after their graduation. Another objective of this study, therefore, was to investigate the effects of a genre-based English writing course for engineers on the writing ability of Thai undergraduate engineering students. According to theories of writing instruction, there are many ways to teach writing, such as the process-based approach, the product-based approach, and the content-based approach, among others. The GBA seems to be the most effective approach to teach writing to engineers because there is a close fit between key characteristics in engineers' writing and the GBA. The written work of engineers has specific organization and linguistic features, while teaching writing through the GBA refers to teaching students how to use text structures and linguistic features to accomplish coherent and purposeful

prose. Also, the GBA focuses on the relationship between the text and its contexts and so instruction is modified to address the dynamic needs of engineers.

Research shows that teaching writing through the GBA is successful in motivating students to study and in helping students improve the text of their writing to achieve their communication goals (Henry and Roseberry, 1998, 2001; Pang, 2002; Udomyamokul, 2004; Emilia, 2005; Kongpech, 2006). While a few studies have shown that English writing lessons for engineering students can also be developed and taught through the GBA in Thailand, there are even fewer studies demonstrating how this can be done. Moreover, there is no comprehensive work specifically dealing with the theory and method of the GBA as it relates to teaching writing to engineers in Thailand.

This study employed the one-group pre-test-post-test research design which compared the writing ability of the same group of subjects before and after the lessons. The research procedures consisted of three phases: needs analysis, course development, and determination of the effectiveness of the course. A summary of each phase along with its findings is offered below.

5.1.1 To investigate the needs of English writing skills for operational and managerial engineers

A needs analysis was conducted to determine the English writing skills needed by operational engineers (110), managerial engineers (17), ESP teachers (31), and engineering students (354). These groups of subjects were recruited by means of purposive sampling. Questionnaires and engineer interview questions were used as the research instruments. The questionnaires were distributed to the four groups of subjects following which, the results were analyzed by using the SPSS program and content analysis. The results of the questionnaire were divided into four parts: demographic characteristics of the subjects; English writing content required, situations in the working contexts of engineers, and related writing problems; opinions about developing an English writing course for engineers; and suggestions and expectations concerning the course. Next, the operational and managerial engineers were asked the interview questions in order to gather in-depth information about the writing contexts and situations of engineers as they related to the three types of genres.

The needs analysis results showed that

1. The three types of texts that were in most demand were request e-mails, enquiry e-mails, and reports.

2. The subjects rated the appropriateness of the relationship between readers and writers, the relevance between the content and context, logical knowledge, and appropriate layout as important for writing English.

3. As for opinions about developing an English writing course for engineers, it was reported that the course should be developed based on 19 items consisting of vocabulary and grammar, using English in teaching, using English more than Thai in teaching, doing individual work, doing group work, doing pair work, providing models of writing before doing exercises, pointing out necessary engineering working situations in writing and then asking students to search for content to write themselves, editing writing of their own, practicing writing from real situations, using commercial texts as the materials, using authentic materials, using transparencies, using VDOs as a teaching aid, using Power-Point presentation as a teaching aid, using E-learning as a teaching aid, using writing tests as an evaluation, using portfolios as an evaluation, and using group activities as an evaluation.

5.1.2 To develop an English writing course based on the GBA for engineering

The course development process was based on the principles of ESP course design and stages in the development of the GBA course (Burns and Joyce, 1997 cited in Paltridge, 2004; Hyland, 2007a).

Burns and Joyce (1997 cited in Paltridge, 2004; Hyland, 2007) suggest the following stages involved in designing a genre-based course:

1. identifying the overall contexts in which the language will be used;
2. developing course goals based on the context of use;
3. noting the sequence of language events within the context;
4. listing the genre used in this sequence;
5. outlining the sociolinguistic knowledge learners need to participate in the context;
6. gathering and analyzing samples of texts; and
7. developing units of work related to these genres and develop learning objectives to be achieved.

The lesson plans (teaching procedures, activities, and materials) were created according to the teaching and learning cycle consisting of five teaching stages (Feez, 2002; Hyland, 2007a) and the explicit teaching concept (Hyland, 2003a). The lessons

were validated by three experts and then the request e-mail lesson was tried out in order to examine the effectiveness of the lesson. The request e-mail writing lesson was piloted with 38 third- and fourth-year engineering students who were registered in the English for Work course for four sessions (three hours each) during the second semester of the 2008 academic year at KMUTNB. The results of the Effectiveness Index: EI (as shown in page 105) of the piloted course and the attitude questionnaires showed that the lesson was effective. However, some parts of the lesson were adjusted based on suggestions from the students and on the teacher's observations of the class.

5.1.3 To evaluate the effectiveness of the English writing course

To determine its effectiveness, the course was taught to 25 fourth-, fifth-, and sixth-year engineering students who were enrolled in the English for Engineers course as an elective during the first semester of the 2009 academic year at KMUTNB. The course was a 12-week course with three hours each session. A pre-test and a post-test were provided to evaluate the writing achievement of the students at the end of the course. It was found that there was a statistically significant difference between the pre-test and post-test scores with a large effect size as shown in Table 4.17. This means that the writing ability of the students improved because of the GBA writing course.

5.1.4 To explore the engineering students' attitudes toward the English writing course developed based on the GBA

The attitudes of the students after attending the course were examined by using attitude questionnaires, student logs, and student interview questions. The students were asked to complete the questionnaires and student logs on the last session of teaching. Then, three of the students were interviewed one day after the last session.

It was discovered that the students had positive attitudes toward the course because the scores of the end-of-the course questionnaires survey were greater than 3.5. Moreover, the results from the student logs and interviews also showed that the students liked the course. That is, they were satisfied with some components of the course such as the content, teaching methodology, and teacher. However, some students suggested that some parts of the course should be adjusted. For example, they would like to have more contents and written samples. Providing more games, pictures, and vocabulary list were suggested as well. In addition, it was also found that most of the students received the gain score higher than the cut off score which was set at 60. This meant that they passed this course.

In sum, the evidence from the test scores and qualitative findings showed that the course was effective because the students significantly improved their writing ability with a large effect size and had positive attitudes toward the course.

5.2 Discussion of the findings

The discussion of this study is organized in three parts: needs analysis results, effectiveness of the course, and attitudes toward the course.

1. Needs analysis results

An important result of the needs analysis was the types of genre or English writing contents required for engineers' working context. The results showed that operational and managerial engineers thought that the three most important types of genre for engineering work were request e-mails, enquiry e-mails, and reports. It is noteworthy that although operational engineers do not work in the administration team, they shared the view of the managerial engineers about the important types of genres. Likewise, it was found that ESP teachers also saw enquiry e-mails, memos, and reports as the three most important types of genres, while enquiry e-mails, reports, and minutes of meetings were the three types of genre most needed in the view of engineering students. This means that although ESP teachers and engineering students do not have direct experience as engineers, they were nevertheless aware of the writing requirements among their professional colleagues. This might be because the engineering students were fourth-, fifth-, and sixth-year students, so they may have some experience in engineering work from professional training when they were third year-students. As for ESP teachers, they may have taught English courses relating to engineers for quite a long time such as English for work and Technical English. With this reason, they might have chances to talk to engineers and their ex-students about engineering work. Thus, they were familiar with the required genres in engineering work.

The findings of this study are in some way similar to the results of Jiranapakul who also conducted a needs analysis among Thai engineers in 1996. According to the findings of Jiranapakul's work concerning the required types of writing-related activities of engineers, the first three types of written work required by operational and managerial engineers were business letters/faxes, reports, and office forms. However, even though the results of this study were partly similar to those reported in

Jiranapakul's needs analysis, Jiranapakul's study is dated because the technologically dynamic environment of engineering has adopted new forms. Moreover, this study has also gone further in specifying the types of business writing engineers need (request e-mails, enquiry e-mails, and reports). More specifically, this study has focused on writing e-mails, whereas Jiranapakul's work emphasized letters and faxes. This might be because letters and faxes were the channels that engineers mainly used to communicate with each other at the time of Jiranapakul's study, while e-mail is being the primary mode of communication at present. Yet, it can be said that the types of genre currently required by engineers are still somewhat similar to the types of genre required in the past, with the important difference being that the "new" technology of the Internet has enhanced electronic communication. Simply put, the contents of written work required by engineer at present have not changed much from the past, but the form has been changed due to new technologies.

In brief, the needs analysis highlighted similar aspects of the required genres for the work of engineers among ESP teachers, engineering students, operational engineers, and managerial engineers. The results of the needs analysis were also similar in some ways to Jiranapakul's study. That is, Jiranapakul's study and this study have identified the same generic field, but this study disagrees with Jiranapakul's study when it comes to the genre forms (letters/ faxes and e-mails).

2. The effectiveness of the course developed based on the GBA

The statistic differences evident in the results of the comparison of the pre-test and post-test scores revealed that the students' writing ability increased after completing the aforementioned English writing course for engineers. This meant that the English writing course developed based on the GBA was effective. One plausible explanation of the increase in the students' post-test scores is the enabling characteristics of the GBA pedagogy (explicit teaching and scaffolding), which are as follows:

2.1 Effects of explicit teaching

Students' writing ability is influenced by "explicit teaching," a key concept of the GBA pedagogy. That is, the GBA offers writers an explicit understanding of how target texts are structured and why they are written in the way they are (Hyland, 2007a). This is crucial because one of the difficulties faced by EFL students when asked to produce an academic piece of writing is they often have an inadequate understanding of how texts are organized to convey their communicative purposes (Hyland, 1990). Based on the characteristics of explicit teaching, it can be said that studying target texts based on the GBA allows students to see clearly the structure of the target texts and why they are written the way they are. This insight helps students make the appropriate linguistic and rhetorical choices when they have to produce work in various genres.

In this study, explicit teaching was employed in the first two prewriting stages of the teaching and learning cycle, namely, modeling and deconstructing the text and joint construction. Regarding the modeling and deconstructing stage, the students had to identify the components of e-mails and reports. The results of genre analysis of the target texts were provided and explained. Then, the students analyzed the samples of written text using a genre analysis form as a guideline. The form consisted of questions relating to analyzing moves and steps, expressions, linguistic features, lexicon, and sociolinguistic knowledge. At the end of this stage, students also had to reread all the samples of written texts and summarize the characteristics of sociolinguistic knowledge and details of linguistic features that they found in each move in the different writing contexts and situations. Thinking about writing strategies in order to organize and write the required genre effectively was also required at this stage. Next was a joint construction stage in which an overhead projector was used to help the students become aware of structure, sociolinguistic knowledge, and language points necessary in the target genre. The teacher made think-aloud comments while planning and creating texts on the overhead. After that, the students practiced writing both in groups and in pairs. In addition, group review and peer review were encouraged before feedback from the teacher.

In so doing, the students learned how to write effectively in the target genres by encompassing sociolinguistic knowledge, organization, writing strategies, and linguistic features. This was confirmed by the results from the questionnaires (see Table 4.19) and the qualitative analysis of the student logs and student interviews. The students thought

that they could write well because they had analyzed samples of genre before the independent writing stage. They felt that by analyzing samples of genre, they were able to understand and remember the genre analysis results. They also thought that genre analysis activities were not difficult. In addition, they could write well because they learned to choose appropriate language for the different purpose of each move and different social contexts.

Other researchers have reported similar findings to the findings of this study. For example, Udomyamokkul (2004) investigated whether the use of the genre-based approach, including explicit instruction of rhetorical patterns of English argumentative discourse, was more or less effective in helping applied science and engineering students gain control of academic argumentative genre than the effects of control treatment which emphasized teaching of the writing process. It was found that the students who were taught with the explicit instruction received significantly higher gain scores than those in the other group who were taught the writing process on the first drafts' development. Another study conducted by Kongpetch (2006) investigated the use of explicit teaching based on the GBA in teaching expository essay writing to English major and minor students. It was again found that the GBA had a significant impact on the students' writing. Honsa and Clark (2004) taught first-year Medical students at Mahidol University how to write opinion paragraph through explicit teaching activities. The results showed that the students could write well.

However, some scholars disagree with the explicit teaching concept. They argue that explicit teaching leads to restrictive formulas that can block the creative thought of writers. That is, explicit teaching may be taught as molds into which content is poured rather than a way of making meaning (Dixon, 1987; Raimes, 1991). Although Dixon (1987) and Raimes (1991) argued that explicit teaching may lead learners to restrictive formulas and also block their creative thought in writing, it was believed by the researcher of this study that explicit teaching was a useful concept for teaching writing and that it was appropriate for second language learners. This can be seen in the results of the studies of Henry and Roseburry (1998); Pang (2002); Udomyamokkul (2004); Emilia (2005); and Kongpetch (2006), who employed explicit teaching to teach second and foreign language learners. It was found that the students improved their ability in writing, and the students also enjoyed studying through the GBA. This means that explicit teaching was a valuable concept in teaching writing to L2 learners. In this

study, it was also found that explicit teaching was effective since the students were able to write better. Most of the students agreed that they could write better because they understood the important concepts that were necessary in writing genres. They understood and remembered that information because of the activities they were engaged in during the explicit teaching stage.

In conclusion, the English writing course developed based on the GBA was effective because of the effects of explicit teaching which allowed the students clearly see the organization of each genre relating to engineering work, and then they understood how to organize different genres, including making them know how to choose appropriate linguistic features and vocabulary according to different writing contexts.

2.2 GBA and scaffolding

Social constructivism, the theory of learning proposed by Vygotsky, was employed in this study. It focuses on learning in a social context since contextualized learning actually leads to cognitive development. Also, social constructivism focuses on the construct of Zone of Proximal Development (ZPD) that bridges the gap between what is known and what can be known, and suggests that learning occurs in this zone (Vygotsky, 1978). This means that a student learns to perform a task that he or she may not normally be able to perform alone, but maybe possible under adult guidance or with peer cooperation. Therefore, what should be emphasized in teaching is the collaboration between the teacher and students and between the students with low writing ability and the students with high ability, including between two students with equal writing ability. The notion of ZPD is applied to pedagogy through the concept of scaffolding (Bruner, 1990). Scaffolding means the temporary but essential assistance that supports apprentice learners in acquiring new skills, concepts, or levels of understanding (Maybin, 1992 cited in Gibbons, 2006). The teacher takes the role to scaffold or support students when they move toward their potential level of performance (Hyland, 2007a). As for the aspect of writing skill, scaffolding can be defined as providing supports to learners as they build their understanding of a text and their linguistic competence to create their writing texts (Hyland, 2003a). Simply put, scaffolding is the way that teachers are in the position to bring learners to the point where they can write without assistance.

It is believed that when learning through the GBA, learners learn how to write and will be subsequently able to write well because of scaffolding activities which was employed in the five teaching stages (Hyland, 2003a; Gibbons, 2002). The important idea underpinning scaffolding is that the novice L2 writers require greater support during the early stages of working with an unfamiliar genre and less later. Learners move toward their potential performance through appropriate input and interaction with a teacher, who contributes what the learners are initially unable to do alone, scaffolds their progress by providing appropriate support (language and guidance practice). When learners can write their new genres, this support is gradually removed (Hyland, 2003a).

The findings in this study have confirmed that students benefit from appropriate use of scaffolding in writing instruction. In this study, the concept of scaffolding was employed in the five teaching stages or the teaching and learning cycle. This scaffolding was most evident at the early stages of teaching where the teacher supported what the students could usually not do alone (building the context, modeling and deconstructing, and joint construction stages). Therefore, in the first teaching stage (building the context), the students were introduced to target genres by reading sample texts and discussing with the teacher and their classmates the important points concerning the purpose of the sample texts, organization of certain types of genre, and sociolinguistic knowledge used in the written samples. As for the second stage (modeling and deconstructing), genre analysis results of types of genre were provided. The students analyzed the samples texts based on the questions in the genre analysis form provided. The teacher needed to assist the students to analyze the texts and point out linguistic features used in each move of the samples. The pedagogy related to this stage and in the joint construction stage was previously explained in detail in the above section on effect of explicit teaching. Next, the students practiced writing with pair and group assignments. In addition, group review and peer review were emphasized before feedback from the teacher. This support was gradually reduced until the students had enough knowledge and skills to work individually.

Subsequently, the results revealed that scaffolding activities helped improve writing ability. The students were able to write better after they were scaffolded with practice activities in the five teaching stages (the teaching and learning cycle). The students' writing skill showed remarkable improvement which was validated by the

results of the post-test scores and attitude questionnaires (see Table 4.19: item 9, mean = 4.21; item 12, mean = 4.32; item 15, mean = 4.52). This was also confirmed by the results of the qualitative analysis of the student logs and student interviews where it was discovered that the five teaching stages (the teaching and learning cycle) allowed the students to write better and to enjoy learning. Moreover, the students pointed out that they also learned a lot from the teacher. Samples of the students' attitudes are presented in the following statements:

The five teaching stages are suitable for this course because the stages are clear and are organized systematically. (Student # 17)

I like this course because it starts from providing background knowledge and then it provides more details about writing genres. (Student # 13)

Teaching with the five teaching stages is fine because all stages develop the writing ability step by step. All activities and exercises are designed appropriately. (Interviewee # 2)

However, the analysis of student logs and interviews revealed that some students preferred less scaffolding activities in teaching stage 2. They thought that they could remember the results of the genre analysis provided by the teacher at the beginning of the second teaching stage, so they did not need to do as many genre analysis exercises. It may be possible that only one or two exercises were enough. In addition, some of them thought that there were too many questions in the genre analysis guided form. They suggested cutting out the questions about vocabulary and grammar points because the teacher could highlight these two issues when she explained the questions relating to distinguished linguistic features. Based on this information, it can be said that scaffolding activities and exercises are useful because they help improve students' writing ability, but there are certain limitations. In particular, the number of guided questions in the genre analysis should be carefully considered. The language proficiency level of the students is a major factor that helps teachers decide the quantity of scaffolding activities to give to the students.

There is a wide body of research showing similar findings. For example, Srirattanakul (1997) investigated the effect of scaffolding on students' writing. The results revealed that scaffolded guidance could improve students' writing holistically. As for the analytic effects, it was discovered that scaffolded guidance worked very well with lower-level cognitive skills. Another study conducted by Liu and Chai (2009)

explored the attitude of advance-level undergraduate EFL learners toward and reaction to peer review and their correlation with the learners' writing performance. It was discovered that peer review was valuable because it helped them know more grammar and reduced grammatical mistakes, and making them get a clearer picture of others' English proficiency while assessing their own. It also helped them become aware of what had been neglected such as organization of paragraphs, organization of ideas, word usage, and clarity of writing. The findings from Liu and Chai revealed that scaffolding through peer review benefited the students because they received suggestions and comments from high ability students in terms of linguistic and non-linguistic knowledge such as in organization of paragraphs, vocabulary, and grammar. Based on these suggestions and comments, the students' writing ability improved.

In conclusion, the GBA English writing course for engineering students offered engineering students the scaffolding-rich learning environment in the five teaching stages. These activities helped the students know and understand how to write effectively in the required genres.

3. Attitudes toward the course

Based on the results of the questionnaire, it was found that the mean of the overall picture of the questionnaire was 4.12. This meant that most of the students were satisfied with the course because they agreed with most questions in the questionnaires. Evidence for positive attitudes toward the course was also supplied by the student logs and interviews. The students had positive attitudes toward the course because of various reasons, namely, increase in self-confidence, appropriate teaching methodology, helpful activities and exercises, and suitable objectives and contents, which are discussed below.

3.1 GBA promotes self-confidence

This study found that the students were satisfied with the course and had positive attitudes toward it. One of the reasons for this is the course helped them improve their writing ability and that developed their self-confidence in writing. According to Brown (2001), self-confidence is one of the principles of language learning and teaching that influence second language acquisition. Self-confidence refers to learners' belief that they are able to accomplish a task (Brown, 2001). To increase self-confidence in writing in English, students need systematic training. The present

course provided tasks and activities that enabled the students to develop a sense of self-confidence in writing in the target genres.

In this study, the students' self-confidence increased as they learned and practiced writing using the teaching and learning cycle. The first three teaching stages provided prewriting exercises. Here, the students were provided with explicit teaching and activities based on the scaffolding concept as mentioned in items 2.1 and 2.2. It was found that most students improved their individual assignments in each unit, except for some students of low writing ability. This was also revealed from the results of the unit test. For example, for "sociolinguistic knowledge," the average scores rose from one to four, and for "organization," it also increased from one to four.

The students saw their improvement and this encouraged them and gave them confidence to continue writing in the target genres and other types of genre. That the self-confidence of the students increased after attending the course was also confirmed by the analysis of the attitude questionnaire (see Table 4.22), student logs, and student interviews. It was discovered that most of the students thought that they could write better and they felt confident to work as an engineer in the future. They also felt more confident in writing since they thought that they had learned to write. That is, they understood and remembered the move patterns in the types of genre they had studied, including choosing appropriate language based on the different social contexts, as exemplified below:

I feel more confident to write because of understanding and remembering the move patterns after attending the course. This helps me see clearly what kind of information and organization we need to write. (Student # 24)

I feel more confident because I know how to write and the organization of writing genres. (Interviewee # 3)

I feel more confident since I feel familiar with writing various genres and I know how to write. Moreover, I also know which one is correct or which one is wrong. (Interviewee # 1)

Moreover, some students even stated that they liked writing in English after attending this course. They found that they needed less time to complete writing each assignment and they also thought that they would be able to apply what they had learned from the course to write other genres later on when they encountered other genres, as one said:

I think I can write if I come across other genres because I know quite enough to write different genres and I also practice a lot. I feel confident. (Interviewee #1)

Some research reported similar findings to this study. For example, Emilia (2005) investigated the effectiveness of using a critical genre-based approach in teaching academic English writing (argumentative) to student teachers in Indonesia. It was found that the student teachers felt confident to write after attending the lessons because they could assess the clarity, accuracy, and relevance of a text.

In brief, the English writing course developed based on the GBA increased the engineering students' self-confidence to write in English. This affective factor was important since it affects success in learning language and will continue to influence the students' attitudes toward English when they encounter it in their professional lives as engineers.

3.2 Appropriate course objectives and contents

According to the results of the attitude questionnaires, student logs, and student interviews, it was found that the students were satisfied with the course because the objectives and contents of the course met their requirements to work as engineers (see Table 4.18: item 1, mean = 4.60; item 5, mean = 4.36). They thought that this course was useful, and that they could apply what they had learned from the course to their work in the future (see Table 4.23: item 38, mean = 4.68). The following statements offer samples of the positive responses of the students:

The objectives are suitable because we can use them in the future. (Student # 2)

The contents of the course are really useful since the contents are really required in engineering work (Student # 11)

Some research has reported similar findings to this study. For example, Vasavakul (2006) developed an oral communication course for the customer services staff at an international bank. It was found that the staff wanted to learn and improve their English as they recognized that English proficiency played a significant role for their career advancement. Thus, the staff tended to pay more attention to learning and developing their English. Moreover, Pattanaphichet (2009) developed an oral communication course based on the competency-based approach for PR students at Bangkok University. It was found that the students liked the course because the contents of the course met their requirements to work as a PR after their graduation.

In brief, most of the students were satisfied with this course since the course contents and objectives met the requirements of the engineering students in order to work as engineers in the future.

3.3 Appropriate teaching methodology

Teaching writing with the GBA resulted in students' positive attitudes toward the course. This was because the students' writing ability improved after studying with the GBA teaching methodology. Explicit teaching and scaffolding are important techniques underpinning the GBA teaching methodology. These two techniques were employed in the five teaching stages (the teaching and learning cycle). The results of the questionnaires revealed that the students were satisfied with the teaching methodology (Table 4.19: item 12, mean = 4.32; item 15, mean = 4.52; item 20, mean = 4.12; item 21, mean = 4.52; and item 22, mean = 4.22). The results were also similar to the results from the student logs and interviews, as illustrated below:

Five teaching stages were suitable because they helped me understand how to write and enjoy learning. (Student # 9)

The five teaching stages were suitable because these teaching stages and activities help me understand the move analysis and remember it well. (Student # 13)

Teaching with the five teaching stages is suitable. I like all of the activities and exercises. All of them help us see clearly how to write, while some of them help us review what we have learned, especially the genre analysis, the grammar conclusion, the move analysis review exercises, and writing strategy brainstorming. These activities and exercises help us remember the move analysis results and we can write. (Interviewee # 1)

Some research has reported similar findings to this study. Henry and Roseburry (1998) examined how genre-based instruction and materials improved learners' capacity to produce effective tokens of the genre of tourist brochures. It was found that the students enjoyed the approach since it differed from the methods employed in their secondary schools. Moreover, they indicated that the teaching method helped improve their motivation to write by showing them clearly their progress in achieving the purpose. Kongpetch (2006) also adopted the GBA in an exposition writing class at Khon Kaen University. She concluded that the GBA had a significant impact on students' writing. It was also found that her students liked the five teaching stages

because they found that these teaching stages helped improve their writing ability. The teaching stages that they liked most were the independent construction and modeling text stages.

In brief, the students had positive attitudes toward the course because of reasons. Most of them were satisfied with the contents and objectives of the course since the contents and objectives of the course met the requirements of the engineering students in order to work as engineers in the future. The students also liked this course because they had a chance to improve their writing ability after attending the course and this helped them gain confidence to write genres. Also, they liked the teaching methodology of this course (five teaching stages: explicit teaching, scaffolding) because they found that studying through the five teaching stages helped them write better. The teaching stages were clear and helped them understand how to write genres step by step.

Conclusion

Based on the results of the study, it was revealed that the English writing course developed based on the genre-based approach (GBA) was effective. This was because of the explicit teaching and scaffolding concepts. Also, the students had positive attitudes toward the course. This was due to the fact that they found that their writing ability had improved and, in turn, this promoted the students' self-confidence in writing genres. In addition, the students liked this course because of the appropriate teaching methodology, objectives, and contents of the course.

5.3 Implications of the findings

Based on the findings of the study, it can be concluded that the English writing course for engineers developed based on the GBA was effective and the students enjoyed studying the course. Therefore, it is worthwhile to integrate the GBA into English writing instruction. The followings are suggestions derived mainly from the research findings, including guidelines for teachers and ESL course designers who wish to implement the GBA in English writing instruction for engineers and other EFL learners.

1. Teachers

1.1 Use of scaffolding activities

It was found that the GBA is an effective method of teaching writing because it helps the students promote their writing proficiency. This is because the GBA helps students see the organization of writing genres (genre analysis results). It also helps students organize and conventionalize their writing based on the constraints of professional communities, such as engineers, doctors, and journalists. In addition, students can develop the ability to choose appropriate words and linguistic features and expressions in order to be able to communicate in different contexts, with different functions, and for different purposes. In order to apply the GBA, what teachers should first take into consideration is the scaffolding concept, which is used as a ground theory in designing the GBA teaching stages: the teaching and learning cycle, which consists of five teaching stages.

It was found that using a scaffolding activity was an effective way of teaching writing because it supported the students writing proficiency. This is, support from teachers and peers helps students learn, and teacher's guidance helps students go beyond their actual capacity (Sutherland, 1992). Empirical research has demonstrated the effectiveness of scaffolded classroom interaction for language learning, suggesting how language learners are able to reach higher levels of performance than they would have been on their own (e.g. Kowal and Swain, 1994; Donato, 2000; Ohta, 2000). Scaffolding activities provide chances for students to learn together in the class with teachers first, and then practice in groups with peers. In addition, feedback from teachers during and at the end of the activities is a kind of scaffolded activity; in this way, students can see their problems and revise their work, and they can understand how to write better. In addition, students may gain more confidence in writing from scaffolding activities. Thus, providing appropriate scaffolding activities is required. Providing these activities needs to be undertaken during the first (building the context), second (modeling and deconstructing the text), and third (joint construction) teaching stages of the teaching and learning cycle. The most important scaffolding activities take place during the second and third stages of the teaching and learning cycle. Students need sufficient scaffolding from teachers and group members in order to help them understand how to compose a given genre, be able to write better, and feel confident to write individually during the fourth teaching stage. Confidence in writing can occur

when the students had sufficient background knowledge in writing in the genres after taking part in the scaffolding activities during the teaching stages (1-3). In addition, students may also gain more confidence in writing when they see the improvement in their writing ability from the teacher's feedback during the fourth teaching stage (independent writing). If they do not have enough scaffolding experience, they may not understand how to follow the framework of genres, and cannot write well. Most of the activities in these stages are group and class activities, so creating appropriate activities for the class and in groups is necessary.

As for the first stage of teaching, teachers should introduce students to the general characteristics of genres. This can be presented in several ways, such as providing samples of genres and asking questions regarding the content, organization of writing, and relationship between readers and writers. The second teaching stage is important because teachers need to scaffold students in order to help them see and understand important components in writing target genres, namely, genre analysis results, linguistic features, sociolinguistics knowledge, the relationship between readers and writers, and lexicon. Explicit teaching activities are required during this stage in order to scaffold students so that they can understand this information. Udomyamokkul (2004) mentions that, generally, L2 learners may have only limited competence in using alien discourse forms to produce expected genres, and accessibility to such discourse forms is hardly possible in the situation where English is not used widely outside the classroom. Therefore, the learners need to be directly taught explicit knowledge of text structure to enable them to shape their work to the convention of the target genres. In so doing, teachers should show students how to analyze genres and have students analyze genres themselves to help them see, understand, and remember the genre analysis results. Teachers also should teach them how to analyze linguistic features and choose the appropriate sociolinguistics knowledge used in each move. Then, students have to analyze linguistic features and sociolinguistics knowledge themselves. Providing these scaffolded activities helps students understand writers when they use different structures to express the expected functions of language. However, these activities may be too complicated and difficult for some students who are not good in English, and teachers should provide them with more support. In this study, most of the students had low proficiency in English, and it was quite difficult for them to do some explicit teaching activities. For this reason, the teacher helped them by providing

analysis forms. What the students needed to do was to answer the questions in the form.

In addition, another factor that should be taken into consideration during the second teaching stage is familiarizing students with the results of the genre analysis to enable them to remember them and use them automatically. Edward and Willis (2005) have stated that the familiarity of students with the tasks they are working on makes them more confident and more willing to become involved. Thus, once students become familiarized with the characteristic text and language features of the task they are expected to perform, they increasingly progress to the point where they are able to produce the written tasks themselves (Udomyamokkul, 2004). Familiarizing students with the genre analysis results can be conducted by providing them with exercises, such as matching names of moves with parts of an e-mail and reordering parts of an e-mail. The quantity of the exercises at this stage depends on the students' background knowledge of English. Another important thing during the second teaching stage is modeling from teachers. Students need clear and sufficient explanation from the teacher when doing all activities and exercises.

As for the third teaching stage, class work and group work are focused on. Class work is the most important at the beginning of this stage because teachers need to show their students how to write genres based on the genre analysis results that the students learn during the second teaching stage. As a result, teachers should "scaffold students" by showing them how to plan, organize, write, and edit texts using think-aloud techniques. Teachers should also write what they think on the board. Making think-aloud comments while planning and creating texts provides students with valuable insights into decision made during text construction and with opportunities and tools useful for talking about language (Reppen, 1995). Based on this activity, students learn how to organize, choose appropriate linguistic features and words, write, and edit texts from the teachers. When students understand these processes of writing, they can duplicate what the teachers do and are able to write. After that, students practice writing genres in groups and peers. Teachers should be careful at this stage not to explain too quickly or move to the fourth teaching stage until they are sure that most of the students know how to plan, organize, write and edit their written texts. This can be determined from the number of mistakes in their written assignments. Another issue that should be pointed out is feedback from the teachers because this is another factor

that can help students feel more confident about writing independently during the fourth stage since students typically improve the quality of their writing through feedback.

1.2 Using group work activities

The findings of this study showed that one of the methods of helping students to write better is by studying in groups—the students felt comfortable practicing writing with their peers. This is confirmed by the report of Storch (2005) concerning collaborative writing. It was found that collaborative writing or writing in pairs produced shorter but better texts in terms of task fulfillment, grammatical accuracy, and complexity when compared to the quality of individual writing work. Also, Watanabe and Swain (2007) found that collaborative writing activities helped improve the students' proficiency in writing essays. This could be seen from the number of patterns of pair interaction or collaborative dialogs when they work together to produce written texts. For this reason, teachers should provide learners with opportunities to work in groups to accomplish shared goals. Group work can be employed during the first, second, and third teaching stages of the teaching and learning cycle. However, the most important stages for employing group work are during the second and third teaching stages. In the second teaching stage, students work collaboratively on explicit learning activities such as genre analysis, linguistic features analysis, and grammar analysis. Group work is important during this stage since it is difficult for students to complete all of these activities alone, especially if they have low proficiency in English. Therefore, they need to get help from peers and learn from each other. For these reasons, teachers need to provide them with activities to have them work and learn together, the quantity of activities and exercises depending upon the students' background knowledge.

As for the third teaching stage, students learn from each other when they practice writing in groups after teachers show them how to write genres through think-aloud techniques. Students share ideas in organizing, drafting, writing, editing, and choosing appropriate writing strategies, words, and structures. As for editing, students have chances to learn from editing their groups' assignments and other groups' assignments. Another factor that teachers should take into consideration is the component of group members because if the levels of proficiency of students are too different, expert learners might feel reluctant to work with weaker peers. Sirithararat (2007) confirms that different levels of proficiency of students is what teachers should

keep in mind since expert students may not enjoy working with novice students. Based on the results of this study, it was found that some of the students with a high level of proficiency tended to feel bored and did not enjoy working in groups when units 2 and 3 were implemented. Sometimes they were absent. They may have thought that they understood the writing process from unit 1 and that they could write well and for this reason did not want to attend class to study other units. In this study, the teacher talked to them directly to ask them to help their group members. In contrast, weaker peers might feel comfortable working with expert students. Kongpetch (2006), whose English writing students felt comfortable in studying in groups since it enabled them to share ideas with friends. Therefore, they learned from each other. In this study, it was found that some of the students enjoyed studying with expert students because they found that they learned many things from them, especially sentence structure, grammatical points, background knowledge, and vocabulary. In addition, some students do not know how to work in groups, and even do not like working in groups. According to the results of this study, it was found that some of the students did not like group work or pair work since they thought that they did not learn a lot from the group members. It was also found that students in some groups preferred studying alone, even though they sat together in the group. This is similar to the situation found by Kongpetch (2006), whose English writing students resisted her GBA teaching. She found that asking students to take a more active and collaborative role was not successful during the third teaching stage (joint construction). This may be because collaborative learning is not culturally “normal” in the Thai educational context, so not all students are used to working in groups to accomplish a task (Byrd, 2009).

2. ESL course designers

2.1 Providing additional grammar and sociolinguistic knowledge lessons

Needs assessment is a systematic and ongoing process of gathering information about students’ needs and preferences, interpreting the information, and then making course decisions based on the interpretation (Graves, 2000). Therefore, a survey of needs is deemed necessary if course designers would like to develop GBA courses to benefit learners. For example, in this study, engineering students, ESP teachers, and operational engineers indicated from the needs analysis (see Table 4.6) that the most important problem area in writing was grammar. Although Thai students have generally studied English for at least ten years before studying at the university level, it

seems that their English proficiency, especially grammatical knowledge, is not enough to enable them to write well (Preecha Sriruengrit, 2547; Naruephon Aryurawattana, 2545). As a result, course designers or teachers who are interested in developing a GBA writing course should help learners increase their grammatical knowledge by providing them with additional grammar exercises. However, it is not necessary to review all grammar points or structures. The distinguishing linguistic features of each genre and the areas in which students make major grammatical mistakes should be reviewed. In addition, not all learners need to attend the grammar review sessions. Possibly, a pre-test should be administered before the course implementation. The scores on the pre-test and the performance in different grammar areas can help teachers focus on specific grammatical problems. Extra grammar review sessions can be arranged once a week.

It is worth noting that English writing in the community of engineers also required sociolinguistics knowledge, and a lack of sociolinguistic knowledge was part of the students' problem (see Tables 4.19 and 4.20). Because of this, they used both formal and informal styles in e-mails. Therefore, using appropriate language to show the degree of formality in writing based on the relationship between the readers and writers is necessary. As a result, course designers as well as teachers should design activities and exercises to help students see how to use language appropriately based on different social contexts.

Finally, one of the results of the needs analysis revealed that engineers have to write to people who use English to contact. Therefore, different cultural contexts should also be emphasized in lessons. Written samples from different cultures should be collected and analyzed. Activities and exercises to help students practice writing to people who are of different cultures should be created. Cultural understanding was significant because people contact each other as cross communication at present. Also, cultural understanding was necessary since it helped people communicate effectively.

2.2 Providing more vocabulary knowledge, contents, and written samples

The results from the student logs and interviews revealed that the students needed more contents, vocabulary knowledge, and written samples. Thus, the course designers should add one or two more contents into the course. This depends on the language proficiency of the students and the number of teaching sessions. More vocabulary exercises should be provided at the beginning of each unit or at the end of

each unit. Providing a vocabulary list (technical and general vocabulary) related to each writing topic is suggested as well. This was similar to Preecha Sriruengrit (2549)'s study that developed an English Writing Instruction Model which applied Vygotsky's concept of Zone of Proximal Development (ZPD). One of the results showed that the students would like the teacher to provide them with more vocabulary exercises. They thought that they could not write well because of deficient vocabulary knowledge. Supanee Chinnawongs (2000) examined writing abilities and problems of English for Academic Purpose science students and explored teaching methods and learning strategies that could enhance students' writing skills. It was found that English teachers and students agreed that teaching vocabulary at the beginning of each lesson was useful and helped improve writing ability. Nation (2002) have suggested three ways to teach vocabulary involving direct teaching, communication activities, and linked skills activities. It seemed that direct teaching method and linked skills activities were suitable for GBA writing courses because students can see clearly the meanings of words, and understand how to use those words when the teacher explains words directly to them. In addition, the students will learn how to use words from reading related texts and then practicing writing based on the topic from the reading texts. As for the written samples of genres, providing more samples with various contexts and situations should be beneficial because students could also study linguistic features and structures from the samples.

2.3 Informing important information

As reflected through the student log, some of the students showed that they were tired with doing some activities, especially during stages two and three of teaching since there were many activities they needed to be involved in. Thus, it is crucial for the teachers to ensure that students clearly understand five issues, namely, the importance and usefulness of the course to their professional life, the objectives of the course, the nature of the genre-based approach, its similarities to and differences from the approaches that the students have experienced in previous English courses, and the activities being undertaken. After learning this information, students should be able to see the benefits and the requirements of each activity which should motivate them to study and try to complete all of the activities so that they can write better. This is similar to the suggestions from previous studies (Kongpetch, 2006; Sirithararath, 2007), where the authors have suggested that teachers should explain to students the benefits of using

new teaching methods, course objectives, course goals, the similarities and differences of approaches they have experienced, and the activities being undertaken at the beginning of the course. If this information is not explained, students may short shrift and they therefore may not see benefits of the course. Thus, they may not have motivation to study courses and not want to attend classes, including not wanting to pay attention to the activities both in class and in groups.

Conclusion

The implication of this study can be divided into two implications: implication for teachers and for ESL course designers. As for the implication to teachers, employing scaffolding and group activities in the lessons was vital. For ESL course developers, it was important to make use of the needs analysis results. That is, additional grammar review sessions should be provided since it was found that most of the students made major grammatical mistakes in writing. Sociolinguistic knowledge, more contents, vocabulary, and written samples were also necessary. In addition, providing important information about the usefulness of the course and the GBA were suggested as well. Therefore, it is important for teachers and course designers to pay attention to these factors when they aim at employing the GBA in their English writing courses.

5.4 Recommendations for further research

1. The present study employed a one-group, pre-test post-test research design, which is considered a weak design because of the lack of a control group, and this led to uncontrolled-for threats to internal validity that may explain the results of the post-test. Thus, an experimental study with a control and experimental group with random sampling and assessment should be conducted in order to determine further the effectiveness of the GBA in improving students' writing ability.

2. Students' writing scores should be divided into three groups according to their writing ability: high, middle, and low. Then, a comparison of the writing achievement of students (pre-test and post-test scores) should be conducted in order to see the extent to which each group improved its writing ability. Qualitative studies should also be carried out with each group in order to explore further the effects of the course on the individual factors, such as suitable activities for each group and attitudes and

engagement toward the course so as to shed more light on the effects of the GBA with different groups of students.

3. As peer review and providing feedback from teachers are among the most important factors influencing the writing achievement of students, exploring students' attitudes and reactions to peer review, and also the teachers' feedback, should be conducted after the students have attended the present course. The results from the exploration will shed light on students' attitudes toward peer review, teacher feedback, and types of feedback in terms of whether they are valuable for students. With this information, teachers or course designers will be able to provide appropriate characteristics of peer review and teacher feedback according to the preferences of them.

4. As needs analysis is the important initial stage in developing courses, it is necessary to collect data from an appropriate sample size of subjects. Therefore, choosing an appropriate sample size of operational and managerial engineers, who were the subjects in this study, was important; the greater the number of subjects, the greater the reliability of the data. Moreover, the subjects should be recruited by using the random sampling method because this method is more likely to guarantee representativeness than other methods. Therefore, when the sample size is appropriate and subjects are recruited by using the random sampling method, it is possible to generalize the results of the needs analysis to other groups of individuals.

5. As it was found that the GBA is a valuable teaching method, it is interesting to develop more English courses based on the GBA. In the case of engineering students, speaking courses for engineering students based on the GBA should be developed so that engineering students can see what people in the engineering community communicate with each other. In addition, more English courses developed based on the GBA should be designed for students in other fields such as business, medical, and tourist students because those students are also ESP students. They should know and understand language skills that are used by people who work in different professional communities. Therefore, teachers should prepare them to meet the professional requirements once they graduate.

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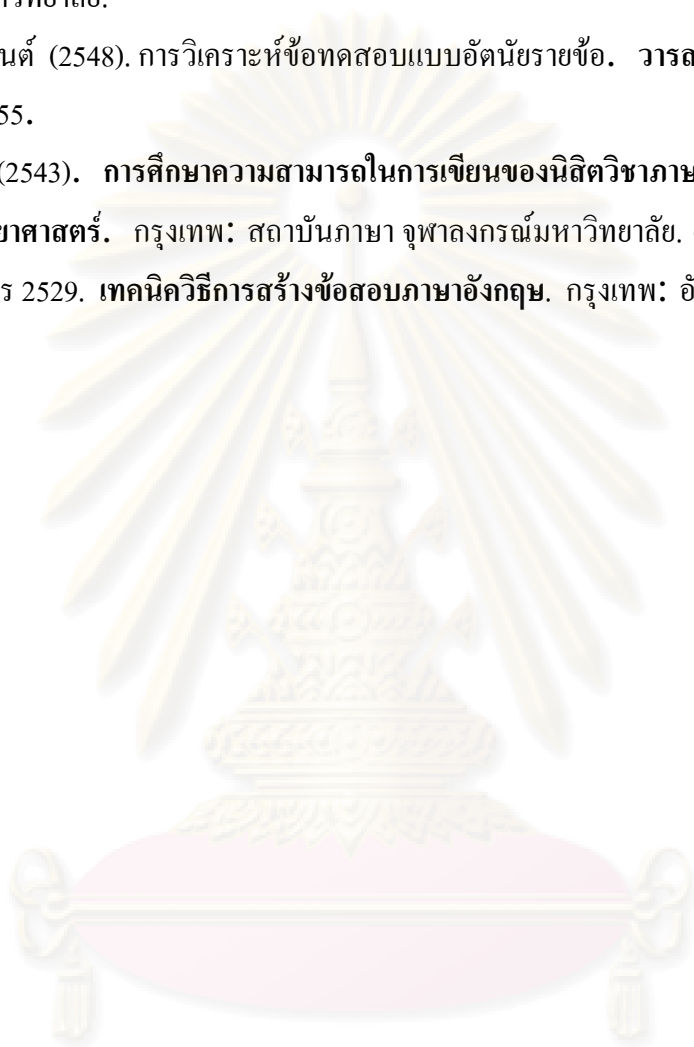
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วิทยาศาสตร์.** กรุงเทพฯ: สถาบันภาษา จุฬาลงกรณ์มหาวิทยาลัย. (เอกสารอัดสำเนา).

อัจฉรา วงศ์โสธร 2529. **เทคนิควิธีการสร้างข้อสอบภาษาอังกฤษ.** กรุงเทพฯ: อักษรเจริญทัศน์.



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Appendices

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Part II: Problem areas in writing English in general, types of genre in engineering contexts, and problems in writing associated with types of genre in engineering contexts

Instructions: Please put / in the space given

- 5 means a very important problem
 4 means important problem
 3 means quite an important problem
 2 means not so important a problem
 1 means no problem at all

2.1 Please identify problem areas in writing English in general.

Problems in writing	Scale					For researcher	
	5	4	3	2	1		
1. Vocabulary							
2. Grammar							
3. Structure							
4. Spelling							
5. Punctuation							
6. Writing procedures							
6.1 Outlining							
6.2 Searching							
6.3 Writing							
6.4 Editing							
7. Others							

2.2 Please identify importance of types of genre in engineering contexts and problems in writing associated with types of genre in engineering contexts.

Importance					Types of genre	Your problems in writing				
5	4	3	2	1		5	4	3	2	1
					1. complaint and adjustment					
					2. request and reply					
					3. inquiry and reply					
					4. memorandum					
					5. progress and problem-solving report					
					6. minutes of the meeting					
					7. agenda					
					8. informative note					
					9. others					

2.3 Please identify importance of knowledge of writing English in engineering contexts and Problems associated with knowledge of writing English in engineering context

Importance					Knowledge of writing English in engineering contexts	Problems of your knowledge of writing English in engineering context				
5	4	3	2	1		5	4	3	2	1
					1. Appropriateness in terms of relationship between reader and writer					
					2. Relevance between the content and context					
					3. Logical knowledge					
					4. Appropriate layout					

Part III: Opinions about developing an English writing course for engineers
Instructions: Please put / in the space given

- 5 means strongly agree
- 4 means agree
- 3 means neutral
- 2 means disagree
- 1 means strongly disagree

Opinions about developing an English writing course for engineers	5	4	3	2	1
1. Focus on the objectives of the course for engineering profession					
2. Focus on objectives of the course on academics					
3. Focus on vocabulary and grammar					
4. Use Thai in teaching					
5. Use English in teaching					
6. Use English more than Thai in teaching					
7. Use Thai more than English in teaching					
8. Ask students to do individual work					
9. Ask students to do group work					
10. Ask students to do pair work					
11. Focus on self-study					
12. Provide models of writing before doing exercises					
13. Point out necessary engineer work situations in writing and ask students to search for content to write themselves					
14. Edit their own writing and their friends' writing					
15. Practice writing from real situations					
16. Use commercial texts as teaching materials					
17. Use real documents as teaching materials					

18. Use transparencies					
19. Use VDOs as a teaching aid					
20. Use PowerPoint presentation as a teaching aid					
21. Use E-learning as a teaching aid					
22. Use exercises as an evaluation method					
23. Use writing tests as an evaluation form					
24. Use portfolios as an evaluation form					
25. Use group activities as an evaluation form					

Part IV: Suggestions and expectations for an English writing course for Engineers

Instructions: Please give comments, expectation, and/or suggestion on the English writing course for engineers.

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APPENDIX B

Interview questions for engineer

1. What is the writing format you often use: letter format or e-mail format?
2. What are the criteria to choose between formal and informal e-mail?
3. How do you show whether the e-mail is formal or informal?
4. How do you use language to show the relationship between readers and writers in different contexts?
5. If you have to write to people who are in a higher status, or work in other companies, what are you aware of?
6. If the reader is a foreigner, what do you pay attention? And Is there any differences between foreigners who are in America, Australia, Europe and Asia?
7. What kind of sentences do you normally use in your writing/
8. What kinds of vocabulary do you normally use (technical terms, semi technical terms or general vocabulary)?
9. Is the format of writing important or engineers?
10. What are writing problems of Thai engineers in your opinion?
11. What are engineer writing contexts and situations for writing request e-mails and enquiry e-mails?
12. What types of report writing do you normally use and what are your writing contexts and situations?
13. What sociolinguistic knowledge are you aware of when you write request e-mails, enquiry e-mails, and reports?
14. What writing tactics or strategies do you use when you write request e-mails, enquiry e-mails, and reports?
15. As a managerial engineer, what is your expectation on the writing quality of engineers? What are their writing problems?
16. In case of new engineers (graduate from a Thai institute), what is their writing competence? What do you want from universities to prepare engineering students to work in the future?

APPENDIX C

Planning and designing test, test items, scoring scheme

1. Planning and designing test

Test specification information:

1.1 The purpose of the test

The test aims at examining ability in writing English necessary for working as an engineer (background, textual, functional, sociolinguistic, grammar, and word choice knowledge) of undergraduate engineering students who are enrolled in the English Writing for Engineers course. The test is an achievement test in order to determine whether students have achieved the objectives of the course.

1.2 Characteristics of the test takers

There are 25 students who are enrolled in the English Writing for Engineers course at KMUTNB. They have passed the two fundamental courses: English I and II. There are both males and females.

1.3 Definition of the construct

(1) Background knowledge/ topic knowledge

Knowledge of how to provide information which is understandable, logical, and reasonable based on the background knowledge of engineer and following the prompt provided

(2) Language knowledge/ language ability

a. Pragmatic knowledge:

- Functional knowledge

Knowledge of how to state the purpose using accurate forms in each type of genre based on the writing situation.

- Sociolinguistic knowledge

Knowledge of how to state the purpose of writing using appropriate forms in each type of genre based on writing situations (e.g polite, formal, an informal).

b. Organizational knowledge:

- Textual knowledge

Knowledge of cohesion and knowledge of rhetorical organization: e-mail components (opening salutation, body, and closing salutation) and investigation report writing component (background of problem, containment, cause of problem, and countermeasure)

- Grammatical knowledge

Knowledge of mechanics, range of vocabulary, and word choices (using appropriate vocabulary, general vocabulary and technical vocabulary, based on the situations provided), morpheme, and syntax

1.4. Content of the test

(1) Organization of the test:

- a. *Number of task*: 3 tasks (3 items) 60 points (20 each)
- b. *Task types*: writing a request e-mail, a enquiry e-mail, and an investigation report following prompts
- c. *Response format*: writing in an e-mail form and a report form on separate answer sheets

(2) Time allocation: 2 hours

(3) Length of input data: 3 pages

1.5 Grading criteria

Analytic scoring is used as the grading criteria. The criteria cover the details of construct: background knowledge, sociolinguistic knowledge, textual and functional knowledge, grammatical knowledge, and word choices. Details of the scoring scheme are illustrated below.

1.6 Scoring

(1) Scoring plan: Each task performance is awarded separate scores

(2) Number of raters: Two (inter-rater)

(3) Rater Selection:

Rater no.1

- **Qualification**: M.A. in Language and Culture for Communication, Dip.in Applied Linguistics
- **Experience**: minimum 7 years in teaching courses relating to ESP

Rater no.2

- **Qualification**: PhD. in Applied Linguistics
- **Experience**: minimum 8 years in teaching courses relating to ESP

(4) Rater training: Assessors will be trained prior to test events.

(5) Rating procedure: Scores are marked on the answer sheet. Assessors work independently.

(6) Rating conditions: Both of the assessors will do their rating on the photocopied version of the answer sheets.

1.7 Plan for evaluating the qualities of good test practice:

Reliability: inter-rater (using correlation)

Validity: construct and content validity can be checked with the objectives of the lesson and construct of the test by experts and the researcher of the study.

1.8 Test task details

(1) Scores: 60 points (20 each)

(2) Purpose: To directly evaluate test takers' ability to write request e-mails, enquiry e-mails, and investigation reports

(3) Course Objective: objectives 1, 2, 3, and 4

(4) Item: 3 items (no. 1-3)

Item 1**Input***Prompt*

Feature of context

Setting	In a company in Thailand
Purpose	To write a request e-mail to a supplier in the USA
Tone	Explicit: formal
Language	Standard English
Problem identification	Implicit: a machine is broken down

Input data

Format	Prompt
Vehicle of delivery	Written

Expected Response

Format	Written
Response content language	Clear, understandable, and appropriate content with appropriate request e-mail organization
Background knowledge	Explanation of a machine which is broken down
Level of authenticity: situation	common situation in engineering work

Interaction between input and response

Reactivity	Non-reciprocal
Scope	Narrow: based on prompt
Directness	Moderately: must use information based on the prompt together with background knowledge in the engineering field

Item 2**Input***Prompt*

Feature of context

Setting	In a company in Thailand
Purpose	To write an enquiry e-mail to ask questions
Tone	Explicit: informal
Language	Standard English
Problem identification	Explicit: asking questions based on the prompt given

Input data

Format	Prompt
Vehicle of delivery	Written

Expected response

Format	Written
Response content language	Clear, understandable, and appropriate content with appropriate enquiry e-mail organization
Background knowledge	Technology knowledge
Level of authenticity: situation	common situation in engineering work

Interaction between input and response

Reactivity	Non-reciprocal
Scope	Narrow: based on prompt
Directness	Narrow: must use information based on the prompt

Item 3*Prompt*

Feature of context

Setting	In a company in Thailand
Purpose	To write an investigation report
Tone	Explicit: formal
Language	Standard English
Problem identification	Implicit: there is a stain problem with a product

Input data

Format	Prompt
Vehicle of delivery	Written

Expected response

Format	Written
Response content language	Clear, understandable, and appropriate content with appropriate investigation report organization
Background knowledge	Explanation of the cause of the problem and its solution
Level of authenticity: situation	Fairy: common situation in engineering work

Interaction between input and response

Reactivity	Non-reciprocal
Scope	Narrow: based on prompt
Directness	Moderately: must use information based on the prompt, with background knowledge in the engineering field

1.9 Target Language Use (TLU) situations and tasks

TLU situations	TLU tasks	Assessment(construct)	Items no.
1. Writing a request e-mail to a supplier in the USA	1. Writing a request e-mail to a supplier in the USA to ask for their technical suggestion to fix a machine since the machine has broken down	1. Background knowledge 2. Language knowledge 2.1 Grammar knowledge 2.2 Textual knowledge 2.3 Functional knowledge 2.4 Sociolinguistic knowledge	1
2. Writing an enquiry e-mail between two engineers	2. Writing an enquiry e-mail to ask questions	1. Background knowledge 2. Language knowledge 2.1 Grammar knowledge 2.2 Textual knowledge 2.3 Functional knowledge 2.4 Sociolinguistic knowledge	2
3. Writing an investigation report to the head of the department	3. Writing an investigation report to the head of the department about a stain problem, its cause, and the countermeasure	1. Background knowledge 2. Language knowledge 2.1 Grammar knowledge 2.2 Textual knowledge 2.3 Functional knowledge 2.4 Sociolinguistic knowledge	3

2. Test items 1-3

1. Situation: You are an engineer at Amano in Thailand. One of your machines, KBW257, has broken down, and production has stopped. You have to contact a supplier in the USA whom you have never contacted before.

Instruction: Write an e-mail to a supplier in the USA to request urgent technical suggestion to fix the machine. Make sure you provide

- details of the machine's problem (such as which parts of machine, its noise, speed, etc.)
- what you have done so far to solve the problem yourself
- Information to convince the recipient to take action immediately

Use the information provided below to help you write the e-mail.

The Details of the machine.

PS serial number: jygf8741

Tap setting:

1. #**2697845

2. #**125836

Don't write more than 100 words.

(20 points)

2. Situation: Your name is Piyapong. You are a product engineer for a machinery company in Thailand. You are a friend of a regional application engineer (Philip Andrew) who works in the same company in Malaysia. You have known him for many years and is quite close to him. He regularly sends your e-mails to ask you to test samples for him. Now you are testing the samples of the latest project, and you have to send him back the results.

Instruction: Write an e-mail to Philip Andrew to tell him the current status of your work and ask him questions using the information given below.

Information:

1. whether or not Philip needs hardware attachments for the samples requested
2. the place and location to send the samples
3. the number of pads for shear test data
4. ask one more question you think is important to this e-mail using your own idea

Don't write more than 100 words.

(20 points)

3. Situation: You are a process engineer. You work at a steel company in Thailand (NSA). The customer (FMP) returned a product, hot roll steel sheet, to your company because of a *stain* (รอยเปื้อน) on it.

Instruction: Write an investigation report to your boss. Be sure to include:

- the information about the problem (stain) such as its color, size, and position of the stain, roughness, etc.;
- its possible cause; and
- a way to solve the problem. Use the information below to help you find out the cause of the problem and write the report.

(1) The details of the product (a hot roll steel sheet):

Product: problem coil number 1459823 and 1459862
Product size = 1.6*1219 mm

(2) The cause of the stain can be one of the four stages of the process of pickling and oil coating a hot roll steel sheet (see no. 3 below). Think of a possible cause of the stain and a way to solve the problem based on your background knowledge. Don't worry whether your solution is correct or not.

(3) The process of pickling and oil coating a hot roll steel sheet involves 4 stages as follows:

1. Pickling (by acid)
2. Rinsing (by water)
3. Drying (by blowing)
4. Coating (with oil)

Don't write more than 100 words.

(20 points)

3. Scoring scheme

score	Background knowledge	Textual knowledge and Functional knowledge	Sociolinguistic knowledge	Word choices	Grammatical knowledge
4	has relevant, clear, logical, and complete content based on the prompts provided	all necessary moves are made; demonstrate knowledge of function of the required move explicitly	has appropriate or mostly appropriate language and expression for the purpose of each move and writing situations e.g register, contexts and situations	effective use of wide variety of lexical items; word form mastery	shows excellent language use (e.g. a variety of sentence structures); contains no major grammatical errors , but may contain some minor errors
3	is relevant and clear or/and misses a few parts of the content based on the prompts provided	misses some minor necessary moves , but the text is still logical and clear; demonstrates a great amount of knowledge of function of the required move	has many appropriate languages and expressions for the purpose of each move and writing situations e.g register, contexts and situations	Variety of lexical items with some problems but not causing comprehension difficulties; good control of word form	has varied sentence structures ; contains few major grammatical errors and/ or several minor errors
2	somewhat relevant, clear but misses some parts of the content based on the prompts	misses a few major necessary moves which make the text lack clear meaning, demonstrates quite limited knowledge of function of the required move	has rather limited appropriate language and expression for the purpose of each move and writing situations, e.g register, contexts and situations	a limited variety of lexical items occasionally causing comprehension problems; moderate word form control	contains several major and minor grammatical errors

1	is unclear or/and misses several parts of the content based on the prompts provided	Few moves are clearly made, demonstrate limited or no knowledge of function of the required move	has very limited appropriate language and expressions for the purpose of each move and writing situations, e.g register, contexts and situations	a limited variety of lexical items; poor word form control	contains too many major and minor grammatical errors for clear meaning
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APPENDIX D

Course Structure

Details of English writing for Engineers course

Goal

By the end of the course, students will be able to write request and enquiry e-mails, including investigation reports with appropriate use of language.

1. Course objectives

By the end of the course, the students should be able to:

1. write request e-mails appropriately in the engineering social contexts
2. write enquiry e-mails appropriately in the engineering social contexts
3. write investigation reports appropriately in the engineering social contexts
4. edit their own written texts

2. Course structure

The English Writing for Engineers course is developed for undergraduate engineering students at King Mongkut's University of Technology North Bangkok. It is an elective course under the English for specific purposes course. It is a 17-week course which was taught three hours per week. It is a three-credit course. The course structure is as follows:

Course title: English Writing for Engineers

Status: Elective course

Students who passed the fundamental courses, English I and II, can enroll in the course.

Pre-requisite: English I and II

Credit: 3 (3-0)

3. Course description

Forms, organization, and how to compose various types of written engineering texts. The topics include request e-mails, enquiry e-mails, and investigation reports. Vocabulary relating to the topics and appropriate use of language depending on levels of formality.

4. Course contents

The course consists of three units: writing request e-mails, enquiry e-mails, and investigation reports.

5. Writing achievement criteria (During and at the end of the course)

Unit test (formative tests)

Homework (pair work and individual work)

Final exam (summative test)

6. Lesson plans (See appendix E)

APPENDIX E (Sample of a lesson plan)

Unit 1: Request E-mail Writing (5 sessions)

Learning objectives

By the end of this unit, the students should be able to:

1. write request e-mails appropriately in the engineering social context
2. edit their writing texts

Lesson 1.1: Request E-mail Writing

Stage 1: Building the context

Note: CW is class work, GW is group work, IW is individual work

Duration	Topic	Language/ skills Focus	Performance objectives	Activities	Materials	Assessment
10 mins	1. Warm-Up	-	Students will be able to 1. think about their background knowledge in terms of request e-mail writing	Class discussion	-	1. Showing their opinion
20 mins	2. Introducing to request e-mail writing	Vocabulary, Reading	1. identify the characteristics and format of request e-mail writing 2. guess the meaning of vocabulary 3. comprehend the message of request e-mails	1. Rearranging the e-mail parts ^(GW) 2. Skimming and scanning for comprehension ^(GW)	1. Request e-mail No.1	1. Identifying the characteristics and format of request e-mail. 2. Guessing the meaning of vocabulary 3. Answering comprehension questions

Teaching procedures: warm up

1. Teacher asks students questions:
 - Have you ever seen or written a request e-mail before?
 - How do you know whether it is a request e-mail?
2. Teacher writes down the students' answers on the board.

Teaching procedures: introducing request e-mails

1. Students work in groups to rearrange parts of an e-mail and answer comprehension questions. (# *E-mail No. 1*)
2. Teacher elicits the answers from students and points out the language form, showing the request function in the sample.



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Lesson 1.2: Request E-mail Writing
Stage 2 Part I: Modeling and deconstructing

Duration	Topic	Language/skill Focus	Performance objectives	Activities	Materials	Assessment
1.30 hrs	Modeling part 1	Reading, move analysis	Students will be able to	1. Textual knowledge identification ^(CW) 2. Functional knowledge identification: move analysis (moves, steps, lexico-grammar, forms ^(CW) 3. Class discussion of sociolinguistic knowledge ^(CW) 4. Vocabulary review ^(CW) 5. Grammar review ^(IW)	1. Request e-mail Nos. 1A, 1B, and 2B 2. Exercise 1 : vocabulary 3. Move and Step list 4. Exercise2: request expression 5. Exercise 3: Vocabulary review 6. Exercise 4: Grammar review (past and present participle)	1. Identifying the components of request e-mail
			1. identify the components of request e-mail writing (textual knowledge: e-mail component)			2. Analysing moves
			2. analyze moves			3. Identifying appropriate language choices
			3. identify appropriate language choices in terms of polite, formal, and informal writing			4. Identifying the meaning of vocabulary
			4. identify vocabulary in various situations of request			5. Identifying language used in e-mail
			5. identify language used in the e-mail			

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Teaching procedures: stage 2 part 1

1. Teacher shows the complete version of e-mail No.1 again on the projector and asks the following questions. (# *E-mail No. 1*)

Questions:

- What is the relationship between them? (*colleague*)
- Do you think Chokchai is senior, junior or approximately equal to Brandon? (*junior*)
- What parts of the text indicate their relationship? (*opening salutation, Please forward/ If Chokchai is a senior or equal, it should use Dear Chokchai or Hi Chokchai instead. If Chokchai is a senior, it should use more polite request form such as I would be grateful if.....or Would you mind*)

2. Teacher asks students to read the two e-mail samples and asks questions. (# *E-mail Nos. 1B, 2B*)

Questions:

- Can you guess what is the relationship between the two engineers?
- Are they equal? How do you know?

3. Teacher points out the differences between two e-mails and explains that knowing the relationship between readers and writers is necessary. It helps the writers to use appropriate language.

Teacher explains: These two e-mails are different in terms of the relationship between the reader and the writer and this reflect the way they write. E-mail No. 1B shows that the writer knows the reader well. This can be seen from the opening and closing salutation, including the closing communication parts. Request form in e-mail No. 2B is more polite than e-mail No. 1B.

4. Teacher asks students to match the name of each move of a request e-mail with the e-mail component. (# *E-mail No. 1A*)
5. Teacher asks students to give their answer.
6. Teacher provides details of the body of e-mail request of engineers (list of move analysis) (six moves and steps of each move: opening salutation, establishing correspondence chain, introducing purpose, attaching documents, closing correspondence, closing salutation). (# **List of move analysis**)

7. Teacher points out the words ‘move’ and ‘step’ and their detail in e-mail No. 1A. (# *E-mail No. 1A*)

Teacher explains: According to the move analysis list, students will see explicitly the organization of e-mail but it is not enough. Students need to be aware of the language choices in terms of sociolinguistic knowledge (degree of formality, informality, and politeness) and language forms.

8. Teacher points out sociolinguistic knowledge, language form, lexico-grammar and writing tactics from e-mail No. 1 again (provide meaning and samples).



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Lesson 2: Stage 2 Part 2: Modeling and Deconstructing

Duration	Topic	Language/skill Focus	Performance objectives	Activities	Teaching Aids	Assessment
3 hrs	Familiarization	Move analysis	Students will be able to			
			1. analyze moves of request e-mail writing samples.	1. Move analysis (GW)	1. Request e-mail Nos.3, 4,5	1. Analyzing moves themselves.
			2. recognize and familiarize themselves with moves of request e-mail writing.	2. Move familiarization exercises (PW)	2. Worksheet Nos.1,2,3	2. Recognizing moves of request e-mail writing.
			3. identify using language choices in each move in terms of polite, formal, and informal situations.	3. Grammar review exercise (IW)	3. Exercise 1: introduction vocabulary exercise for e-mail no.3	3. Identifying language choice in each move in terms of polite, formal, and informal situations.
			4. create their writing strategies in different request situations.	4. Vocabulary review exercise (IW)	4. Move familiarization exercises (2,3,4)	4. Creating logical and reasonable writing strategies.
5. identify language knowledge used in each move	5. Sociolinguistic knowledge conclusion (GW)	5. Exercise 5: vocabulary review	5. Identifying grammar used in each move			
			6. Writing strategy brainstorming (GW)	6. Exercise 6: grammar review		
			7. Grammar identification brainstorming (GW)	7. Sociolinguistic conclusion form		
				8. Grammar knowledge conclusion form		
				9. Exercise 8: brainstorming		

Teaching procedures: stage 2 part 2

1. Students are asked to do introduction vocabulary exercise for e-mail No. 3.
(# *Vocabulary Exercise 1*)
2. Students work together in groups to analyze moves of request e-mail sample Nos. 3, 4, and 5. Use questions in the worksheet as a guideline to analyze relationship between reader and writer, writing context, purpose of each move, structural form: please..., sociolinguistic knowledge, writing strategy, and lexicogrammar: vocabulary, tense, (# *Email Nos. 3, 4, and 5 and Worksheet Nos. 1, 2, and 3*).
3. Teacher provides the correct answers for the three samples in e-mail Nos. 3, 4 and 5.
4. Teacher asks students to focus on language forms in each move in those emails. Teacher explains the purpose of using those language forms.
5. Teacher reviews grammar points which students can see from the result of the analysis if necessary (passive voice, tenses, modal, and if clause (fact)).
6. Students do more exercises to familiarize themselves with six moves of request e-mail. (# *Exercises 2-4*)
7. Teacher asks students to focus on language forms in each move in those emails. Teacher explains the purpose of using those language forms.
8. Students are asked to conclude the characteristics of moves.
9. Teacher asks students to do vocabulary review exercise 5 and grammar review exercise 6. (# *Exercises 5 and 6*)
10. Teacher asks students to gather language (in terms of sociolinguistics knowledge) in Move 1, Move 3 step 1, and Move 5, and fill that information in the form given (group work). (# *Sociolinguistic conclusion form*) The information is also divided into formal and informal forms.
11. Teacher provides more information of sociolinguistic knowledge in each move.
12. Teacher asks students to conclude grammar knowledge used in each move, especially in moves 2, 3, and 4 from exercises and e-mail explored previously.
(# *Grammar conclusion form*)
13. Teacher provides more information about grammar knowledge in each move.
14. Teacher asks students to create possible writing tactics or reasons they can use in order to make request provided stronger reasons according to various working situations and conditions. (# *Exercise 8*)

Lesson 3.1: Stage 3: Joint Negotiation

Duration	Topic	Language/ skill Focus	Performance objectives	Activities	Teaching Aids	Assessment
1.5 hrs	Joint Negotiation	Writing, Editing	Students will be able to			
			1. write request e-mails by negotiating in group	1. Write a request e-mail together in class and in groups (TW, GW)	1. Request e-mail No.6 2. Editing checklist 3. A situation for writing 4. Controlled writing exercises	1. Checking whether students can write a request e-mail together in group and in class
			2. edit request e-mails	2. Edit a request e-mail in group (TW)	Nos. 1 and 2	2. Checking whether students can edit a request e-mail

Teaching procedures: stage 3

1. Teacher shows a request e-mail sample and asks students to practice editing together in class. (*# E-mail No. 6*)
2. Teacher asks students to practice writing via controlled writing exercise. (*# Exercises 1, 2*)
3. Teacher asks students to write an e-mail together in class (Situation: investigate the cause of a problem). (*# Situation 1*)
 - Teacher asks students to use their move analysis list mentioned previously to brainstorm and outline their request e-mail in groups. (thinking of writing context, organization of an e-mail, required moves following the prompt for the situation). (*# Situation 1*)
 - Teacher asks each group of students to present their idea and teacher gives them feedback.
 - Students adjust their outlines.
 - Teacher shows a guided outline and writes an e-mail according to the outline using the think aloud technique. Students will see how to transfer the outline to a complete e-mail.
4. Teacher shows the e-mail checklist on the projector and asks students to check the writing through the checklist.
5. Teacher asks students to write another e-mail request in groups by using their group outline (first draft). (*# Situation 1*)
6. Students exchange their work for group editing. (*# E-mail writing checklist*)
7. Each group revises their work and submits it to the teacher.
8. Teacher gives each group feedback on their writing.

Lesson 3.2 : Request e-mail writing
Stage 4: Independent Writing

Duration	Topic	Language/ skill Focus	Performance objectives	Activities	Teaching Aids	Assessment
1.5 hrs	Independent writing	Writing, Editing	Students will be able to 1. write request e-mail individually 2. edit request e-mails	1. Listen to a conversation ^(CW) 2. Write a request e-mail in pairs ^(PW) 3. Write a request e-mail individually ^(IW) 4. Edit a request e-mail in pairs and individually ^(IW, PW)	1. Tape script No.1 2. Situation Nos.2 and 3 3. Editing checklist	1. Understanding the conversation. 2. Writing a request e-mail in pair and individually 3. Editing a request e-mail

Teaching procedure: stage 4

1. Students work in pairs to listen to a conversation and answer the comprehension questions. The information from the conversation leads to writing e-mail situation (# *Tape script No. 1*)
2. Students write a request e-mail following the information from the conversation and the prompt provided in pairs: brainstorming, outlining, receiving feedback (from Teacher), revising the outline, writing (first draft), editing their work (use editing checklist), revising, peer editing with other groups, revising their work, receiving feedback from the teacher. (# *Situation 2*)
3. Students write a request e-mail on their own using the same procedure (planning, outlining, drafting, editing, and revising). (# *Situation 3*)
4. Each student edits his/her own work. Then, they revise their writing.
5. Students are asked to exchange their written work with friends to do cross-editing.
6. Teacher gives them feedback and talks about progress on their writing

Stage 5: Comparing

Duration	Topic	Language/ skill Focus	Performance objectives	Activities	Teaching Aids	Assessment
30 mins	Comparing	Comparing request e-mails with other types of written texts	Students will be able to 1. compare moves of request e-mail with other written works	1. Compare a request e-mail with a wedding invitation card ^(TW)	1. Situation information (worksheet No.3, wedding invitation card from the second session)	1. Checking whether students can compare moves between writing request e-mail and an inviting wedding card

Teaching procedures: stage 5

1. Teacher talks about students' writing work from the last session.
2. Teacher reviews details of moves of writing request e-mail and then reviews move analysis of wedding invitation mentioned previously.
3. Teacher asks students to compare the differences and similarities in moves between request e-mail and wedding invitation.



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APPENDIX F
Attitude questionnaire

Part I: Previous experience before attending the English for Engineers course

1.1 What kind of English writing texts have you written before attending the English for Engineers course?

Instruction: Please tick (/) in the brackets below. You can choose more than one type of genres.

- 1. diaries
- 2. journals
- 3. letters
- 4. summaries
- 5. reflections on assigned readings
- 6. short answers to comprehension questions
- 7. short messages
- 8. essays
- 9. others please specify.....

1.2 What is the length of the written work you have written before attending this course?

- 1. about 1 paragraph
- 2. more than one paragraph
- 3. an essay

1.3 What did you feel about English writing before attending this course?

- 1. I really liked it because
- 2. I liked it because
- 3. I wrote it because it had to write and sometimes I was forced to write.
- 4. I did not like much because
- 5. I did not like it at all because

1.4 Was writing English difficult before attending this course?

- 1. very difficult
- 2. difficult
- 3. not so difficult
- 4. not difficult at all

Part II: Attitude after attending the English for Engineers course

Instruction: Please tick (/) in the blanks in each item.

- Score 5 means strongly agree
- Score 4 means agree
- Score 3 means neutral
- Score 2 means disagree
- Score 1 means strongly disagree

Content	Level of attitude				
	5	4	3	2	1
Objectives and contents of the course					
1. Course objectives are suitable.					
2. Contents of the course in general are interesting.					
3. The difficulty level of the contents of the course suits my English background knowledge.					
4. Contents of the course in general are suitable for the teaching session (3 units for twelve sessions)					
5. Contents of the course meet my expectation.					
6. Contents of the course match the objectives of the course.					
7. The content of the course can improve my writing ability in order to work as an engineer in the future.					
Teaching methodology and activities					
8. There is a wide variety of activities and exercises.					
9. Activities and exercises in each unit can improve my writing ability in each type of genre.					
10. Activities and exercises of each unit in general are suitable.					
11. Activities and exercises of each unit are suitable for my English background knowledge.					
12. The teaching method of having students analyze samples of written texts and then asking students to practice writing in class, in pair, in groups, and individually are suitable.					
13. I like studying with friends in a group.					
14. I learn and improve my writing ability through studying in a group.					
15. Studying through analyzing samples of genre before the independent writing stage helps me to write well.					
16. I learn how to write from pair work.					
17. I feel uncomfortable when studying in a group.					
18. I like the stage of independent writing.					
19. I think that practicing writing in a class is necessary.					
20. I can write because I understand and remember the genre analysis results.					
21. Awareness of the relationship between the reader and the writer helps me use language appropriately.					
22. Practicing thinking and using writing strategies are useful because it helps the writer plan writing organization and its details appropriately.					

23. This course provides enough opportunities to write.					
24. This course is learner-centered because students learn by doing activities and exercises themselves.					
25. I like the way that the teacher provides broad instruction because students are free to create the details of what they want to communicate.					
26. The stage of genre analysis is difficult.					
Teacher					
27. The course contents and teaching aids are prepared suitably.					
28. Her teaching methodology helps students understand the lessons easily.					
29. Teacher is friendly and has a good relationship with students					
Evaluation					
30. Explaining the evaluation criteria before evaluating writing achievement is suitable.					
31. The evaluation criteria are clear and suitable.					
32. Editing our own writing and our friends' writing is suitable.					
Writing achievement					
33. After attending this course, I still think that English writing is very difficult.					
34. I think that I can write English better.					
35. I feel confident in working as an engineer in the future.					
36. I'm sure that I will face difficulty in writing in the future.					
Additional comments and suggestions					
37. I'd love to recommend this course to my friends.					
38. I think that this course is useful for working as an engineer in the future.					
39. I think that it is good if we have group changing after each unit.					
40. When I come across other genres, I think that I can apply what I learn from this course to write different types of genre.					

Part III: Attitudes and suggestion about the course

Instruction: Write your attitudes and suggestion about the course.

.....

.....

.....

.....

APPENDIX G

Student logs

Instruction: Write down your attitudes and suggestions for the English for Engineers course in response to the items below.

1. Are the objectives of each lesson suitable? Do they need to be improved? How? (To verify questionnaire item1)
2. Are the course contents suitable? Do they need to be improved? How? (To verify questionnaire items 2-7)
3. Are the five stages of teaching (teaching and learning cycle) suitable? Do they need to be improved? How? (To verify questionnaire items 8-26)
4. Which teaching activities do you like or do not like at each teaching stage? Why? (To verify questionnaire items 8-26)
5. Is it difficult to do the move analysis activities? Is the move analysis suitable for engineering students? (To verify questionnaire item 26)
6. What are the strength of the teacher? For example, speaking, explanation and what should she improve? (To verify questionnaire items 27-29)
7. Are the evaluation criteria suitable? Do they need to be improved? How? (To verify questionnaire items 30-32)
8. How do you feel about writing in English after studying this course? Do you think you can write better? (To verify questionnaire items 33-36)
9. Do you feel confident in writing now? (To verify items 33-36)
10. Overall, what do you like about this course? What are the outstanding aspects of this course? (To verify items 1-40)
11. What are the aspects of the course that should be improved? (To verify questionnaire items 1-40)

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APPENDIX H

Interview Questions

1. Are the objectives of each lesson suitable? Do they need to be improved? How? Which one do you like most or least? Why? (To verify questionnaire item 1)
2. Are the course contents suitable? Do they need to be improved? How? (To verify questionnaire items 2-7)
3. Is the difficulty level of the course suitable? (To verify questionnaire item 3)
4. Do you think teaching through the GBA suits the engineering context and engineering students? Why? If not, what are the obstacles? What is better than this? (To verify questionnaire items 8-26)
5. Do you think that five teaching stages are suitable? Do they need to be improved? What are the problems? Which activities do you like most or least? (To verify questionnaire items 8-26)
6. Do you think that you have learned how to write from group work? How about the teacher; how much have you learned from her? (To verify questionnaire items 8-26)
7. Do we need to change the group at the end of each unit? If not, when should we change it? (To verify questionnaire items 8-26)
8. What are the strengths and weaknesses of the teacher? (To verify questionnaire items 27-29)
9. Are the evaluation criteria suitable? Which ones do we need to improve? Why? (To verify questionnaire items 30-32)
10. Is it suitable to inform the students about the evaluation criteria before doing the test? (To verify questionnaire items 30)
11. After attending the course, do you still think that writing is difficult? (To verify questionnaire item 33)
12. Has your writing ability improved? What genres can you write well at present? (To verify questionnaire items 33-35)
13. Do you feel more confident about writing in English? How? Why? (To verify questionnaire item 35)
14. What are the benefits of this course? What should be improved? (To verify questionnaire item 1-40)
15. If you come across other genres when you are working in the future, do you think you can analyze those genres yourself? Will you write those genres? (To verify questionnaire question 33-36)

APPENDIX I Normal Distribution

Pretest

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 8	1	3.8	3.8	3.8
13	1	3.8	3.8	7.7
15	1	3.8	3.8	11.5
17	1	3.8	3.8	15.4
17	1	3.8	3.8	19.2
19	1	3.8	3.8	23.1
22	1	3.8	3.8	26.9
25	1	3.8	3.8	30.8
26	1	3.8	3.8	34.6
27	1	3.8	3.8	38.5
27	3	11.5	11.5	50.0
28	1	3.8	3.8	53.8
28	2	7.7	7.7	61.5
29	1	3.8	3.8	65.4
30	1	3.8	3.8	69.2
31	1	3.8	3.8	73.1
31	1	3.8	3.8	76.9
32	1	3.8	3.8	80.8
33	1	3.8	3.8	84.6
35	1	3.8	3.8	88.5
38	1	3.8	3.8	92.3
38	1	3.8	3.8	96.2
40	1	3.8	3.8	100.0
Total	26	100.0	100.0	

One-Sample Kolmogorov-Smirnov Test

		Pretest
N		26
Normal Parameters ^{a,b}	Mean	26.43
	Std. Deviation	7.884
Most Extreme Differences	Absolute	.171
	Positive	.076
	Negative	-.171
Kolmogorov-Smirnov Z		.869
Asymp. Sig. (2-tailed)		.436

a. Test distribution is Normal.

b. Calculated from data.

APPENDIX J

Summarizing of lexico-grammatical features (investigation report, request e-mail, and enquiry e-mail)

1. Investigation report

Move 1 Step 1 (Statement of the problem: identifying information)

Grammar or linguistic features

<p>1. <u>A</u> informed <u>B</u> <i>of</i> ____N.____.</p> <p>e.g. <u>Customer</u> informed <u>AAA</u> <i>of</i> an oil stain problem on AAA pickling material.</p>
<p>2. Passive voice</p> <p>e.g. <u>A</u> is torn.</p> <p><u>A</u> is stuck.</p>
<p>3. Present simple tense</p> <p>e.g. <u>A</u> is bigger than B.</p> <p><u>A</u> are out of order.</p>
<p>4. <u>A</u> informed <u>B</u> <i>that</i> <u>sentence</u>.</p> <p>e.g. <u>A</u> informed <u>B</u> <i>that</i> they found under-pickling problem.</p>
<p>5. They found that <u>sentence</u>.</p> <p>e.g. We found that <u>the current exceeded the maximum point</u>.</p>
<p>6. Noun</p> <p>e.g. Mistake on shipment, Dark surface problem</p>
<p>7. Present perfect tense</p> <p>e.g. AAA has been informed of a rust problem occurring on ____.</p>

Lexicon

1. Words for identifying problem

Adjectives: e.g out of order, defective, short

Nouns: e.g mistake, defect

Verbs: e.g tear, burn, damage

2. Verbs introducing identifying problem

e.g find, inform

Move 1 Step 2 (Statement of the problem: providing information)**Grammar or linguistic features****Present simple tense**

e.g. The problem coil number is 12587

Lexicon**Verbs explaining information**

Verbs: verb to be (is, are, was, were)

Move 2 Step 1 (Investigation process: identifying the cause of problem)**Grammar or linguistic features**

1. X is/was caused by Noun.

e.g. The problem of dark surface is caused by the different heat level.

2. The possible root cause is Noun.

e.g. The possible root cause is interference between the carpet sock and the pivot.

3. X may result from Noun.

e.g. The problem may result from some grease drops.

4. The root cause seems to be Noun.

e.g. The root cause seems to be the over consumption of current.

5. It can be concluded that the root cause of problem is Noun.

e.g. It can be concluded that the root cause of the problem is the damage of containers.

6. Past simple tense

e.g. The operators did not check the spring of the Jector pin by... Therefore, they did not see that the Jector spring was cut.

7. The problem were resulted from _____

8. The root cause is that sentence.

e.g. The root cause is that the working area is not planned properly.

9. Noun is the cause of the problem.

Lexicon**Words for identifying cause**

Nouns: e.g root cause, cause of problem, possible root cause

Verbs: e.g was caused by....., result from....., root cause seems to be....., to be resulted from

Move 2 Step 2 (Investigation process: investigation in action)**Grammar or linguistic features**

1. AAA has investigated _____ by <u>Noun</u> . e.g. AAA has investigated the surface by using scanning.
2. Present simple tense e.g Operators check work pieces and there are no mistakes.
3. Past simple tense e.g. An operator did not check KC and record the results on the card. The scale layer <u>could not be removed</u> by pickling with acid. A <u>investigated</u> the cause of the problem by _____.

Lexicon**Verbs denoting investigation process**

Verbs: e.g check, inspect, investigate

Move 3 Step 1 (Countermeasure: permanent countermeasure)**Grammar or linguistic features**

1. Present perfect tense e.g. AAA has increased the coating oil.
2. Future simple tense e.g AAA will install a pressure switch and an alarm system.
3. Modal e.g. The working area must be arranged better as follows:
4. The permanent action is that <u>sentence</u> . e.g. The permanent action is that the supplier will increase _____.
5. Instruction form e.g. check all the process again.

Lexicon**Words for countermeasure**

Verbs: e.g change, decrease, prevent, follow, explain

Nouns: permanent countermeasure, measure, permanent action

Move 3 Step 2 (Countermeasure: immediate countermeasure)**Grammar or linguistic features**

1. <u>A, B, C</u> were done as the intermediate countermeasure after the problem was found. e.g. Resorting, rechecking and reworking were done as the intermediate countermeasure after the problem was found.
2. Present continuous tense e.g. We are installing some fuses into the board to protect the sockets from over current.
3. Future simple tense e.g. The pipe will be changed as soon as possible.
4. Containment action: instruction form
5. The intermediate countermeasure was done with <u>Noun</u> . e.g. The intermediate countermeasure was done with 100 % check at GM.

Lexicon

Words for intermediate countermeasure Nouns: containment, intermediate countermeasure Verbs: change, replace, send

2. Request e-mails**Move 1** (Opening salutation)**Lexicon**

Opening address: e.g Dear sir, Hello, Dear Mr.

Move 2 step 1 (Establishing correspondence chain: referring to previous events or contacts)**Grammar or linguistic features**

Past simple tense e.g. As discussed in the meeting last week, _____. Referring to your mail dated _____, _____. Regarding the request from _____, _____. You visited the AAA booth and discussed about _____.
--

Lexicon**Phrases referring to previous events**

e.g. As discussed, Referring to, Regard to, With reference to

Verbs: e.g. discuss, request

Move 2 step 2 (Establishing correspondence chain: introducing themselves)**Present simple tense**

e.g. My name is _____. I work as an engineer for _____ in the department of _____.

Move 3 step 1 (Introducing purposes: requesting)**Grammar or linguistic features**

Please + verb 1

Could you please + verb 1

I was wondering if _____.

I need your help with _____.

I would like you to _____.

Lexicon**Words for requesting**

Verbs: confirm, send, provide, decide, check, forward

Modal (show politeness): could, would, would like

Move 3 step 2 (Introducing purposes: providing information)**Grammar or linguistic features****Present simple tense**

e.g. Our designer needs the information today.

Present perfect tense

e.g. I have recommended that shop floor change the hardware.

Future simple tense

e.g. We will visit again.

Modal

e.g. AAA would like to work on developing a new product called super roof.

Lexicon**Words showing requesting**

Coordinating conjunction: e.g because, since

Move 4 (Attaching document)

More information is in the attached files.

This attached file is _____.

More information is attached.

For more information, please see the attachment.

Move 5 (Closing correspondence chain)

I'm waiting for your reply

If you have any question, please do not hesitate to call me.

Your early reply will be appreciated.

Feel free for any questions.

Enquiry e-mails

The linguistic features analysis results of enquiry e-mails are similar to that of request e-mails, except for move 3 step 1 (Introducing purposes: asking questions) concerning asking questions based on different situations and contexts. Asking questions need various forms of tense and structure. With these reasons, the linguistic features analysis results of enquiry e-mails are not presented here since they are the same as the analysis results of linguistic features of request e-mails. In addition, there are no specific forms and structures of asking questions. It depends on situations and contexts.

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Appendix K

Independent t-test results showing the inter-rater reliability of the pre-test and post-test

Item 1

	N	Mean	S.D	t
Teacher X	50	8.84	2.41	0.76
Teacher Y	50	9.22	2.59	

$p < 0.05$

Item 2

	N	Mean	S.D	t
Teacher X	50	10.76	2.73	1.01
Teacher Y	50	11.31	2.68	

$p < 0.05$

Item 3

	N	Mean	S.D	t
Teacher X	50	10.68	3.08	0.25
Teacher Y	50	10.51	3.25	

$p < 0.05$

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Appendix L

Independent t-test results showing the inter-rater reliability of the test used in the pilot teaching

	N	Mean	S.D	t
Teacher X	50	8.84	2.41	0.76
Teacher Y	50	9.22	2.59	

$p < 0.05$



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Appendix M

Inter-rater reliability of the student logs using independent t-test

	N	Mean	S.D	t
Teacher X	150	1.79	.688	.58
Teacher Y	150	1.75	.687	

$p < 0.05$



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Appendix N

Inter-rater reliability of the interviews using Sign test

Frequencies

	N
GTeacherY - GTeacherX Negative Differences ^a	2
Positive Differences ^b	0
Ties ^c	16
Total	18

a. GTeacherY < GTeacherX

b. GTeacherY > GTeacherX

c. GTeacherY = GTeacherX

Test Statistics^b

	GTeacherY - GTeacherX
Exact Sig. (2-tailed)	.500 ^a

a. Binomial distribution used.

b. Sign Test

p < .05

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Biography

Assistant Professor Piyatida Changpueng has been working as an English instructor for 10 years. She was born on January 1, 1974 in Saraburi. She graduated with a Bachelor's Degree in English from Srinakarinwirot University, Prasanmit Campus, in 1995 and a Master's degree in Language and Culture for Communication from Mahidol University in 1999. She received a scholarship to study for a post graduate diploma in Applied Linguistics at SEAMEO RELC, Singapore in 2004. At present, she is working in the Language Department, Faculty of Applied Linguistics at King Mongkut's University of Technology North Bangkok. Her areas of interest involve reading instruction, material design, genre-based approaches, learning autonomy, and, curriculum development in particular for engineering students.



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