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The Perceived Needs Related to Language Skills for Korean Postgraduate Engineering Students

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This research aims to examine the needs of English language skills of Korean postgraduate engineering students in an academic community. In raising these issues, this study focuses on the perceptions of Korean engineering students themselves and subject lecturers by using semi-structured interviews. The research showed that the current global world order has strongly influenced participants' perceptions in the Korean context. Students were required to be equipped with a flexible combination and balanced competence of all language skills, which are contextualised in the discipline. Finally, this thesis discusses the implications for upgraded English for Academic Purposes (EAP) programmes adapted to the needs of Korean engineering students in the global age.

[needs analysis/language skills/English for Academic Purposes/engineering postgraduates/필요분석/언어 능력/학문적 목적을 위한 영어/공학 대학원생]

I. INTRODUCTION

English for Academic Purposes (EAP) can be theorized as "the needs-related nature of teaching" (Dudley-Evans & St. John, 1998, p. 1). The major focus of needs analysis in EAP has been on how effectively teaching EAP can be relevant to learners' purposes and contexts of learning. Such analysis is a crucial starting point when deciding the contents and methodology along with designing syllabi and lesson plans (Flowerdew & Peacock, 2001; Hyland & Coles, 2006; Mok, 1987), particularly in tertiary academic settings. Accordingly, needs analysis and

approaches to EAP have been responsive to learners' real-world communicative requirements when learning English within a specific context.

This study aims to examine the perceived needs in relation to English language skills of Korean postgraduate engineering students in the light of globalisation. Since they wish to participate in the academic work of engineering in the global community while engaging in their local contexts (Wenger, 1998), Korean engineering students, as a specifiable group, have distinctive purposes of learning English (McDonough, 2005; Myeong-Hee Seong, Hyung-Ji Chang & Hyun Jin Kim, 2007). Their preferences and problems are discussed with reference to language skills drawing on data concerning the relative importance of each language skill in the 'academic practices' of the engineering community. In this study, language skills refer to four skills: listening, speaking, reading and writing. The study also addresses the reasons given for these preferences and the related problems for students in their academic settings in Korea.

II. THE CHANGING CONCEPTS OF NEEDS ANALYSIS AND SKILLS-BASED NEEDS IN EAP

The general background of the development of needs analysis is explained by Tudor (2001) as mostly due to the increased need for language learning to relate to communication in international milieus. The expanding desire for EAP to enable people to operate in special domains of use in international settings called for needs analysis, in accordance with environmental factors such as economic expansion and the growth of science and technology (Dudley-Evans & St. John, 1998). The diversity of students' ethnic, linguistic and educational backgrounds and the growing professional and institutional expectations of competence in "dealing with the social, cultural and ideological contexts of language use" (Hyland, 2006, p. 5) in the global community have also enhanced the importance and requirement of needs analysis in EAP.

Given that EAP is mainly focused on learners' communicative purposes within a sociocultural context, it is essential to decide what learners' needs are, and how they can be identified and analysed in the given context. That is, the scope and

approaches of needs analysis, based on "what people see as needs" (McDonough, 2005, p. 59), have continually evolved and varied according to the learning situations which researchers have dealt with (Braine, 2001) and evolving faculty and student needs (Stoller, 2001).

The early research on needs in EAP underwent stages of identifying special linguistic dimensions such as register analysis (Ewer & Latorre, 1967) and rhetorical or discourse analysis (Trimble, 1985), in pursuit of suitable teaching materials for learners, predominantly for scientific and technical contexts. Since the early 1970s, however, there have been major paradigm shifts in EAP research and pedagogy from attention to the surface forms of language to a focus on the direct needs of its learners.

EAP researchers have hence been interested in "describing the types of tasks, skills and behaviours required of learners" (Benesch, 2001, p. 9) in the future target situations. Significant research has been done regarding target tasks and the sets of skills required for carrying out academic tasks (Horowitz, 1986; Johns, 1981; Munby, 1978; Ostler, 1980). The analysis of targets has been based upon pragmatic perspectives, in order "to provide students with the writing skills and the cultural information ... to perform successfully" (Reid, 1989, p. 232 as cited in Benesch, 1993, p. 711). However, the notion of skills transferable to future target academic settings has been challenged, because these skills presumed an underlying common reasoning process, regardless of disciplinary areas and for all levels of learners, from primary to tertiary, from native speakers to non-native speakers. The notion of 'academic literacy' incorporates "the complex set of skills which are increasingly argued to be vital underpinnings of cultural knowledge required for success in an academic community" (Hyland & Hamp-Lyons, 2002, p. 4).

Another criticism of the skills approaches is that conventional teaching practices accommodate each language skill separately, dividing them into pedagogically convenient units of learning and teaching materials. My argument is, however, that learners cannot learn these skills in isolation. Johns (1997) also considered the notion of academic literacy as an inclusive term encompassing reading, writing, speaking and listening, "because it [academic literacy] requires an understanding that these skills are influenced by each other" (p. 2) in different

social contexts. In the actual classroom practice of EAP, a multi-skills approach is thus more powerful. For example, reading skills have mostly been taught within EFL contexts. However, the effective learning of reading skills involves the active writing or speaking of learners and the learning of new kinds of literacy. As Hinkel (2006) states:

> In an age of globalisation, pragmatic objectives of language learning place an increased value on integrated and dynamic multiskill instructional models with a focus on meaningful communication and the development of learners' communicative competence. In many locations around the world, learning English has the objective of learners' gaining access to technical, educational, or professional opportunities. (p. 113)

Therefore there has recently been an influential expansion of multi-skills instruction of language skills (Hinkel, 2006), and the English teaching field widely accepts that "skills are interconnected, with pedagogies and curricula being developed to teach them together" (Canagarajah, 2006, p. 5). All skills need to be coordinated as necessary to "increase learners' opportunities for purposeful L2 communication, interaction, real-life language use, and diverse types of contextualised discourse and linguistic features, developing students' language proficiency and skills" (Hinkel, 2006, p. 114). For this reason, a combination of skills and a balanced approach which improves various skills are needed to promote learners' communicative language use in EAP classrooms.

Although all language skills are necessary for students, some needs analysis has attempted to establish the priority of learners' needs in particular skills (Chia, Johnson, Chia & Olive, 1998; Johns, 1981; Pholsward, 1993; Zughoul & Hussein, 1985), because EAP teachers need to be informed in a specific way about the skills in which students are most deficient in relation to their development in the academic context. In Korea, for example, while reading and listening skills have been normally accessed in the school curriculum and through formal examinations, speaking and writing have not been trained to such a degree. In this respect, Korean postgraduate students, who have to construct knowledge and communicate actively with foreigners in the academic community, may need to learn more adequate writing and speaking skills. Therefore it is important for

EAP teachers to acknowledge the main requirements for skills in a given situation, in order to help students to properly balance all language skills and necessary strategies.

Moreover, "doubts about the generalizability of ... skills from one context to another" (Benesch, 2001, p. 11) and "the possibility of a mismatch between institutional demands and learners' perceptions of what they need" (p. 42) led to the analysis of participants' perceptions, that is, subjectively felt needs of students (Dudley-Evans, 2001; Sunghye Kim & Hyunah Ahn, 2007) as identifiable elements of their situations, skills and behavioural needs. The research mostly includes "reactions of students to assignments and the processes they go through in fulfilling them as well as faculty reactions to students' participation and writing" and recognize teaching and learning "as an interactive social practice" (Benesch, 2001, p. 11).

Learners are therefore viewed as social beings, achieving a sense of identity through learning to enter with increasing confidence into the ways of working as features of particular communities. One of the reasons why learners learn a specific language is to be a member of a certain community, using a language, skills and culture in a certain context for communicating with other members of the community (Widdowson, 1997). Therefore, it is crucial to identify learners' subjectively felt needs in EAP so that the social relationship of language learners and their context is not neglected. These subjectively felt perceptions are also the focus of the present study.

III. METHOD

1. Participants

The participants surveyed for this analysis of academic needs in English were comprised of Korean postgraduate engineering students (KS) and lecturers (KL) at College K. College K was considered an elite institution in the field of engineering in Korea, and students and lecturers have had many opportunities to meet and collaborate with multinational engineers in the global milieu. For interviews, 21 students and 14 lecturers were selected. The respondents in my

study were all Korean, and studying or working in a number of different engineering departments. All the participants were male. To differentiate M.Sc., Ph.D., and Post Doctor levels in demonstrating interview data, the letters M, P or PD were put after the students' codes (e.g. KS-3M, KS-1P).

2. Instruments

For the purposes of needs analysis, semi-structured interviews (Appendix) were chosen to determine precisely the nature of students' needs or the reasons why the participants consider issues in certain ways (Cohen, Manion & Morrison, 2007). The semi-structured interview generates qualitative data within the loose structure containing key questions, and offers the flexibility to ask subsequent questions in individual conversations (Arksey & Knight, 1999). When I actually interviewed the participants, it was possible to ask them additional questions about such topics as their study background, experiences, aims of study, strategies, views of institutional systems and emotional factors in their human relationships.

3. Procedures

In recognizing the difficulty of contacting participants, I used the snowballing approach (Cohen et al., 2007); that is, I started my survey by using my perviously established personal contacts with accessible lecturers and students at College K, and asked interviewees to identify possible peers related to my research, thus expanding my pool of participants.

4. Data Treatment

During the course of the interviews, I used Korean with participants. The comments of both the students and the lecturers were tape-recorded and translated into English. I attempted to set out the major themes that emerged repetitively throughout the data, and coded them in such a way that both common grounds and differences between the participants became salient.

IV. RESULTS AND DISCUSSION

Both groups of respondents, Korean postgraduate engineering students and lecturers, revealed that *all* language skills were crucially important for students undertaking academic practices, although each participant highlighted different skills, according to his situated academic practices and individual weaknesses or preferences. The roles and the particular use of each or several language skills in the engineering context were commented on as follows.

1. Reading Skills

Many KSs and KLs advocated reading skills as useful and important in engineering, because it was a required *basic* skill to gain most information from papers and journals and *frequently* used in the Korean context.

> I am only a student. I need to accumulate much knowledge, and the most important medium of study is texts. Reading is the prior way to obtain a lot of information from academic literature in the domestic area. All engineering subject materials such as papers and journals are written in English. (KS-7P)

> Reading other foreign literature is a basic skill needed in domestic engineering fields. Without having proper reading skills, it is not possible to follow up classes and research, and students use reading skills more than any other skills during their academic process. (KL-8)

KS-4P believed that they had acquired a reasonable level of reading skills and were confident in reading in comparison to other skills, as it is possible to revisit written texts.

> Reading skills have been acquired at a certain level by now and we can read materials over and over again. (KS-4P)

Although KS-4P believed that he was used to reading texts through long periods of study, reading is still a very demanding practice. This is because students read to perform academic tasks (Donald, 2002), not only for pleasure.

Although students understand subject terms, they sometimes may not understand examples in texts which have strong cultural connotations, because readers may interpret texts differently when negotiating meanings in different social settings (Parry, 1996; Wallace, 2003). Reading and understanding may also take time. That is, at the beginning, students normally read superficially with partial understanding. As they gain more subject knowledge through reading widely with appropriate influences such as supervisors' comments, their understanding becomes clearer. Despite the difficulty in reading the literature, students are often not trained in reading strategies for disciplinary contents (Nuttall, 1996 as cited in Flowerdew & Peacock, 2001). Students may thus require systematic reading instruction for their discipline.

2. Writing Skills

Writing was considered as the essential practice for communicating, and for contributing students' findings to the existing knowledge about engineering even in the Korean domestic context. KSs and KLs emphasized the importance of well-written papers and theses in English to demonstrate their ideas and findings, which was considered as a pivotal practice for postgraduate students in Korea.

> Writing is essential to transfer information and ideas, and to develop engineering fields. After one writes a paper well, he or she may have a chance to present it in public. (KS-18P)

> Well-written papers expressing their own findings and arguments are most important for students, and technical contents are mostly communicated by written documents. Writing papers is the important job for postgraduate students, and writing in English is the basic skill needed, even in domestic engineering fields. (KL-2)

These requirements indicate that writing skills in English are enormously important for students. However, many KSs perceived their deficiency in writing skills, as KS-9M remarked:

> In particular, writing skills are not only important but also deficient for most Korean students. (KS-9M)

Participants thus perceived that writing to communicate their work is difficult, and were concerned about their deficient writing ability, as these deficiencies may cause inefficiency for students when writing theses and papers.

3. Reading and Writing Skills

Numerous respondents in the interviews illustrated the importance of various skills supporting each other. For instance, participants considered that reading and writing were *inseparable* and that one's good writing skills came from good reading skills.

> Once one can acquire writing skills, reading skills will follow naturally. (KS-18P)

KSs perceived both reading and writing as the basic crucial skills for sharing ideas with other engineers in the community.

> The basic issue in doing engineering is to be able to understand others' work and to share our findings with others. In doing these jobs, both reading and writing skills are very crucial. (KS-1P)

Therefore many respondents emphasized the inseparable relationship of reading and writing skills. This is probably because these skills constantly interact together in text processing (Johns, 1997), and the reading of source texts in the appropriate genres carefully and extensively provides resources, and promotes the modelling and recognition of typical features in the discipline (Reid, 1988 as cited in Flowerdew & Peacock, 2001). Shaw (1991) demonstrated that this composing process was most frequently used by science and technology postgraduate overseas students at Newcastle University in the UK. Academic writing processes may include a creative organization of authors' ideas through reading related models in a range of genres, as well as a process of creating and discovering meaning (Zamel, 1982). Therefore it is beneficial if engineering students are supported through EAP programmes by knowledge of genres, structures, rhetoric, registers and conventions of writing papers and journal articles in their discipline.

4. Speaking Skills

Speaking skills were considered pivotal in Korea, because KSs nowadays have more chances to present at international conferences or to collaborate with foreign researchers than before. They were aware of the demands for natural, clear and prompt speaking so as to have *good relationships* with foreigners.

> To collaborate successfully with foreign researchers and to have good relationships with foreign buyers in the global era, we need fluent speaking skills. (KS-4P)

Students were aware that they were deficient in speaking and were in need of more opportunities to exercise formal or informal speaking skills in the local context.

> As for me, I have acquired reading and writing skills to some extent. So, I need to improve speaking skills. (KS-13PD)

> Despite the importance of oral communication in engineering, the amount of time and chances to practise speaking is relatively limited. (KS-12P)

KLs perceived that students work hard and spend most of their time extracting data from experiments in the laboratory, but do not have time for practising oral presentation skills. This situation has led to unsatisfactory outcomes and frustration when students present at international conferences, regardless of the quality of their study.

> So far, our English education has focused on reading skills. Therefore, in presenting, more precise and better expressions in English are problematic for students. Even if our students did the same things in their research, other foreign students, like American students, present as if they did huge amounts of work. On the other hand, our students express themselves as if they did only small things, although they did a great amount of work. It is a very important issue, I think. This comes from the fact that Korean students cannot use English well. So presentation skills are crucially necessary for students. Especially in the engineering area, students and researchers should make their

research public. So how they can transfer and share the results to others is a critical issue. (KL-9)

Recognizing the difficulties in students' speaking, KL-14 also emphasized that students needed to speak *clearly* and *fluently*.

Our students can speak English at least to transfer their ideas to others, but they may have difficulties in speaking English fluently. They should be at the level of speaking English fluently. (KL-14)

Therefore the demands upon Ph.D. students for oral presentations of their ideas were quite remarkable and almost as important as writing papers. Those demands are greater than in humanities or human science subjects where, even if their spoken English is not good, students can rely more upon reading and writing papers for their academic performance. Despite the growing demand to speak English, students seemed to lack credible speaking skills in the Korean context.

5. Writing and Speaking Skills

KLs emphasized the importance of both writing and speaking skills for postgraduate students, to enable them to *express* their research and findings at international conferences or in journals.

For postgraduate level students, just having a reading skill is not enough. They also need to express their research and the work they've done not only by speaking, but also in written forms of literature such as journals and conference proceedings. The essential component is writing and expressing himself or herself in a systemic, clear and straightforward manner. (KL-1)

Thus lecturers strongly underscored the importance of adequate speaking and writing skills for postgraduates to express their work and opinions in the global community.

In particular, for engineering Ph.D. students, writing and speaking skills to present their own work and findings to the international conferences and journals are inevitably emphasized, because students are eagerly expected to join the

global community in Korea. As "public behaviours" (Coleman, 1991, p. 17), the use of these skills is anticipated to conform to the norms of the global academic community. Throughout students' postgraduate courses, writing and speaking practices in the global forum not only accelerate the formulation of their engineering ideas, but also offer opportunities to glimpse the expectations of the global community.

KS-17P who was almost in the last period of the Ph.D. course perceived that he had become used to academic practices in English, as he had accumulated engineering knowledge over a number of years. When students had nearly completed their Ph.D. courses, they gained some confidence in English, at least for the purposes of presenting their own work.

> When I was at the undergraduate level or at the early stage of a master's degree, I had great difficulties in presenting my research in English, but now I am used to it. I can manage to write my thesis and explain my findings in English without much trouble, as far as my research is concerned. (KS-19P)

As students progressed in knowledge of the subjects throughout their academic lives, they seemed to acquire the necessary writing and speaking skills for the discipline as an integral part of learning. The particular variety of linguistic rules and skills seems to be integrated with the specific knowledge and culture within the discipline, rather than skills and languages being transferable to other disciplinary areas.

Therefore, 'good' language skills may depend on a clear understanding of contents and conventions of engineering. For example, proficiency in skills such as those needed for oral presentations and writing papers is premised on acquiring an understanding of disciplinary knowledge by reading much relevant literature. Other skills, such as the logical development of ideas, reading and searching for useful information and establishing research directions, are all fundamentally grounded on solid engineering knowledge and conventions. Both students and lecturers were also well aware of the importance of specific academic writing skills in the discipline, which differ from those used in their daily lives. These examples clearly indicate that for engineers the use of literacy in English is incorporated with the knowledge and epistemology of the discipline.

6. Listening Skills

Listening was also prioritised by several respondents as a fundamental skill required for students to understand comments and acquire information effectively and clearly at talks, lectures or conferences, where communication is now conducted in English in Korea. Listening was, however, perceived as much harder than reading because students cannot revisit the text.

> First of all, we need to listen to others' ideas well, because listening is the first step preceding further work and presenting their own ideas and opinions. When we are able to listen first, then, we can acquire other skills. Reading and listening skills are equally important, but reading skills have been acquired at a certain level by now and we can read materials over and over again, but if we do not understand while listening, we lose a chance catch the points. (KS-4P)

> They can manage to speak anyway, although their speaking is clumsy and it will take time to have good speaking skills. But, if they cannot listen to others' talks properly at seminars and conferences, then they may have huge difficulties in communication. (KL-14)

We see that whereas in previous years reading was the only major skill needed to acquire information in Korean academic settings, now listening is also considered as fundamental for performing academic practices. This change indicates the extension of English language oral/aural communications within the Korean academic settings. Listening skills are therefore crucial particularly because the information offered during oral communications is not repeated in the academic setting.

7. Speaking and Listening Skills

KS-4P was well aware that both speaking and listening skills were crucial for questioning and answering at seminars and meetings with foreigners. Oral/aural communication skills were crucial for social relationships and interactions with foreign engineers as well as for academic performance.

With fluent speaking skills, we can keep good relationships with foreign buyers. To collaborate with foreign researchers successfully in the global era, first of all we need to listen to others' ideas well. (KS-4P)

These oral/aural communication skills were considered by KS-6P more important and difficult to acquire.

Speaking and listening skills are more crucial than reading and writing skills. Reading and writing skills can be overcome by studying alone and can be managed by our efforts. But speaking and listening cannot be acquired in a short time. Continual listening and speaking practices are needed. Also, if we go abroad or to international conferences, if we cannot reply directly to the questions, we may face great difficulties. (KS-6P)

In short we see that the requirement of competent oral/aural communication skills made Korean students anxious about these skills.

8. All Language Skills

All language skills appear to be important for Korean students in Korea, because none of the skills can be neglected in academic practices and Korean students, as non-native speakers, may lack any of them.

All four skills are interrelated and important. (KL-3)

This may occur because "skills are not normally activated in isolation from each other" in real-life situations (Johnson & Johnson, 1998, p. 322). Thus many participants commented that all of the skills were important as they worked collaboratively. Therefore we should note that participants were often not able to separate each language skill, but they highlighted the need for the integration and balance of language skills in academic practices in Korea. Within engineering, the lack of any one language skill may have serious consequences for students when they perform academic practices in their community.

We may conclude that it is unsatisfactory to instruct students in reading or listening skills separately in the way that students have been taught traditionally

in Korea; they should be able to adopt all language skills collaboratively and competently when studying in the discipline (Benson, 1989; Canagarajah, 2006; Coleman, 1991). As Hinkel (2006) states, language learning now seems to place "an increased value on integrated and dynamic multi-skills" (p. 113) "to increase learners' opportunities for L2 purposeful communication, interaction, real-life language use, and diverse types of contexualised discourse" (p. 114). Students need to employ *multi-skills* as essential components for meaningful communication throughout their academic lives in the era of globalisation.

In contrast to earlier times, schools and society now encourage Korean students not to remain in domestic settings, but to interact with foreign engineers and participate in global academic practices. Although some actual practices of the academic culture and pedagogy may still largely remain in the Korean tradition, globalisation has enormously changed the current academic circumstances, demanding more interactions and communicative skills to enable participation in the global forums of the engineering community. This change has rapidly transformed engineering academics' perceptions about the needs for sophisticated and diverse skills in English, in sensitising themselves to the international expectations of the engineering academic community. Therefore the current changing academic situation of globalisation has significant implications for the renovation of EAP programmes in Korean universities to include multi-skills approaches and discipline-specific literacy.

Finally, facing the current distinctive and urgent needs to manage the daunting tasks imposed by the local and global practices in the community, students seemed to struggle due to their lack of necessary language skills and strategies in English. Korean students were anxious about their competence in the writing, speaking and listening skills needed to pursue their academic goals or engage in academic practices. Most students regretted their limited chances to acquire any formal and informal speaking, writing and listening skills, and ardently sought for more time to practice these skills in or outside English classes. Subject lecturers also pointed out students' problems of language skills, urging students to find ways to fulfil academic tasks in English in academic practices. Well-organized EAP programmes focusing on multi-skills instruction and including

discipline-specific literacy and conventions may provide students with better preparation for participating in academic practices in the community.

V. CONCLUSIONS

This paper has made use of data on engineering postgraduate students' and lecturers' perceptions regarding Korean engineering students' needs in language skills in Korea. Participants have shared perceptions of the needs for multi-language skills integrated with engineering disciplinary knowledge and conventions. Contrary to the general belief that there must be different preferences for language skills among students and lecturers, participants seemed to agree that students are required to be equipped with a flexible combination and balanced competence of all language skills, in order to fulfil real-life communicative tasks and to engage in meaningful conversations in the engineering community. Engineering academics also clearly acknowledged the importance of discipline-specific skills for their study practices, indicating that the use of language skills is contextualised in the discipline rather than transferable to other disciplinary areas. That is, "knowledge" is seen as "a 'language game' that is maintained through the interaction of community members" (Canagarajah, 2002, p. 30).

Students are involved in various academic practices in English, requiring competence of all kinds of language skills. Thus the practices in which students need to use English are expanding, and the requirements of discipline-specific literacy are increasing in Korea. In order to participate constructively in the global academic community, students, therefore, seem to require unified access to discipline-specific literacy to be genuine members of the community in the global age.

To sum up these thoughts, the skills-based needs of learners should be understood specifically along with the particular academic culture and conventions of the discipline in which the skills are used. Additionally, the practice of EAP teaching should encompass multi-skills in Korea, because skills interact during the

information exchange process and students need to use integrative forms of literacy.

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APPENDIX

Interview Questions for Students

1. What is your department?
3. Which course are you taking (M.Sc., Ph.D., or Post Doctor)?
4. How long have you studied your subject? What is the goal of your current subject study? Any plans for future study?
5. Of the four major language skills (Reading/ Writing/ Speaking/ Listening), which are the most essential to success in your study? Why do you think so?

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