Academic English Language Needs Assessment: The Case of Undergraduate Engineering Students at Hawassa University

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Abstract

The main purpose of this study was to identify the language skills and the academic tasks that undergraduate engineering students needed to carry out for their study at HU. To achieve the intended objectives, a cross-sectional survey research design with a mixed method was employed. Two sets of questionnaires were administered to systematic random samples of 284 engineering students and 100 engineering instructors and semi-structured interviews were also carried out with a purposively selected 5 engineering students and 5 engineering instructors to corroborate the results. The analysis of data from different sources showed that engineering students needed the receptive skills followed by the productive skills for their engineering study. With regard to the academic tasks in each skill, the most common and highly required tasks in a descending order in each skill were reading: textbooks, lecture notes, reference books, research papers, and manuals; writing: research reports, internship reports, exam answers, lab reports, and assignments; speaking: presentation of their internships, research reports and assignments, defenses, introductions, asking and answering questions, and expressing opinions; listening to: lecture, questions in class or defense sessions, presentations, discussions, instructions and online resources. Based on these findings implications were made for future research and classroom instruction.

Keywords: academic English, needs assessment, engineering students, undergraduate

1. Introduction

The emergence of English for Specific Purposes (ESP) teaching movement resulted from the English language needs of the learners for specific purposes in accordance with their professions or job description (Dudley-Evans and St John, 1998). According to Paltridge and Starfield (2013) ESP refers to the teaching and learning of English as a second or foreign language where the goal of the learners is to utilize English in a particular domain. That is, the content and aims of the course are targeted to the specific needs of the learners. ESP courses generally focus on the language, skills, and genres pertinent to the specific activities the learners need to carry out in English.

For much of its infancy, ESP was mostly concerned with the teaching of English for Academic Purposes (EAP); that is, most of the materials produced, the course descriptions written and the research conducted were in the area of EAP (Dudley-Evans and St John, 1998). Moreover, as Kawpet (2009) asserts, the development of EAP is derived from the awareness of ESP practitioners that all the tertiary level students possess different learning needs and this cannot be achieved by teaching them the same type of English language. Sabariah and Rafik-Galea (2005), for instance, see the development of EAP as a result of dissatisfaction with the lack of generalizability of ESP courses.

EAP is usually described as teaching English with the aim of assisting learners' study or research in that language (e.g. Flowerdew and Peacock, 2001; Jordan, 1997). It is as Hyland (2006) underscores a specialized English-language teaching established in the social, cognitive and linguistic needs of academic target situations, providing focused instruction enlightened by interpreting of texts and the constraints of academic context. Moreover, EAP according to Charles (2013) focuses on researching and teaching the English required by those who use the language to carry out academic tasks.

Any EAP course starts with the question of why a group of students are learning English. It is a point which helps

specify the course and makes it appropriate for learners by taking the world outside the language classroom into consideration (Hyland, 2006). As Long (2005, 2015) strongly argues a one-size-fits-all approach has long been challenged by research findings on the specificity of the tasks, genres and discourse practices that language learners come across in the varied domains in which they must function.

As Long (2005) stresses, in foreign and second language teaching one of several consequences is the increasing importance attached to careful studies of learner needs as a prerequisite for a sound course design. In addition, according to Shing and Sim (2011), the design and implementation of any curriculum for EAP courses should take into account the different language needs of the target learners.

As Shin (2008) further stresses, engineering students need to accumulate disciplinary knowledge in English medium academic settings, identify themselves as qualified academics and participate actively in their international intellectual community. For most of these students, English tends to be an obstacle or burden while studying their engineering subjects, although English is the main medium of instruction in engineering.

In Ethiopia, English language plays various roles in the academic and other social, economic, political, and business sectors (Tesfay, 2004). It is the medium of instruction at secondary schools and universities despite the policy from 1994 states that English is taught as a foreign language from year 1 of primary school.

Recently, in the higher learning institutions all universities run their education through the medium of English language. Almost all academic subjects with the exception of a few Ethiopian languages such as Amharic, Afan Oromo, Tigrigna, etc. are taught in English and other academic correspondences are carried out through the medium of English in Ethiopian universities. In this regard, mastering English is essential for students to succeed in learning their subjects through the medium of English textbooks and lectures. Nevertheless, at a university level in Ethiopia, only General English language courses are offered irrespective of the disciplinary differences of the students (Biniam, Adinew and Nelson, 2015).

The present researcher has taught English common courses such as *Communicative English skills* and *Basic Writing skills* across various disciplines including engineering students for several years. However, he observed that the students of particularly certain disciplines such as engineering showed the least amount of interest in English courses they were taught and were observed contributing very little for their classes.

While there could be several factors for this lack of the students' interest in the English classes, such as the teachers' approach and training, the students' poor background of learning English, and so on, the researcher strongly feels that the nature and content of the courses itself, i.e. the course contents and materials being too general and not based on the interests and needs analysis of any particular group of students could have significantly contributed.

Currently the Ethiopian government has placed a special attention to science and technology fields with the aim of transforming the country from an agriculture-led economy to an industrial one. As a result, the Ministry of Education has given a large proportion of university enrollment to science and technology disciplines in comparison to social sciences and humanities. This indicates the degree of emphasis given to these fields. Hence, there is a big role engineering fields are expected to play in the realization of the country's short and long term developmental and transformational goals.

Orr (2010: 216-17) explains that an *ability to function in multidisciplinary teams* (italics in original) requires engineers to be able to communicate both technical and nontechnical information to other people on a project team who may not be familiar with some of the vocabulary or concepts being discussed. And *the ability to communicate effectively* (italics in original) extends the need for competence in English to include all aspects of spoken and written communication that are required to connect professionally with others for all of the academic and professional purposes that characterize a student's field.

In congruence with the above expectations, the common elements in the Ethiopian National Harmonized Engineering Curriculum of 2013 about the expected competencies of the graduates' profile besides having sound technical and disciplinary knowledge of engineering and mathematics, critical thinking and problem solving abilities, the graduates are expected to have the *ability to function in multidisciplinary teams* and *an ability to communicate effectively both orally and in writing*. These lastly mentioned competencies in this case obviously involve English language skills for effective communication. In addition, the document clarifies what the above communication skills that engineering graduates are required to have as follows:

i. *An ability to participate effectively in group discussions and team assignments, and oral and written communication.*

ii. An ability to express their ideas and present their projects successfully.

iii. Developing good communicative skills in preparation of technical proposals and presentations (P. 11)

Thus, engineering students need a good knowledge of English language to carry out various activities to become successful in their field of study and to be well-equipped for their future workplace effective communication. Since all engineering students at Hawassa University learn their subjects through the medium of English, the making of English courses relevant and focused to their field of study can play a significant role in equipping the students with the necessary knowledge and skills so that they can contribute their best to the development and transformation of the country. With only general English courses it appears difficult to address the English language needs of engineering students because of the limited time given to study the English courses. Therefore, it seems advisable to make these courses as focused and relevant as possible to their field of study to address the specific academic needs of these students.

1.1 Research Questions

1. Which English language skills are particularly important for engineering students' academic study at HU?
2. What academic tasks are engineering students required to carry out in each of the language skills at HU?

2. Literature Review

2.1 Needs Analysis

Needs analysis (or needs assessment), according to Upton (2012), refers to the systematic investigation of needs for the design of a language course and the optimization of language teaching and learning, and has been identified as a defining characteristic in the field of languages for specific and academic purposes from the start. In addition, Widdowson (1981:1) describes the overall idea of ESP by declaring that "if a group of learners' needs for a language can be accurately specified, then this specification can be used to determine the content of a language program that will meet these needs."

As Bocanegra-Valle (2016) underlines, needs analysis is fundamental to curriculum renewal, course and syllabus design, materials development and methodology updating. There is a strong support in the literature on the linkage of needs analysis to course planning, curriculum design and materials development (Basturkmen, 2010; Belcher, 2006, 2009; Brown, 2009; Dudley-Evans & St John, 1998; Hyland, 2006; Jordan, 1997; Long, 2005; Upton, 2012). ESP and needs analysis literature specifies that learner needs must be addressed if a course is to succeed (Bosher & Smalkoski, 2002; Garcia, 2002).

2.2 Needs Analysis and Task-based Syllabus

As many researches in SLA show synthetic syllabuses, such as the grammatical, lexical, notional-functional failed to enable the learners to effectively perform the tasks in the target contexts. Analytic, for example, task-based syllabuses have proved to equip learners perform their target tasks in the academic and workplace contexts (Long, 2005; Bosher & Smalkoski, 2002). Adding independent, converging motivation for a shift towards analytic, e.g., task-based, syllabuses of some kind, a variety of studies have suggested that it is often not lack of linguistic competence per se that renders learners unable to perform adequately at work or on an overseas university course. Rather, it is learners' inability to accomplish the tasks required of them, for which language use is often highly differentiated and both field-and context-specific, and for which much more than L2 linguistic knowledge is needed (see, e.g., Bosher & Smalkoski, 2002; Jacobson, 1986; Jacoby, 1999; Long, 2005, 2015).

Hence, many modern NAs use task as the unit of analysis, with analysts out in the field collecting samples of the discourse typically involved in performance of target tasks relevant for the communicative needs of particular groups of learners (Long, 2005, 2015).

However, both the functional and register analysis approaches to needs have been criticized on various grounds. Long (2005), in his seminal publication on second language needs analysis, makes the point that syllabi grounded in notional-functional needs still relied, as before, on the intuitions of applied linguists and language teachers rather than domain specialists and tended to result in synthetic syllabi in which the target language items were presented as itemized lists. A failing of Munby's model was that its detailed specification of communicative events for a given participant contained no specification of the actual language forms realizing specific needs (Schutz and Derwing 1981). Neither did functional syllabi take account of empirical data. While the register analysis approach did provide somewhat sparse linguistic data on the target situation, little attempt was made to correlate grammatical findings with different sections of text and their respective rhetorical purposes or to seek advice from "specialist informants," as in

later genre-analytic approaches (Swales 2004; Flowerdew, 2013).

Task-based needs analysis as Long (2015) presents is distinguished from a traditional needs analysis framework such as *target situation analysis* (Munby, 1978)*, present situation analysis* (Richterich & Chancerel, 1980), and *learning centered approach* (Hutchinson & Waters, 1987) in that the former adopts tasks as the unit of analysis and syllabus design while the latter have used linguistic categories (lexical, structural, notional, and/or functional) as the units of analysis. Long (2015) also claims that task-based needs analysis has advantages over other traditional needs analysis approaches since: (a) task-based needs analysis provides more valid data on the target tasks by utilizing the knowledge of domain experts rather than outsiders' such as language teachers and applied linguists; (b) task-based needs analysis identifies the real-world uses of the target language, the dynamic qualities of the target discourse while traditional linguistically based needs analyses provide a list of de-contextualized structural items; and (c) the results of task-based needs analysis can be readily used as input for the task-based or content-based course design.

2.3 Characteristics of English for Science and Engineering

English for Science and Technology (EST) as Li and Li (2015) put generally refers to English used in scientific publications, papers, textbooks, technical reports and academic lectures, etc. It is used to describe the physical and natural phenomena, their processes, properties, characteristics, laws and application in productive activities.

According to Parkinson (2013) because of the rapid expansion of English for science and technology (EST) in the last 50 years, science and technology were an early focus for ESP researchers (e.g. Barber, 1988; Braine, 1989; Halliday, 1993a). The initial interest of EST teachers and researchers was on linguistic forms, with later emphasis on skills, a more recent focus has been on disciplinary socialization, and most recently a critical perspective, which considers how literacy practices express societal or disciplinary power differences (Parkinson, 2013).

Halliday (1993a) comments that a text is recognized as scientific English because of the combined effect of clusters of features and, importantly, the relations of these features throughout a text. Yet characteristic forms and vocabulary of science or technology should not be considered as separate from the genres in which they occur, because linguistic differences are part of what constitutes genre. Similarly the genres of science and technology partially constitute the various disciplines, and cannot be separated from them. Being a member of a discourse community involves using its characteristic language and genres, and also sharing its values (which are reflected in its language and genres), and taking on a role recognized by other members of the discourse community (Paltridge, 2012; Parkinson, 2013).

2.4 Common Genres for Engineering Fields (Science and engineering)

The genre approach in EAP settings concentrates, as the term suggests, on teaching particular academic genres, such as essays, research reports, and theses and dissertations. This might include a focus on language and discourse features of the texts, as well as the context in which the text is produced (Paltridge, 2001).

To mitigate teachers' outsider status and gain insight into the genres and culture of these communities, researchers have worked on identifying key EST genres. Swales (2004) has noted that genres in any discipline or discourse community come in related sets, such as the research article (RA) and the lab report, the feasibility study and progress report, and the engineering presentation and design report. Much progress has been made also in analyzing the rhetorical and linguistic features of genres and identifying how they reflect the values and culture of the discourse community. The task is complicated by the fact that the key genres of these discourse communities are not identical with the genres demanded of students. Having identified work-related genres and/or pedagogical student genres, the EST teacher must consider how best to teach them in order to provide access to the discourse community (Parkinson, 2013: 160).

2.4.1 Undergraduate Textbooks

Textbooks are indispensable to academic life, facilitating the professional's role as a teacher and constituting one of the primary means by which the concepts and analytical methods of a discipline are acquired. They play a major role in the learners' experience and understanding of a subject by providing a coherently ordered epistemological map of the disciplinary landscape and, through their textual practices, can help convey the values and ideologies of a particular academic culture. This link to the discipline is crucial for novices seeking to extend their competence into new areas of knowledge and trying to cope with the specific demands of a new interpretive community. Thus students, particularly in the sciences, often see textbooks as concrete embodiments of the knowledge of their field (Hyland, 2009). Hyland, however, argues that university textbooks are something of a neglected genre that little is known about their rhetorical structure, their relationship to other genres, or the ways that they vary across disciplines.

Swales (1995:4) characterizes textbooks as ‘‘conservative encapsulations of prevailing paradigms. Appearance,

arrangement, certitude, and style…make them examples of canonizing discourse''. He notes that textbooks have little hedging, little reference to human agency, use abstract nominalization as subjects of processes, and mediate difficult material. Myers (1992:8) notes that textbook authors arrange currently accepted knowledge into a coherent whole, while by contrast journal article authors try to make the strongest possible claim for which they can get agreement. This distinction is significant because textbooks are the most prominent genre given to undergraduate students to read, while the laboratory report, a genre with strong similarities to the research article, is the genre students are most frequently expected to produce (Jackson et al: 2006: 263).

Myers (1992:13) suggests that the tasks involved in reading a textbook include arranging facts in order; separating facts from researchers; taking most knowledge as accepted; and inferring knowledge using cohesive links. Readers of articles, by contrast, sort out new knowledge from old; attribute credit to researchers; assess the certainty of statements; infer cohesive links between knowledge; and trace the relation to other texts. In addition, Hyland (2009) argues that if we follow Paltridge (2002) and Berkenkotter and Huckin (1995) then we can conclude that reading and learning from the textbook does not sufficiently apprentice students in the ways of producing scientific knowledge.

2.4.2 Undergraduate Assignments

Across every field of study, students write assignments and exams for a host of reasons: to demonstrate their knowledge, synthesize ideas, or present new research (Graves and White, 2016). However, university writing assignments vary tremendously across the academic disciplines, requiring cognitive tasks from basic summary to analysis and synthesis of conceptual material to development of original ideas. Writing assignments in disciplinary courses must resonate or connect with writing assignments in first-year composition courses for students to connect these experiences in meaningful ways. Yet the variability of assignments across disciplines presents challenges for students. Braine's (1989) study of writing assignments in science and engineering courses found that most assignments were either lab or design reports (other writing included summary/reactions, case studies and library research papers).

While it is necessary for instructors in different disciplines to provide direct instruction about the genres of writing they ask students to produce, it is by designing writing assignments that ask students to make meaning out of material they are learning that instructors can engage students deeply in course content, while also teaching them the conventions and epistemologies of a particular discipline (Soliday, 2011). For that reason, scaffolding assignments, providing direct instruction on genres and providing feedback that addresses both global and local concerns are essential components of writing assignments for multilingual writers (P.301).

As Hyland (2006) argues surveys of academic writing tasks, for example, have asked both subject tutors and students to rank the tasks assigned or skills needed in particular courses but often fail to get beyond generic labels. In other words, they tend to use a set of preconceived classifications such as 'essay', 'report' or 'critical review' without recognizing that these often mean different things in different courses and disciplines.

2.4.3 Lab Reports

It appears that from all the variety of tasks that engineering students are required to carry out, writing lab reports stand out as most common and most frequent throughout their academic endeavor. In analyzing experimental lab reports across different technical and engineering disciplines, for example, Braine (1995) found that, despite the common genre name, some fields required reports with abstracts and others didn't; some included description of apparatus but not others; some had recommendations, others had a specification of a hazards section or a heading labeled 'theory', and so on. "In fact, no two disciplines had experimental report formats that were the same in their move structures" (Hyland, 2006:78). The lab report socializes students into core disciplinary values in experimental science including conventions for expressing objectivity, a value for quantitative methods, the need to show continuity of one's own findings with the literature, and a preference for mathematical models (Parkinson, 2013:162).

The report genre may be distinguished from other kinds of writing that science and engineering students do in that it involves the analysis of measured data, either collected by the students themselves or supplied by their lecturers. The centrality of the laboratory report genre in undergraduate science and engineering is indicated in the finding by Braine (1989), who examined the writing tasks given to undergraduate science and engineering students, that 85% of these fall into the category comprehending research/experimental/laboratory reports. Behrens (1978) surveyed university science teaching staff and found that 93% of the writing tasks they assigned were laboratory reports.

2.4.4 Design Reports

The design report is identified by Marshall (1991) as one of the important written engineering genres. Design,

usually taught through problem-based learning (PBL), is a key outcome for engineering education. PBL enculturates students into the activities of engineering by using group work, as practicing engineers do, to solve design problems. Students make and test the products of their designs. They report on this process in the design report as well as interim progress reports. Unlike a lab report, design reports consider the feasibility and cost of designs as well as match to specifications, not merely scientific/ technical elements (Parkinson, 2013).

Part of the same genre set as the design report is the design presentation. The work of Dannels (2003) illustrates how ESP teachers have investigated disciplinary communities' values and activities. In teaching the design presentation, Dannels found that although this genre was designed to simulate a workplace environment, professors had academic expectations.

Design reports are used to communicate your solution of a design problem, usually to your boss or a colleague. The design report is a critical component of the design process. An extremely competent or ingenious design solution cannot be communicated by drawings alone; it needs to be supported by comprehensive documentation (Silyn-Roberts, 2013).

2.4.5 Academic Lecture

Upon entering university, students encounter many aspects of academic life to which they may have been previously unaccustomed, not least of which is the language specific to the context. However, comprehension of academic spoken English, such as that found in lectures, may be one of the most challenging aspects of studying at English-medium universities (Dang and Webb 2014; Flowerdew 1994). Moreover, academic listening comprehension is vital because so much of what university students need to understand and learn is conveyed through the lecture (Hyland 2009; Hyland and Shaw, 2016).

The centrality of lectures to undergraduate teaching and learning has long been recognized. It is also widely acknowledged, however, that listening to lectures can present a considerable processing burden to students, especially those working in a foreign language (e.g. Flowerdew, 1994). Comprehending lectures according to Rost (1990) cited in Hyland, 2009:97) is challenging for students as it requires two main cognitive operations: First, academic listening involves 'bottom-up' processing of language input in real time, requiring students to attend to data in the incoming stream of speech signals. Second, it also draws on 'top-down' analysis of what is being said by utilizing prior knowledge and expectations to create meaning.

Olsen and Huckin (1990) studied the oral genre, the academic lecture in engineering. They found that students ignored the rhetorical problem–solution structure of the lecture. They understood the details, but ignored the main points and how they fitted together. They explain this failure as stemming from reliance on board notes, a focus on absorbing facts, and ignoring introductory remarks, prosodic markers, and rhetorical cues emphasizing main points. They suggest that the problem-solution-based nature of science and engineering is not stressed enough, either within the disciplines or within EST (Parkinson, 2013).

3. Methodology

3.1 Research Design

This study employed a *cross-sectional survey* research design for the assessment of academic English language needs of undergraduate engineering students since it involves different stakeholders and requires obtaining of their opinions, perceptions and preferences. In addition, this research design is convenient to collect and analyze both quantitative and qualitative data about the research problem. That is, it allows the researcher to gather quantitative data involving many respondents' views and perceptions through questionnaire, and qualitative data to justify their responses through interviews and classroom observation (Cohen, Manion & Morrison, 2007; Bhattacherjee, 2012).

3.2 Sources of Data

The main sources of data for this study were the final (fifth) year engineering students of Hawssa University and their instructors who were offering different courses to these students. The rationale behind choosing the final year engineering students was because besides taking the English courses in their earlier years, they had already taken most of the major area courses expected of them to accomplish their studies in different engineering fields. Hence, they were in a better position to identify and provide information about the level of importance of the language skills and the kinds of tasks they needed to carry out in their specialty areas. In addition, engineering instructors who were teaching different engineering courses in the institute and assigning various tasks and assignments to these students to be carried out and thereby assessing their works were another potential source of information to find out the

students' academic English language needs. They were appropriate to identify and give information about the students' English language needs and the target tasks and activities the students were required to carry out throughout their study.

3.3 Instruments of Data Gathering

To collect the necessary data for this study, two tools of data gathering were employed. These were questionnaires, and semi-structured interviews.

3.3.1 Questionnaire

In order to collect the relevant data to meet the research objectives of this study, two sets of related questionnaire were developed by the researcher for engineering students and engineering instructors of HU. The questionnaires were developed based on the pertinent literature by adapting mainly from Hyland (2006, 2009), Kawpet (2009), Evans and Green (2007), Brown (2016) and Woodrow (2018). Incorporating the comments obtained from the pilot study, the researcher employed the questionnaires as a main instrument. The questionnaires consist of close-ended items with 5-point Likert scale to elicit information about the level of importance of English language skills/areas for engineering students' academic study, engineering students' perceived level of English language proficiency, expressing the level of need of carrying out skills-based tasks for engineering students' academic study.

The questionnaires were administered to a sample of 284 engineering students and 100 engineering instructors after validating them through the comments from colleagues and supervisors for content and language clarity and through the pilot study to verify their validity and reliability.

3.3.2 Semi-structured Interviews

Besides questionnaires, semi-structured interviews were another important in-depth data gathering tool in this study. It helped to obtain data about the research problem from the participants' own perspective. It was held mainly to consolidate, intensify and justify information obtained through questionnaires. In light of this, the interview guides were designed and conducted with 5 engineering instructors and 5 engineering students using purposive sampling technique to elicit the necessary qualitative data about the academic English language needs of engineering students.

3.4 Procedures of Data Collection

In order to gather the necessary data for this study the following procedures were followed. First, the semi-structured interviews were carried out with purposively selected engineering students and engineering instructors to elicit information about the English language skills and target needs of the students using interview schedules.

Following the structured interviews, the two sets of questionnaires were administered to the participants with a clear description of the purpose properly explained and a request for cooperation. While the instructors' questionnaire was distributed individually so that they could fill them out in their time of convenience and return within the time frame, the students' questionnaire was administered by the researcher in person with the help of an assistant in their classrooms by explaining the purpose of the study and giving clarification where necessary. The objective in doing so was to let the students fill in the questionnaires carefully and to increase its return rate.

3.5 Methods of Data Analysis

The data collected through the questionnaires were first coded and entered on the Statistical Package for Social Sciences (SPSS Version 21). Then they were analyzed quantitatively by using descriptive statistics such as frequency, percentage, mean and standard deviation with the help of the statistical software. On the other hand, the data obtained through structured interviews were organized around themes and analyzed using a modified grounded theory method, a process of classifying and categorizing text data segments into a set of codes (concepts), categories (constructs), and relationships (Bhattacherjee, 2012). The interpretations are grounded in (or based on) observed empirical data using the NVivo 10 software and then thematically analyzed qualitatively. This program can quickly and efficiently organize, search, sort, and process large volumes of text and other kinds of data using user-defined rules. To guide such automated analysis, a coding schema should be created, specifying the keywords or codes to search for in the text, based on an initial manual examination of sample text data. The schema was organized in a hierarchical manner to organize codes into higher-order codes or constructs. The coding schema was validated using a different sample of texts, i.e., the pilot data, for accuracy and adequacy.

4. Results of the Study

4.1 Background Information about the Respondents of Questionnaires

The respondents of engineering students who correctly filled in and returned the students' questionnaire were 258 and were composed of four faculties of engineering: namely, Faculties of Manufacturing, 74 (28.7%); Bio-systems and water Resources, 43 (16.7%); Civil engineering and Built Environment, 80 (31.0%); and Electrical and Biomedical Engineering, 61 (23.6%), and from nine departments of engineering: namely, Mechanical engineering, 23 (8.9%); Electromechanical, 21 (8.1%); Chemical, 29 (11.2%); Water Resources and Irrigation, 25 (9.7%); Hydraulics and Water Resources,18 (7.0%); Civil 29 (11.2%); Construction Technology and Management, 23 (8.9%); Architecture, 29 (11.2%); and Electrical and Computer engineering (Communications and Power streams), 61 (23.6%). These were the most prominent departments in terms of their establishment and hosted the majority of engineering students in the Institute of Technology at HU.

Similarly, the total number of respondents of engineering instructors who correctly filled the questionnaire was 87 and was composed of the four faculties: namely Manufacturing, 30 (34.5%); Bio-systems and Water Resources, 19 (21.8%); Civil and Built Environment, 25 (28.7%); and Electrical and Biomedical, 13(14.9%). They were taken from all the 15 engineering departments in varying proportions of which 59 (67.8%) were lecturers, 18 (20.7%) assistant lectures and 10 (11.5%) assistant professors. Concerning their work experience at university, 32 (36.8%) of them had 4 to 6 years of experience, 23 (26.4%) had 1 to 3 years, 15 (17.2%) had 7 to 9 years, 12 (13.8%) had 10 to 12 years, and only 5 (5.7%) of them had 13 or more years of teaching experience at university. This implies that the majority of them had fewer years of teaching experience at university.

4.2 English Language Skills Important for Engineering Study and Workplace Communication

Table 4.1A. Students' Response about the Level Importance of English Language Skills for Engineering Students' Academic Study (N=258)

English Skills	Level of importance (%)					Mean	SD
	1	2	3	4	5		
Reading	-	-	1.9	8.9	89.1	4.87	0.39
Writing	0.4	0.4	4.7	24.6	69.9	4.63	0.63
Speaking	-	1.2	7.4	26.1	65.4	4.56	0.68
Listening	-	-	2.3	22.1	75.6	4.73	0.49

Scale: 1=Not important 2=Of little importance 3= Of medium importance 4=Important 5=Very important

Table 4.1B. Engineering Instructors' Response about the Level of Importance of English Language Skills for Engineering Students' Academic Study (N=87)

English Skills	Level of importance (%)					Mean	SD
	1	2	3	4	5		
Reading	-	-	1.1	20.7	78.2	4.77	0.45
Writing	-	-	-	16.1	83.9	4.84	0.37
Speaking	-	-	3.4	33.3	63.2	4.60	0.56
Listening	-	-	1.1	24.1	74.7	4.74	0.47

Scale: 1=Not important 2=Of little importance 3= Of medium importance 4= Important 5= Very important

Tables 4.1A and 4.1B present data from the samples of engineering students and instructors about the level of importance of English language skills for engineering study at HU. Concerning the importance of reading skill for engineering students' academic study, 89.1% and 8.9% of the respondents of engineering students and 78.2% and 20.7% of engineering instructors respectively replied that reading skill was "very important" and "important" for engineering study with the mean scores of 4.87 and 4.77 respectively.

On the other hand, when it comes to the importance of the writing skill for engineering study, 83.9% and 16.1% of the respondents of engineering instructors replied that writing was "very important" and "important" while 69.9% and 24.6% of engineering students respectively replied that the writing skill was "very important" and "important" for their academic study. This seems to suggest that engineering instructors placed more importance to the writing

skill for engineering study than did the respondents of engineering students. We can also see that the mean score of the writing skill for engineering instructors was very high, i.e. 4.84 with the lowest standard deviation (0.37) while for engineering students' it was 4.63 with relatively higher standard deviation of 0.63.

Regarding the importance of speaking skill for engineering study, 65.4% and 26.1% of the respondents of engineering students replied respectively that writing skill was "very important" and "important" for their academic study with the mean score of 4.56 while 63.2% and 33.3% of the engineering instructors said respectively that speaking skill was "very important" and "important" for their students' academic study with the mean score of 4.60. When we compare the mean scores of speaking for engineering students and instructors which were respectively 4.56 and 4.60 with that of the reading and writing above, it appears that the speaking skill was perceived as relatively less important than the other two skills for engineering students' academic study.

Finally, concerning the importance of the listening skill, 75.6% and 22.1% of the respondents of engineering students and 74.7% and 24.1% of engineering instructors, which was almost similar, replied respectively that the listening skill was "very important" and "important" for engineering study with the very high mean scores of respectively 4.73 and 4.74. This seems to suggest that the listening skill was unanimously perceived as very important by most of the respondents of both engineering students and instructors.

In general, based on the participants' responses it is possible to note that all English skills were important for engineering students' academic study. However, strictly speaking one can see that the samples of engineering students slightly gave the highest priority to the reading skill with the highest mean score of 4.87, whereas the samples of engineering instructors placed the greatest importance to the writing skill for engineering study with the highest mean scores of 4.84.

Finally, from the mean scores of each group of respondents it is possible to put the language skills in order of importance for engineering study. Hence, the respondents of engineering students put the reading skill as the first most important, listening skill as the second most important, writing skill as the third most important and speaking skill as the (fourth) last most important skill for their engineering study. Likewise, the respondents of engineering instructors on their part prioritized the writing skill as the first most important, reading as the second most important, listening skill as the third most important and speaking as the fourth (last) most important.

Based on the interview results, concerning the English language skills most important for engineering students' academic study, almost all of the engineering instructors and students stressed the importance of all English language skills for engineering students' academic study. However, strictly speaking similar to the quantitative results, the interview results also confirmed that the skills in order of importance from the most to the least important for engineering study were reading, listening, writing and speaking. While the respondents of engineering students underscored the importance of reading and listening for the success of their academic study, the respondents of engineering instructors overemphasized the criticality of the writing skill in determining their students' success or failure in their academic endeavor.

4.3 Level Need of Carrying out Academic Tasks for Engineering Study at HU

4.3.1 Academic Reading Tasks

Tables 4.2A and 4.2B present engineering students and instructors' responses respectively about the level of need of carrying out reading tasks for engineering students' academic study at HU. Based on the engineering students' responses, the reading of exercises/ test questions, lecture notes/slides, textbooks (handouts/ course books), research papers/thesis, reference books, project reports, and lab manuals stood out as highly required academic reading tasks for engineering students in a descending order with their mean scores of respectively 4.50, 4.42, 4.38, 4.30, 4.18, 4.17 and 4.16. On the other hand, the reading of academic journals and model codes with their mean scores of 3.61 and 3.68 respectively appeared to be less required by these students in their academic pursuit probably because their instructors did not assign them to read such reading materials.

In the same way, according to the respondents of engineering instructors, the reading of textbooks (handouts), reference books/materials, lecture notes/slides, exercises/test questions, project reports, research papers/thesis, and lab manuals constituted the most prominently required academic reading tasks for engineering students academic study in a descending order with the mean scores of respectively 4.61, 4.56, 4.52, 4.50, 4.48, 4.47, and 4.46. It is also possible to note that the average mean score for these particular reading tasks was nearly 4.5 or greater implying that these tasks are highly required by engineering students for their engineering study. This could be because engineering students were required to read particularly textbooks, reference books, lecture notes, exercises/ test questions and lab manuals throughout their five years of academic study period.

Table 4.2A. Engineering Students' Response about Their Level of Need of Carrying out Academic Reading Tasks (N=258)

Academic reading tasks	Level of need (%)						
	1	2	3	4	5	Mean	SD
1. Lab manuals	2.3	1.2	19	33.3	44.2	4.16	0.93
2. Textbooks (handouts)	0.4	0.8	10.5	37.6	50.8	4.38	0.73
3. Reference books	1.2	1.9	16.7	38.4	41.9	4.18	0.86
4. Lecture notes	1.2	2.0	9.1	29.5	58.3	4.42	0.83
5. Exercises/ test questions	0.4	1.9	7.8	26.7	63.2	4.50	0.75
6. Academic journals	3.5	10.2	31.3	32.0	23.0	3.61	1.06
7. Design reports	0.8	7.0	22.2	33.1	37.0	3.98	0.97
8. Project reports	0.8	5.1	13.7	37.1	43.4	4.17	0.90
9. Research papers/thesis	0.8	5.5	12.5	25.0	56.3	4.30	0.94
10. Safety signs, rules and notices	2.0	9.1	18.9	27.6	42.5	4.00	1.01
11. Model codes	4.5	11.8	23.6	31.3	28.9	3.68	1.14

Scale: 1=No need, 2= Little need, 3= Moderate need, 4= High need, 5= Very high need

Table 4.2B. Engineering Instructors' Response About Their Students' Level of Need of Carrying out Academic Reading Tasks (N=87)

Academic Reading	Level of need (%)						
	1	2	3	4	5	Mean	SD
1. Lab manuals	-	-	4.6	44.8	50.6	4.46	0.59
2. Textbooks (handouts)	-	-	2.3	34.5	63.2	4.61	0.54
3. Reference books	-	-	5.7	32.2	62.1	4.56	0.60
4. Lecture notes (PP slides)	-	1.1	4.6	35.6	58.6	4.52	0.65
5. Exercises/ test questions	-	-	5.8	38.4	55.8	4.50	0.61
6. Academic journals	1.1	1.1	10.3	36.8	50.6	4.34	0.80
7. Design reports	-	3.5	8.1	41.9	46.5	4.31	0.77
8. Project reports	-	-	6.9	37.9	55.2	4.48	0.63
9. Research papers/thesis	-	1.1	10.3	28.7	59.8	4.47	0.73
10. Safety signs, rules and notices	-	2.3	17.2	35.6	44.8	4.23	0.82
11. Model codes	-	4.6	16.1	39.1	40.2	4.15	0.86

Scale: 1=No need, 2= Little need, 3= Moderate need, 4= High need, 5= Very high need

Finally, from the information contained from both groups of respondents, it is possible to see that the most common and highly required academic reading tasks for engineering students at HU appeared to be the reading of textbooks (handouts), lecture notes/slides, exercises/test questions, reference books, research papers/thesis, lab manuals and project reports. However, the total mean scores for the respondents of engineering students and engineering instructors were respectively 4.13 and 4.42 and this suggests that in general engineering instructors placed greater level of importance for the academic reading tasks than did the respondents of engineering students.

Similarly, the interview results also depicted that the major reading tasks for engineering study were the reading of lecture notes (slides), reading of reference books, lab manuals, project manuals or codes and research materials like previously done B.Sc thesis or projects, journal articles, and research methodology books. Some of these like reading lecture notes (slides) and handouts, references and reading lab manuals appeared to be the most common and frequent reading tasks whereas reading tasks such as reading project manuals or codes and reading research materials were mostly needed in their final years.

4.3.2 Academic Writing Tasks

Table 4.3A. Engineering Students' Response about Their Level of Need of Carrying out Academic Writing Tasks (N=258)

Academic writing tasks	Level of Need (%)					Mean	SD
	1	2	3	4	5		
1. Laboratory reports	-	2.3	9.8	37.9	50.0	4.36	0.75
2. Assignments	0.4	2.7	13.6	40.7	42.6	4.22	0.81
3. Exam answers	0.4	2.3	10.2	31.6	55.5	4.39	0.79
4. Research proposals	0.4	0.8	9.3	22.1	67.4	4.55	0.73
5. Research projects or thesis	0.8	1.2	5.9	19.1	73.0	4.63	0.72
6. Field visit reports	0.4	1.6	15.3	41.2	41.6	4.22	0.79
7. Internship reports	0.4	0.4	7.4	30.6	61.2	4.52	0.68
8. Presentation slides	-	1.6	7.8	36.7	53.9	4.43	0.71
9. Design reports	1.2	7.2	17.7	1.7	42.2	4.06	0.99

Scale: 1=No need, 2= Little need, 3= Moderate need, 4= High need, 5= Very high need

Table 4.3B. Engineering Instructors' Response about the Level of Need of Carrying out Academic Writing Tasks for Their Students (N=87)

Academic writing tasks	Level of need (%)					Mean	SD
	1	2	3	4	5		
1. Laboratory reports	-	-	7	44.2	48.8	4.42	0.62
2. Assignments	-	-	10.3	49.4	40.2	4.30	0.65
3. Exam answers	-	-	5.7	40.2	54.0	4.48	0.61
4. Research proposals	-	-	1.1	32.2	66.7	4.66	0.50
5. Research projects or thesis	-	-	2.3	29.9	67.8	4.66	0.52
6. Field visit reports	-	-	14.9	42.5	42.5	4.28	0.71
7. Internship reports	-	-	10.3	42.5	47.1	4.37	0.67
8. Presentation slides	-	1.2	9.3	52.3	37.2	4.26	0.67
9. Design reports	-	2.4	10.6	48.2	38.8	4.24	0.73

Scale: 1=No need, 2= Little need, 3= Moderate need, 4= High need, 5= Very high need

Tables 4.3A and 4.3B present data from the respondents of engineering students and engineering instructors respectively about the level of need of carrying out academic writing tasks for engineering study. According to the respondents of engineering students the first six prominently needed writing tasks for engineering study comprised the writing of research projects or thesis, writing of research proposals, which was part of the research project but written and defended in advance, internship reports, writing presentation slides, writing of exam answers particularly for theoretical/ conceptual courses, and writing lab reports in a descending order with their mean scores of respectively 4.63, 4.55, 4.52, 4.43, 4.39, 4.36.

In the same way, from the engineering instructors' perspective the first six highly required academic writing tasks for engineering students included writing research projects/thesis, writing research proposals, writing exam answers, writing lab reports, writing internship reports, and writing assignments in a descending order with their mean scores respectively 4.66, 4.66, 4.48, 4.42, 4.37, 4.30. On the other hand, it does not mean that the remaining writing tasks such as field visit reports and design reports were not important for engineering study as they had their mean scores of more than 4 means that they were highly needed for engineering study.

It is also important to note that the total mean scores of the two groups of respondents were 4.38 for engineering students and 4.41 for engineering instructors implying that both groups showed nearly equally high amount of need to carrying out the above academic writing tasks for engineering students at HU. Therefore, putting together the results of both groups of respondents the most prominently required academic writing tasks for engineering students

at HU appeared to make the writing of research proposals and research projects/thesis, internship reports, exam answers, lab reports, presentation slides and writing (course work) assignments.

In addition, the interview results also confirmed the aforementioned quantitative findings as they underscored on the need of engineering students to carry out quite a lot of writing tasks and assignments particularly from the second year to the final year to successfully accomplish their fields of study. However, some of writing tasks appeared to be very frequent and very common among all engineering students throughout their study time. These tasks included mainly the writing of assignments and case studies as a coursework requirement, writing laboratory reports, writing design reports, and writing exam answers especially for their theoretical courses. The other important writing tasks they needed for engineering study especially in their senior years were the writing of internship reports, writing research project proposals and project/ thesis reports.

4.3.3 Academic Speaking Tasks

Table 4.4A. Engineering Students' Response about Their Level of Need of Carrying out Academic Speaking Tasks (N=258)

Academic speaking tasks	Level of Need (%)					Mean	SD
	1	2	3	4	5		
1. Asking and answering questions in class and lab sessions	1.2	3.5	14.5	35.5	45.3	4.20	0.90
2. Introducing yourselves and others in class and during field visits in foreign companies	1.2	3.1	13.2	39.9	42.6	4.20	0.87
3. Delivering oral presentations of internships, research reports, projects, etc.	0.4	3.9	9.7	38.8	47.3	4.29	0.83
4. Expressing their opinions or ideas freely during group discussions	1.2	3.1	14.0	40.3	41.5	4.18	0.87
5. Defending their positions during defense sessions	1.2	2.4	11.2	39.9	45.3	4.25	0.84

Scale: 1=No need, 2= Little need, 3= Moderate need, 4= High need, 5= Very high need

Table 4.4B. Engineering Instructors' Response about their Students' Level of Need of Carrying out Academic Speaking Tasks (N=87)

Academic speaking tasks	Level of need %					Mean	SD
	1	2	3	4	5		
1. Asking and answering questions in class and lab sessions	-	-	21.8	31.0	47.1	4.25	0.79
2. Introducing themselves and others in class and during field visits in foreign companies	-	-	14.9	41.4	43.7	4.29	0.71
3. Delivering oral presentations of internships, research reports, projects, etc.	-	-	12.6	40.2	47.1	4.34	0.69
4. Expressing their opinions or ideas freely during group discussions	-	3.4	16.1	35.6	44.8	4.22	0.84
5. Defending their positions during defense sessions	-	-	13.0	41.4	45.6	4.30	0.73

Scale: 1=No need, 2= Little need, 3= Moderate need, 4= High need, 5= Very high need

Tables 4.4A and 4.4B present data respectively from the respondents of engineering students and engineering instructors regarding the level of need of carrying out different speaking tasks for their engineering study at HU. According to the respondents of engineering students, the academic speaking tasks required for engineering study in a descending order of importance were delivering oral presentation of their internships, research proposals and research reports or projects, defending their internship or research works, introducing themselves and others, asking and answering questions in class, and expressing their opinions or ideas in group discussions with their mean scores

of respectively 4.29, 4.25, 4.20, 4.20, and 4.18.

Similarly, the respondents of engineering instructors put the following speaking tasks as relatively highly needed for engineering study in a descending order of importance: delivering oral presentation of their internships, research proposals and research reports or projects, defending their internship or research works, introducing themselves and others, asking and answering questions in class, and expressing their opinions or ideas in group discussions with their mean scores of respectively 4.34, 4.30, 4.29, 4.25, and 4.22. From both groups of respondents we can see that for each speaking task the respondents of engineering instructors appeared to give more weight with the higher mean scores than the corresponding respondents of engineering students. In addition, the total mean scores for the level of need of carrying out speaking tasks are just 4.22 for the respondents of engineering students and 4.28 for that of engineering instructors. This also implies that in comparison with the academic reading and writing tasks above, academic speaking tasks were less highly needed for engineering study at HU.

The interview results also confirmed that there were certain speaking tasks that all engineering students were commonly required to carry out. Hence, the most common speaking tasks for oral presentation by all engineering students particularly in their senior years were the presentation of their internship reports, the presentation and defense of their final year projects or thesis proposals and final reports. On the other hand, the speaking tasks which might be required for presentation somehow frequently but in varying degrees across the engineering departments were the presentation of their course assignments such as case studies, term papers and mini-projects, and the presentation of semester or design projects.

4.3.4 Academic Listening Tasks

Table 4.5A. Engineering Students' Response about the Level of Need of Carrying out Academic Listening Tasks (N=258)

Academic Listening tasks	Level of Need %					Mean	SD
	1	2	3	4	5		
1. Listening to lectures	-	0.8	10.5	23.3	65.5	4.53	0.71
2. Listening to presentations or discussions	-	1.2	10.5	36.4	51.9	4.39	0.72
3. Receiving spoken instructions/advice	0.4	1.6	10.9	35.3	51.9	4.37	0.77
4. Listening to instructor questions during class/defense	0.8	1.6	6.6	33.7	57.4	4.45	0.75
5. Listening to internet resources	1.6	0.4	10.5	39.5	48.1	4.32	0.80

Scale: 1=No need, 2= Little need, 3= Moderate need, 4= High need, 5= Very high need

Table 4.5B. Engineering Instructors' Response about Their Students' Level of Need of Carrying Academic Listening Tasks (N=87)

Academic listening tasks	Level of need %					Mean	SD
	1	2	3	4	5		
1. Listening to lectures	-	1.1	5.7	37.9	55.2	4.47	0.66
2. Listening to presentations or discussions	-	1.1	4.6	48.3	46.0	4.39	0.64
3. Receiving spoken instructions/advice	-	1.1	6.9	49.4	42.5	4.33	0.66
4. Listening to instructor questions during class/defense	-	-	8.0	43.7	48.3	4.40	0.64
5. Listening to internet resources	-	-	14.9	44.8	40.2	4.25	0.70

Scale: 1=No need, 2= Little need, 3= Moderate need, 4= High need, 5= Very high need

Tables 4.5A and 4.5B present information about the level of need of carrying out academic listening tasks for engineering students respectively from the respondents of engineering students and engineering instructors. Accordingly, for the respondents of engineering students, listening to lectures stood out as the most needed listening task for engineering study with its mean score of 4.53. This is followed by listening to instructor questions in class or defense sessions with the mean score of 4.45. In addition, according to engineering students' response, listening to presentations or group discussions, receiving spoken instructions in class or sessions from their instructors or lab

assistants, and listening to internet resources such as Youtube videos were also highly needed listening tasks for engineering study with their mean scores of respectively 4.39, 4.37 and 4.32.

In the same token, from the engineering instructors' response, listening to lectures also stood out as the mostly required academic listening task for engineering students with its mean score of 4.47. Listening to instructor questions in class or defense sessions was ranked second with the mean score of 4.40. Similar to the engineering students, listening to presentations or discussions, receiving spoken instructions in class or lab sessions and lastly listening to internet resources such as Youtube videos were ranked the third, fourth and fifth highly needed listening tasks for engineering study with their mean scores of respectively 4.39, 4.33 and 4.25.

In general, it is important to note here that higher importance was placed for the given academic listening tasks for engineering study by both groups of respondents with the same order of ranking of the tasks and with the total mean scores of 4.41 for engineering students and 4.37 for engineering instructors as compared to the academic tasks above. However, it is also important to note here that slightly greater importance was given to the listening tasks by the respondents of engineering students than was by those of the engineering instructors.

Similarly, almost all of the engineering students and instructors who participated in the interview underscored the utter importance of the listening skill for engineering students' academic success as it was the key medium through which they could have access to the spoken (audio-visual) information from their instructors and as well as online (YouTube) resources. Hence, the most frequent and highly needed listening tasks they were required to carry out were listening to lectures in class, listening to teacher instructions in the lab sessions/workshops, and listening to or watching lecture videos from YouTube on the internet and other resources.

5. Discussion

5.1 Language Skills Important for Engineering Students' Academic Study

Both the results of the analysis of students and instructors' questionnaires and the interviews indicate that all the four language skills are important for engineering study. However, strictly speaking, based on the results of the students' questionnaire using their mean scores, the respondent engineering students put the reading skill as the first most important, listening skill as the second most important, writing skill as the third most important and speaking skill as the (fourth) last most important skill for their engineering study. This result is also consistent with Mahmur and Bagheri's (2019) study in Iranian Science and Technology Universities in which they found that reading skills were the most essential for learning and target needs of EST students.

On the other hand, the respondents of engineering instructors on their part prioritized the writing skill as the first most important, reading as the second most important, listening skill as the third most important and speaking as the fourth (last) important for their students' academic study. This suggests that for engineering students the receptive skills (reading and listening) were more important than the productive skills (writing and speaking) whereas for engineering instructors the literacy skills (writing and reading) were more important than the oral skills (listening and speaking in the order listed). The engineering instructors appeared to be more concerned with the writing skill because they were the ones who assigned different writing tasks to these students and at the end they were also the ones who read and evaluated their students' written works as it was also confirmed by the interview results.

Hence, based on the results from both the quantitative and qualitative sources, it is possible to put the literacy skills as more important than the oral skills for engineering students' academic study at HU. According to the interview informants this was because most of their routine academic engagements were related with reading different materials like the lecture notes or handouts, reference books and articles and then writing different assignments, test answers, lab reports, project or design reports and research proposals and reports. So, in this respect writing was the most crucial and determinant skill for engineering students' academic success or failure since most of their works were communicated through the medium of writing to their instructors. In the same way, the listening skill was also a highly needed one because most of the engineering students' time was spent listening to their instructors' lectures and other resources like the Youtube. These results are in congruence with Woodrow's (2018) findings that state in EAP settings academic writing is extremely important because the majority of academic assessment is made through the skill of writing. She also underscores that the focus on reading in EAP has followed a similar trajectory to writing meaning that it is important to reflect the reciprocity between reading and writing in course design.

On the other hand, it is also worth mentioning here that the results from all data sources identified the speaking skill as the last one in terms of its importance for engineering study. According to the informants this was because the speaking skill was the least frequently needed one in their academic endeavor in comparison to the other skills.

Except for asking and answering questions, engineering students were required to make presentations only sometimes (commonly 3 to 4 times) during their entire university stay. This appears to suggest that they could survive with even poor skill of speaking provided that they were good in the rest of the skills. West (1994) also has a similar finding in which he reports that speaking is usually regarded as the least needed skill for EAP students.

5.2 Academic Tasks for Engineering Study at HU

Firstly, regarding the reading tasks, the results from this study indicated that the most common and most frequent reading tasks for engineering study were the reading of lecture notes, textbooks/ handouts, reference books, lab manuals, project manuals or codes, exercises/test questions and research materials. Similar findings were also obtained in Kawpet's (2009) study on the academic English needs of engineering students at Thai Universities. Moreover, Orr's (2010) and Parkinson's (2013) studies on reading tasks for engineering study commonly identified reading textbooks, reading lab manuals, and reading project reports as highly and frequently needed reading tasks.

Concerning the writing tasks, the results showed that the most frequent and most important academic writing tasks for engineering study were writing (library) assignments and case studies, writing lab reports, writing exam answers for conceptual questions and writing design reports. On the other hand, the other very highly required writing tasks, but less frequent tasks for engineering students were the writing of internship reports, writing research project proposals and project/ thesis reports. In line with this, Braine's (1989) and Parkinson's (2013) studies of writing assignments in science and engineering courses found that most assignments were either lab or design reports (other writing included summary/reactions, case studies and library research paper.

With regard to the academic speaking tasks the results from different sources indicated that the more common and highly needed academic speaking tasks for engineering students were the presentation and defense of their internship reports, the presentation and defense of their final year research or project proposals and research reports or thesis. The other optional speaking tasks for engineering study were asking and answering questions in class and lab sessions, presentation of course work assignments such as case studies, term papers, and design projects. However, in comparison with the academic reading tasks and writing tasks, there were much fewer speaking tasks that engineering students needed to carry out throughout their university stay at HU for reasons of large class size and time constraints. According to some of the interview participants of engineering students and engineering instructors, this limited provision of speaking opportunities has, on the other hand, resulted in poor development of speaking abilities of engineering students which has counter-productive effects on their future academic and professional lives.

Finally, the most common and highly required academic listening tasks for engineering study in a descending order of importance were listening to lecture, listening to instructor's questions in class or defense sessions, listening to presentations or group discussions, receiving spoken instructions in class or lab sessions from instructors and listening to/ watching internet resources such as Youtube videos.

6. Conclusion

The first specific objective aimed to identify which English skills were of particular importance for undergraduate engineering students' academic study at HU. This study achieved this objective by finding that all four English skills were important for engineering study in general. However, engineering students needed the receptive skills (reading and listening) more than the productive skills (writing and speaking) for their academic study at HU because most often these students were required to read and listen to different materials and documents, and communicate their understanding of these materials through the writing of various assignments and reports.

Concerning the second research objective which aimed to identify the target tasks for undergraduate engineering students' academic study at HU, this study found the following highly needed academic tasks in each language skill for engineering study. Firstly, with regard to the reading skill the most common and most frequent reading tasks for engineering study were the reading lecture notes, textbooks, reference books, lab manuals, project manuals or codes, exercises and research materials. Secondly, concerning the writing tasks, the most frequent and most important academic writing tasks for engineering study at HU were writing (library) assignments and case studies, writing lab reports, writing exam answers for conceptual questions and writing design reports. On the other hand, the other very highly required and common writing tasks but less frequent tasks for engineering students were the writing of internship reports, writing research project reports.

Thirdly, regarding the speaking skill the more common and highly needed academic speaking tasks for engineering students at HU were making the presentation and defense of their internship reports, final year research or project proposals and research reports or thesis. The other optional speaking tasks for engineering study were asking and

answering questions in class and lab sessions, presentation of course work assignments such as case studies, term papers, and design projects. Fourthly, with regard to the listening skill, the most frequently and most commonly needed listening tasks for engineering students' academic study at HU were listening to lectures, listening to questions in class or defense sessions, listening to teacher instructions in class and lab sessions/workshops, and listening to or watching lecture videos from YouTube on the internet and other resources. Hence, any English course syllabus developers and materials writers for engineering students should consider these identified language skills and academic tasks to develop a sound syllabus and write effective English materials to address the English language needs of engineering students at HU and other public universities un Ethiopia.

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