A study of needs, problems and wants of using English of Engineering students at Quaid-e-Awam university of Engineering, Science and Technology, Pakistan

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Abstract

English language is considered as an official language in Pakistan and is medium of instructions within schools, colleges and universities. However, no study has been conducted to analyse the current situations, needs, problems, and wants of students who study engineering programs. Therefore, this review study is conducted to fill this gap. The purposes of this research were: (1) to investigate needs of engineering students to use English, (2) to find problems of engineering students in using English in their academic and professional studies, and (3) to explore the students' wants regarding the purpose, content and methodology of engineering students to use English at QUEST Pakistan. This research theoretically tends to develop ESP courses regarding different engineering fields. The literature review directs that the needs of the learners can be fulfilled if the ESP courses in different engineering fields will be completely successful. It also discusses the important principles related to the engineering learners' needs within teaching learning methods that include curriculum development, its implementation and evaluation. ESP courses are underway to be developed if the learners' needs are to be fulfilled. This research will be useful in ESP, ESL, ELT and EFL context and will offer different ways to carry out more research in this genre.

Keywords: Needs analysis, Engineering programs, problems of engineering students

1. Introduction

Robinson (1991) argued that ESP philosophy can be used in order to carry out the specific needs of the learners. Thus, Engineering learners QUEST have an explicit English language need that focuses to develop ESP courses according to the different engineering fields' requirement in order to meet certain needs of the learners. These courses follow the principles based on ESP needs analysis theory. Because, it is a fact that without ESP need analysis principles, no ESP courses whether it may be formal or informal can be designed, developed, implemented and presented for teaching learning process in an engineering class room setting.

Literature is analyzed theoretically based on ESP and English for engineering students in Pakistan which exercises greater impact and influence leading to motivation concerning different aspects of curriculum development and factors of need analysis. Gilleard (2002) pointed out that the demand for cross-cultural work has increased rapidly that demanded engineers to be proficient in second language learning, interpersonal and intrapersonal communication including organizational communication and behavioral communication. In Pakistan, English is predominantly used as an official language and is considered second language as well. Garcia (2002) discussed that learners' needs must be fulfilled if an ESP course is to be succeeded. It is vivid from ESP literature review and work document of an engineering university that engineers need English particularly for their workplace communication that include oral and written communication. The approaches of need analysis have paved a way for the development of curriculum. Likewise the ESP literature through need analysis models and engineering work documents can be best for investigating engineering learners' need. These aspects can be applied in the structure for making it as an appliance of the principles in order to develop curriculum for engineering students to meet their basic needs.

2. Background of the study

English is considered as an international language sharing information through science and technology. Previous research in the field of engineering showed that English language is very important in the academic and professional lives of engineering students (Basturkman, 1998; Pendergrass et al., 2001; Pritchard & Nasr, 2004; Joesba & Ardeo, 2005; Sidek et al., 2006; Hui, 2007; Venkatraman & Prema, 2007). For example, Pendergrass

et al. (2001) pointed out the use of English in engineering education and stated, "integrating English into engineering, science and math courses is an effective way to improve the performance of engineering students in oral and written communication" (p. 1). In addition, Pritchard & Nasr (2004, p. 426) emphasised that "English is of particular importance for engineering and science students because it is the principal international language of science and is looked upon as an effective means for enabling those students to become familiar with professional texts written in English". Similarly, Joesba and Ardeo, (2005) stated that English is an international language of science and technology. And engineering students have to realize the fact that engineering books, papers, handbooks and journals are written in English. Further, they stated that these all are included in their reading lists.

Hutchinson and Waters (1987) state that the expansion of scientific, technical, and economic activities in international scale after the end of the Second World War in 1945 led to the importance of English study. Hutchinson and Waters (1987) further stated, "As English became the accepted international language of technology and commerce, it created a new generation of learners who knew specifically why they were learning a language". Learners were seen to have different needs and interests, which had an important influence on their motivation to their learning. This led to the support of the development of the courses in which relevance to learners needs and interests were of great importance (Read, 2008).

Presently, researchers (Gilabert, 2005; Long, 2005) indicated that task based NAs have gained attention. Needs analysis was introduced into language teaching through the English for Specific Purposes (ESP) movement. Hutchinson and Waters (1987) define ESP as "an approach to language teaching, course design and materials development in which all decisions as to context and method are based on learners' reason for learning" (p.19). "By the 1980s, in many parts of the world a "needs-based philosophy" emerged in language teaching, particularly in relation to ESP and vocationally oriented program design" (Brindley, 1984 as cited in Richards, 2001).

In Pakistan, English language is considered as an official language and is medium of instructions within schools, colleges and universities. However, the curriculum of English is not changed at official level but is in the process of developing at private level of teaching and learning. University Grants Commission (1982) reported in its "Report on the Teaching of Language" in the context of national language, English language and various regional languages, termed English as 'the language of knowledge, technology, and international communication, as an important second language'. The report further states regarding the future of English in Pakistan:

> *English would continue to be used in the foreseeable future as the language of technology and of international communication. English is increasingly becoming the equivalent to a universal lingua franca and is essential for international intercourse. There is no scope for any country in the world from learning English well and thoroughly and it would be very unwise, in fact, almost suicidal for Pakistan to destroy by neglect all the advantages we already possess in respect of past knowledge of English."* (UGC 1982:14)

The importance of English in the country has increased since the publication of the report. The evidence is the decision of the Government of Pakistan to introduce English in all government schools from the year one to graduate and post graduate level (MoE 2007). However, English is widely recognised as a foreign language in more than 100 countries of the world including Thailand, China, Japan, Brazil and Europe (Crystal, 2003). Many other countries like Singapore, Pakistan, India and Philippines teach English as either second or medium of instruction or official language (Channa, 2012; Crystal, 2003).

3. Statement of the problem

Engineering learners need to use English for academic and professional purposes since they learn English through other subjects. Thus, the planning, teaching and learning in engineering programs need to be analysed in order to match the learners' needs and the programs provided. There are two main problems Quaid-e-Awam University has to face in forming an NA for its learners. First, different engineering programs at QUEST have been in existence for 32 years without any analysis of the learners' needs. This means that Quaid-e-Awam University has never analysed the learners' needs. Second, teachers come from different engineering area and thus remain unprepared to teach students with engineering or professional needs in terms of English language. Strevens, (1988) explained that two main areas create difficulties for teachers who do not have ESP knowledge. First difficulty is one of different attitudes, particularly as between literature and science. The second area of difficulty for teachers lies in the gap between learners' knowledge of engineering subject and the teachers' ignorance of it. However, Strevens suggested that ESP teachers could overcome these difficulties with three techniques that include teachers' knowledge of ESP course material, language of the subject and the use of learner centred.

Researchers (Gardner and Winslow, 1983; Long, 2005; Richterich, 1980; West, 1994) believed that there is often a failure to use NA as a tool in EFL course designing, especially is ESP courses where the specific needs of the learners are difficult to determine. The lack of NA and the idea one size fits all approach are the two main problems which the Quaid-e-Awam University has to solve in order to provide engineering students the knowledge related to them for their professional development.

4. Background and the development of English for specific purposes (ESP)

Jordan, (1997) reported that the term English for specific (ESP) was first used in 1974 and it is divided into two main strands: English for occupational/professional purposes EOP and English for academic purposes (EAP). EAP is carried out for their higher studies within their country and in abroad. EAP involves English for (Academic) Science and Technology (EST), English for (Academic) Medical Purposes (EMP), English for (Academic) Legal Purposes (ELP), and English for management, finance and economics. EOP includes English for Professional Purposes (English for Medical Purposes, English for Business (EBP) Purposes) and English for Vocational Purposes; in EAP, EST has been the main area, but EMP and ELP possess its place. Similarly, EOP refers to English for professional purposes in administration, medicine, law and business purposes.

Hutchinson and Waters (1987) stated that ESP is considered as an approach, not a product that is not a particular kind of language nor does it consist of a particular type of teaching material. But this analysis derives from an initial identified need on the part of the learner to learn a language. ESP then is an approach to language teaching in which all decisions as to content and method are based on the learner's reason for learning.

Johns and Dudley-Evans (1991) noted that ESP requires careful research and design of pedagogical materials and activities for an identifiable group of learners within a specific learning context. Strevens (1988) provided a list of characteristics of ESP. He stated that in order to define ESP there is a need to distinguish between four absolute and two variable characteristics. According to absolute characteristics, ESP consists of English language teaching which is "designed to meet specified needs of the learner; it is related in content (in themes and topics) to particular disciplines, occupations and activities; and it is centred on the language appropriate to these activities in syntax, lexis, discourse, semantics, etc. And analysis of this discourse and it is in contrast with General English" (Strevens, 1988 as cited in Johns and Dudley-Evans, 1991, p.298). According to variable characteristics, ESP may be, but is not necessarily "restricted as to the language skills to be learned (e.g. reading only) and it is not taught according to any pre-ordained methodology" (Strevens, 1988 as cited in Johns and Dudley-Evans, 1991, p.298).

5. Definitions of Needs Analysis

According to Nunan (1988), needs analysis refers to the procedures for gathering information about learners and about communication tasks for use in syllabus design. Richards et al. (1992: 242-243) defined needs analysis in language teaching:

> …*The process of determining the needs for which a learner or group of learners requires a language and arranging the needs according to priorities. It makes use of both subjective and objective information. The analysis seeks to obtain information on the situation in which a language will be used including whom it will be used with, the objectives and purposes for which the language is needed, the type of communication that will be used, and the level of proficiency that will be required…*

Ellis and Johnson (1994) added that needs analysis is a method of obtaining a detailed description of learner needs or a group of learner needs. It takes into account the specific purposes for which the learner will use the language, the kind of language to be used, the starting level, and the target level which is to be achieved. Information can be obtained from a range of different people such as company staff, trainers, and the learners themselves. It will have implications for the future training approach. Bachman and Palmer (1996) argued, "Needs analysis or needs assessment, involves the systematic gathering of specific information about the language needs of learners and the analysis of this information for purposes of language syllabus design".

Graves (2000) further stated that needs analysis is a systematic and on-going process of gathering information about students' needs and preferences, interpreting the information, and then making course decisions based on the interpretation in order to meet the needs.

Needs analysis has a vital role in the process of designing and carrying out any language course, whether it may be English for Specific Purposes (ESP) or general English course. Though needs analysis has gone through many

stages, with the publication of Munby's Communicative Syllabus Design in 1978, situations and functions were set within the frame of needs analysis. In his book, Munby introduced communication needs processor' which is the basis of Munby's approach to needs analysis.

6. Target Situation Analysis (TSA)

The term *Target Situation Analysis* (TSA) was, in fact, first used by Chambers in his 1980 article in which he tried to clarify the confusion of terminology. For Chambers TSA is "communication in the target situation" (p.29). In his work Munby (1978) introduced Communicative Needs Processor (CNP). As Hutchinson and Waters (1987: 54) say:

> With the development of the CNP it seemed as if ESP had come of age. The machinery for identifying the needs of any group of learners had   been provided: all the course designers had to do was to operate it.

In Munby's CNP, the target needs and target level performance are established by investigating the target situation, and his overall model clearly establishes the place of needs analysis as central to ESP, indeed the necessary starting point in materials or course design (West, 1997).

7. Present Situation Analysis (PSA)

The term PSA (Present Situation Analysis) was first proposed by Richterich and Chancerel (1980). In this approach the sources of information are the students themselves, the teaching establishment, and the user-institution, e.g. place of work (Jordan, 1997). If target situation analysis tries to establish what the learners are expected to be like at the end of the language course, present situation analysis attempts to identify what they are like at the beginning of it. As Dudley-Evans and St. John (1998: 125) state "a PSA estimates strengths and weaknesses in language, skills, learning experiences."

8. Learning Situation Analysis (LSA)

Hutchinson and Waters (1987) advocated a learning-centred approach in which learners' learning needs play a vital role. If the analyst, by means of target situation analysis, tries to find out what learners do with language (Hutchinson and Waters, 1987) LSA will tell us "what the learner needs to do in order to learn". Obviously, they advocate a process-oriented approach, not a product- or goal-oriented one.

Hutchinson and Waters' (1987) definition of *wants* (perceived or subjective needs of learners) corresponds to learning needs. Similar to the process used for target needs analysis, they suggest a framework for analysing learning needs which consists of several questions, each divided into more detailed questions. The framework proposed by Hutchinson and Waters (1987) for analysis of learning needs is the following:

1. **Why** are the learners taking the course?

- compulsory or optional;
- apparent need or not;
- Is status, money, promotion involved?
- What do learners think they will achieve?
- What is their attitude towards the ESP course? Do they want to improve their English or do they resent the time they have to spend on it?

2. **How** do the learners learn?

- What is their learning background?
- What is their concept of teaching and learning?
- What methodology will appeal to them?
- What sort of techniques bore/alienate them?

3. **What** sources are available?

- number and professional competence of teachers;
- attitude of teachers to ESP;
- teachers' knowledge of and attitude to subject content;
- materials;
- aids;
- Opportunities for out-of-class activities.

4. **Who** are the learners?

- age/sex/nationality;
- What do they know already about English?
- What subject knowledge do they have?
- What are their interests?
- What is their socio-cultural background?
- What teaching styles are they used to?
- What is their attitude to English or to the cultures of the English speaking world?

9. Essential for Needs Analysis

The most common reasons for needs analysis to be conducted according to Soriano (1995) are "justification for funding, regulations or laws that mandate needs assessments, resource allocation and decision-making – determining the best use of the limited resources and as part of program evaluations".

Richards (2001) stated that needs analysis in language teaching can be used for a number of different purposes, for example:

- "To find out what language skills a learner needs in order to perform a particular role, such as sales manager, tour guide or university student
- To help determine if an existing course adequately addresses the needs of potential students
- To determine which students from a group are most in need of training in particular language skills
- To identify a change of direction that people in a reference group feel is important
- To identify a gap between what students are able to do and what they need to be able to do
- To collect information about a particular problem learners are experiencing" (p.52)

10. A Review of Previous Studies

Needs analysis has been among research topics of high interest in ESP. A large number of studies on this topic have been carried out worldwide. A number of need analysis studies have been conducted to analyse learner needs in different areas of academic settings.

Soranastaporn (1993) investigated the needs, problems and wants in English language teaching and learning of nursing students at nursing colleges under the control of the nursing college division, office of the permanent secretary, Ministry of public health, Thailand. The findings of the study indicated that both nursing students and teachers felt positive towards English and wanted more English courses. Both, teachers and students need to improve reading. However, students want to practice listening and speaking while teachers want them to practice reading and writing.

Holliday (1995) assessed the English language needs for an oil company in the Middle East. The study aimed to analyse and make recommendations regarding the language needs of national staff, to recommend a broad curriculum framework for language training courses, and to recommend implementation phases for course development and the training of instructors.

Chia et al. (1999) conducted study on English language needs for medical college students and faculties in Taiwan, trying to identify the perceptions that medical college students and faculties had of the English language needs in medical contexts. Survey information included respondents' opinions on the importance of English language use in students' studies and their future careers, and suggestions for development of an English curriculum. Results showed that students wanted a Basic English language course at the freshmen level, naming listening as the most important skill to improve. Students and faculty desired more than one year English language study.

Edwards (2000) carried out a needs assessment study to identify the language needs of the German bankers in order to design an ESP course for the bank personnel. Four skills were explored. Interview with the director of the bank's language department was conducted and a questionnaire was given to the participants of the course to reveal the institutional and personal objectives. Students' past learning experience could be reflected through the questionnaire as well. Especially writing and specialist vocabulary in banking came up to be specific needs. An ESP course was designed and guidelines for teaching method were set.

Kuen, (2001) examined the communicative needs in sales in a Malaysian business context. The study looked at the communicative needs of sales personnel of a Malaysian owner-managed group of companies. More specifically, it focused on the productive skills of speaking and writing which sales personnel needed in their job, and the types of communicative events sales personnel were involved in and the communicative skills that they

needed. The result showed that sales personal needed to communicate in English both in spoken and written modes. Consequently, they needed to be equipped with a repertoire of communication skills in English in order to perform effectively in their job.

Kormos, (2002) investigated the language wants of English majors in Hungry. The study used questionnaire among 2 year students, majoring English language teaching combined with English literature and TESOL. The study found that students used English only for academic purpose and wanted their future occupations seemed to be expressing their opinions, reading texts on the internet, conversing with non-native speakers, writing email messages and translating oral and written English.

Cook (2006) investigated the aspiration of adult ESOL learners with adult migrants learning English in UK by using a case study methodology. The results indicated that the methods employed for attempting to meet their needs that include individualized learning plans, are inadequate because they ignore the real life experiences of ESOL learners. The effective social needs of migrants ESOL learners fail them to realize their full potential as users of English, and as members of the work force and future citizens.

Cowling (2007) conducted the needs analysis (NA) for the development of a set of English language intensive courses at a large Japanese industrial firm. The case study emphasised the NA practices. The results found that great care is needed in the planning and execution stages as this area of syllabus design is often more complex than described in syllabus design literature.

Read (2008) conducted a study entitled "Identifying Academic language needs through Diagnostic Assessment". The study looked some specific provision governing university admission in New Zealand law. The study considered the way in which the Diagnostic English language Needs Assessment (DELNA) is presented to students and staff of the university and procedures for reporting the results. The results indicated that DELNA is different from other tests of English for academic purposes. It did not work as gatekeeping device for university admission, and students could not be excluded from university on the basis of their results. It is not simply a placement procedure to direct students into one or more courses within a required EAP program according to their level and areas of need.

Samawathdana, (2009) explored the needs, problems and wants of students studying in the bilingual program at Winit secondary school, Thailand. Results of the study indicated the learners' needs to improve their four communicative skills. Learners had problems in speaking during discussion and presentation. They also had difficulties with writing, particularly in producing compound and complex sentences. Thus, they wanted to be able in using English mainly for academic purpose; especially for future study at university.

11. Discussion and A final remark

Course, material or curriculum designers should consider certain fundamental issues before conducting a needs analysis, such as the philosophies of needs assessment, the types of information to be gathered, and the instruments that can be used to collect data.

Brown (1995) recommends four primary philosophies to be adopted in a needs assessment that include discrepancy, democratic, analytic, or diagnostic. These philosophies relate to their effect on the type of information that ultimately gets gathered. In a discrepancy philosophy, needs are viewed as discrepancies or differences between a desired performance from the students and what they are actually doing. Holding such a philosophy implies that the analyst is concerned with the question of what the learners know and what they ought to know. A democratic philosophy proposes that any change that is desired by a majority of the group involved can be defined as a need. An analytic philosophy assumes that needs are defined as the things that the students will naturally learn next, based on what is known about students and the learning process involved. A diagnostic philosophy defines needs as anything that would prove harmful if it was missing. In this study, the researcher used a discrepancy approach, because one of the aims of the study is to find out the current language levels of the students along with their target needs.

Discussions on the methodology of needs assessment often begin with deciding on the appropriate time to conduct a needs assessment in the process of developing a program curriculum. Although there is a tendency to conduct needs assessments before setting the goals of a course, a needs assessment study might be conducted before, during or even after the program. If a needs assessment is conducted initially, it provides information to the teachers about the background knowledge and desires of their students. The findings of such a needs assessment should help the instructors in determining appropriate materials and teaching approaches. If the needs assessment is conducted at the end of the program, findings should be used to check whether the needs of the students have been met, to identify the weaknesses and strengths of the current curriculum and syllabus, and,

perhaps most importantly, to decide on the necessary changes to improve the current program (Richterich & Chancerel, 1980).

In carrying out a needs assessment the second major steps that should be followed is to determine the data sources. Graves (2000) points out that needs assessment should include input from students as well as from various people related to the course, such as teachers, funders, parents, administration, and employers. According to Brown (1995) the researcher should consider the high-stake aspect of the needs analysis, when deciding on the groups that will be involved in the study. He identifies these groups as the target group, audience, needs analysts and resource groups and states that they are equally responsible for the identification of learners' language needs. The target group refers to the people (learners) about whom information will be gathered. It is the population whose needs are being analyzed. Audience refers to all the people who will eventually be required to act upon the analysis, such as teachers or program administrators. Needs analysts are those people who are responsible for conducting the needs analysis. Resource groups are any people who might serve as sources of information about the target group, such as language instructors, content teachers, administrators, or employers.

The second crucial step that should be followed while carrying out a needs analysis is to decide on the techniques that will be used in the data collection process. There are various techniques that can be used for collecting the data of a needs assessment.

Research has resulted in a significant discourse on needs analysis. However, much remains to be explained in order to satisfy learner needs more effectively in ESP. It is worth for engineering university to develop an ESP syllabus in order to solve language teaching and language learning problems. According to Munby (1978), Jordan (1989), Nunan (1990), and Mackey (1981), the first step to develop ESP syllabus is to do a need analysis (NA) of the language of the students. Similarly, Jordan (1997) defined needs analysis as the starting point in course designing. Need analysis may be developed in order to adapt any language course to accommodate students. To develop NA for engineering students in Pakistan, the studies done in past till now must be reviewed. Munby (1978) presented a detail on NA by focussing on learners' needs using the performance based approach. The approach relates to areas of practicalities and constraints, teaching methods, learning strategies, and material selections. However, no single research regarding NA of English for engineering students has been done. Consequently, NA relating to engineering students in Pakistan should be established in order to meet the present and future needs of professional learners in engineering programs.

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