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Assessing the Academic Literacy and Learning Needs of Undergraduate Engineering Students at Quaid-e-Awam University of Engineering, Science and Technology (QUEST) Pakistan

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Needs analysis, which is described as a way of ascertaining the needs of learners, is used as the basis for EAP/ESP. The rationale for needs analysis comes from the fact that once the teachers know about the target English situations of the students, they will use them instruction, which enhances students' likelihood of achieving success in their courses and future careers (Benesch, 1996).The present study looks at the needs of undergraduate students at QUEST from the perspective of a target needs model prescribed by Hutchinson and Waters (1987) vis-à-vis the importance of language skills and purposes for learning English. In this study, questionnaire was used to seek the perspectives of the currently enrolled final year students from Civil Engineering Department, and English teachers of English Language Centre. The main findings of the study were that students' specific needs were not being met. The students considered that productive skills (writing and speaking) were more important than receptive skills (reading and listening) for their academic and professional success. In addition, students were keener to learn technical vocabulary than general vocabulary, and were relatively uninterested in learning grammar through traditional methods. However, their teachers from the ELC believed that both receptive and productive skills were equally important for the QUEST undergraduate students. They considered academic literacy skills as most important for the students in their initial years of study, and both academic literacy and professional skills including written and oral communication skills as very important for the students in their final years of study and beyond. In contrast to the students, they considered reading to be the most important skill, followed by writing. Like the students, they rated English language skills as very important for students' success in their academic and professional endeavours.

Keywords: *general vocabulary, technical vocabulary, academic literacy, communication skills*

Background to the Education System in Pakistan

In Pakistan, as in other developing countries, the education system struggles to achieve quality (Memon, 2007; Zia, 2003) mainly due to a very low public investment in education at only 2.2% of GDP (Memon, 2007). This lack of funding leads to weaknesses in implementation mechanisms such as monitoring, management and teaching (Zia, 2003). A further challenge is the absence of any standardized curriculum or uniformity as to the medium of instruction (Zia, 2003). There are also disparities with regard to access to quality education, since the private education system is of better quality but not accessible to the poor, (Zia, 1999). Further, the system as a whole is constrained by poor physical infrastructure, disparities on the basis of gender, lack of properly trained teachers, inadequate supplies of teaching materials, large classes and a strong emphasis on exams and traditional, teacher-centered methodologies (Mohammad & Harlech-Jones, 2008; Shamim & Qureshi, 2009; Westbrook et al., 2009). Due to the former colonial imposition of English and its widespread use globally, English is the language of prestige and power in Pakistan as well as the official language, although Urdu is the lingua franca (Mansoor, 2;005) and the country as a whole is strongly multilingual and multi-ethnic. The common language in rural schools is mostly Urdu while English is widely used in urban schools, so most students entering tertiary education will have had their previous education in both English and Urdu. English is generally used as the medium of instruction at higher education (Mansoor, 2005;

Rahman, 2005; 2008). It is, therefore, no surprise that Pakistan is the country with the lowest literacy rate among countries with comparative resources and a similar socio-economic situation (Memon, 2007).

English language needs of undergraduate engineering students in Pakistan. Despite the fact that English is widely taught in Pakistan, and fluency in the language confers social prestige (Abbas, 1993; Rahman, 1999), little attention has been given to developing a curriculum to meet the English language needs of engineering students in their professional studies to ensure that they are able to understand the content of their major subjects in engineering disciplines, which are all taught in English. Furthermore, according to my observation as a lecturer in a public sector university, an undergraduate engineering student is expected to be able to comprehend texts at an advanced level in all relevant genres using a variety of reading skills, express himself/herself in oral and written discourse accurately and fluently, think critically and logically, be aware of ethical concerns related to engineering studies, be aware of cultural differences; use technology appropriately to communicate in English; and develop effective learning strategies to regulate their learning. In addition, engineering students are also expected to have improved their professional learning skills during their studies to be able to make effective CVs and job letters and perform well in their job interviews immediately after graduation. However, the performance and standard of graduate students has deteriorated in recent years, mainly because of inadequate proficiency in both written and spoken English (Mansoor, 2005). The prime focus of the policy makers has remained on major academic disciplines, and most of the resources are invested in developing laboratories and supplying hardware.

English for Specific Purposes (ESP)

It has been a long-held tenet in the field of language teaching that the rise to prominence of LSP (Language for Specific Purposes) is associated with socio-economic trends and policies rather than with shifts and trends in applied linguistics as such. This is especially the case with ESP, which can be said to be inherently responsive to major developments in many areas of professional and academic activity. As generally conceived, ESP focuses attention on the learner's current or desired socio-cultural profile and on the reasons s/he might have for learning a specific language. The student on an ESP course is almost certainly not learning English as an end in itself, but as the means of acquiring a particular body of knowledge or set of skills. An ESP course, then, must be aimed at clearly utilitarian purpose beyond the learning environment itself. This purpose is the successful performance of occupational or educational roles integrally linked with predefined areas of activity (academic, vocational or professional). With regard to the fields of engineering, almost two-thirds of the literature in this field appears in English, and two-thirds of the world professional engineers are obliged to read in English. Therefore, post;2graduate engineers cannot achieve success without reading in English (Mackay & Mountford, 1978).

English is currently used as a lingua franca in a number of academic and professional fields, and this situation has created a continuing world-wide need for ESP in general, and English for engineering, science and technology (EST) in particular.As a result of natural disasters and the energy crisis faced by Pakistan, there is an urgent need for trained, efficient and skilled engineers. This has in turn led to a growing demand for high quality courses in engineering (Mamoor& Khan 2008; Siddiqui, 2004) that necessarily must include an ESP component.

ESP – an overview. ESP is a heterogeneous sub-field of ELT. Instruction, materials and methodology in ESP courses are designed to meet the specific learning needs of groups of learners within a specific time frame, and to provide instruction for groups where general English will not suffice (Orr, 2001). Some researchers believe that ESP has a long history (Strevens, 1977) while others maintain that ESP is relatively recent development (Swales, 1985). However, there is a general agreement about the purpose for which this movement was launched, which was to bring specificity, appropriateness and relevance to the instructional practices in ELT as a reaction to the notion of TENOR (Teaching English for no obvious reason) (Carver, 1983). In its former manifestations in the 1960s, it was predominantly associated with the idea of special language or register, and with the important sub-fields of English

for science and technology (EST). In later years the focus shifted to a communicative view of language as applied to ESP, the importance of needs analysis for language teaching and learning, and an increasing focus on tailor-made approaches to specific skills and sub-skills in particular disciplines (Johnson & Johnson, 1998). Current research takes an integrated approach by converging register analysis with discipline specificity and focusing in particular on materials used and the role and training of ESP teachers (ibid).The central principle of ESP is that English teaching that should be matched to students' specific needs and purposes (Hulst& Jensen, 2002; Hutchinson & Waters, 1984, 1987; Markee, 1984; Mackay&Mountforld, 1978; Munby, 1978, 1996; Robinson, 1980, 1991; Strevens, 1977; Swales, 1985).

English for engineers. The ESP literature that relates specifically to engineering contexts indicates that a high degree of English language proficiency is essential for engineers in their academic and professional lives (Basturkmen, 1998; Pendergrass, Kowalczyk, Dowd &Laoulache, 2001; Pritchard & Nasr, 2004). It is necessary that students receive instruction in English to improve their performance in spoken and written communication (Pendergrass et al., 2001), as well as to help them understand professional texts written in English (ibid). Further, Basturkmen, (1998) found the literacy and learning needs of undergraduate engineering students consistently varied over the duration of their four-year programme. Therefore, she suggests regular assessment of needs and evaluation of course syllabus to meet changing needs (ibid).

Research studies conducted to identify the English-language needs of the ESL/EFL students studying in the different areas of science and technology, specifically in engineering, are largely related to language skills, language purposes, and study skills in relation to communication skills. The English language needs identified by previous research conducted by means of different types of survey questionnaires are based on the students' perceived language needs (e.g. Boyle, 1993; Basturkmen& Al-Huneidi, 1996; Hall, et al., 1986; Krowne, 1982; 1983) or on the perspectives of the teachers in different disciplines (e.g. Johns, 1981; Ferris & Tagg, 1996b). Students' English-language needs and purposes of learning English are frequently described by ESP researchers and practitioners (e.g. Amyotte, 1991; Jordan, 1997; Lotte, 1978; McDonough, 1984; Morrison, 1978; Richards, 2001; Selfe, 1983; Strevens, 1977a, 1977b; Swales, 1985;).

Needs analysis (NA). Needs analysis (NA) is an information-gathering process for language teaching and learning programmes. As defined by Dudley-Evans and St. John (1987), it is the process of establishing the *what* and *how* of a course (p.121, italics in original). The term "needs" has been defined in various ways. For instance, Brindley (1989) refers to learners' wants, desires, demands, expectations, motivations, lacks, constraints and requirements. West (1994) points out that needs analysis was popularized by the 1960s ESP movement, with its emphasis on accountability to stakeholders and the need for courses to have an immediate impact on learners' abilities in the target language. Before that time, policy makers tended to plan language courses without determining the needs of learners, or the degree of fit between courses and students' planned destinations (Richards, 2001). The major factor in the successful implementation of change or innovation in any course syllabus or curriculum is its acceptance and ownership by the end-users for EAP, this could be teachers and learners (West, 1994).

Needs analysis can be described as a way of ascertaining the needs of learners, and thus establishing this ownership and acceptance of the course (Richards, 2001; Waters &Vilches, 2001). The rationale for needs analysis comes from the fact that once the teachers know about the target English situations of the students, they will use them as the basis for EAP/ESP instruction, which enhances students' likelihood of achieving success in their courses and future careers (Benesch, 1996). According to Munby (1978) ESP courses are those where syllabus and materials are determined in all essentials by the prior analysis of the communication needs of the learner. Analysis of the students' target needs makes an important contribution by analysing what people in particular areas of specialization normally do through language (Strevens, 1977a, 1977b). Strevens (1977a) argues that these ideas enable the course designer or teacher to be much more precise in fitting his or her teaching materials to the needs of the students, which is beneficial as

there seems to be a direct relation between how relevant a student perceives his or her course to be and how well he or she learns.

In this regard, the present study looks at the needs of undergraduate civil engineering students at QUEST from the perspective of a target needs model prescribed by Hutchinson and Waters (1987). According to this model, NA is an umbrella term which includes learners' necessities (their target linguistic features), lacks (their target linguistic features minus what they already know), and wants (what the learners feel they want and need). By looking at learner's needs one can identify "the demands of the target situation, that is, what the learner has to know in order to function effectively in the target situation" (ibid, p.55) while taking into account institutional frameworks (Jordon, 1997). Thus, the study aims to ascertain the English language needs of undergraduate engineering level students in QUEST vis-à-vis the importance of language skills and purposes for learning English. To achieve the aim of this study, the researchers seeks to understand from the perspectives of students and their English language teachers, what are the academic literacy and learning needs of undergraduate engineering students at Quaid-E-Awam University of Engineering, Science and Technology (QUEST) Pakistan?

Context and participants

The study was carried out at Quaid-E-Awam University of Engineering, Science and Technology, which is located in a small town in the Sindh province of Pakistan. It is a public sector university jointly funded by the provincial government of Sindh and the federal governments' autonomous body called Higher Education Commission of Pakistan, and regulated by the University Grant Commission (UGC) and Pakistan Engineering Council (PEC). The university consists of nine departments which offer undergraduate and post graduate degree courses in engineering, science and technology disciplines.

The participants in the study were students and English lecturers at QUEST. The number of student participants was 60 final-year undergraduate engineering students from the Civil Engineering Department of the university. These students were all male, and aged between 19 and 22. Forty five participants were native speakers of Sindhi, five were Punjabi speaking, nine were both Siraeki and Urdu speaking, and one was an international student from Palestine whose native language was Arabic. These students were in their final year and final semester of the four-year and eight-semester undergraduate programme in Civil Engineering. The main reason I chose to involve final year students was that the list of academic and professional tasks used in the questionnaire (see Appendix A) would be much more familiar to senior students, and they would therefore be in better position to comment about the WCS course. As the course is taught to the first year students only, first year students would not be in a position to comment about their literacy and learning needs during their second, third and fourth years of study. Hutchinson and Waters (1991) also point out that one of the most valuable times for evaluation is after the course, as "the learners will be in a position to judge how well the course prepared them for the target situation they are [then] in" (p.155).

All four English lecturers from ELC of the university volunteered to participate in the research, and this add to the information provided by the students. These lecturers were all male with MA degrees in English literature, which is a pre-requisite for getting the job of lecturer at the university. Their average teaching experience was nine years, although it varied from four to fourteen years. Their average age was 33.5 years with youngest teacher participant aged 28 and the oldest 40.

Instruments.The study used questionnaires for both teachers and student participants as a main research instrument. This is a commonly used instrument for NA and ESP as it can provide both qualitative insight and quantifiable data due to its flexibility (Dudley-Evans and St. John, 1987; Hutchison & Waters, 1987; Long, 2005).This information drawn from literature review was used to create two separate questionnaires for teacher and student participants of the study (see Appendix B & C). Moreover, the items I selected were both positive and negative on needs and ESP course, as switching direction would help to uphold against response bias caused by the monotony of item types (Dornyei, 2010; Tuckman, 1999).

The students' questionnaire was based on 18 Likert-scale items and three open ended items. The questionnaire was divided into two parts. Parts A and B addressed two major themes i.e. importance of English language skills and the purposes for learning English related to the needs assessment topic. The eight items of Part A and B covered present and future academic needs in their study of English in engineering. Therefore, the participants were requested to consider each item carefully and, based on their own language needs, indicate how important each item was for their study in English courses. This instrument therefore collected data on students' current and perceived needs for their English courses.Teachers' questionnaire consisted of three open-ended items for more detailed answers. These items were based on students' English language needs at QUEST and their purposes for learning English. Open-ended items for both student and teachers were used to allow respondent to express their own thoughts and ideas in their own words, which is said to possibly result in more unexpected and insightful data (Kent, 2001; Mackey & Gass 2005). In addition, it puts the responsibility for and ownership of the data much more firmly into the respondents' hands (Cohen, Manion & Morrison, 2000).

As a first step, I grouped the Likert scale responses provided in Parts A, B of the questionnaire to measure two major themes on needs assessment. The groups contained both positive and negative responses on the provided scales. The descriptive statistics used here followed the similar techniques used by the earlier study on NA in engineering context by Basturkmen (1998) in which she calculated percentages for each item type, each task and sub-task against the measuring scales and number of participants responded to the each item. Students' open ended responses were read and re-read to get in-depth view of the context and keeping in view the research questions set for the study. Their responses were analysed both qualitatively against the themes concerned and quantitatively on percentage scale to measure how many student responded in favour and against to that particular question statement. Responses on teachers' questionnaire were analysed quantitatively by calculating the number of participants responded in favour and against of the themes on needs assessment, and qualitatively through identification of shared themes (Dornyei, 2010). Responses from the teachers were also compared with the responses of the students

Data Presentation

Data is presented is a sequence.

Assessment of English language needs. Questionnaire data on students' views of the WCS course and their academic literacy needs were analysed using descriptive statistics. Since the study aimed at ascertaining the English language needs of undergraduate engineering level students in QUEST, Pakistan. It gathered data from questionnaires completed by students at QUEST and by their teachers.

Student questionnaire responses.

The Importance of English language skills

Percentage distributions of students' questionnaire responses for each of the eight items are shown in the Tables 3 through 6:

Table 3: Rank order of 7sub-items (1a to 1i) of Item No 1 on reading Skills

Reading Skills	Responses to the First Two Levels of Importance (I andVI) (n=60)		
	Item No	Count	Percent
text books	1(a)	56	93.3

course handouts	1(c)	55	91.6
instructions for assignments/projects/thesis	1(d)	53	88.3
study notes	1(f)	51	85
instructions for labs	1(e)	50	83.3
technical articles in magazines/journals	1(b)	49	81.6
manuals (e.g. electronic/machines)	1(g)	48	;280
reading newspapers	1(h)	35	58.3
reading for purposes other than study	1(i)	22	36.6

Two Levels of Importance are "Important" (I)and "Very Important" (VI)

Table 4: Rank order of 11 sub-items (2a to 2k) of Item No 2 on writing skills

Writing Skills	**Responses to the First Two Levels of Importance (I and VI) (n=60)**		
	Item No	**Count**	**Percent**
projects/ thesis	2(d)	58	96.6
assignments	2(b)	57	95
lab reports	2(a)	57	95
a curriculum vitae (cv)	2(i)	56	93.3
cover letters for applications	2(j)	55	91.6
job applications	2(h)	55	91.6
notes in lectures	2(e)	54	90
other reports	2(g)	53	88.3
field-trip reports	2(c)	50	83.3
answers to question papers	2(f)	49	81.6
minutes of meetings	2(k)	45	75%

Two Levels of Importance are "Important" (I)and "Very Important" (VI)

Table 5: Rank order of 6 sub-items (3a to 3f) of Item No 3 on Listening Skills

	Responses to the First Two Levels of

Listening Skills	Importance (I and VI) (n=60)		
	Item No	Count	Percent
understand lectures	3(a)	52	86.6
listen to instructions for assignments	3(d)	50	83.3
participate in discussions	3(e)	48	80
follow question/answer sessions in class	3(b)	48	80
listen to spoken presentations	3(c)	33	55
listen to class speeches/debates	3(f)	23	38.3

Two Levels of Importance are "Important" (I)and "Very Important" (VI)

Table 6: Rank order of 6 sub-items (4a to 4f) of Item No 4 on Speaking Skills

Speaking Skills	Responses to the First Two Levels of Importance (I and VI) (n=60)		
	Item No	Count	Percent
give a viva voce	4(d)	57	95
give spoken presentations ask	4(b)	56	93.3
take part in job interviews	4(e)	54	90
take part in formal meetings	4(f)	52	86.6
ask questions in class	4(a)	49	81.6
give speeches/take part in debates	4(c)	38	63.3

Two Levels of Importance are "Important" (I) and "Very Important (VI)"

Data in the tables show that while respondents perceived all 32 sub-items for all four language skills to be important in their academic and professional lives, their main concern was to meet needs in their immediate learning and professional contexts. The participants rated the following items as less important: *reading newspapers*, *reading for purposes other than study*, *writing minutes of meeting*, *listening to class presentations*, *listen to class debates/speeches* and *give speech/take part in debates*. This is not surprising, since newspaper and general purpose reading may not help students in their academic studies, and listening to presentation and debates are passive skills comparing to delivering presentation and speeches. Writing the minutes of meetings is a purely occupational requirement for engineers, so these students do not see its usefulness in the near future. Table 7 presents the top ten sub-items on language skills in rank order:

Table 7: Rank order of top ten sub-items on Language Skills

	Language Skills	Responses to the First Two Levels of Importance (I and VI) (n=60)		
		Sub-items No	**Count**	**Percent**
1	writing projects/ thesis	2(d)	58	96.6
2	writing assignments	2(b)	57	95
3	writing lab reports	2(a)	57	95
4	give a viva voce	4(d)	57	95
5	writing a curriculum vitae (cv)	2(i)	56	93.3
6	reading text books	1(a)	56	93.3
7	give spoken presentations	4(b)	56	93.3
8	cover letters for applications	2(j)	55	91.6
9	writing job applications	2(h)	55	91.6
10	writing notes in lectures	2(e)	54	90
10	take part in job interviews	4(e)	54	90

Two Levels of Importance are "Important" (I)and "Very Important" (VI)

As can be seen from the table, seven of the top ten sub-skills related to writing, while listening was not represented in the ranking, except for "writing notes in lectures" where students have to be able to use their listening skill to take notes. Table 8 presents students' overall evaluation of the importance of each macro-skill.

Table 8: Ranked 1st or 2nd as important language skills by student participants

Item No	**Priority for Language Skills**	**Responses to the First Two Levels of value (A and SA) (n=60)**		
		Sub-item No	**Count**	**Percent**
8	**To be a successful learner and user of English, I need to develop my skills in…….**			
	writing	8(b)	58	96.6
	Speaking	8(d)	56	93.3

Reading	8(c)	54	90
Listening	8(a)	48	80

Two Levels of value are "Agree" (A)and "Strongly Agree" (SA)

Table 8 confirms that students clearly believed that writing and speaking were the most important skills for their academic and professional success. This may be because these productive skills tend to be given less attention during school education in Pakistan. They are also the more challenging skills for second language learners. Furthermore, these skills are important for achieving good grades, and also for getting good jobs. Table 9 shows student preferences for grammar and vocabulary instruction.

Table 9: Items on vocabulary and grammar

Item No		Responses to the First Two Levels of value (A and SA) (n=60)		
		Sub-item No	Count	Percent
	Priority for vocabulary and grammar			
8	**To be a successful learner and user of English, I need to develop my skills in…….**			
	technical engineering vocabulary	8(g)	58	96.6
	Grammar	8(e)	31	51.6
	general vocabulary	8(f)	17	28.3

Two Levels of value are "Agree" (A) and "Strongly Agree" (SA)

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As can be seen from the table, to almost all student-participants technical engineering vocabulary was important for their success as students and as professional engineers. Grammar and non-technical vocabulary was considered less important. This may be because students have been learning grammar and general vocabulary since their school and college education; therefore at university level their greater need is for technical vocabulary to help them wit;8h their engineering studies and future professional lives.

Purposes for learning English

The second main theme for the first research question concerned the language learning purposes which these final-year students considered important. Table 10 shows students' responses to combined categories of "Strongly Agree" (SA) and "Agree" (A) for the purposes of learning English in their current and future contexts:

Table 10: Items on purposes for learning English

	Responses to the First Two Levels of value (A and SA) (n=60)		
	Sub-item No	Count	Percent

Item No	Purposes for learning English			
5	**I need to study English:**			
	to speak to foreigners in Pakistan/abroad	5(a)	28	46.6
	to speak to my friends and family	5(b)	18	30%
	to pass exams	5 (c)	58	96.6
	for higher education	5(d)	50	83.3
	for success in future professional life	5(e)	56	93.3
6	**Currently I use English:**			
	when studying	6(a)	57	95
	when socializing/ with friends	6(b)	27	45
	at home with family	6(c)	16	26.6
7	**In future I think I will use English:**			
	for further studies	7(a)	51	85
	for socializing	7(b)	29	48.3
	in my future job	7(c)	57	95
	at home	7(d)	19	31.6

Two Levels of value are "Agree" (A)and "Strongly Agree" (SA)

The table reveals that these final-year Pakistani engineering respondents considered all of the 12 sub-items of (Items 5 to 7) of language learning purposes in the questionnaire as important in one way or the other to their studies and future professional lives. However, they clearly did not consider English to be important for situations such as socialising with people, talking to family, or speaking to foreigners. This may be because (according to my experience as a former lecturer on the WCS course) most students at QUEST do not speak English at home, and also because students rarely come into contact with foreigners in Pakistan.

Teacher questionnaire responses. The second source of data for this study was teachers' open ended questionnaire responses.These were analyzed both qualitatively to identify common themes as well as quantitatively.

The importance of English language skills

Item No 2 in the questionnaire asked teacher-respondents to identify the specific tasks, sub-tasks and text types in engineering studies needed by students at QUEST. Their responses were very similar to those made by students; however, they related more to skills needed over the whole four years of study at QUEST, while students were more concerned with their needs in their final year of study. One of the teachers, Insaf gave a comprehensive response in these words:

> "Engineering students enrolled at QUEST in a four year undergraduate programme have varying needs for their academic and professional success. In their initial years of studies they need to have varieties of reading skills to comprehend text books in major engineering courses, lecture hand outs and study notes, read and comprehend instructions for assignments and projects, for understanding technical and non-technical materials. They need to have very good written skills to express themselves fully in their paper based exams, in their written assignments, making their study notes, note taking in class, writing reports for their projects and different visits on field. Besides, they need to have written skills for writing applications, letters to get

> permission for different field or study trips. They need to have some developed listening skills for comprehending lectures, participating in discussions, listening to questions and respond accordingly. They need to develop speaking skills for expressing themselves orally in presentations which is the part of assessment, and perform well in oral examination for various major papers. As engineers they are also required to have effective communication skills such as CV writing skills, job application skills and interviewing skills for wining internships during studies and jobs in future."

Item No 3 on the teacher questionnaire asked the respondents to identify the English language needs of engineering students immediately after they complete their studies and start seeking employment as engineers. Three out of the four teacher-respondents agreed that these students need to have strong writing skills for drafting their CVs for job applications. In addition, recent graduates were also expected to have strong interviewing and presentation skills. Inayat replied to this question by stating that:

> "Soon after finishing their studies, engineering students embark on the search for jobs. Their foremost English need during this time is the ability to write good job letters, presentable CVs, and relevant cover letters. Once they are called for an interview, they have to show reasonable spoken proficiency in English language. After they get a job, they need to be efficient at writing letters, compiling reports, etc. They also need both writing and speaking skills to befittingly prepare and deliver. They also need to be trained in 'Interpretation'".

Teachers considered all the four language skills to be of equal importance in contrast to the students' prioritising of the productive skills. Teachers considered reading as the most important skill, with writing as the second most important, listening third and speaking as the fourth important skill for the success of undergraduate engineering students at QUEST. Mansoor stated in response to the first questionnaire item that:

> "Although all language skills are important for engineering students, they need reading and writing skills more than speaking and listening skills during their course of studies. Reading tops the list because all the subjects they study have their textbooks and related material in English language, and these are mostly written by native speakers. Therefore, Engineering students require sufficient command of reading skills, including scanning and skimming, to be able to successfully and sufficiently comprehend the subject matter. They also need writing skills because they have to attempt the question papers in exams in English language, and have to write technical reports for the companies off and on."

Purposes for learning English

Research question one also sought the information about the purposes for learning English at QUEST. In their responses to Items 1-3, all four teachers pointed out that English plays a crucial role in the academic success of students at QUEST, and is needed by the undergraduate engineering students after graduation for further study or for their future jobs as an engineers. Inayat commented that:

> "….English is very important for the students in understanding their major courses which are all in English. Students with low proficiency in English mainly fail in their major papers and those with better English get good grades in their overall exams…"

Regarding the future learning needs and purposes English for engineering students Tariq was of the view that:

> "It depends on student's choice for future life, those who plan to study further need to develop their English in all four major skills equally to get through their future studies. Whereas, those who plan to do a jobs in their major field of engineering

immediately after graduation need to develop their communication skills both written (for writing an effective cv, job letter) and oral (presentation and interviewing skills).

Discussion and Recommendation

Since the study aimed at assessing the academic literacy and professional learning needs of undergraduate engineering students of QUEST Pakistan. In this regard, two themes were considered: the importance of language skills and learning purposes for English. Questionnaire findings revealed general agreement about the needs of English by the engineering students at QUEST; however, the two participant groups did not agree about the importance of particular sub-skills on the four macro-skills. Final year students in their responses viewed the productive skills (writing and speaking) as more important than the receptive skills (listening and reading). This could be because their final year of study required them to perform well in their exams, which area written examination and an oral viva. However, their teachers rated receptive skills and productive skills as both contributing academic and professional success, as they generalised the needs of students in all their four-years of engineering studies at QUEST. A study by Clelik (2003) on NA in vocational colleges in a Turkish context too shows the same variation in students' and teachers' preferences in respect of English language skills.

With regard to preferences for literacy and professional learning skills(i.e. rhetorical skills and strategies necessary for students to integrate into their engineering related course content to facilitate finding a job and ultimately achieving success in the workplace), students considered both literacy and professional learning skills equally important for their success in studies and professional lives. However, their teachers pointed out that the needs of engineering students at QUEST vary during their whole study programme: in their initial years of study they require literacy skills, whereas in their final years they need both literacy and learning skills to meet professional challenges as engineers. The findings of the study revealed that there are many English language sub-skills that the students have to know in order to function effectively in their target situations. This was evident from the results depicted in Table 7 which presents the rank-order of top ten sub-skills on both literacy and learning skills. These results on the teacher-participants responses are to a large extent consistent with those of Basturkmen (1998). Both studies identified that academic literacy skills and tasks were highly important for engineering students. Those skills are: reading textbooks, writing lab reports/lab assignments, following lectures, reading instructions for labs and assignments, listening to instructions for labs and assignments, reading course and lecture handouts, note taking in lectures, presentations and participating in the discussion, preparing projects, and preparing answers to questions from textbooks.

Another significant finding relates to the rank-order for the four language skills by students. Students ranked writing and speaking as the first and second most important skills and reading and listening as third and fourth important skills. These findings confirmed their earlier preferences for importance of sub-skills from the four language skills on literacy and learning skills as most important. This may be because these productive skills tend to be given less attention during school education in Pakistan. They are also the more challenging skills for second language learners. However, the teachers disagree with the students' views on top ranked language skills and considered reading to be the most important skill followed by writing, listening and speaking.This was possibly because teachers are aware of students' lacks and necessities in language learning, and also know that the reading is an essential component of their studies and influential in their performance in their final exams.

Although students perceived writing, speaking, and to some extent reading skills to be very important for the academic and professional success at QUEST, listening was not considered an important skill by the majority of students. This might well have been because they were in their final years of study and were more instrumental in their motivation for learning therefore more interested in the productive skills that can help them succeed in their final exams. The second reason, supported by the literature, is that the respondents may be undervaluing the listening skill due to their

lack of knowledge about listening as a particular acquisition process with its own sub-skills. Moreover there is added difficulty of improving listening skills in an English as a foreign language setting (Nunan, 2002; Rost, 2002). Furthermore, study results revealed that the majority of students rarely practice English outside the classroom (see Table 10 in Chapter IV). A needs assessment study conducted by Arik (2002) revealed same results that, while reading was perceived as a required English skill for the students by their content-course teachers, listening was not seen by students as an important skill for the their content-course English requirements.

Study findings also revealed students' preferences for technical engineering vocabulary over general vocabulary and grammar teaching. The results showed that students were more interested in learning technical vocabulary than general vocabulary and grammar teaching through traditional ways. The findings of the study resemble to some extent the study by Ward (2009) that found that university engineering undergraduates in many developing nations fall far short of the basic linguistic, and in particular lexical, knowledge necessary to read academic materials in English. He therefore devised a word list for foundation engineers that presupposed little lexical or grammatical knowledge, which could be used by learners with a low level of English, and which applied to all engineering disciplines.

With regard to the purposes for learning English, both sets of questionnaire responses revealed a great deal of consensus on students' purposes for learning English as: either to assist them with their present studies, to help them to find job in future or for the future studies. This may be because (according to my experience as a former lecturer on the WCS course) most students at QUEST do not speak English at home and also because students rarely come into contact with foreigners in Pakistan. This aspect of the study is consistent with the three suggested purposes of learning English in ESP/EST context by (Strevens, 1977a) namely "general purposes", "social purposes" and "special purposes." In addition, the findings of the study are in agreement with other studies on NA and course evaluation by Basturkman (1998) which found that students prefer specific purpose English courses either because they do not use English outside their study context or due to their adequate proficiency in general English.

The study has both theoretical and practical implications for teachers, teacher-educators, and policy-makers involved in tertiary-level English language teaching in the context of engineering in Pakistan. The study indicates that learner needs analysis is a crucial element in the design of specific-purpose language courses so that teachers and material designers focus primarily on the immediate and future needs of students. The major purpose of needs analysis is to identify the communicative needs of a particular audience. The task of the teacher and the material writer is to convert these into the content of a syllabus.

The foremost implication is that the needs analysis that was conducted for this study needs to be used as a database of information concerning the use of English language by the students of QUEST. This will enable the English Language Centre of the university to ascertain more accurately the English language demands of the students they meet in their engineering studies and professional lives, their purposes for learning English, the areas of difficulty that students face and their attitudes towards English language instructions in QUEST. Such a database, according to Basturkmen (1998), can make it possible for institutes to evaluate and modify where appropriate the contents and methodologies used for the English courses to make them more effective for meeting students' needs. As pointed out by Hutchison and Waters (1987), learning (academic) needs should be viewed as the instructional logistics that can be used by the students in order to reach or meet the target (professional/occupational) needs, which are the particular skills that learners need for their future careers. The academic and professional learning needs of the students in this study should therefore not be considered separately. The overall results of this study can be utilized to guide the inclusion of both language requirement types into the new curricula which will help students to meet both their learning (academic, current) and target (occupational, future) needs.

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