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A Framework for Investigating Learner Needs: Needs Analysis Extended to Curriculum Development

Chamnong Kaewpet
(chamnongkaewpet@yahoo.com)
Rajamangala University of Technology Krungthep, Thailand

Abstract

This paper presents a framework for investigating the English for Specific Purposes (ESP) needs of Thai engineering students who will study ESP in an English as a Foreign Language (EFL) environment. The theoretical research originates from an aspiration to update and improve an ESP course. The review of literature indicates that learner needs will have to be addressed if the course is to be successful. The literature suggests important principles for investigating learner needs, specifying that attempts should be made to meet those needs in actual teaching and learning situations, which further involve attention to curriculum development. The framework described in this paper is created for the investigation of learner needs which is integrated into the curriculum, and implemented and evaluated while the course is underway to establish if learner needs have been met. By thoroughly examining the framework established in the literature, it can prove useful for other ESP, EFL and English language teaching (ELT) contexts.

1 Introduction

Engineering students have specific English needs. This reality has inspired a variety of ESP course designs to address them. Not surprisingly, satisfactory results are always reported in these courses, because they follow the fundamental ESP principle of needs analysis. A basic ESP philosophy is to cater to specific needs of learners as much as possible (Robinson, 1991). It might be appropriate to say that no ESP courses should be conducted without needs analysis, be it formal or informal.

Thai engineering students and engineers have expressed long-term dissatisfaction with their English ability (Wattanasakunpusakon, 1996; Kittidhaworn, 2001). It is not evident whether the ESP courses offered to these students have seriously considered their specific needs. Very few reports on the needs of engineering students are available, and most of them focus on problems and desires in English courses rather than addressing actual needs in ESP courses (Ongsakul, 1984; Wittayapirak & Preechapanit, 1992). It is also questionable whether or not the Technical English 1 course presently offered at the author's university is up-to-date and truly catered to students' needs, for it has been designed more than ten years prior to this study (Faculty of Liberal Arts, Rajamangala University of Technology Krungthep, 1996). A thorough review of related literature is conducted so that a course update can be implemented. The host university supports the research process, and is open to research findings that might alter the way in which the course will be conducted.

Theoretical literature related to English for engineering and ESP needs analysis is examined. This leads to a heightened awareness concerning approaches to needs analysis and approaches to curriculum development. It is clear from the review of ESP and engineering literature that the en-

gineering profession significantly requires English as a means of communication. Multicultural work practices increasingly demand that engineers are equipped with enhanced soft-skill proficiency, specifically, foreign language ability, communication confidence and cross-cultural experience (Gilleard & Gilleard, 2002). The foreign language in use is predominantly English, as evidenced by the extensive volume of reports related to English. ESP and needs analysis literature specifies that learner needs must be addressed if a course is to succeed (Bosher & Smalkoski, 2002; Garcia, 2002). The significance of needs analysis has led to the development of several approaches. This in turn brings attention to the importance of curriculum development. While the literature on needs analysis and curriculum development provides important principles for investigating learner needs, a suitable and practical framework for employing these principles in the Technical English 1 course is not provided. Therefore, an original framework has been created to make full application of the principles.

2 Approaches to needs analysis

Influential models of needs analysis include a sociolinguistic model (Munby, 1978), a systemic approach (Richterich & Chancerel, 1977), a learning-centred approach (Hutchinson & Waters, 1987), learner-centred approaches (Berwick, 1989; Brindley, 1989) and a task-based approach (Long 2005a, 2005b).

2.1 A sociolinguistic model

Munby (1978) develops an influential sociolinguistic model for defining the content of purpose-specific language programmes. His model can be used to specify valid 'target situations' (Jordan, 1997; West, 1994) that target communicative competence. A profile of communication needs is presented, comprised of communicative events (e.g. discussing everyday tasks and duties), purposive domain (e.g. educational), medium (e.g. spoken), mode (e.g. dialogue), channel of communication (e.g. face-to-face), setting of communication, main communicator/s, person/s with whom the communicator/s communicate, dialect, attitudinal tone (e.g. informal), subject content and level of English ability required for the communication. After a profile has been created, the communication needs are developed into a syllabus.

While the model provides an abundance of detail, it is impractical, inflexible, complex and time-consuming (West, 1994). It does not include needs that are dependent on human variables. For example, learner's voice is not taken into account: "[It] collects data about the learner rather than from the learner" (West, 1994, p. 9). Jordan (1997) criticizes the model for considering 'implementational constraints' such as the number of trained teachers available only after completion of syllabus specifications. Despite these criticisms, sociolinguistic variables remain important for effective communication.

2.2 A systemic approach

Richterich & Chancerel (1977) propose a systemic approach for identifying the needs of adults learning a foreign language. This approach fills the gaps in the sociolinguistic model in terms of flexibility and shows a distinct concern for learners. They are the centre of attention, and their 'present situations' (Jordan, 1997) are thoroughly investigated. The emergent nature of learner needs is also taken into account. Context of investigation and multiple perspectives are given prominence. Learner needs are approached by examining information before a course starts as well as during the course by the learners themselves and by 'teaching establishments' such as their place of work and sponsoring bodies (Jordan, 1997). Richterich & Chancerel (1977) also recommend using more than one or two data collection methods for needs analysis such as surveys, interviews and attitude scales.

Although this approach has not received much criticism, two concerns should be raised: lack of

attention to learners' real-world needs and over-reliance on learners' perceptions of their needs. Jordan (1997) suggests that course designers approach real-world learner needs both in terms of the target situation as recommended by Munby, and in the systemic model put forth by Richterich & Chancerel (1977) as complementary approaches. Over-reliance on learners' perceptions becomes an issue because many learners are not clear about what they want (Long, 2005a). 'Learner training' (Trim, 1988, cited in Holec, 1988) can be usefully incorporated to strengthen the systemic approach, as it aims at training learners how to learn. It is important for engineering students in particular because their needs are continually changing. Engineers must be able to identify emerging needs and gain new skills to satisfy them.

2.3 A learning-centred approach

Hutchinson & Waters (1987) offer an often-cited learning-centred approach to ESP. They argue that other approaches give too much attention to language needs, whereas more attention should be given to how learners learn. They suggest that a learning needs approach is the best route to convey learners from the starting point to the target situation. Learner needs are approached from two directions; target needs and learning needs. Target needs are defined as "what the learner needs to do in the target situation" (Hutchinson & Waters, 1987, p. 54). They are broken down into three categories: necessities, lacks and wants. Necessities are considered to be "what the learner has to know in order to function effectively in the target situation" (p. 55). Lacks are defined as the gaps between what the learner knows and the necessities (p. 56). Wants are described as "what the learners think they need" (Nation, 2000, p. 2). The second focus in this approach is on learning needs, referring to numerous factors, including who the learners are, their socio-cultural background, learning background, age, gender, background knowledge of specialized contents, background knowledge of English, attitudes towards English, attitudes towards cultures of the English speaking world and studying English. Learner needs also involve:

- Teaching and learning styles with which the learners are familiar
- Appropriate or ineffective teaching and learning methods
- Knowledge of specialized contents that teachers should have
- Suitable instructional materials and study location
- Time of study and status of ESP courses
- Expectations about what learners should achieve in the courses
- How necessary the courses are for the learners

Similar to the systemic approach, Hutchinson & Waters (1987) also recommend that needs analysis be checked constantly. They also stress the use of multiple methods of data collection – such as interviews, observation, and informal consultations with sponsors, learners and others involved – to deal with the complexity of target needs.

Analysis of needs in this approach is well-supported (Nation, 2000; West, 1994). Richterich & Chancerel (1977) insist on considering learners' background knowledge from the outset of the teaching and learning process. Grellet (1981) supports the use of authentic materials to encourage students to face the complexity of authentic texts. Eggly (2002) discusses differences in expectations between students who are forced to study and those who voluntarily enroll.

2.4 Learner-centred approaches

Berwick (1989) and Brindley (1989) are leaders in contributing learner-centred approaches to needs analysis. Three ways to look at learner needs are offered: perceived vs. felt needs; product vs. process oriented interpretations; and objective vs. subjective needs. 'Perceived needs' are from the perspective of experts while 'felt needs' are from the perspective of learners (Berwick, 1989). In the product-oriented interpretation, learner needs are viewed as the language that learners require in target situations. In the process-oriented interpretation, the focus is on how individuals respond to their learning situation, involving affective and cognitive variables which affect learning

(Brindley, 1989). Finally, objective needs are explored prior to a course, whereas subjective needs are addressed while the course is underway. According to Brindley (1989), objective needs can be derived from various kinds of factual information about learners, their real-life language use situations, their current language proficiency and difficulties. Subjective needs can be derived from information concerning their affective and cognitive factors such as personality, confidence, attitudes, learning wants, learning expectations, cognitive style and learning strategies.

Aside from language needs, learners' attitudes and feelings are clearly highlighted in the learner-centred approaches. The classification of perceived vs. felt needs gives rise to consideration of how needs can depend on an individual's perceptions and interpretations. A combination of the concepts of needs as specified in the sociolinguistic model and the learning-centred approach would effectively embrace the issue raised concerning learner-centred approaches. For example, needs in the product-oriented interpretation are similar to the concepts of communication needs (Munby, 1978) and target needs (Hutchinson & Waters, 1987). Needs in the process-oriented interpretation can be combined with learning needs.

2.5 A task-based approach

Long (2005a) recommends taking a task-based approach to needs analysis as well as with teaching and learning based on the argument that "structures or other linguistic elements (notions, functions, lexical items etc.)" should not be a focal point of teaching and learning. "Learners are far more active and cognitive-independent participants in the acquisition process than is assumed by the erroneous belief that what you teach is what they learn, and when you teach it is when they learn it" (p. 3). In this approach, tasks are the units of analysis and "samples of the discourse typically involved in performance of target tasks" (p. 3) are collected. An example of a 'real-world task' or 'target task' for engineers is the reading of textbooks (Mudraya, 2006).

The concept of tasks is similar to that of communicative events as defined by Munby (1978). The difference is that language variables, rather than sociolinguistic variables, are highlighted in the task-based approach. They are considered of equal significance in this paper, especially for engineering students who are expected to perform real-world tasks after graduation.

3 Principles for analyzing learner needs

Based on the survey of approaches to needs analysis presented in Section 2 as well as the author's personal teaching experience, learner needs should embrace the following principles:

3.1 Give first priority to communication needs

Communication needs come to attention when it is believed that what learners are taught should be specifically what they will really use, and that this should determine the contents of ESP courses (Munby, 1978; Dudley-Evans & St John, 1998). It is also argued that specific knowledge concerning English language alone is insufficient. The ability to communicate also involves understanding the discourse practices where the language is situated and in which learners must operate (Long, 2005a, 2005b; Orr, 2002).

While many types of needs can be addressed in an ESP course, communication needs analysis is particularly necessary in the Thai context because of several distinctive characteristics related to English education in general and other issues specifically relevant to engineering. These include the obscure role of English use in Thailand, students' lack of exposure to English, the lack of basic English knowledge prior to entering university and the lack of English opportunities provided in universities. The exploration of engineering-related workplaces in Thailand reported numerous occasions where engineers must employ English exclusively, such as in cases of international collaboration. In situations where English is used less frequently, companies are keen on internationalisation and want engineers with stronger English ability. On other occasions, engineering stu-

dents or future engineers might not use English at all. These cases highlight the importance of predicting students' specific communication needs as accurately as possible to prepare them adequately for situations they are likely to face in the near future. During the period of time under investigation, the communication needs of Thai engineering students remain relatively unknown.

3.2 Give equal importance to learning needs

Cognitive and affective variables as well as learning situations are influential in determining the manner in which a language is learned or should be learned (Berwick, 1989; Brindley, 1989). Hutchinson & Waters (1987) argue that the study of language descriptions, namely, the study of communication needs, does not enable someone to learn a language. Learning situations comprising several learning factors must also be taken into account. In fact, a thorough study of both descriptions will help elaborate learner needs more thoroughly.

The learning needs of Thai engineering students have been investigated in very few studies. However, in a study on English needs in technical workplaces conducted at the university where this research was carried out, graduates call for the better determination of their learning needs: "English is a 'must-know,' not a 'should-know,' thing"; "Enhance confidence in using English in students so that they do not fear making mistakes" (Bamrungpol, Panprem, Kaewpet & Treenate, 2002, pp. 31–32).

3.3 Take 'context' into account

Context influences the teaching and learning of ESP (Holliday & Cooke, 1982; Jordan, 1997; Richterich & Chancerel, 1977). Language teaching and design that do not consider particular groups of students is likely to be either inefficient or inadequate (Long, 2005b). In the Thai context, university engineering students come through from either technical or academic progressions. Technical students have completed diplomas in engineering-related areas such as construction while academic students finished their upper secondary education in pre-sciences programmes, which might lack any connection at all with engineering. The pre-sciences programs prepare the students generally to study in any 'science' faculty such as science, engineering, medicine – not specifically just in any one of these disciplines. The students normally study three main 'science' subjects in their schools – chemistry, mathematics and physics – as part of their pre-sciences programmes. In these environments, English instruction for the technical students can be directly based on the students' specialised knowledge, e.g. engineering, as suggested by Hutchinson & Waters (1987). The civil engineering students of the course under investigation will come from the technical background. English instruction for the academic students, on the other hand, probably should not be too closely connected with their specialised knowledge, as they do not possess much knowledge of the specialised content before attending ESP courses.

Additional factors to consider when looking at the context of teaching and learning include societal, institutional and teacher factors (Richards, 2001). Societal factors refer to expectations of society such as employers' English standards for employment. Educational institutions may influence the specificity of ESP for engineering. At Thai universities, courses range from general enrolment in "English for Science and Technology" to "English for Chemical Process Engineers" in which only students in the respective discipline can enrol (Khon Kaen University, 2009; Silpakorn University, 2009). The Technical English 1 course under investigation fits into the latter category, because of its focus on practice in language skills related to students' specialised areas of study (Faculty of Liberal Arts, 1996). Finally, teacher factors influence the way ESP courses are run for engineering students. For example, when ESP courses aim at teaching all four skills, a given teacher may believe that reading and writing should be emphasised more than listening and speaking. Teaching style, conservatism, and personality are also vital factors that influence every learning situation.

3.4 Invite multiple perspectives

Learners' English needs depend on various expectations, interpretations and individual value judgments (Berwick, 1989; Brindley, 1989). Vandermeeren (2005) points out that "researchers, too, have attitudes concerning language needs, which inevitably influence their choice of research objectives and their interpretation of the findings" (p. 161). It is therefore important to ensure that interpretations consider the perspectives of all involved. Multiple perspectives refer to institutions, teachers and learners (Benesch, 1999; 2001; Richterich & Chancerel, 1977). ESP relates to work or professional study situations (Flowerdew & Peacock, 2001; Jordan, 1997). Therefore, stakeholders from both locations should be invited to participate in needs analysis research.

In the context under investigation, where the technical English class will be conducted for civil engineering students, key stakeholders should include employers, civil engineers, engineering lecturers, former civil engineering students of the Technical English I course, ESP teachers and current civil engineering students. Employers and engineers can be direct sources of learners' communication needs in workplaces. Lecturers witness actual professional study situations. Former students include those who have already completed the course under investigation, but continue studying other professional courses required in their programme of study. They will be witnesses of both learning needs and communication needs in professional study situations. The teachers and current students will contribute useful knowledge of the learning situation as well as a variety of experience.

3.5 Employ multiple data collection methods

Use of multiple data collection methods is recommended when dealing with complex needs and for validating data (Gilabert, 2005; Hutchinson & Waters, 1987; Jasso-Aguilar, 2005; Richterich & Chancerel, 1977). Jasso-Aguilar's (2005) study revealed that some of the language needs of hotel maids could not have been found if participation observation had not been employed in addition to the study of task force predictions. Long (2005a, 2005b) calls for more attention to 'methodological options' in needs analysis. It is also recommended that limitations of data collection methods should be dealt with both before and during the research process.

For the context under investigation, it is anticipated that utilising the following data collection methods will capture all available data: individual interviews, class observation, collection of students' work samples, focus group interviews and evaluation of instructional materials. Interviews are the most direct way of determining what stakeholders will think about learner needs (Long, 2005a). Using structured interviews, questions concerning learner needs that have been carefully constructed can be asked repeatedly to focus all stakeholders on specific concerns (Dudley-Evans & John, 1998; Lynch, 1996). By collecting data through observation, enquiries into learner needs can be addressed by perceiving what will actually happen in day-to-day situations (Patton, 2002; Rea-Dickens & Germaine, 1992). Structured, but open-ended observation will provide the opportunity for observers to focus on particular aspects of learner needs and at the same time be open to the discovery of innovative findings (Lynch, 1996). Students' classroom work samples produced in the classroom can be useful sources for confirming the relative success of a course in satisfying learner needs (Wortham, 1995). Focus group interviews will be effective for discussing the fulfilment of specific learner needs in the course (Cohen, Manion, & Morrison, 2000; Patton, 2002). Instructional materials will need to be evaluated to ensure that they correspond to learner needs, reflected real language uses and facilitate the learning process (Cunningsworth, 1995).

3.6 Treat needs analysis as an ongoing activity

Learner needs should be analysed on an ongoing basis because they are likely to change over time, depending on contextual and human affective variables (Brown, 1995; Holliday, 1994; Hutchinson & Waters, 1987; Nunan, 1988; Richterich & Chancerel, 1977). This principle expands the

attention of needs analysis to include both curriculum development and action research.

The purpose of needs analysis is to identify learner needs, taking place at a relatively theoretical level outside of classes, yielding recommendations on how a course should be designed. Yet, at a more profound level, needs analysis is actually a process in curriculum development (Brown, 1995; Richards, 2001); it can and should be extended to curriculum development because many other important variables are connected with learner needs in authentic teaching and learning. A description of needs conducted prior to classes, by itself, will not generate a complete understanding of learner needs. Allwright (1988) states that "what happens in the classroom still must matter. We need studies of what actually happens [inside classes]" (p. 51). In fact, Holliday (1994) points out that data about what really happens in the classroom are not only insufficient, but also lacking for the settings around the world.

As the word 'curriculum' can be interpreted in many ways, it should be clarified here how it is perceived in this paper. Curriculum is "a very general concept involving consideration of the whole complex of philosophical, social and administrative factors which contribute to the planning of an education programme" (Allen, 1984, p. 62). It is generally understood that curriculum development comprises three main stages: design, implementation, and evaluation (Brown, 1995; Johnson, 1989; Richards, 2001). It is sometimes interpreted as 'syllabus' or 'course.' However, 'syllabus' is most often defined as specifications of content to be taught in a course, and is concerned with course objectives (Dubin & Olshtain, 1986; Jordan, 1997; Nunan, 1988; Richards, 2001). A 'course' is an instructional programme (Dudley-Evans & St John, 1998; Feez, 1998) with a name such as "English for engineering students 1."

In recent times, the 'process' meaning of curriculum has been added to the former 'product' concept. In the process/product orientation framework, a curriculum is designed prior to classes, but remains open to scrutiny and adjustment in real situations (Shavelson & Stern, 1981; Nunan, 1988; Smith, 1996, 2000; Stenhouse, 1975). Brown (1995) describes curriculum as a systematic process during which language teaching and language programme development are a "dynamic system of interrelated elements" (p. ix). The elements include needs analysis, goals and objectives, language testing, materials development, language teaching, and programme evaluation. He stresses that learner needs should be served, while alternative perspectives should also be taken into account. In addition to language needs, human needs and contextual variables should also be appraised. It is further recommended that evaluation should be regarded as an ongoing needs assessment. Richards (2001) emphasises that the processes of "needs analysis, situational analysis, planning learning outcomes, course organisation, selection and preparing teaching materials, providing for effective teaching and evaluation" (p. 41) are all integrally interconnected. Richards (2001) places teachers at the centre of the planning and decision-making process. The processes in curriculum development reflect the contributions of a variety of people with various roles and goals.

The subject of needs analysis also extends to curriculum development by action research. The spiral, iterative and evaluative procedures of action research plus its belief in change for improvement demand consideration (Dick, 2000; Kemmis & McTaggart, 1988; McNiff & Whitehead, 2002). Action research usually originates from a 'thematic concern' (Kemmis & McTaggart, 1988), which is 'learner needs' in the present situation. The concern leads to the first 'moment' (Kemmis & McTaggart, 1988), planning, which involves building learner needs into the first half of a curriculum. Research then proceeds to subsequent moments such as acting, observing and reflecting. Implementing and evaluating are engaged to ascertain whether or not the curriculum meets learner needs. Action research generates spirals of investigation which "unfold from themselves and fold back again into themselves" (McNiff & Whitehead, 2002, p. 56). With this consideration, a curriculum is redesigned based on learner needs discovered in the initial procedure of teaching and learning, which are then implemented and evaluated in the second half. Change for improvement is another important characteristic. Action research is "an inquiry which is carried out in order to … change, in order to improve some educational practice" (Bassey, 1988, p. 93). In employing action research in needs analysis, needs are checked in the first component; elements which are

unsuitable can be changed to improve the curriculum during the second half to comply with learner needs more effectively.

4 A framework for investigating learner needs

The purpose of analysing learner needs in this paper is to update an existing course (Nation, 2000) which is of a small scale done by a teacher researcher (Nunan, 1992) to improve a course only taught by herself. She requires a theoretical framework based on what she learned from the literature review that suits the context and consisted of the practical stages and processes. Such a framework is created as shown in Figure 1 (Kaewpet, 2008).

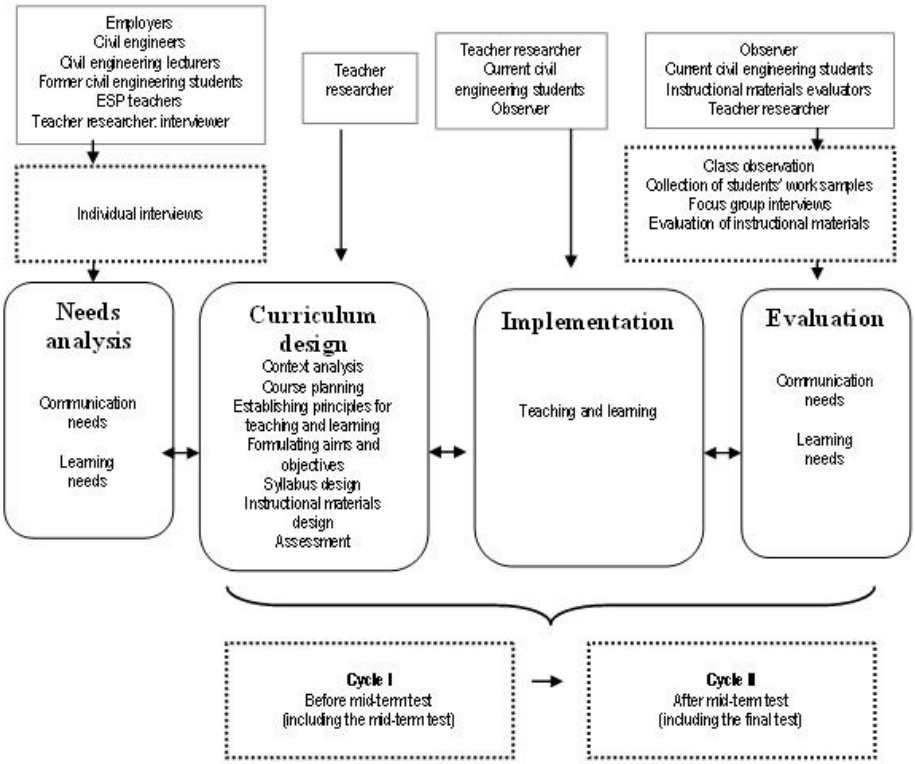

Figure 1: A framework for investigating learner needs

This framework is for a needs analysis which is extended to curriculum development. The investigation starts from an analysis of communication and learning needs, and proceeds through the spiral and iterative stages of curriculum development. Prior to classes, learner needs are established as a result of individual interviews with key stakeholders from five groups. After the interviews, the identified needs are assessed in terms of their suitability for the context under investigation. Based on the identified needs and preliminary reflections, a new curriculum is designed for the first part of the course by the teacher researcher. The curriculum design process includes: context analysis and course planning; establishing the principles of teaching and learning; formulating aims and objectives; designing of syllabus and instructional materials; and, in conclusion, assessment. All of the processes are treated as an interrelated whole as suggested in the literature (Brown, 1995; Richards, 2001). The initial part of the curriculum is implemented in the first cycle, i.e. engaging an ESP teacher to observe the classes. At the end of each class, work samples of student participants are collected. After the mid-term test, the students participate in a focus group inter-

view. The instructional materials designed for the first cycle are distributed to ESP teachers for evaluation. The focus in all of the data collection methods is on learners' communication needs and learning needs. The data obtained from the five sources are analysed to reveal how effectively the curriculum in the first cycle has met learners' communication and learning needs. The needs are reviewed in preparing the design of the second cycle curriculum.

Based on the evaluation of the curriculum during the first cycle, the curriculum for the second cycle is designed. Strengths are maintained and weaknesses addressed accordingly. The same curriculum design process and data collection procedures employed in the first cycle is emulated in the second cycle. However, new questions are formulated to evaluate the complete curriculum in the final observation, the second focus group interview, and the final instructional materials evaluation. After data collection is completed, the data generated from both cycles are thoroughly examined to generate conclusions, implications and recommendations.

To reiterate, this framework is generated from concepts given in the published literature in the fields of ESP, needs analysis and language curriculum development. Key concepts include Munby's (1978) definition of communication needs, and Hutchinson & Waters's (1987) framework for analysing learning needs. Brown (1995) and Richards (2001) also provide the scope for language curriculum development with the idea that all of the processes are interrelated. Dudley-Evans & St John (1998) illustrate how stages in the ESP process are interconnected. Finally, Brown (1995) provides a powerful consideration for this framework when he suggests defining evaluation as an ongoing needs assessment.

Each stage of the framework remains to be elaborated. In needs analysis, the concepts of communication and learning needs have been obtained. However, questions posed to address the needs will have to be constructed.

In curriculum design, Hutchinson & Waters (1987) propose a learning-centred approach with the view that methodology is not "just grafted on to the end of an existing selection of syllabus items and texts: it must be considered right from the start" (p. 92). In their approach, an initial syllabus is designed outlining content; details are added later especially when instructional materials are designed.

For each process in curriculum design, literature related to it will need to be further examined in order to select a suitable approach to it. Methods to analyse context should probably include societal, institutional, teacher and learner factors (Richards, 2001). Course planning should probably involve considering existing time frame; addressing and sequencing specific sets of needs; planning units of study and selecting the course format (Dubin & Olshtain, 1986; Richards, 2001). The following principles of teaching and learning are likely be necessary: learning should occur gradually and incrementally; learners' attitudes should be kept in mind because learning is an emotional experience and positive emotions should be developed in learners (Hutchinson & Waters, 1987; Nunan, 2004). Formulation of specific aims and objectives (Richards, 2001) should facilitate the teaching and learning process. Recommendations on a task-based approach to English instruction can make an effective approach to syllabus design (Nunan, 2004). Design of instructional materials employing authentic materials designed to produce language practice, language input, and a source of stimulation and motivation will aid learning in real situations (Dudley-Evans & St John, 1998; Nunan, 1985; Richards, 2001). Use of multiple assessment procedures will validate students' ability more than using any one type in particular (Bosher & Smalkoski, 2002; Brown, 1995; Jordan, 1997; Nation, 2000).

In curriculum implementation, activities which do not run as smoothly as initially planned should be monitored so the curriculum can be improved in the subsequent round.

In curriculum evaluation, attention should be given to both its strengths and weaknesses in meeting learner needs so that the strengths can be maintained and the weaknesses improved. This type of consideration is part of a powerful analysis for strategic management devised by Humphrey in the 1960s and 1970s (Arslan & Deha ER, 2008).

5 A final remark

Research has resulted in a substantial treatise on needs analysis. However, much remains to be explained in order to satisfy learner needs more effectively in ESP, EFL, and ELT. The framework described in this paper benefits from a significant amount of research and could further expand on the work by Long (2005a, 2005b) which calls for more effective needs analysis methodology than simply identifying needs. However, Long's work emphasises methodological options; that is, selection of data collection methods and analysis of data, rather than making use of the results of needs analysis to inform curriculum development. Andrews's (2003) study is also of much importance. In addressing complaints that technical communication courses are not relevant to engineering students' major areas of study, new joint courses have been designed in metallurgical engineering and English, focusing on writing reports. In this study, the results of needs analysis conducted prior to class have been extended to course design, implementation, and evaluation. However, the approach is best suited to a context with potential for joint instruction of a technical discipline with the English language. In addition, the research was conducted in an English-speaking environment. The next two studies also set good examples of needs analysis methodology. Bosher and Smalkoski (2002), and Freeman (2003)'s studies inform curriculum development. However, the focus of Bosher and Smalkoski's study is on listening and speaking skills for health-care students. The emphasis of Freeman's research is oral communication by engineering students in an English-speaking setting. There is limited research:

1. which is particularly concerned with seeking an effective approach to meet students' communication needs and defining their learning needs
2. in which the needs are addressed by the whole processes of curriculum development
3. which is conducted in ESP, EFL, and ELT contexts

Thus, needs analysis research which further involves curriculum development is required. The framework reported in this paper thoroughly examined existing knowledge, making it a potentially suitable framework for use in other ESP, EFL and ELT contexts. In the context under investigation, the framework will be used to investigate a group of Thai civil engineering students' communication needs and learning needs. Employing the framework in other contexts is also suggested so that knowledge of applicability of the framework in other contexts can be understood.

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