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**Curriculum renewal pathways for English for Specific Purposes
Teachers**

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INTRODUCTION

In this study, I was initially influenced by the framework for English for Academic Purposes where Swales (1990a) identified the access routes for curriculum development: discourse communities; instructional materials and advice; genre; and language learning tasks. In my study, I selected the first three access routes. The studies reported the following:

- Workplace expectations of Thai engineers in the English language Perceived English language needs of Thai engineers
- The salient features of English that engineers encounter in the workplace settings
- The strengths and weaknesses of materials used with engineering students at RIT, Khon Kaen Campus
- The mismatches between texts engineers have to read and write in the workplace and texts in English classroom .

Table 1.1 A conceptual model for my studies

ACCESS ROUTES FOR CURRICULUM DEVELOPMENT		
DISCOURSE COMMUNITIES	DATA SOURCES	RESEARCH TOOLS
Primary target	Engineers in the workplace	Interview Survey
Secondary target	ESP teachers Engineering subject teachers Authoritative personnel	Interview
INSTRUCTIONAL MATERIAL & ADVICE	Materials used with engineering students at RIT KKC Curriculum guideline	Discourse analysis
GENRE	Workplace texts	Discourse analysis

Swales' framework enabled me to initially identify the key contexts of my professional roles and activities. Thus, I evaluate the access routes based on the data and research methods used in the three studies, and then I propose a procedural framework which ESP/EFL teachers can adopt for their own curriculum renewal process. I also discuss the pedagogical and professional implications arising from the study.

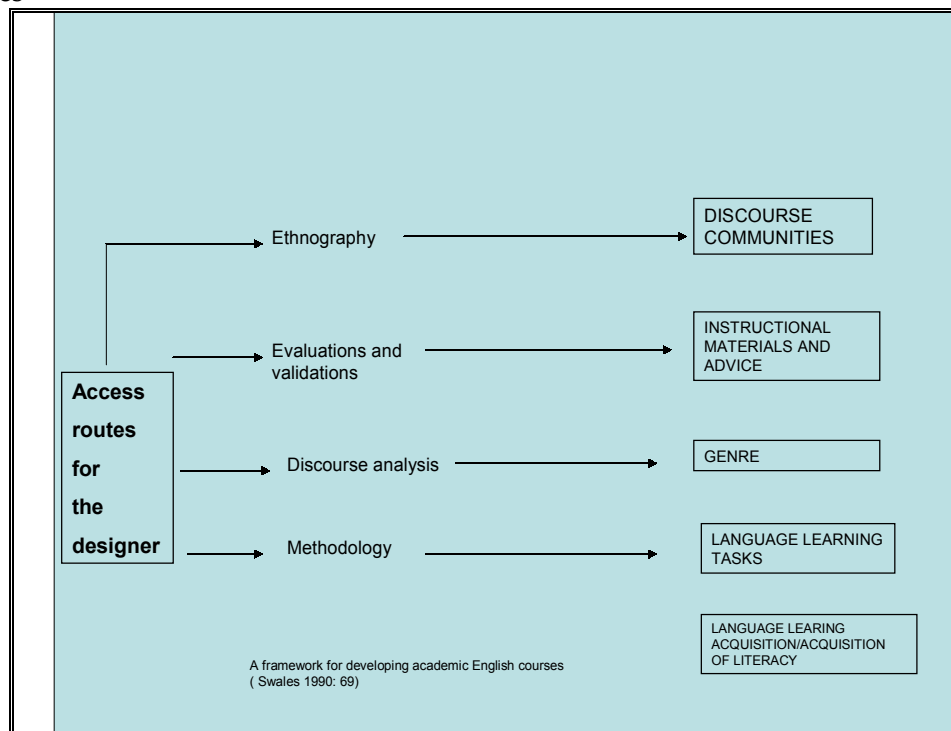
EVALUATION OF CURRICULUM RENEWAL PATHWAYS

The overall aim of my research was to examine the English language demands that language teachers could incorporate in RIT teaching programs and to design a curriculum framework for ESP teachers at RIT, KKC.

Using Swales access routes

Swales (1990a) proposed major access routes for those concerned with academic English programs to adopt for the realization of their curriculum objectives. His fourfold investigation strategy comprised ethnography, evaluations and validations, discourse analysis, and methodology. Figure 1 is the framework for developing academic English courses suggested by Swales (1990a)

Figure 1 A framework for curriculum development process for English for Academic Purposes



I selected the first three access routes of Swales' framework for my study: discourse communities, instructional materials, and genre. Swales suggested that there was no need to pursue several access routes simultaneously but that the researcher could choose one or more access routes depending which presented immediate opportunity for development, '...the routes are not ordered in any particular ways...there is no

presumption that exploring discourse communities should precede analysing genres or that genre analysis should precede the devising of tasks' (Swales 1990, p. 77).

The notion of discourse communities

Although communicative purpose identifies or determines a particular genre, central to establishing the purpose(s) of communicative events is the 'discourse community' in which communicative goals are acted out. Swales (1990a, p. 9) notes, '... genre belongs to discourse communities, rather than individuals'. Swales (1990a, pp. 24-27) defines a 'discourse community' as having the following six characteristics:

1. a broadly agreed set of common public goals
2. a mechanism of intercommunication among its members
3. a participatory mechanism used primarily to provide information and feedback
4. one or more genres that are used in the communicative furtherance of its aims
5. some specific lexis
6. a threshold level of members with a suitable degree of relevant content and discursal expertise.

Instructional materials and advice

The second aspect of my framework concerns the review of widely used instructional materials. I assessed the value of existing ESP materials by attempting to predict potential relevance and interest for learners. I used Littlejohn's framework (Littlejohn, 1998) to value teaching materials systematically in relation to their objectives for their intended learners. It can be applied, pre-, whilst-, or post-classroom use. Although I based my materials evaluation on Littlejohn's framework, I also conceptualised my evaluation as one of Swales' access routes (1990) for curriculum development.

Genre

My third analytic approach reflected Swales' (1990) genre access route. According to Swales, genre is a recognisable communicative event in which language plays a significant role in terms of its dominance and frequency. The purposes of a particular communicative event are not always easy to identify. Johns (1997) suggests that genre analysts need to be very careful when attributing a single set of communicative purposes to texts, writers or readers because of the complex nature of purposes of communicative events.

English for Specific Purposes

Nowadays, reasons for learning English have become more clearly defined. For example, English for Academic Purposes is a truly international phenomenon linked with the overall trend towards the globalisation of information exchange, communication and education (Flowerdew & Peacock, 2001, p. xv), and English generally is well established as the world language of research and publication. In Thailand, English is seen as a language for communicating with our neighbouring countries in the region, and Asian speakers of English are developing their own unique lingua franca. The needs analyses address workplace and teaching expectations (engineering and ESP) and learners' (as engineers and language users) needs, wants, and desires (Hutchinson and Waters, 1987).

EFL analyses in Thailand

Although English has a recognised place in Thai society, there has been no specific research into language features used in the engineering field, types of language skills, the level of competence required, and there has been no evaluation of language programs for engineering students (Pholsward, 1993). Consequently, commercial texts, British and American, are widely used with engineering students. Yet those texts have been criticised for their lack of empirical basis {Moudraya, 1999 #322}, since they cannot be relied upon to reflect students' actual needs because they are not based on linguistic evidence.

RESEARCH METHODOLOGY

Research orientation

The three studies examined the phenomenon of English language in two settings (workplace and educational) in order to learn more about English language teaching requirements. Given the nature of the research focus and the specific research questions, a qualitative paradigm was deemed more appropriate than an overall quantitative approach, which is usually best suited to studies concerned with hypothesis testing (Guba & Lincoln, 1998).

I adopted a constructionist epistemology whereby 'all knowledge, and therefore all meaningful reality as such, is contingent upon human practices being constructed in

and out of interaction between human beings and their world, and developed and transmitted within an essentially social context' (Crotty, 1998, p. 92). I am of the view that reality is also constituted in and through language as discourse, with the result that representations of reality are just representations which have become naturalised through lived experiences and ideologies. Therefore, I believed a constructionist paradigm would help me in working with the participants: engineers as professionals and students, subject teachers and language teachers.

Data collection and analysis

My research questions and processes are now presented and discussed. A summary of the three studies is presented in Table 1.

Table 1 A summary of three studies

Project	Sources	Aims	Tools
Project 1	Job advertisements	To find out what skills and knowledge were indicated in the job advertisements for engineering professions in Thailand	Content analysis
Project 2	Engineers Subject teachers English teachers Authoritative personnel	To determine the needs of English of engineers in the workplace and perceptions of educational stakeholders.	Questionnaire survey Semi-structured interviews
Project 3	Workplace texts Classroom texts	To investigate the patterns of English experienced by engineers in the workplace To evaluate the teaching materials currently used with engineering students at bachelor degree in RIT KKC To examine the relationship between the communication skills engineers require and skills in which they engage in their language study	Semi-structure interview A systemic functional model A principled framework for material evaluation

Evaluation of major research tools

Systemic functional Analysis

I used a systemic functional model (Halliday, 1994) to examine how engineering workplace texts operated in my chosen workplaces. This model enabled me to identify the common genres, communicative purposes and language features appearing in the workplace texts that these engineers in Thailand had to read and write.

The objective of a functional grammar model is to explain language in terms of what people do with the language and how people use the language in their lives (Halliday, 1994). Halliday's model proved extremely useful because I was able to focus on interpersonal, ideational, and textual meaning. Thus, I was able to document what resources engineers needed to interact and express opinions and attitudes in the workplace. I was also able to list some of the grammatical resources they need to talk about work processes or experience. Through Halliday's descriptions of Textual Processes, I was able to examine information flow and how engineers organised their communication effectively.

Register analysis enabled me to document the system of linguistics engineers could expect in their working contexts through the actual vocabulary and grammar choices they made. Halliday's system of Field, Tenor, and Mode (The varieties of register analysis) was very helpful: I was able to identify what engineers read and write about (Field); highlight the transactional, functional nature of their relationship (Tenor); and chart the channel of communication they used (Mode) and the Mood of their transactions.

Genre analysis

Two genre approaches were used in this study: an ESP approach and systemic functional linguistics. ESP programs aim to assist students to recognise and learn the patterns of language required in various academic and professional contexts (Bhatia, 1993; Dudley-Evans & St John, 1998; Johns, 1991; Swales, 1990a). The key feature of ESP is that the teaching and the materials should be founded on the results of needs analysis; in this study the analysis of texts that engineers have to produce or understand formed that basis. Genre analysis in this study included analysing the target situation, analysing models of specific genres and identification of grammatical patterns. I analysed the English language demands of the personnel in engineering workplace and compared these with students' current educational emphases. This means that I analysed examples of texts engineers have to read and write in the workplace and the course book used with engineering students at RIT KKC.

RESEARCH OUTCOMES

Access Route 1: Discourse communities

My studies involved three workplace settings (my primary target, see Swales, 1990) and one educational context. The three workplaces were as follows:

- Company 1 was a Thai-German venture managed by the Board of Investment, with the goal to become an international company with engineers able to use English.
- Company 2 was established under Thai-Indian co-operation, exporting to 40 countries. Employees were Thai, and Indians.
- Company 3 was a privately-owned Thai brewery, one of Thailand's largest, using imported technology from Germany and other countries and relying on English for its production protocols and maintenance.

My secondary target (cf. Swales 1990) which was the controlling discourse community (pp 68 - 69) was RIT KKC, my workplace where I interviewed language teachers and engineering teachers, and analysed an English course book used in the Institute and a related curriculum guideline.

Access Route 2: Instructional material and advice

This route was the analysis of a course book, Technical English 1 (01-320-003), designed for undergraduate engineering students at RIT KKC students at RIT KKC, the available advice provided for teachers in the course book, and curriculum guideline suggested by the Institute. In 132 tasks from the course book, the focus was largely on rules or patterns of language. Course book tasks aimed to assist engineering students to be familiar with the genres used in engineering contexts, so learners had to understand how to write instructions, and how to describe engineering processes. The language focus of each unit depended on the aim of each unit: that is whether it was focused on meaning or form. Although each unit included focus on form, less than half the tasks in the book (52) prioritised meaning. Some tasks required students to do more than one activity.

The range of structures in the course book introduced to engineering students in the English language classroom was limited compared to what engineers faced in workplace texts. Traditional grammar terms were introduced from Unit 1 of the course book to prepare students for reading and writing tasks they were expected to

do in their work. They included Sentence Structure, Word Structure Clues, Reference, Punctuation Marks, Discourse markers, and Context Clues.

Access Route 3: Genre

In my systemic functional analysis of the workplace texts I found that the most common types of workplace texts were reports, procedural texts, and memorandums. Engineers had to report jobs performed under their responsibilities; give instructions of jobs to be done with particular machines and in particular circumstances, give lists of machines to be serviced and how; request materials; inform on existing situations and request further action; and request goods and services from external companies.

Reports

Each company had a standard format for each type so after observing details and overall contexts of their work, engineers must be able to organise and present chunks of essential information sequentially. They needed to be able to describe equipment, time they spent in doing the tasks, machine failure and its causes, and future action required to avoid recurrences. The required language forms were varied depending on the company or the division. Essentially, however, engineers had to be able to fill in the information required in whatever format they encountered.

Procedures

Procedural templates were pervasive as a means of communication in the workplace, particularly in the form of job lists or checklists. Engineers had to read, perform the jobs, and fill out the forms in relation to the tasks involved. Most of the required information concerned the condition of the machine, and/or what was to be done during the work shift. Some procedural texts identified machine parts to be serviced and the departments responsible for the jobs. Sometimes engineers were instructed to carry out additional tasks.

Memorandums

'Memos along with the telephone, are the workhorses of communication within any organisation' (Batteiger, 1985, pp. 203-204) because they provide a fast efficient, unambiguous convenient way of exchanging information. They are also part of the decision making process in an organisation. The memorandums from these engineering workplaces functioned as requests. Writers provided background to the

request and this was followed by the request. The memos were directed to the higher rank position, using the appropriate politeness strategy in Thai, for approval and support. Sometimes the request was not engineering related but was company related, so engineers were also involved in non-technological work.

Clause structure in workplace texts

Clause types

I found that the process of breaking down the clause structures of workplace texts to find their constituent parts was quite problematic. As mentioned earlier, these English texts were written by non-native speakers, and there were grammatical inaccuracies and inconsistencies. However, 6 basic types of structures were found in the workplace texts. A summary of clause structures is shown in Table 2.

Table 2 A summary of clause structure found in the workplace texts.

Type	Constituent Parts
Type 1	Process + Participants
Type 2	Circumstances + Process + Participants
Type 3	Participants + Process
Type 4	Participants + Process + Participants
Type 5	Circumstances + Participants + Process + Participants
Type 6	Circumstances + Participants + Process + Circumstances

Clause analysis indicated that what engineers had to read or write as part of their daily work varied from simple structures to more complex structures with four constituent parts.

Processes

Most of the Processes in the workplace texts were Material Processes, which related to tasks that engineers had done or would do during their work shift. They related to maintenance jobs under their responsibilities, for example, *clean, check, change, keep, close, fill, prepare, send, install, find out, and modify*. Some Material Processes were written in passive voice.

Participants

Many of the nominal groups from the texts consisted of nouns with premodification and post modification. Some nominal groups were long and complex. Since all the words were used everyday and work related, they did not cause any difficulties. The

head nouns were names of machines or parts of machines that the engineers worked with or work processes. Nominal groups included *spout cooling line, inlet & outlet duct, inlet cone, emitting plate, primary conveyor sprocket*. Engineering workplaces are made up of equipment and locations which together form a unified whole; therefore items in the workplace are generally named according to their function, or relation to other items of technology. Comprehensive knowledge of the technology can take years to acquire as engineers gain experience in one task after another. Workplace texts, however, assume a high level of specialised field of knowledge.

Circumstances

Circumstances appearing in the texts were mostly related to manner, location, time, and cause respectively. When engineers read or wrote their workplace texts, they had to be able to understand or explain how, why, when and where processes occur. The Circumstances were vital for precise explanation.

Mood choices

Imperative structures in passive voice were common in the Instruction texts and reports respectively. Whereas, active imperatives were used in reports, passive imperatives were often used in written instructions. In reports, imperatives were used to recommend *Remedies* (in monthly reports), or fill in *future action required to avoid recurrences* (in Breakdown analysis reports); sometimes writers used passive imperatives to give instructions the readers.

Themes

Themes are elements which come first in the clause. Analysing the thematic structure of the texts clause by clause made clear the nature of their underlying concerns: the technology, and parts of technology that engineers had to concentrate on. Unmarked themes dominated the workplace texts. Marked themes were generally circumstantial.

Faulty parallelism

The texts collected included mixed tenses, voices, verbal and nominal forms, clauses with phrases or vice versa. Evidently language classroom emphasis on grammatical accuracy has not flowed into the workplace.

Summary

The comparative study of language features in engineering workplace texts and texts from the classroom make evident that there are some differences in the structures of

the texts from the two sources. While the emphasis of the ESP program was on reading extended discourse, engineers in the workplace seldom engaged in extended reading texts. Further, engineers in the workplace had to write for wider audiences. They wrote to supervisors, work colleagues, suppliers, or their customers to direct, report, inform, or request according to their job roles and positions. Whereas writing exercises in the course book required students to utilise a single rhetorical mode at a time for their work, engineers often had to combine modes and move from one mode to another.

REFLECTIONS

Pedagogical implications

The studies gave me the professional opportunity to reflect upon and assess the effectiveness of my own teaching experience of adopting externally constructed curriculum development processes and what would be the potential pedagogic use of a needs analysis framework. Constructing my research pathways, accessing ways for curriculum development suggested by Swales (1990), involved me in 'talking about, understanding, and directing the process' (Graves, 1996), and made me confront the need for teachers to develop the skills of 'teacher as curriculum developer' (Burton, 1987; Nunan, 1987).

Pathways to curriculum renewal process at RIT, KKC

I have learned that the focus and the sensitivity of teachers to the learners' needs and backgrounds and the effects of the environment in which they use English are fundamental in a curriculum renewal process. The results of my needs analysis in the three related studies demonstrate that engineers in the workplace have to use English as part of their work. Discourse communities, instructional materials and advice, and genre (three of Swales' access routes to curriculum development) will be useful in future curriculum and course development for ESP for engineers at RIT, KKC.

Teacher exploration of the discourse communities

For language practitioners in specialist workplaces, this study has confirmed that ESP practitioners need to broaden their perspectives beyond classroom practice. They need to step out into the field and disciplines of the contexts and communities that they are serving.

Workplace texts investigations using systemic functional linguistics

In order to produce course contents relevant to the students' needs, a corpus of workplace texts should be utilised in the classroom. I found systemic functional linguistic (SFL) analysis useful as a basis for using authentic texts in language teaching. The close comparison of workplace texts and materials used in language classroom illustrate how ESP teachers could assess and renew their own practice. By analysing authentic texts from the workplace and comparing them with texts from the classroom, teachers will have more bases for planning and designing language tasks and programs relevant to the needs of the students.

Professional implications

Teachers as researchers

In our situation, Thai teachers are not viewed as knowers, thinkers, or researchers. Teachers are always viewed as '**Teach-er**'. Teachers either do not undertake research, or they are excluded from determining the research agenda. Thai teachers are like teachers in other parts of the world where there is not a culture of teachers using research to inform their everyday school practice (Davies, 1999). In addition, the educational system, like other areas of public administration, is highly centralised so teachers are seen as recipients of knowledge. When teachers conduct research, particularly action research, they challenge the top down model, in which knowledge is created by those removed from the classroom (Newkirk, 1992). Action research and teacher conducted research is a means of providing a forum for teachers to articulate and share their craft knowledge. Such research enables teachers to develop their skills through documenting what is happening in their classrooms and stepping back, analysing and interpreting what they have seen and heard, and going public if they choose (Goswami & Stillman, 1987, p. 16).

Teachers and curriculum development

This study has enabled me to learn to problematise the situations in which I work. I now have more confidence to go beyond being the teacher as 'a guide on the side' to more of 'a sage on the stage' My research could be useful in showing how teachers can contribute to, even if they cannot control, to professional knowledge and curriculum renewal.

Teachers conducting research as professional development

This educative process should be permanent part of teachers' lives. As teachers are central players in curriculum, teachers need to be prepared to become more responsible for course development, materials development, classroom teaching and learning assessment (Burton, 2000).

In January 2003, when I was reporting on Stage 2 of my research at the Thai TESOL Conference in Bangkok, I heard Donald Freeman speak of teachers' knowledge as a crossword puzzle. His talk brought to mind my original starting point of solving a jigsaw puzzle. I ask myself now:

- Am I surprised at the jigsaw picture I have constructed?
- Have I any blank pieces still to find?
- Do all the process I have fit together smoothly?

Solving curriculum jigsaw puzzles for curriculum renewal is different from solving other picture puzzles. For picture puzzles we have the finished picture as a guide to follow. In contrast, the jigsaw puzzle I have constructed was drawn from the data gained from different sources. Thus, putting together pieces of curriculum jigsaw will either give surprising, unexpected pictures, or confirm the pictures that, as a solver, we learn and see for the first time. Since I did not have a finished picture in mind when I started, there are still more pieces that I can add to the picture in the future. This could be, for example, data from the classroom, how teachers deliver the courses, the attitudes of students, the use of teachers' questions. Even though my curriculum jigsaw puzzle is finished as one piece, each piece can also be further studied in depth. For example, subject teachers can examine job advertisements to find the employing bodies' expectation towards engineering graduates, English language teachers can compare one type of workplace texts from different companies to find out the characteristics of text. Since the development of any programs is dependent on creative and dynamic teachers and administrators who continue to look for better and more effective ways to deliver the curriculum and courses that meet the needs of students as well as the requirements of the stakeholders (Dantas-Whitney & Dimmit, 2003), seeing the curriculum renewal process as solving jigsaw puzzles will bring a productive outcomes of the program.

CONCLUSION

The study has identified potential workplace English characteristics that can be exploited to support the preparation of today's engineering graduates. The quality of higher education should be relative to its purpose, and its role to impart in students the knowledge and understandings that are necessary for them to become well-educated professionals in the world.

To be knowledgeable, teachers need to seek knowledge relevant to their students' professions. Knowledge of professional discourses and procedures will help ESP teachers fill the discursual requirement of their students and solve their teaching problems (Freeman, 2003). Teachers who see themselves with multiple roles, as seekers, learners, or explorers, are bound to discover things about themselves, their environment and the students they work with that would otherwise go unnoticed (Casanave & Schechter, 1997).

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