Addis Ababa University

Department of Foreign Languages and Literature

An Assessment of English Language Needs of Undergraduate Engineering Students: The Case of the Institute of Technology in Hawassa University

By Kifle Meskelo

May 2024

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Supervisors: Dr Alemu Hailu &

Dr Geremew Lemu

A Thesis Submitted to the Department of Foreign Languages and Literature in Partial Fulfillment of the Requirements of the Doctor of Philosophy in English Language Teaching (ELT)

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Declaration

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in any other university, and that all sources of materials used for the thesis have been duly acknowledged.

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Date of Submission: June 2024

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Approved by the Board of Examiners:

Advisors: 1. _____ signature: _____ Date: _____

2. _____signature: _____ Date: _____

Internal Examiner: _____ signature: _____ Date: _____

External Examiner: _____ signature: _____ Date: _____

Dedication:

To My Dad, Ato Meskelo Ejigu, who always wished to see my academic accomplishments but passed away when I was only a Grade 11 student

&

To My Mom, W/ro Lefo Anoro, who is lucky enough to see and celebrate all my accomplishments and gave her best to that end

Abstract

Previous research in the field of engineering has showed that English language is essential in the academic and professional lives of engineering students, and thus they need a good proficiency of English to become effective in their academic study and future workplace communication. However, engineering students at Hawassa University (HU) were observed to have pressing problems of English language proficiency and showed little interest in English courses taught to them. In principle, English courses at university level should be designed in a way to address the immediate and target needs of the specific groups of students. Nevertheless, at HU based on the Nationally Harmonized Modular Curriculum the same kind of general English (Communicative English Skills I&II) courses were offered to all first year students irrespective their disciplinary differences. The researcher strongly feels that among other things this could have significantly contributed to the lack of interest of engineering students in English courses at HU and to curb this problem a needs assessment study be carried out.

Hence, the main objective of this study was to assess the academic and work-related English language needs of engineering students at HU and engineers at Hawassa Industrial Park (HIP) and to establish a syllabus framework that can better address their needs. To achieve the intended objective a cross-sectional survey research design was employed in order to identify the English skills and the target tasks needed for engineering study and workplace communication particularly at the foreign companies of HIP. Five instruments of data gathering were used to elicit the necessary information: namely, questionnaire data were collected from randomly selected 258 final- year engineering students, 87 engineering instructors, and 70 engineers working at HIP; semi-structured interviews were conducted with purposively selected 5 final year engineering students, 5 engineering instructors, 3 English instructors, 3 engineers and 3 foreign employers; IELTS test was administered for randomly selected 100 final-year engineering students from the four engineering faculties (25 from each), classroom observations and a brief evaluation of the currently in-use English course modules.

Based on the quantitative and qualitative analysis of data, the following findings were identified. First, while all major English skills were important for engineering students' academic study and

workplace communication, reading and writing skills were of particular importance for engineering study at HU, and listening and speaking skills were especially required for engineers' workplace communication in the foreign companies of HIP. Second, the most common and highly needed tasks for engineering study in each skill were: reading lecture notes, textbooks, lab manuals, project manuals and research materials; writing library assignments, lab reports, exam answers, design reports, internship reports and research reports; making the presentation and defense of their internships and research/project reports, presentation of course work assignments, asking and answering questions; listening to lectures, questions and answers, presentations and discussions, and online resources such as You tube videos. In the same way, the most common and highly required tasks for engineers' workplace communication were: reading product manuals, safety signs and notices, training manuals, project documents and reports, business letters and e-mails; writing performance reports, job applications, product descriptions, project proposals and reports; speaking making technical conversations, making presentations, participating in meetings, giving trainings/seminars and talking on the phone; listening to instructions or advice, meeting discussions, and trainings or seminars.

Regarding the English language problems, engineering students at HU had the most difficulty to carry out speaking and writing tasks particularly giving well-organized presentations of their works in class and writing coherent internship and research reports, and the engineers at HIP experienced more difficulty in writing formal business letters and formal reports and listening to English from native and hard-accented foreigners. Finally, the evaluation of the English course modules in-use was found to contain topics and tasks of general academic English and appear to address the identified academic and work-related English language needs of engineering students at HU and engineers at HIP only to some extent. Finally, based on the findings and conclusions, implications for English classroom use and syllabus design have been made.

Acknowledgements

Above all, I am truly humbled to thank the Almighty God for His protection and grace He bestowed on me throughout my academic career and for granting me the ability and strength to accomplish this project.

Next, there are a lot of people who have helped me in different ways to materialize this project to its present form. Here, I will mention a few of them whose contributions are very great. First of all, I am really grateful to my supervisors. My first supervisor, Dr. Alemu Hailu, deserves my heartfelt appreciation and thanks for his professional guidance and critical comments he provided me throughout this project and for shaping the research topic to its present form at the very outset and for generously sharing me some of his books which are relevant to my study on his own. In the same way, I am really grateful to my second supervisor, Dr. Geremew Lemu, for his invaluable comments, unwavering support, encouragement and patience I cherished throughout my study. Following my supervisors, I am obliged to thank the board of Examiners, Dr. Nuru Mohamed, Dr. Animaw Anteneh, Dr. Berhanu Bogale, Dr Getachew Seyoum and Dr Abebe Gebretsadik who gave me insightful comments during the proposal, upgrading and the final stages in order that this dissertation gets its present shape.

I would also like to thank my friends and colleagues in the department of Enghlish Language and literature at Hawassa University, Prof. Zeleke Arficho, Prof. Mebratu Mulatu and Dr. Tagesse Daniel for making critical comments on the instruments of the data collection before they were used for the study and for encouraging me throughout the project. The following colleagues are really worthy of my gratitude: Ato Gizachew Kindie, Dr. Abayneh Feleke, W/t Misgana Girma and Dr. Mihireteab Abraham who willingly participated in assessing the speaking part of the IELTS test, and Ato Yirgu Asres and Dr. Achame Haile who took the painful task of marking the writing part of the IELTS test. Thank you all for standing by me in my time of need!

I very highly appreciate and thank the active participation and cooperation of my informant engineering students, engineering instructors, and English instructors at Hawassa University, and those engineers and their employers at Hawassa Industrial Park for providing me with the necessary data during my pilot and main study. Ato Mengistu Yimer, a Human Resources Officer at HIP, deserves my special thanks for making me the way to contact the engineers and their employers at the Park.

I must also owe my heartily appreciation to my beloved wife, W/ro Almaz Arficho, for her unfailing support, love and encouragement, and for bearing most of the burden of caring for our dearest children, Yididya Kifle, Fisiha Kifle and Yabets Kifle during my study. Last but not the least, Etenesh G/meskel, my dearest sister, is worthy of my utmost gratitude for her unfailing moral and material support throughout my academic career, and the Ph.D journey in particular.

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Acronyms and Abbreviations

CBL Content Based Learning

CLIL Content and Language Integrated Learning

EAP English for academic purposes

EE Engineer Employee

EEmp Engineer Employer

EGAP English for General academic Purposes

EI Engineering Instructor

ES Engineering Student

EngI English instructor

ESAP English for Specific Academic Purposes

ESP English for Specific Purposes

EST English for Science and Technology

HIP Hawassa Industrial Park

HU Hawassa University

IoT Institute of Technology

NA Needs Analysis/Assessment

PSA Present situation analysis

SFL Systemic Functional Linguistics

TBLT Task-based language Learning

TBLI Text- based language instruction

TSA Target situation analysis

WPC Workplace communication

ZPD Zone of Proximal Development

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CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

The original flowering of the English for Specific Purposes (ESP) movement resulted from general developments in the world economy in the 1950s and 1960s such as the growth of science and technology, the increased use of English as the international language of science, technology and business, the increased economic power of certain oil-rich countries and increased numbers of international students studying in UK, USA, and Australia (Dudley-Evans and St John, 1998). Hutchinson and Waters (1987) also state that in the ESP context, the effect of the historical occurrences resulted from a mass of people across the globe who wanted to learn English language as a key language for the fields of science, technology and commerce. The emergence of the English for Specific Purposes (ESP) teaching movement resulted from the English language needs of the learners for specific purposes by their professions or job descriptions. During its infancy age, 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 carried out were in the area of EAP (Dudley-Evans and St John, 1998).

The teaching of English for Specific Purposes has generally been seen as a separate activity within English Language Teaching (ELT), and ESP research as an identifiable component of applied linguistics research (Dudley-Evans and St John, 1998). They believe that for some of its teaching, ESP has developed its own methodology, and pointed out that ─ the main concerns of ESP have always been, and remain, with needs analysis, preparing learners to communicate effectively in the tasks prescribed by their study or work situation.

Similarly, Ruiz-Garrido, et al. (2010) note that the relevance of English in academic and professional settings began some decades ago, in the 1960s, and it has not decreased. ESP is an exciting movement in English language education that is opening up rich opportunities for English teachers and researchers in new professional domains. The spread of science and technology all over the world, together with the globalization of the economy and the fact that the university world is becoming more international, has all helped to make the English language the current lingua

franca of international communication. Ruiz-Garrido et al. (2010:2) also define EAP ─ to refer mainly to the academic needs of students and of future professionals who would seek a career in the academic environment and English for Professional or Occupational Purposes (EPP/EOP) refers to ─ the actual needs of (future) professionals at work. As this distinction is currently widely accepted by many scholars, it is also true that those two broad fields or categories also involve many different areas and fields of interest and research.

Hyland (2006) further explains the growth of academic English since English is now the world's predominant language of research and scholarship; and now that more than 90 percent of the journal literature in some scientific domains is printed in English and the most prestigious and cited journals are in English. Countless students and academics around the world must now gain fluency in the conventions of English-language academic discourses to understand their disciplines, establish their careers, or successfully navigate their learning. Hyland adds that ─ the ESP crucial point is that English is not taught as a subject separated from the learners' real world (or wishes); instead, it is integrated into a subject matter area important to the learners (Hyland, 2006:24).

Students arriving in universities where the dominant language is not their native language have very specific needs in terms of accessing the genre of academic language. In order to be successful in their new domain of language use, these students must acquire language skills and competences that will allow them to carry out the tasks required in an academic setting. Such tasks may include, for example, producing various academic writing styles, presenting complex information and reading academic texts (Riordan, 2018).

Basturkmen (2010) also points out the theoretical arguments that can be made as to why ESP courses should be more effective than general ESL courses. She argues that

> *Because ESP courses cater to students' interests and needs, they are more likely to engender high levels of motivation. It can be assumed that students will be more interested in topics and texts related to their work or study areas. If students are more motivated, then learning is more likely to occur. It can also be argued that ESP courses are more efficient because they have more limited aims than general ESL courses. Because ESP courses are based on needs analysis, the learning objectives are more highly prescribed than would be the case in general ESL courses. Thus it is not*

> *surprising that learning outcomes may be perceived more favorably since limited and highly specified aims are more likely to be achievable.* (Basturkmen, 2010:11)

As Charles (2013) presents, English for academic purposes (EAP) is concerned with researching and teaching the English needed by those who use the language to perform academic tasks. The field originally arose out of the wider area of English for specific purposes (ESP) and over the last three decades has increased enormously in importance, driven by the global growth in the use of English for employment, as well as academic research. EAP has thus become ― a major research field in its own right, responding to the demands of a widening circle of users by providing increasingly sophisticated accounts of academic discourse and translating these insights into pedagogically valid methods and materials (Charles, 2013:137).

Moreover, as Kawpet (2009) asserts, the growth of EAP is derived from the awareness of ESP practitioners that all tertiary level students possess different learning needs and this cannot be fulfilled 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.

As Hyland and Hamp-Lyons (2002) explain, the growth of English as the leading language for the dissemination of academic knowledge has transformed the educational experiences of numerous students, who must now gain fluency in the conventions of English language academic discourses to understand their disciplines and to successfully navigate their learning. The response of the language teaching profession to these demands has been the development over the past 25 years of a new field in the teaching of English as a Second/ Foreign Language in universities and other academic settings: the field of English for Academic Purposes (EAP). This development has taken several of different forms and directions, but together these have reshaped the ways that English language teaching and research are conducted in higher education (Hyland and Hamp-Lyons, 2002).

According to Hyland and Hamp-Lyons (2002:2), English for Academic Purposes refers to ―Language research and instruction that focuses on the specific communicative needs and practices

of particular groups in academic contexts. It means grounding instruction in an understanding of the cognitive, social and linguistic demands of specific academic disciplines. This takes practitioners beyond preparing learners for study in English to developing new kinds of literacy, i.e. equipping students with the communicative skills to participate in particular academic and cultural contexts. One key issue surrounding the ways we understand and practice English for Academic Purposes (EAP) is that of specificity, or the distinction between what has been called English for General Academic Purposes (EGAP) and English for Specific Academic Purposes (ESAP) (Jordan, 1997; Hyland, 2006; Basturkmen, 2010; Dudley-Evans and St John, 1998).

Science and engineering are global disciplines, with English being the language of preference for top international conferences and scholarly publications as well as for communication among international employees in the workplace and on international project teams. Competence in the English of scientific and technical work is essential for success, not only for native speakers, but also for non-native speakers, who comprise the vast majority of professionals in scientific and engineering fields (Orr, 2010).

Previous research in the field of engineering showed that English language is essential in the academic and professional lives of engineering students (Basturkmen, 1998; Pendergrass et al., 2001; Pritchard & Nasr, 2004). For example, Pendergrass et al. (2001) point out that English is an essential tool in engineering education and, therefore ―integrating English into engineering, science and math courses is an effective way to improve the performance of engineering students in oral and written communication.

Kawpet (2009) also points out that the engineering profession significantly requires English as a means of communication. Multicultural work practices increasingly demand that engineers are equipped with enhanced soft-skill proficiency, specifically, foreign language ability, communication confidence and cross-cultural experience. The foreign language in use is predominantly English, as evidenced by the extensive volume of reports related to English.

Thus, engineers all around the world would find themselves using English for some aspect of their jobs. English is used in most international organizations and publications in the engineering field and most engineers whose native language is not English would find disadvantages in their

professional terms (Orr, 2002). Beyond the difficult task of developing expertise in engineering, nonnative speakers must master English through continued English education, which some have estimated takes anywhere from 4-10 years of training to reach an average level of proficiency (Kim, 2013).

In this 21st century, engineering employers seek professional engineers who have excellent scientific knowledge and can demonstrate good communication and problem-solving skills. With this focus on job demands, engineering education has been restructured, balancing the emphasis between scientific knowledge and soft skills (Mohammed, 2015).

As Shin (2008) 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 this era of globalization, English communication ability for engineers whose native language is not English has become as important as their major- related abilities (Kim, 2013).

Currently, the Ethiopian government has placed a special emphasis on science and technology fields, particularly in engineering in the hope of transforming the country from an agriculture-led economy to an industrial one. As a result, the Ministry of Education has given a significant proportion of university enrolment to science and technology and particularly to engineering fields in comparison to social sciences and humanities. This indicates the degree of emphasis given to engineering 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.

According to the report of UNESCO of 2010 in the Millennial Developmental Goals of 2015, the critical roles of engineering in addressing the large-scale pressing challenges facing our societies worldwide are widely recognized. Such large-scale challenges include access to affordable health care; tackling the coupled issues of energy, transportation and climate change; providing more equitable access to information for our populations; clean drinking water; natural and man-made

disaster mitigation, environmental protection and natural resource management, among numerous others. As such, mobilizing the engineering community to become more effective in delivering real products and services of benefit to society, especially in the developing world, is a vitally important international responsibility.

West (1994) in his -state -of -the -art article about needs analysis points out that language teachers have frequently based their teaching on some kind of intuitive or informal analysis of students' needs (Tarone & Yule, 1989) but the concept of a formal analysis of ―the requirements which arise from the use of that language in the multitude of situations which may arise in the social lives of individuals and adults (Richterich, 1973) was established during the early 1970s, largely as a result of the work of those associated with the Council of Europe, and it was in the field of ESP that it was taken up most vigorously (West, 1994).

Any EAP course starts with the question of why these students are learning English. It is a question that helps focus the course and makes it relevant for learners by taking the world outside the language classroom into account (Hyland 2006). As Long (2005) strongly argues a one-size-fits-all approach has long been discredited by research findings on the specificity of the tasks, genres and discourse practices that language learners encounter in the varied domains in which they must operate.

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 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).

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 effective course design. He adds

> *The combination of target language varieties, skills, lexicons, genres, registers, etc., that different groups of students need varies greatly, however, meaning that language teaching using generic programs and materials, not designed with particular groups in mind, will be inefficient, at the very least, and in all probability, grossly inadequate. Just as no medical intervention would be prescribed before a thorough diagnosis of what ails the patient, so no language teaching program should be designed without a thorough needs analysis.* (Long, 2005:1)

Every language course should be considered a course for specific purposes, varying only in the precision with which learner needs can be specified-from little or none in the case of programs for most young children to minute detail in the case of occupationally-, academically-, or vocationally-oriented programs for most adults (Long, 2005).

1.2 Statement of the Problem

The present researcher has made a brief survey of the research conducted in the area of ESP/ EAP and EOP locally particularly at Addis Ababa University, and found several of M.A theses and a few Ph.D dissertations conducted at technical and vocational colleges, private and public colleges and universities.

The first study by Marew (1990) evaluated an existing EAP course in Business English at the Junior College of Commerce and established that its objectives lacked clarity and specificity and did not adequately indicate the communicative skills students needed in study and post-study. Consequently, he came up with an alternative syllabus and teaching material for the same course.

Hailemariam's (1993) research targeted to establish preliminary criteria for designing an appropriate English course for the then-Yared Music School. In his research he revealed that there was little or no correspondence between the English syllabus of the school and the textbooks in use,

both in terms of objectives and contents. Moreover, it was found that to a large measure neither the syllabus nor the textbooks corresponded with the needs of students. In the same year, another study that looked into a specific course in English for academic and vocational purposes was that of Abraham's (1993). He aimed to develop criteria for a course design in English for aircraft technicians of the Ethiopian Air Force. After assessing the existing materials in use, he concluded that a syllabus for such purposes should be topic-based while including a sub-syllabus of functions and notions, skills, vocabulary and structure.

Hailemichael (1993) carried out an EAP needs assessment study to develop a service English syllabus for university freshman students emphasizing the need for a more communicatively-oriented and task-based syllabus design. Mekasha (1994) evaluated the syllabus of a private language school in relation to the target and learning needs of the learners. He found out that the syllabus of the school and the textbooks and handouts failed largely to meet the learners' needs.

Abebe's (1997) study investigated the communicative as well as target and learning needs of technical students with special reference to three technical schools in Addis Ababa with a view to developing criteria for designing an appropriate English course for these students. He developed criteria based on the findings that the syllabus should be topic-based incorporating language functions and notions, skills, vocabulary and structure; the content should derive both from technical and general English; the materials should cover all four language skills and the methodology would adopt a variety of more recent and suitable techniques for language learning such as pair or group work problem-solving activities.

Geremew (1999) made a comprehensive needs identification study to determine the nature of the requirements in writing for academic purposes focusing on four departments in AAU. He suggested that a course in writing for academic purposes at the university should consist of two components: Writing for General Academic Purposes and Writing for Specific Academic Purposes. The first focuses upon those skills that are commonly needed by all disciplines and the latter focuses on writing skills that are required by specific fields of study.

Tesfay's (2004) study aimed at exploring the English language problems of adult students of law in the Ethiopian Civil Service College, establishing their needs for the language to succeed in their studies and function effectively in their legal profession and proposing guidelines for English for law courses that would address the established needs and constraints. The study found out that law students manifested English language problems in the four skills and lexico-grammar, and concluded that the English courses offered by the college need to be relevant for their purposes and address the specified target and learning needs of law students .

Gashaw (2007) carried out an investigative study of the English language needs of the trainees of Major General Mulugeta Buli Technical and Vocational Education Training College. His findings indicated that the trainees preferred a balance of general English and technical English. In an occupational setting the relative importance of the macro skills in descending order are speaking, listening, writing and reading. Concerning the activities, the most important are speaking to foreigners, listening to foreigners, writing project reports and reading manuals and concluded that it is essential to design an English course considering the relative importance and difficulty of the macro-and micro-skills and areas of language knowledge.

Another study by Bekele (2009) assessed the English language needs of Applied Chemistry students at the then Ambo University College (now Ambo University) and revealed that, both the students in applied chemistry program and graduates at professional settings need the English course as ESP in chemistry. To this end, he suggested that the English language course offered at applied chemistry program should enable chemists to practice the four English language macro-skills with a wide range of activities of sub-skills.

A more recent study by Wendyifraw (2013) aimed to explore the learning needs of Dilla University English major students and identified the sub-skills with which these students have much/some difficulty while taking the skill courses. He found out that the sub-skills most subjects had much/some difficulty included word stress, interaction skills, organizing ideas, synthesizing ideas, using correct and complete sentences, intonation, pronouncing words, and distinguishing main ideas from supporting ideas. He concluded that there was a mismatch between course materials and

learners' needs and hence the curriculum, syllabi and course materials should undergo complete revision in line with learners' current needs.

Finally, Bedilu (2020) carried out a study to examine the Suitability of English for Academic Purpose course in addressing learners' needs with special reference to the provision of Communicative English Skills at Adama Science and Technology University and came up with a finding that though there was harmonized syllabus meant to teach Communicative English skills in rhetoric, the university under investigation did neither use the recommended syllabus nor designed its own teaching materials that address learners' dynamic needs. He suggested that it is appropriate to design an EAP syllabus, and then develop/adapt a course book that can tap into learners' diverse target and learning needs.

The above locally conducted studies dealt with the assessment of English language needs of students in various contexts from secondary schools to university and showed that the general English courses that were being offered to the students either failed or needed revision to meet the immediate and target needs of the respective students and recommended for more relevant and focused specific English courses. However, to the best of the present researcher's knowledge, no study has been conducted locally at a Ph.D. level on the English language needs of engineering students. Therefore, to fill this gap the present researcher undertook a needs assessment research on the academic and work-related English language needs of engineering students with the aim of establishing criteria to develop a sound syllabus that can address the academic and work-related needs of engineering students at Hawassa University.

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 in secondary schools and universities. In addition, the policy from 1994 states that English is taught as a foreign language from year one of primary school onwards (Dearden, 2014).

Recently, in the higher learning institutions, except for a few regional colleges which use the vernacular languages to run their education and training, 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 the university level in Ethiopia, 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* I and II across disciplines/departments 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 in classes. That is, engineering students lack interest in learning Communicative English Skills I and II. The factors that contribute may be many. One possible reason can be students are not satisfied with the contents of the courses because they may not meet their needs. All tertiary level students possess different learning needs and this cannot be fulfilled by teaching the same type English language.

Engineering students were deficient in their language skills for both academic and workplace communication. The students were found to struggle in making presentation and writing effective papers. Similarly, in workplaces, many of engineering graduates were unable to express themselves and write effective reports, proposals, minutes and business letters as complained by their foreign employers at Hawassa Industrial Park in the preliminary study of problem identification. However, the 21st century employers in the field of engineering seek professionals who have excellent scientific knowledge and can demonstrate good communication skills.

In this regard, it is worth citing what Long (2005) points out on the importance of carrying out a needs analysis before conducting any language course:

> *Many secondary school students and, especially, adults with serious academic, occupational, vocational, or 'survival' needs for functional L2 proficiency, as well as their sponsors, are increasingly dissatisfied with lessons, materials and methodology developed for someone else or for no-one in particular. There is an urgent need for courses of all kinds to be relevant - and to be seen to be relevant - to the needs of specific groups of learners and of society at large. General courses at any proficiency level almost always teach too much, e.g., vocabulary, skills, registers or styles some learners*

> *do not need, and too little, e.g., omitting lexis and genres that they do. Instead of a one-size-fits-all approach, it is more defensible to view every course as involving specific purposes. . .* (Long, 2005:19)

Moreover, Long (2005) emphasizes the role of needs analysis as one of the ways in which foreign and second language educators respond to the changing situations by basing more of their courses on the findings of surveys of learner needs.

In addition, according to Shing and Sim (2011), the design and implementation of any curriculum for EAP courses should take into consideration the different language needs of the target learners. By determining learners' language needs, a strong foundation pertaining to the whole idea of conducting the particular language courses can be formed. With that preliminary knowledge, the whole process of designing a curriculum, from the construction of course objectives to the selection of course contents and learning activities, can be made easier. This could provide assurance in the quality of the courses especially in making learners achieve the expected learning outcomes. To collect information on the learners' language needs, a needs analysis has to be carried out.

On the other hand, the present researcher observed a remarkable amount of motivation and contribution from law students when he taught them *English for Lawyers I& II courses*. The students enjoyed the courses and were highly involved, among other things, because the contents of the courses were relevant and integrated with their field of study. Besides, the contents were very carefully selected and seemed appropriate to address the academic and future work-related English needs of these students. In the same way, the researcher feels that if engineering students are provided with such course materials that can address their academic English needs, there will be a different result from what is presently in view. This is where the motivation for the present study came from.

In addition, currently the Ministry of Education has developed new course materials for both *Communicative English Skills I and II* by a team of instructors from different universities with the intention to better address the academic English and study skills needs of university students in the 2019 academic year. These materials have been implemented since the academic year of 2019/2020 and yet there is no study carried out to assess the effectiveness of these materials if they have

brought any positive impact on the students' English language interest and improvement. Therefore, in order to see how far these materials address the academic and work- related English language needs of engineering students, the researcher feels it is important that a needs assessment study be carried out.

In principle, it is expected that a course and the corresponding teaching materials should be designed in a way to address the immediate academic and future work-related needs of the target students in mind. In this case, to see the extent to which English courses at Hawassa University, namely *Communicative English Skills I and II* meet the academic and work-related needs of engineering students a needs assessment ought to be carried out.

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 Nationally Harmonized Engineering Curriculum (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 last 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*.

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 and work-related needs of these students.

While it is also possible to conduct an assessment of the English language needs of each engineering department students and subsequently develop a syllabus and course material, for instance, for Civil engineering or Mechanical engineering students as it is the case in some foreign contexts (e.g. Glendinning & Glendinning, 1995, Kaewpet, 2009), in our situation, it is more appropriate and meaningful to do a needs assessment of English language for engineering students as a whole. Therefore, in order to identify the generic academic and work-related English language needs of undergraduate engineering students at Hawassa University, the researcher aims to carry out a needs assessment research. Hence, this study attempts to achieve the following general and specific objectives.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study was to assess the academic and work-related English language needs of undergraduate engineering students and engineers with particular reference to the Institute of Technology at Hawassa University and Hawassa Industrial Park.

1.3.2 Specific Objectives

Hence, the specific objectives of this study were to:

1. Identify the language skill(s) undergraduate engineering students need most for their academic study and future workplace communication at HU.
2. Find out the current English proficiency levels of engineering students at HU and engineering employees at HIP.
3. Identify the target academic tasks that undergraduate engineering students are required to carry out for their academic study at HU.
4. Identify the future work-related tasks that undergraduate engineering students are required to carry out for workplace communication.
5. Identify the English language problems or difficulties of undergraduate engineering students in academic and work-related contexts.
6. Find out whether the currently offered English courses address the English language needs of undergraduate engineering students at HU for academic study and workplace communication.
7. Examine if there is a statistically significant mean difference between/among the respondents of engineering students, instructors and engineers in the English language proficiency, and academic and work-related English language needs of engineering students at HU.

1.4 Research Questions and Hypotheses

In other words, this study attempts to answer the following research questions:

1. Which language skill(s) do engineering students need most for their academic study and future workplace communication?

- Do they need all language skills equally for their academic study and workplace communication?

2. What are the current English proficiency levels of engineering students at HU and Engineering employees at HIP?

3. What are the academic English language needs of undergraduate engineering students in terms of the target tasks they are required to carry out at HU?

4. What are the future work-related English language needs of undergraduate engineering students in terms of the target tasks they are required to carry out at HU?

5. What are the English language problems or difficulties of undergraduate engineering students at HU in their academic and work-related contexts and their major causes?

6. How far do the currently offered English courses address the academic and work-related English language needs of undergraduate engineering students at HU?

7. a. Is there is a statistically significant mean difference between the different groups of respondents of engineering students and engineering instructors in the perceived English language proficiency of engineering students at HU?

   b. Is there is a statistically significant mean difference between the different groups of respondents of engineering students and engineering instructors in the academic English needs of engineering students at HU?

   c. Is there a statistically significant mean difference among the respondents of engineering students, instructors and engineers (employees) in the future work-related English language needs of engineering students at HU?

Hypotheses

1. Ho: There is no a statistically significant mean difference between the respondents of engineering students and instructors in the English language proficiency of engineering students at HU.

   H1: There is a statistically significant mean difference between the respondents of engineering students and instructors in the English language proficiency of engineering students at HU

2. Ho: There is no statistically significant mean difference between the respondents of engineering students and instructors in the academic English needs of engineering students at HU.

   H1: There is a statistically significant mean difference between the respondents of engineering students and instructors in the academic English needs of engineering students at HU

3. Ho: There is no a statistically significant mean difference among the respondents of engineering students, instructors and engineers in the future work-related English needs of engineering students at HU.

   H1: There is a statistically significant mean difference among the respondents of engineering students, instructors and engineers in the future work-related English needs of engineering students at HU.

1.5 Significance of the Study

The results of this study are hoped to have significance to the following groups of people:

First, undergraduate engineering students of Hawassa University and engineering students of other public universities in similar situations in Ethiopia might benefit from this research because based on the findings a new syllabus and course materials that can better address the English language needs of these students can be developed.

Second, the academic staff in the engineering faculties of Hawassa University might benefit from this research since based on the findings, a new syllabus and teaching materials can be developed and this can improve the English language learning of the students and enhance better performance and production or execution of activities and assignments required of these students in the institute.

Third, English language instructors of Hawassa University may also benefit from this study because based on the findings a new syllabus and teaching material can be developed and this can result in more meaningful English language teaching and learning in engineering departments.

Fourth, syllabus designers and material writers might use the findings from this research to revise the existing general English syllabus for higher learning institutions and can develop new syllabi and teaching materials for engineering students at the national level.

Fifth, other researchers who want to conduct similar or related research in the area of English for academic or work-related purposes might use this research as a resource.

1.6 The Scope of the Study

According to the newly developed structure, the Institute of Technology (IOT) at Hawassa University comprises four engineering faculties and a faculty of informatics. However, in order to treat the English language needs of undergraduate engineering students in particular, this study does not incorporate the students of the faculty of informatics. Therefore, the scope of this research is delimited to Hawassa University, the Institute of Technology, the four faculties of undergraduate engineering students (namely, Faculty of Manufacturing, Faculty of Biosystems & Water Resources Engineering, Faculty of Civil Engineering & Built Environment, and Faculty of Electrical Engineering).

This study also involves the engineering graduates' and their employers' opinions, observations and experiences about the role of English in the work place to see if the English courses they took in their undergraduate studies have helped or prepared them for the demands of work place communication in English.

This study, however, does not address the possible factors or constraints that might affect NA or the teaching and learning of English for engineering students like the training and quality of teachers, the necessary facilities, time constraints etc. due to the broadness of these issues since analyzing the constraints themselves can make another possible research topic on its own.

CHAPTER TWO

2. REVIEW OF THE RELATED LITERATURE

In this section a thorough discussion of the literature that is pertinent to the issue of ESP and EAP, EPP, English for general academic purposes (EGAP) and English for Specific academic purposes (ESAP), English for engineering students, needs analysis in ESP, components and models of needs analysis, syllabus design in EAP, types of syllabuses will be carried out.

2.1 Definitions of ESP

Since the inception of ESP, different writers and researchers have attempted to define it from different angles. Hutchinson and Waters (1987:19) see the concept of ESP as an approach rather than a product. That is, "ESP is an approach to language teaching in which all decisions as to content and method are based on the learner's reasons for learning." For them ESP is an approach to language learning which is based on learner needs. Dudley-Evans and St John (1998) believe that a definition of ESP should reflect the fact that much ESP teaching, especially where it is specifically linked to a particular profession or discipline, makes use of a methodology that differs from that used in general-purpose English teaching. By methodology they refer to the nature of interaction between the ESP teacher and the learners, and that is, in more specific ESP classes, the teacher sometimes becomes more like a language consultant to the learners.

Dudley-Evans and St John (1998) also believe that language should be included as a defining feature of ESP. Accordingly, while the specified needs arising from needs analysis relate to activities or tasks that students need to carry out (rather than language), a key assumption of ESP is that these activities generate from and depend on registers, genres and associated language that students need to be able to manipulate in order to carry out the activity.

In their definition of ESP, Dudley-Evans & St Johns (1998) used *absolute* and *variable characteristics* as follows:

I. Absolute characteristics:

- *ESP is designed to meet the specific needs of the learner;*

- *ESP makes use of the underlying methodology of and acti\vities of the disciplines;*
- *ESP is centered on the language (grammar, lexis, and register), skills, discourse and genres appropriate to these activities.*

II. Variable characteristics:

- *ESP may be related to or designed for specific disciplines;*
- *ESP may use, in specific teaching situations, a different methodology from that of general English;*
- *ESP is likely to be designed for adult learners, either at tertiary-level institution or in a professional work situation.*
- *ESP is generally designed for intermediate or advanced students. Most ESP courses assume basic knowledge of the language system, but it can be used with beginners.* (Dudley-Evans and St John,1998:4-5)

The division of ESP into absolute and variable characteristics, in particular, is very helpful in resolving arguments about what ESP is and is not. From the definition, we can see that ESP can but is not necessarily concerned with a specific discipline, nor does it have to be aimed at a certain age group or ability range. ESP should be seen simply as an 'approach' to teaching, or what Dudley-Evans describes as an 'attitude of mind'. This also indicates that the absolute characteristics hold true for all ESP courses and are fundamental and the variable characteristics can but are not necessarily applicable to all ESP courses.

In addition, according to Paltridge and Starfield (2013:2) English for specific purposes (ESP) refers to ─ the teaching and learning of English as a second or foreign language where the goal of the learners is to use English in a particular domain. A key feature of an ESP course is that the content and aims of the course are oriented to the specific needs of the learners. ESP courses, then, focus on the language, skills, and genres appropriate to the specific activities the learners need to carry out in English. Typically (although not always) ESP students are adult learners. They are also often a homogeneous group in terms of learning goals, although not always in terms of language proficiency. Key issues in the teaching of English for specific purposes are how to identify learner needs, the nature of the genres that learners need to be able to produce as well as participate in, and

how we can know that our learners have been able to do this successfully, and, if not, what we can do to help them to do this (Ibid).

Regarding the essential features or differences between ESP and English for General Purposes (EGP) courses Woodrow (2018) makes the following analysis:

Some typical characteristics of ESP and EGP courses

ESP	EGP
Adult learners	Any age learners
Learners have a common goal	Learners have a wide range of goals
Learners have high external motivation	Learners have a range of motivation
Are short term	Are long term
Based on needs analysis	May not bear in mind student needs
Have an academic, professional or workplace focus	Have no specific focus
Have specific content	Have general content
Are based on specific target communication	May include limited exposure to target communicative events
Learners usually have a basic command of English	Learners may be at all levels, including absolute beginners
Focus on specific lexis	A full range of lexis is included
May have a limited focus on grammar	Usually incorporates the full grammatical system. This may be the central organizational strand in the syllabus
A limited range of skills taught – for example, writing and speaking	All four skills are taught with equal focus
ESP courses may be taught with methodologies relevant to the content field	Methodology tends to be similar across courses adopting current thinking in English-language teaching in the region

(Woodrow, 2018:24)

2.2 English for Academic Purposes

EAP is usually defined 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, in short, specialized English-language teaching grounded in the social, cognitive and linguistic demands of academic target situations, providing focused instruction informed by an understanding of texts and the constraints of academic contexts (Hyland, 2006:2).

English for academic purposes (EAP) according to Charles (2013) is concerned with researching and teaching the English needed by those who use the language to perform academic tasks. The field originally arose out of the wider area of English for specific purposes (ESP) and over the last three decades has increased enormously in importance, driven by the global growth in the use of English for employment, as well as academic research.

2.2.1 English for Specific and General Academic Purposes (EGAP& ESAP)

A question that often arises in the design of EAP courses concerns the level of specificity that should be adopted. Some argue that at the lower levels of general English competence, learners are not ready for discipline- specific language and learning tasks, while others argue that the most cost-effective teaching is that which focuses on the immediate specific needs confronting learners in their disciplines (Flowerdew and Peacock, 2001; Jordan, 1997).

The issue is related to what Bloor and Bloor (1986) refer to as the common core hypothesis in applied linguistics. According to proponents of this hypothesis, there is a common core of grammatical and lexical items that predominates in any linguistic register. Thus, whatever type of text one analyses, a common set of linguistic structures and vocabulary items will run through it. When applied to language teaching, it follows, according to this position, that before embarking on a specific purpose course, learners may master the basic set of linguistic items that make up the common core (Hutchinson and Waters, 1987; Jordan, 1997; Widdowson, 1983).

However, Flowerdew and Peacock (2001) argue that there are a number of problems with the common core hypothesis. Although it is possible to specify a set of items to make a common core

because grammatical forms make up a finite set, this is to ignore the question of meaning. Any form has many possible meanings, based on the context in which it appears. The common core is a formal system, divorced from meaning and use. Because meaning is determined by context, if meaning is to be incorporated into the common core hypothesis, it is not possible to escape from the notion of specific varieties. Mastery of any language system, whether or not it is claimed to be part of the common core, must take place within the context of the specific variety or varieties (Hyland, 2006; Hyland and Shaw, 2016).

The proponents of the narrow-angle EAP argue that because the common core is to be found in any variety, and then it is possible to learn the common core at the same time learning the specific variety. Such an approach is more cost-effective, it can be argued, as mastery of the specific language of the target discipline can begin at any level of overall competence (Flowerdew and Peacock, 2001). They further justify this as

> *…. with its focus on language items, a common core approach neglects language skills. An EAP discipline is defined as much by the activities performed within it as by its typical language forms and meanings. EAP needs to prepare learners to read textbooks, listen to lectures, write essays, and do library research, among a range of other skills. Curriculum planners cannot wait until mastery of the common core is complete before focusing on these discipline-specific activities. It is far better to do remedial work on common core items- which will regularly be encountered in any variety- at the same time as developing the discipline-specific skills.* (Flowerdew and Peacock, 2001: 17-18)

On the other hand, some EAP practitioners have argued for a wide-angle EAP on the general pedagogic grounds. Widdowson (1983) has claimed that a narrow-angle ESP is a type of **'**training' as opposed to 'education.' He explains that if ESP is to play a role as part of a broader educational process, then broader competencies will be developed in courses with broader aims, courses which focus on ─purposeful activity─ rather than specific language. Hutchinson and Waters (1987) also argue for a broad-angle approach on similar grounds, claiming that competence in the skills required in the target situation is more important than the specific language of those situations.

However, these positions fall back on the common core hypothesis in assuming that the basic set of language items exists, which learners already know and which they can use in the development of the target skills. Those who reject the common core hypothesis, however, argue that the specific language associated with the specific skills might just as well be the target of learning than a register which must be artificially created to employ only those items of language which purportedly belong to the common core (Flowerdew and Peacock, 2001; Hyland, 2002; 2006;2016).

In order to reconcile the two viewpoints, Jordan (1997) proposes that, depending on the needs of students, EAP courses may be more general, which she terms *English for General Academic Purposes* (EGAP), or relate to the needs of studying in a specific discipline, which she terms *English for Specific Academic Purposes* (ESAP). Similarly, Hyland (2006) stresses that one key issue surrounding the ways we understand and practice EAP is that of specificity, or the distinction between what has been called English for General Academic Purposes (EGAP) and English for Specific Academic Purposes (ESAP). Following an EGAP approach, teachers attempt to isolate the skills, language forms and study activities thought to be common to all disciplines. Dudley-Evans and St John (1998: 41), for instance, include the following activities among such a core: (i) listening to lectures (ii) participating in supervisions, seminars and tutorials (iii) reading textbooks, articles and other materials (iv) writing essays, examination answers, dissertations and reports.

However, Hyland (2002) actually suggests that there needs to be a greater focus on disciplinary specificity in academic English courses, and actually challenges both the validity and the usefulness of more general EAP courses. In relation to this debate, Ding and Bruce (2017) comments that it is probably fair to say that the ESAP and EGAP tendencies for categorizing EAP courses remain, and most fall broadly within these two categories. Robinson (1991) also suggests that even if we cannot base an EAP course on the learning-style of a particular discipline, it is possible to focus on discipline-specific topics and texts.

This approach might encourage us to see such activities as questioning, note taking, summary writing, giving prepared presentations and so on as generic academic practices. ESAP, on the other hand, reflects the idea that, while some generalizations can be made, the differences among these

skills and conventions across distinct disciplines may be greater than the similarities. ESAP, therefore, concerns the teaching of skills and language which are related to the demands of a particular discipline or department (Hyland, 2006).

Hyland (2006) acknowledges that this debate is not new. The idea of specificity was central to Halliday et al.'s (1964) original conception of ESP over forty years ago when they characterized it as centered on the language and activities appropriate to particular disciplines and occupations. They distinguished ESP from general English and set an agenda for the future development of the field. While matters are more complex now as university courses become more interdisciplinary, there is still a need to stress students' target goals and to prioritize the competences we want them to develop and these often relate to the particular fields in which they will mainly operate (Hyland, 2006).

The bottom line, as Hyland (2002:394) puts it, is that ─ effective language teaching in the universities involves taking specificity seriously. It means that we must go as far as we can. Put very simply, ESP can only be as specific as it can be, but we need to make it as specific as is practically and reasonably possible. In this context, then, each ESP NA should be as specific as possible, but only as specific as it needs to be given the institutions and people involved and even given the specific era in which it is performed (Brown, 2016).

However, there is no agreement over the specificity view as some EAP writers, such as Hutchinson and Waters (1987), Blue (1988) and Spack (1988), argue against subject-specific teaching on the grounds that our emphasis should be on learners and learning rather than on target texts and practices. Dudley-Evans and St John (1998), on the other hand, suggest that teachers should first help students develop core academic skills with more specific work to be accomplished later.

2.3 Conceptions and Components of Needs Analysis

Needs analysis is not unique to language teaching as needs assessment, for example, is the basis of training programs and aid-development programs, nor, within language training, is it unique to

Language for Specific Purposes (LSP) and thus ESP. However, needs analysis is the corner stone of ESP and leads to a much focused course (Dudley-Evans and St John, 1998).

The concept of needs analysis, hand-in-hand with an underlying theory, was first established by the Council of Europe with their model for describing the language proficiency of adults whose jobs entailed working in different countries in, what was then, the European Economic Community (West, 1994). With a view to ensuring some degree of standardization across languages and countries, a semantically based model drawing on Wilkins' (1976) "notional -functional" syllabus design was proposed (Richterich and Chancerel, 1977). This focus on functions culminated in Munby's (1978) communicative syllabus design, an ambitious undertaking to draw up a profile of communicative needs underpinned by Hymes' (1971) notion of communicative competence (Flowerdew, 2013).

Needs analysis according to Hyland (2006) refers to the techniques used for collecting and assessing information relevant to course design: it is the means of establishing the how and what of a course. He further explains that needs is actually— an umbrella term that embraces many aspects, incorporating learners' goals and backgrounds, their language proficiencies, their reasons for taking the course, their teaching and learning preferences, and the situations they will need to communicate in. In other words, this can involve what learners know, don't know or want to know, and can be collected and analyzed in a variety of ways (e.g. Brindley, 1989; Brown, 1995).

Nation &Macalister (2010) point out that the focus of needs analysis should be on the goals and contents of the course:

> *Needs analysis is directed mainly at the goals and content of a course. It examines what the learners know already and what they need to know. Needs analysis makes sure that the course will contain relevant and useful things to learn. Good needs analysis involves asking the right questions and finding the answers in the most effective way.* (Nation &Macalister, 2010: 24)

As Basturkmen (2010) describes needs analysis in ESP/EAP refers to a course development process. In this process the language and skills that the learners will use in their target professional or vocational workplace or in their study areas are identified and considered in relation to the

present state of knowledge of the learners, their perceptions of their needs and the practical possibilities and constraints of the teaching context. The information obtained from this process is used in determining and refining the content and method of the ESP course.

According to her the needs analysis process involves:

- *Target situation analysis: Identification of tasks, activities and skills learners are/will be using English for; what the learners should ideally know and be able to do.*
- *Discourse analysis: Descriptions of the language used in the above.*
- *Present situation analysis: Identification of what the learners do and do not know and can or cannot do in relation to the demands of the target situation.*
- *Learner factor analysis: Identification of learner factors such as their motivation, how they learn and their perceptions of their needs.*
- *Teaching context analysis: Identification of factors related to the environment in which the course will run. Consideration of what realistically the EAP course and teacher can offer.* (Basturkmen, 2010: 19)

Needs analysis (also 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.

As Bocanegra-Valle (2016) points out needs analysis has a long history and, still today, ─ a confusing plethora of terms exists (Dudley-Evans & St John, 1998, p.123) to refer to the concept of needs: demands, motivations, deficiencies, goals, gains, wishes, concerns, necessities, lacks, wants, requirements, desires, expectations, constraints, difficulties, preferences, communicative reasons, or communicative situations.

Hyland (2006:74) further presents that it is usual to distinguish between *present situation* analysis and *target situation* analysis as follows:

- *Present situation analysis concerns starting where the students are and refers to information about learners' current proficiencies and ambitions: what they can do and what they want at the beginning of the course; their skills and perceptions; their familiarity with the specialist subject; and what they know of its demands and genres. This kind of data can*

be both objective (age, proficiency, prior learning experiences) and subjective (self-perceived needs, strengths and weaknesses).

- *Target situation analysis concerns the learners' future roles and the linguistic skills and knowledge they need to perform competently in their disciplines. This relates to communication needs rather than learning needs and involves mainly objective and product-oriented data: identifying the contexts of language use, observing the language events in these contexts, and collecting and analyzing target genres.* (Hyland,2006:74)

Richterich, and Chancerel (1977) put a particular emphasis on *present situation analysis* (PSA). A present situation analysis draws attention to the gap between what students are able to do with language at the beginning of the course and what they need to do at the end of the course. This is sometimes referred to as their "lacks." According to Flowerdew (2013) the *present situation analysis* also encompasses other aspects pertaining to the prevailing situation, including:

- *personal information about the learners: factors which may affect the way they learn such as previous learning experiences, cultural information, reasons for attending the course and expectations of it and attitude to English;*
- *information about the language teaching environment (e.g. resources, administration matters).* (Flowerdew, 2013:326-7)

Thus, broadly speaking, whereas the *target situation analysis* is concerned with ―needs, the *present situation analysis* addresses learners'― lacks and ―wants, three aspects addressed at length in Hutchinson and Waters (1987) and also in Bruce (2011) on needs analysis. As Widdowson (1981) points out, while target needs are seen as a goal - oriented, learner needs are more process – oriented when they refer to what the learner has to do to acquire the language (Flowerdew, 2013).

Because target language description alone provides limited direction to classroom practitioners, needs analysis evolved (in the 1970s) to include "deficiency analysis," or assessment of the "learning gap" (West, 1997, p.71) between target language use and current learner proficiencies (Belcher, 2006:5).

2.4 The Purpose and Characteristics of Needs Analysis

Purpura et al. (2003) describe four characteristics of NA: NA should be situation-specific, learner-centered, pragmatic, and systematic. These four characteristics are key to selecting and creating data collection procedures for an NA because the procedures: (a) must end up being appropriate for the specific situation involved; (b) should be centered on the learners (though all other stakeholders should also be considered); (c) must be practical within the constraints found in the particular situation; and (d) should be systematic so the results will function well and lead to defensible NA conclusions (Brown, 2016:57).

As Richards (2001) itemized the following are some of the reasons why needs analysis is conducted:

(1) To find out what language skills a learner needs in order to perform well at the target situation

(2) To help determine if an existing course adequately addresses the needs and potential students

(3) To determine which students from a group are most in need of training in particular language skills

(4) To identify a change of direction that people in a reference group feel is important.

(5) To identify a gap between what students are able to do and what they need to be able to do

(6) To collect information about a particular problem learners are experiencing. The information gathered distinguished ESP from General English instruction because it focused on an awareness of need. A flexible and responsive curriculum determined by an instructor's assessment led to ESP as an attractive learning alternative.

2.5 Methods or Techniques of Needs Analysis

To carry out a needs analysis several alternatives exist, some requiring more expertise or time than others, and some being more appropriate than others for different situations or for use with different kinds of informants. They include both inductive and deductive procedures (Berwick, 1989). The former involves the use of expert intuitions, participant and nonparticipant observation, and unstructured interviews, from which categories of needs are derived; the latter includes the use of devices and instruments, such as structured interviews, questionnaires, and criterion-referenced performance tests, with pre-set categories.

It is difficult to overemphasize the likelihood that the use of multiple measures, as well as multiple sources, will increase the quality of information gathered, whether or not the findings are used for triangulation by methods (Long, 2005).

Needs can be collected and analyzed by means of quantitative or qualitative and inductive or deductive research methods, and with the use of specific data collection instruments or techniques. For instance, Jordan (1997) lists fourteen different procedures for collecting needs data, including student self-assessment, class progress tests and previous research, while Brown (1995, 2009) lists twenty-four, grouping them into six main categories: existing information, tests, observations, interviews, meetings and questionnaires. Besides, Hyland (2006) mentions collecting and analyzing authentic texts, now regarded as a key source of information about target situations. According to him, the most widely used techniques are: (i) Questionnaires, (ii) Analyses of authentic spoken and written texts, (iii) Structured/Semi-structured interviews, (iv) Observations, (v) Informal consultations with faculty, learners, other EAP teachers, etc. (vi) Assessment results.

1. Interviews

The interview is a key data-gathering tool in many branches of the social sciences, most notably in anthropology and linguistics fieldwork. The use of interviews is widely reported in NAs in ESP. For example, Ramani, Chacko, Singh and Glendinning (1988) conducted unstructured interviews with Indian scientists, and Fixman (1990) summarized the findings of 32 semi-structured interviews, mostly with middle and senior managers, in nine companies of different types and sizes, designed to identify FL needs of US corporations (Long, 2005).

2. Questionnaire surveys

Questionnaires can procure sizeable amounts of focused, standardized, organized data, potentially from a large sample of respondents, and do so relatively quickly and cheaply (Long, 2005). They can accomplish all this, moreover, with the option of anonymity and with less chance of interviewer bias, since the questions asked, the order in which they are asked, and the precise way they are asked can all be carefully planned and fixed. On the other hand, response rates can be low, and the type of information and range of responses obtained are likely to be limited by the use of pre-determined questions and response options and formats.

Administration of a questionnaire is among the most widely used procedures in NA (see, Brecht & Rivers, 2005; Chaudron et al, 2005; Gilabert, 2005).

3. Participant and non-participant observation

Participant and non-participant observation have the advantage of allowing direct, in-depth, contextualized study of what participants actually do, of the activities of interest in their natural environment (natural, that is, except for the presence of the outside observer in the case of non-participant observation) (Long, 2005).

4. Ethnographic methods

Ethnographic procedures, of which some kinds of participant and non-participant observation are two, are designed to lessen the cultural distance between outsider (observer) and insider (observed). They are used to seek out insider views of the culture. Crucially, this involves eschewal of pre-conceived, outsider, or etic, analytic categories of events, formulated before observation begins, in favor of emic categories, those considered relevant by insiders, which emerge from the data and the observer's developing interpretation of them interpretations which are validated reflexively against insider views, e.g., through triangulation (Long, 2005).

5. Tests

Tests of various kinds constitute another valuable option for the needs analyst, but the kinds of tests available are as varied, and in some cases as problematic, as those employed for traditional assessment purposes. Few would deny that students in any kind of language teaching program should be tested using measures whose reliability and validity are established for the population concerned, (i) for diagnostic and placement purposes before a program begins, or, where that is impossible, soon after it starts, and (ii) again before exiting the program, for their readiness to perform adequately in the target domain(s). What is harder for some to accept is the proposition that, certainly for achievement testing, and arguably for diagnostic and placement purposes as well, measures of the ability to perform target tasks or task types identified as relevant by the NA should take precedence over general linguistic proficiency measures, and that if linguistic abilities are tested at all, it should be as integrated with task performance, and using real-world, not purely linguistic criteria (Long, 2005).

2.6 Task-based Syllabus and Needs Analysis

Task-based language teaching (TBLT) constitutes a strong form of communicative language teaching. It aims to develop learners' knowledge of a second language (L2) and their ability to use this knowledge in communication by engaging them in a series of communicative tasks. It differs from other approaches in that it does not attempt to teach learners predetermined linguistic items (i.e. vocabulary and grammar). TBLT is based on a view of language learning that claims that an L2 is best learned through learners' efforts to communicate with it. Central to an understanding of TBLT is the concept of ─task (Ellis, 2011).

Nunan (2004:4) defines a pedagogical task as

> *a piece of classroom work that involves learners in comprehending, manipulating, producing or interacting in the target language while their attention is focused on mobilizing their grammatical knowledge in order to express meaning, and in which the intention is to convey meaning rather than to manipulate form. The task should also have a sense of completeness, being able to stand alone as a communicative act in its own right with a beginning, middle and an end.*

Pedagogically, according to Nunan (2004) task-based language teaching has strengthened the following principles and practices:

• A needs-based approach to content selection.

• An emphasis on learning to communicate through interaction in the target language.

• The introduction of authentic texts into the learning situation.

• The provision of opportunities for learners to focus not only on language but also on the learning process itself.

• An enhancement of the learner's own personal experiences as important contributing elements to classroom learning.

• The linking of classroom language learning with language use outside the classroom. (Nunan, 2004:1)

As many types of research in SLA show synthetic syllabuses, such as the grammatical, lexical, and 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 to 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., Arden-Close, 1993; Bosher & Smalkoski, 2002; Long, 2005).

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 the performance of target tasks relevant to the communicative needs of particular groups of learners (Long, 2005).

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).

On account of the failings of the notional-functional syllabus due to its synthetic nature, Long (1985, 2005) proposed task-based needs analyses as the unit of analysis for the following reasons. Job descriptions, which are formulated by domain experts on the background knowledge, performance standards, and tasks required, provide a more reliable source of data than those produced by language teachers and applied linguists. Task-based needs analyses reflect the dynamic

qualities of the target discourse, thus revealing more than static, product-oriented text-based analyses. Whereas synthetic syllabi tend to be the outcome of needs analyses organized around functions, task-based needs analyses promote a more holistic analytical syllabus (Flowerdew, 2013).

Thus, according to the task-based syllabus proposed by Long and Crookes (1992), TBLT adopts tasks as the analytic unit of the syllabus and organizes a course around different types of tasks. Principles underlying TBLT also emphasize the importance of developing pedagogic tasks based on real-world tasks that learners need to perform using the target language after or during the course. As a result, to develop a TBLT program, it is necessary to conduct a task-based needs analysis to identify real-world target tasks and to develop pedagogic tasks based on these. Task-based needs analysis is assumed to enhance the real-world relevance of the course and increase student interest and motivation (Huh, 2006).

In addition Robinson (2001) noted that

> …adopting tasks as the unit of analysis helps to ensure a high degree of real-world relevance, since they are based on a needs analysis of target performance objectives, thereby most likely increasing student interest and motivation in classroom pedagogic activities, and the possibility of direct transfer of the abilities developed in classrooms to similar situational contexts. (Robinson, 2001: 292)

Task-based needs analysis as Long (2005) 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 (2005) 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 (Huh, 2006).

In recent years, needs analysts have increasingly used tasks as the focus of inquiry (Long, 2005; Cowling, 2007; Thomas, 2009). Tasks are units not defined by linguistic criteria and task-based needs analyses aim to identify the 'real world' work or study tasks in the target situation. For example, Thomas' (2009) task-based needs analysis in a civil engineering company found that 'applying for a building consent' was a key task and that the engineers broke this complex task down into a set of subtasks. It is expected that this trend will continue and that analysts will continue to seek to identify the language-based tasks involved in the work or study area of interest, which of these the students find difficult and the nature of student difficulties in them (Basturkmen, 2010).

2.7 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 physical and natural phenomena, their processes, properties, characteristics, laws and applications 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; Bazerman, 1984, 1988; Braine, 1989; Halliday, 1993a; Swales, 1971, 1988). 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). She further notes that

To become a member of a science discourse community, a student needs to participate in and come to regard as natural, research science values: that science is quantitative, repeatable, and ideally free from bias. Engineering values by contrast are concerned with the design process and problem-solving within set specifications; associated discourse includes argument that links scientific phenomena to specific contexts. Parkinson (2013: 157)

Artemeva, Logie, and St Martin (1999), to assist students' integration into the engineering discourse community, based communication assignments on each student's chosen engineering area. This made the context seem more genuine for students, improving perceptions that the course served their needs. Their course, which included several engineering genres, focused on audience and purpose, encouraging a sense of dialogue with the instructor and peers. Similarly, Parkinson (2000) aimed to assist socialization into a discourse community by situating EST coursework in the context of undergraduate science students' subject areas. Students collected experimental data and wrote lab reports on this data, thus simulating students' disciplinary discursive contexts (Parkinson, 2013: 159).

As Hyland (2016) further notes the principle of specificity receives strong theoretical support from social constructivism which stresses that disciplines are largely created and maintained through the distinctive ways in which members jointly construct a view of the world through their discourses (e.g. Bruffee, 1986; Hyland, 2012b). Each discipline draws on different lexical, grammatical, and rhetorical resources to create specialized knowledge. Wignell, Martin & Eggins (1993) as cited in Hyland (2016), for instance, characterize the sciences as reworking experience technically by establishing a range of specialist terms which are ordered to explain how things happen or exist. They further explain that

> *This technicality is then used to create further technicality through defining, classifying, and explaining. The humanities, like history and philosophy on the other hand, employ abstraction rather than technicality, moving from instances to generalizations by gradually shifting away from particular contexts to build ever-more abstract interpretations of events.* (Hyland, 2016:20-21).

This implies that technicality is one defining characteristics in the science and engineering fields.

2.8 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 the language and discourse features of the texts, as well as the context in which the text is produced (Paltridge, 2002).

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). The following are some of the most common genres for undergraduate engineering students:

2.8.1 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). He also adds— university textbooks, however, are, once

again, something of a neglected genre. 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) 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, as we indicate below, 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.

2.8.2 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 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 (Ibid). 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 the 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 (Ibid).

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.

2.8.3 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 the 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 a 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, 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 of 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. Jackson et al. (2006) further describe the ways in which laboratory reports are alike and different from the research articles as follows:

> *Like research articles, student laboratory reports are expected to place the work done in the context of the literature, provide an account of the method used, and convince the reader that the work was accurately performed. Like research articles, student laboratory reports indicate the extent to which the work is continuous with accepted facts. A difference between student laboratory reports and research articles is that the findings of the laboratory report are not expected to be new or to extend accepted facts or to deviate from them. That findings are expected to reflect accepted facts is well-recognized by students who as a result may be tempted to fudge their results to make them credibly close to what is predicted in the textbook.* (Jackson et al., 2006: 264)

2.8.4 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 of 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 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 (2009) illustrates how ESP teachers have investigated disciplinary communities' values and activities. In teaching the design presentation, Dannels (2003) found that although this genre was

designed to simulate a workplace environment, professors had academic expectations (Parkinson, 2013).

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).

2.8.5 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).

2.8.6 Manuals

Manuals (printed or electronic) help customers and technical specialists use and maintain products. These manuals are often written by professional technical writers, although in smaller companies, engineers or technicians may write them (Alred et al, 2009: 315). These authors classify manuals into six types. These are:

i. ***User Manuals.*** *User manuals are aimed at skilled or unskilled users of equipment and provide instructions for the setup, operation, and maintenance of a product. User manuals also typically include safety precautions and troubleshooting charts and guides.*

ii. Tutorials. *Tutorials are self-study guides for users of a product or system. Either packaged with user manuals or provided electronically, tutorials guide novice users through the operation of a product or system.*

iii. Training Manuals. *Training manuals are used to prepare individuals for some procedure or skill, such as operating a respirator, flying an airplane, or processing an insurance claim. Training manuals may be printed or delivered in electronic or online forms.*

iv. Operators' Manuals. *Written for skilled operators of construction, manufacturing, computer, or military equipment, operators' manuals contain essential instructions and safety warnings. They are often published in a convenient format that allows operators to use them at a work site.*

v. Service Manuals. *Service manuals help trained technicians repair equipment or systems, usually at the customer's location. Such manuals often contain troubleshooting guides for locating technical problems.*

vi. Special-Purpose Manuals. *Some users need manuals that fulfill special purposes; these include programmer reference manuals, overhaul manuals, handling and setup manuals, and safety manuals* (Alred et al, 2009:315-6).

2.9 Engaging with the Disciplines

Based on Hyland (2006) the importance of well contextualized EAP instruction based on the needs of students and subject teachers has led to various ways of matching language teaching to the assignments, discourses and activities of content courses. The adjunct model in which an EAP course is linked with an academic content course, and team teaching, involving collaboration in the

same classroom, are the most developed approach to such partnerships. The types of possible cooperative relationships with subject departments can be seen as a continuum of involvement (Baron, 1992), along which Dudley-Evans and St John (1998) identify three main types of subject–language integration: *co-operation, collaboration* and *team teaching* Hyland (2006: 86).

- *Co-operation* is used to refer to the use of subject teachers as specialist informants who can provide information about texts, course assignments and the conceptual and discoursal framework of the discipline. Here the teacher is proactive in gathering information about the target course and establishing what tutors and students regard as priorities. This is part of the target needs analysis where the EAP teacher finds out what is going on in the subject department and the discipline. Information is usually collected by interviews, questionnaires, observations and by studying materials and texts. Beyond this, co-operation can involve discussion with subject tutors to introduce alternative readings in the EAP course, to bring different perspectives to the content, and to analyze relevant discourse texts such as lectures, textbooks and essays.
- *Collaboration* is further along the involvement continuum and refers to the direct working together of language and subject teachers outside the classroom. Dudley-Evans and St John (1998: 44) suggest three options here:

1. Subject tutors offer advice on readings, vocabulary preparation, etc., so that the EAP class can prepare students for a subsequent subject class. The objectives of the EAP course are thus subordinate to those of the subject course.
2. The subject department either produces or provides input into material produced for students to work with in the EAP class. This may also take the form of a joint assessment. There is greater equality in this relationship than in the first option.
3. The EAP course is taken in conjunction with a subject course in an *adjunct model*. Here instruction is largely focused on addressing the study and literacy demands of the subject course, often discussing videos of lectures, set texts, and course topics from different perspectives.

Finally, *team teaching* involves the closest engagement with the subject discipline as subject and EAP teachers work together in the same classroom. While costs and resources often restrict opportunities for this, pioneering work at Birmingham University in the UK on lecture

comprehension shows that it can be successful. Here the subject tutor and EAP teacher together followed up each lecture with a series of questions on a recording of the lecture, including a discussion of key points and the development of note-taking skills (Johns and Dudley-Evans, 1980). Commenting on the expansion of this work to the writing of examination responses, project outlines, dissertations and essays, Dudley-Evans and St John (1998) suggest three elements for their success:

1. Clearly defined and complementary roles for EAP and subject teachers.
2. Relatively few demands on the subject tutor beyond classroom responses, therefore, encouraging his or her participation in the course.
3. Mutual respect for and acceptance of each other's specialist expertise.

Engagement can be a fraught enterprise, however, as participants may be suspicious and even openly critical of each other. EAP teachers may see subject tutors as unresponsive to L2 learners and regard their failure to communicate effectively as a source of student difficulties. Subject tutors might feel that EAP teachers know little about disciplinary communication and so should teach general English skills and not interfere in their classes. Barron (2002), moreover, shows how conflicts may be even more fundamental. He argues that the ontological superiority that science teachers give to their scientific facts can make them rigid when negotiating learning tasks and assignments. The divergent philosophies of functionalism in EAP and realism in science, in other words, can undermine cooperation and lead to the subordination of EAP to subject content.

Clearly some engagement with the subject discipline is essential to the development of an effective EAP course. At the minimum this should involve an understanding of the texts, tasks and forms of information delivery in the target course or discipline, and the use of tutors as informants on the literacy practices of their fields (Hyland, 2006).

2.10 ELT Materials and Tasks

It is obvious that materials are used in all teaching. The core materials according to Dudley-Evans and St John (1998) are usually paper-based, but where possible, ESP teachers also want to use Audio and video cassettes, overhead transparencies, computers, and occasionally, other equipment or real objects. For Tomlinson (2011:2) materials refer to ―anything used by teachers or learners to

facilitate the learning of language. This broad definition includes EAP textbooks, commercial materials that are not part of EAP-textbook packages, excerpts from introductory university textbooks, teacher-created worksheets, video recordings, online sites (including technology, entertainment), and computer-assisted language learning programs. Inextricably linked to these materials are the tasks associated with them that students engage in to process materials, learn from them, and attain course objectives. In EAP contexts, materials and tasks work in concert to prepare students for future academic pursuits (Stoller, 2016).

A defining characteristic of effective EAP materials and tasks is that they are informed by the needs of students who aspire to study (or who are simultaneously studying) in English (Stoller, 2016:577). As he further stresses, EAP students' needs extend well beyond language; thus, EAP materials and tasks should also guide students in:

• *engaging in academic-task sequences;*
• *using strategies in meaningful combinations to overcome challenges and achieve goals;*
• *comprehending and producing the spoken and written genres that students will encounter;*
• *developing study skills;*
• *strengthening critical thinking abilities;*
• *using technology for academic purposes;*
• *developing test-taking strategies for test types that will be encountered.* (Stoller, 2016:577)

Materials are used to stimulate and support EAP instruction and their development probably consumes most of the teacher's out-of-class work time. According to Hyland (20006) materials refer to:

> *Anything that can help facilitate the learning of language, and while they are predominantly paper-based, they can also include audio and visual aids, computer-mediated resources, real objects, or performance. They provide most of the input and language exposure that learners receive in the classroom and, because course outcomes significantly depend on them, teachers need to ensure that their materials relate as closely as possible to the target needs and learning profiles of their learners and to their own beliefs as teachers.* (Hyland, 2006:94)

2.10.1 Creating and Evaluating Materials

Commercial textbooks are common in EAP classes and proponents argue that they are the most convenient form of presenting materials, that they help to achieve consistency, cohesion and progress, and that they assist teachers to prepare and learners to revise. While there are obvious advantages for teachers and institutions in using course books, opponents argue that they are inevitably reductionist and superficial, restrict teacher initiative, and cannot cater to the diverse needs of all users (Hyland, 2006).

The highly targeted and context-specific nature of EAP means that no textbook can ever be ideal for a particular class and so an effective teacher needs to be able to evaluate, adapt and produce suitable and effective materials. The process normally starts by evaluating the suitability of available resources or published texts against criteria of relevance, difficulty, rhetorical appropriacy, presentation, and so on, and numerous evaluation checklists exist for selecting textbooks (e.g. Cunningsworth, 1995; Harmer, 2001; Reid, 1993). But these tend to be very subjective and no set of criteria fits all situations as selection involves more than simply matching needs to available resources. It is important that teachers feel they can work with a book to achieve their goals with a particular group of learners, and this means that they cannot just accept what others recommend. More usually, teachers are evaluating not books but individual units, texts or activities, and simple criteria are more useful, in determining whether the content and genre are relevant and the language focus appropriate (Hyland, 2006).

Often teachers are forced to either adapt existing materials or create their own. There are five ways of adapting materials, although in practice they actually shade into each other:

- ***Adding****: supplementing or extending what a textbook offers with extra readings, tasks or exercises.*
- ***Deleting****: omitting repetitive, irrelevant, potentially unhelpful or difficult items.*
- ***Modifying****: rewriting rubrics, examples, activities or explanations to improve relevance, impact or clarity.*
- ***Simplifying****: rewriting to reduce the difficulty of tasks, explanations or instructions.*

- ***Reordering****: changing the sequence of units or activities to fit course goals*. (Hyland 2006:97)

Designing new writing materials can be extremely satisfying, both professionally and creatively, as well as offering students a more tailored learning experience. It is, however, also very time-consuming. Dudley-Evans and St John (1998) estimate at least fifteen hours to produce just one hour of good learning material from authentic texts.

2.10.2 Relationship between Materials and Tasks

EAP materials and tasks should work together. Materials without accompanying tasks are not particularly effective in preparing students for the demands of academia; similarly, standalone tasks, detached from materials, do not prepare students for the realities of academia where tasks are typically connected to written and aural materials. Tomlinson (2013) mentions the value of combining authentic texts (i.e., materials) with pedagogic tasks to raise students' awareness about language, and provide practice opportunities. Alexander, Argent, and Spencer (2008) advocate the opposite when they claim that the authenticity of a task can be allowed to override the authenticity of content (or text).

EAP textbooks typically include pedagogic tasks, in the form of exercises and activities. Such tasks might be designed to build and recycle vocabulary, assess comprehension, provide strategy training, increase fluency, integrate skills, and guide students in the application of content for speaking or writing purposes (when, e.g., preparing oral presentations, participating in group discussions, writing summaries). Tasks that are integral to EAP textbooks are sometimes approximations of authentic tasks (e.g., choosing a topic related to core materials, researching it, and writing a paper; taking notes and using them for authentic academic purposes) (Stoller, 2016).

4.11 Theoretical and Conceptual Framework

4.11.1 Theoretical Framework

Theories that have shown promise for their application to LSP (Language for Specific Purposes) research include socially-based theories of interaction (e.g., socio-cultural theories of language acquisition, based on Vygotsky's, 1978 and genre-based theories (e.g., systemic functional linguistics, based on work by Halliday, 1978, and Swales, 1990).

According to Hyland (2006), English for specific academic purposes (in this case, English for engineering students) employs the social constructivist theory of language learning since the students construct meaning to their learning through social interaction in their specialty and collaborative problem-solving activities. He locates the origin of social constructivism in symbolic interactionism and its connection to ESP and EAP:

Originating in the symbolic interactionism of Mead (1934) and developed within social psychology and post-modern philosophy, social constructivism is probably the mainstream theoretical perspective in ESP and EAP research today (Hyland, 2002:23).

A disciplinary socialization perspective views students as not merely learning the registers and genres important in their disciplines, but as being enculturated into those disciplines by learning disciplinary values and behavior. This perspective draws on sociocultural theory, viewing discourse practices as learned through interaction with those who have already mastered them (Duff, 2010; Parkinson, 2013).

Social construction has thus become a central theoretical underpinning of work in ESP. It sets a research agenda focused on revealing the genres and communicative conventions that display membership of academic and professional communities, and a pedagogic agenda focused on employing this awareness to best help learners critique and participate in such communities (Hyland, 2002). Swales (2001:48) points out that social constructionism is attractive to those working in ESP as it gives them ─ an enhanced place in the study of academic tribes and territories , putting discourse at the center of human endeavor and elevating the role of those who study it.

In addition, Živković (2014) emphasizes how the discipline-specific EAP fits the social-constructivist theory as follows:

> *Bearing in mind that EAP is a student-centered approach which focuses on developing English communication skills in a specific discipline, it is clear that it fits well with a constructivist theory which emphasizes the central importance of students and their attitudes and motivation towards learning. Constructivism argues that learning is an active process in which learners construct new knowledge based upon their previous knowledge through the interaction with the environment* (Živković 2014:19).

In this sense, constructivist epistemology explains that knowledge, learning, and cognition, as social constructions, are expressed on the basis of the interaction with their environment (Živković 2014). Besides, in the case of collaborative and problem -solving activities, it can be said that they foster constructivist learning and provide learners with resources and guidance to engage them in building new knowledge and understanding. In collaborative learning, students are encouraged to communicate with their peers and be prepared for real-world problem-solving situations (ibid).

Applied to language learning, social constructivism means that learners first manifest new linguistic forms and functions in interactions with others and subsequently internalize them so they can use them independently. Social talk is also the means by which they achieve self- regulation with new forms (Ellis, 2003). This suggests that ―tasks can cater to learning by providing opportunities for learners: (1) to use new language structures and items through collaboration with others; (2) to subsequently engage in more independent use of the structures they have internalized in relatively undemanding tasks; and (3) to finally use the structures in cognitively more complex tasks. Central to this process are the collaborative acts learners participate in tasks, then, can be seen as tools for constructing collaborative acts (Ellis, 2003: 178).

Clearly within the social context of a classroom, EFL learners face some tasks or structures that are impossible to accomplish without receiving social assistance from other capable peers or the teacher. This problematic aspect in learners' development maximizes the need to provide assistance in students' potential language development. Vygotsky's use of the problem-solving activity is vital enough to justify the distinction between an individual learner's actual development level and potential level. In an attempt to collaborate with a more capable other, whether teacher or peer, in problem-solving activity, the learner indicates that the distance between his actual level of development and potential level is his zone of proximal development (ZPD) (Behroozizad et al, 2014). They further explain that

> *Language learners need to expand and bridge their ZPD through support received from the expert and what is called scaffolding. Thus, an EFL language learner as a novice and the teacher as an expert or more 'capable other' (Vygotsky, 1978) can interact with each other in a social setting of classroom which leads to the enhancement of learning. In such a context, to facilitate the learners' cognitive development and social construction of knowledge within their ZPD, the teacher may scaffold students in different ways such as*

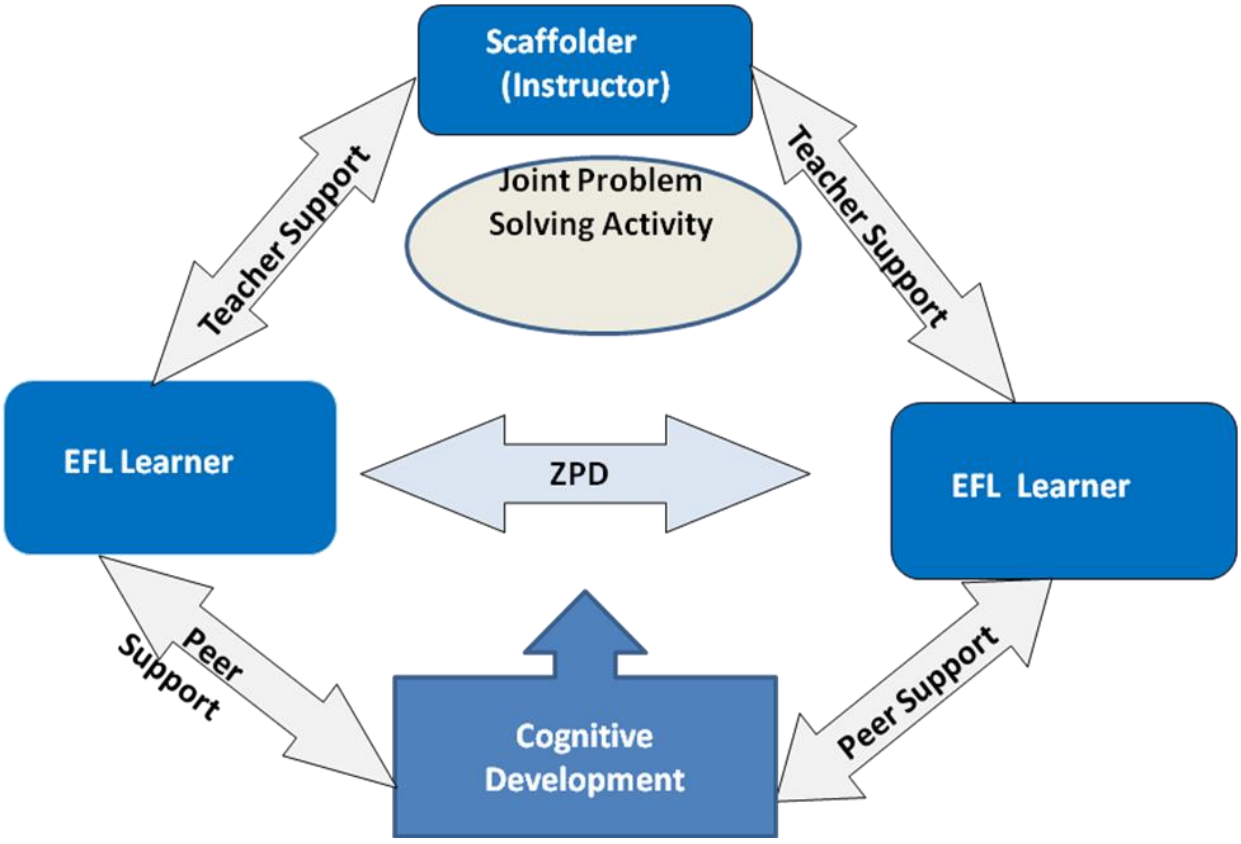
> *giving helpful suggestions in the process of doing tasks, asking leading questions, drawing tables and charts, and giving feedback concerning the students' group work* (Behroozizad et al, 2014:222).

Social constructivism or sociocultural theory of learning is a theory of the development of higher mental practices which regards social interaction as the core of the communication and learning process. This theory envisages that students' learning can be mediated or promoted by the scaffolding (i.e support of an expert or a capable person (i.e a teacher or peer) to enable the learner or the novice to do the impossible. In a specific EAP context, this can be ensured through the support of a teacher and other capable students working collaboratively on authentic problem-solving and jigsaw activities through interaction using activities (Ibid).

Sysoyev (2001) also makes links between needs analysis in ESP/EAP and Vygotsky's (1978) notion of the Zone of Proximal Development. In this notion there are two stages in the development of an individual. The first stage represents what the learner can do independently. The second stage represents the potential of that individual and what he or she can achieve with the help of another more competent person. The ZPD is the distance between the two stages. The mediator is the person who helps the learners move from the first to the second stage. In EAP, the mediator is the teacher and the second stage is the realization of their needs (Basturkmen, 2010).

In other words, a constructivist approach focuses on cognitive processes; it assumes that students will learn best by engaging in scaffolded practical problem- solving tasks. Scaffolding refers to the way the teacher – *contributes what learners are not yet able to do alone or do not yet know. Teachers adjust and strategically diminish their contribution supporting learners as they progress towards their potential level of independent performance* (Feez 2002: 56). In ESP, constructivism is commonly applied in task-based learning and problem-based learning including computer-based learning, in fact, in any environments where there is an emphasis on learning by doing. These could include fieldwork, group projects, problem-based learning, self-directed research in libraries and online and hypothesis testing, using, for example, computer-based simulations (Thornton and Houser 2002; Gollin-Kies, Hall & Moore (2015).

Fig1. **Interaction and Collaboration among Engineering Students, and English Instructors in an EAP Context**



Behroozizad et al., (2014)

In addition, systemic functional linguistics (SFL) outlines a social theory of language as being fundamentally about meaning making. In the context of formal education, SFL offers a way of understanding language and specialist or disciplinary content or knowledge. It is concerned about how language operates and means in different contexts (Halliday, 1985; Widodo, 2015). As Widodo (2015: 37) further describes, SFL as a social semiotic theory provides the basis for pedagogical practices because ─ it has been adopted in both content based instruction (CBI) and text-based language instruction (TBLI). It provides tools for educational researchers, applied linguists, and language teachers to understand the ways in which language builds disciplinary language, knowledge, discourse, and social practices in different disciplinary areas.

Because it is concerned with language use, SFL places higher importance on language function (what it is used for) than on language structure (how it is composed) (Mick O'Donnell 2012). Systemic Functional Linguistics (SFL) according to Coffin &Donohue (2012) is a theory of language which highlights the relationship between language, text and context. Its scope is wide in that it sets out to explain how humans make meaning through language and other semiotic resources, and to understand the relationship between language and society. As an 'Appliable Linguistics' (Halliday, 2007) it is designed to be a strategic tool and a guide to action, a means of responding to everyday real-life language-related issues in diverse social, professional and academic contexts. Academic learning and teaching is just one of the contexts that it has been applied to (Coffin &Donohue, 2012).

Thus, social constructivism and systemic functional linguistics are thought to best form the theoretical framework of this study as engineering students can learn English language best through interaction among themselves and engaging in collaborative problem-solving activities such as project work and jigsaw activities. Therefore, in teaching and learning ESP employing these theories can be pertinent because students can better construct language knowledge and meaning by working collaboratively focusing on content integrated language learning and problem-solving activities.

2.11.2 Conceptual Framework

A conceptual framework in research is used to understand a research problem and guide the development and analysis of the research. It serves as a roadmap to conceptualize and structure the work by providing an outline that connects different ideas, concepts, and theories within the field of study. It illustrates the relationship between the variables and defines the objectives for the research.

Accordingly, the conceptual framework in this research illustrates the relationship between the key variable, i.e. the English language needs analysis of engineering students for academic study and workplace communication and the specific objectives set to realize these needs. These are the language skills needed for the academic study and workplace communication, the tasks required to be carried out in academic study and workplaces, the English language problems/ difficulties experienced while carrying out the academic and work-related tasks and the assessment of their

perceived and actual English language proficiency of engineering students and engineers at work in HIP. Pictorially, it is presented in the following way.

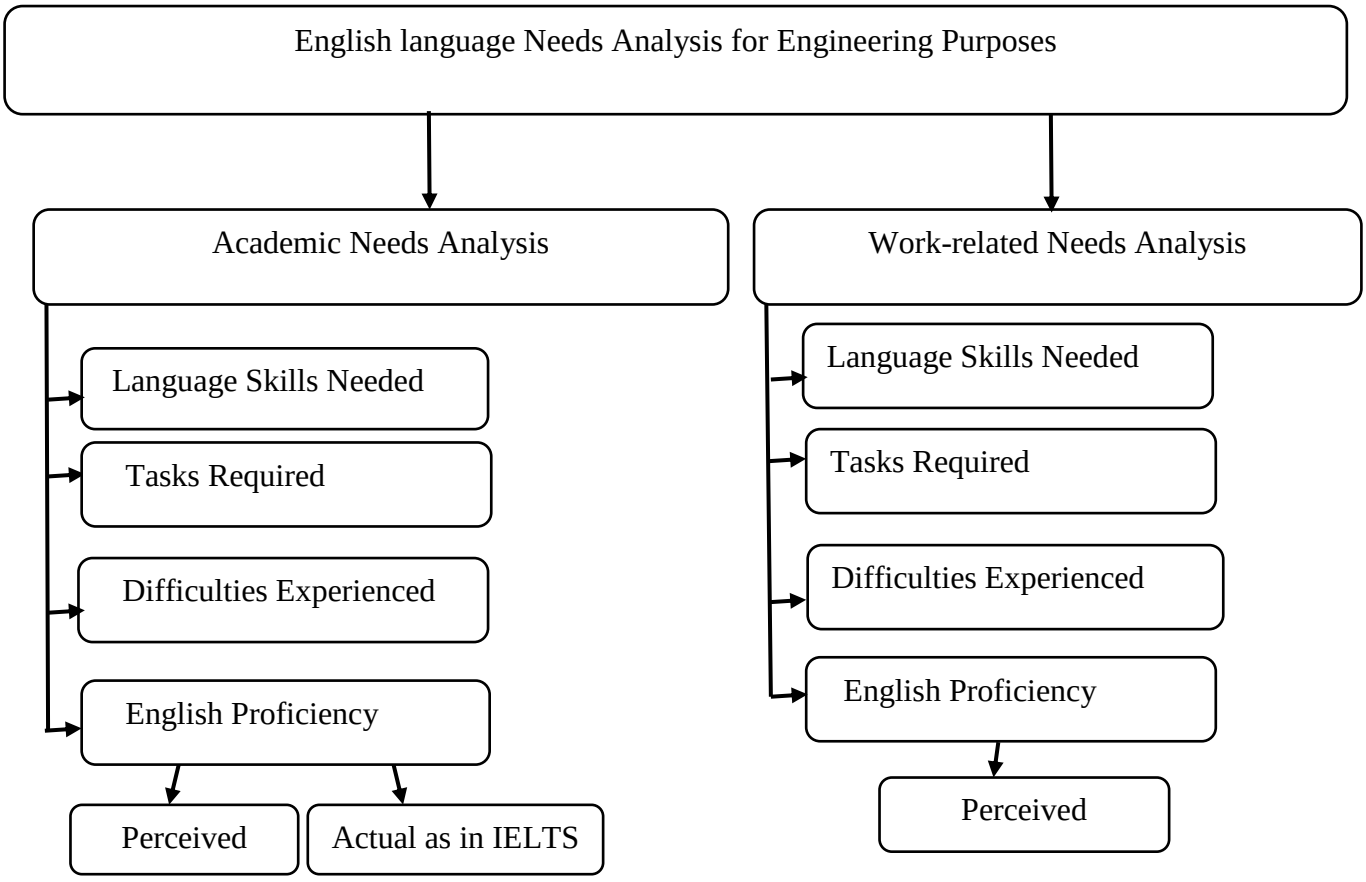


Fig.2 Conceptual framework

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

The main objective of this study was to identify the academic and work-related English language needs of undergraduate engineering students at Hawassa University and evaluate the effectiveness and relevance of the currently developed teaching materials in addressing the identified needs of these students and establish the framework for a syllabus that can better address their needs.

In this section a detailed description of the research design, research setting and data sources, sampling techniques, instruments of data gathering, procedures of data collection, data organization and methods of data analysis is provided.

3.1 Research Design

Research design normally incorporates the specific procedures employed in the process of data collection, analysis and reporting the findings of a study (Creswell, 2012). It is apparent that the choice of a research design could be determined by the purpose of the study. Since the assessment of English language needs and difficulties of undergraduate engineering students and engineers at work requires the involvement of different stakeholders and obtaining of their opinions, perceptions and preferences, a *cross- sectional survey* research design has been chosen for this research. Survey research is a research method involving the use of standardized questionnaires and/or interviews to collect data about people and their preferences, thoughts, and perceptions in a systematic manner (Cohen, Manion & Morrison, 2007; Bhattacherjee, 2012).

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 document analysis. Hence, it is appropriate to employ the survey design to elicit information for this academic and work-related needs assessment research of undergraduate engineering students' English language needs at Hawassa University and engineers working at Hawassa Industrial Park.

3.1.1 Research Paradigm

Before disclosing the research paradigm adopted in this study, I will briefly discuss the major paradigms of research. A research paradigm refers to the overarching culture, framework or worldview that guides the way researchers conceptualize, conduct, and interpret their studies (Richards, 2003). A paradigm shapes how researchers understand social phenomena, choose research methods, and analyze data and interpret it.

The first research paradigm is positivism which assumes that reality exists independently of humans. The epistemology of positivism is objectivism. Researchers come in as objective observers to study phenomena that exit independently of them and they do not affect or disturb what is being observed (Richards, 2003). Positivist methodology relies heavily on experimentation. Hypotheses are put forward in propositional or question form about the causal relation between phenomena. While objective and scientific methods are appropriate for studying natural objects, they are not as successful when they are applied on social phenomena.

The second approach is interpretivism, which is a response to the over-dominance of positivism (Grix, 2004). Interpretivism rejects the notion that a single, verifiable reality exists independent of our senses. Instead, interpretivists believe in socially constructed realities; truth and reality are created, not discovered. Interpretive epistemology is subjective (Guba and Lincoln, 2005). Interpretive methodology requires that social phenomena be understood through the eyes of the participants rather than the researchers. The goal of interpretive methodology is to understand social phenomena in their context and the approach to analyzing data thus generated is inductive, i.e the researcher tries to discover patterns in the data which are categorized under broad themes to understand a phenomenon and generate theory (Cohen et al., 2007). The interpretive paradigm has been criticized for, among other things, being “soft,” incapable of yielding theories that could be generalized to larger populations and the involvement of the researcher with participants which leads to lack of objectivity(Grix, 2004). However, Richards (2003) disagrees and states that qualitative inquiry is not soft ─ it demands rigor, precision, systematicity, and careful attention to detail. Although positivist research has its merits, there are social phenomena that could be best investigated.

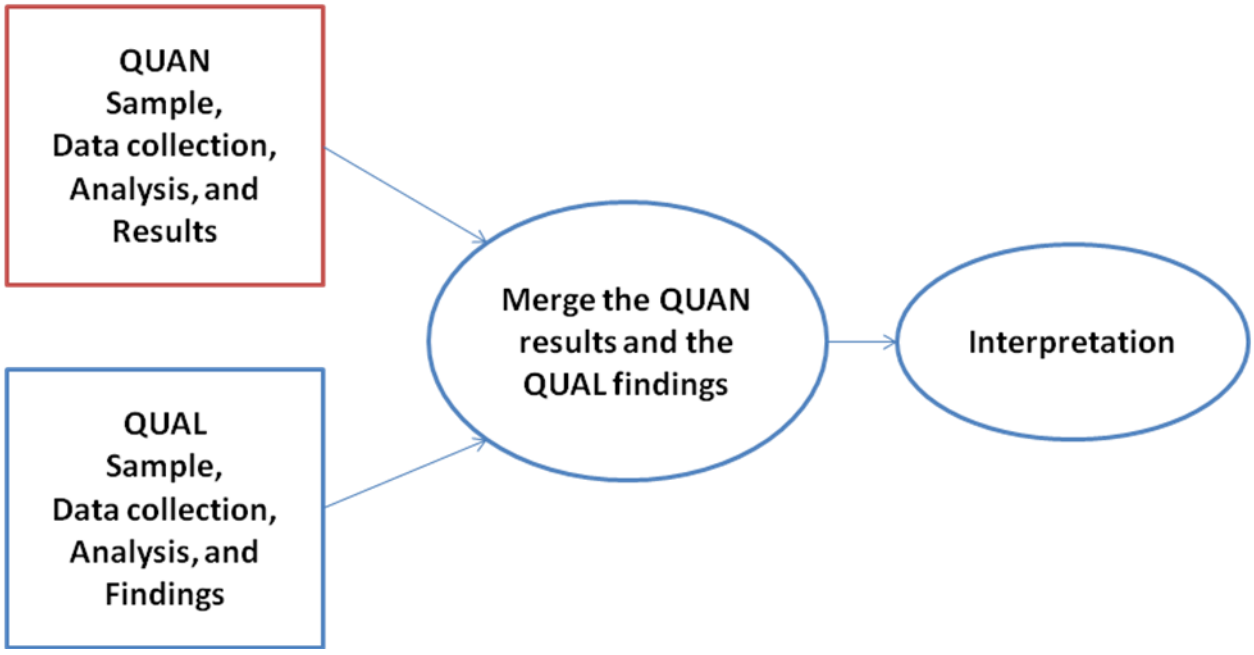
The third research paradigm is pragmatism. Pragmatism is all about the notion "what works". Pragmatism is simply oriented toward solving practical problems in the real world rather than being

built on assumptions about the nature of knowledge (Creswell, 2014). Johnson et al. also (2007) agree that pragmatism is an advanced philosophy that provides the epistemology and the logic for combining the quantitative and qualitative approaches and methods.

While positivist and interpretivist approaches are mutually exclusive, pragmatism is an approach that suggests there are in fact many different ways of integrating the world and conducting research to investigate reality and that combination of different approaches may provide a broader understanding of the phenomena being investigated. Unlike positivism and interpretivism research philosophies, pragmatist research philosophy can integrate more than one research approaches and research strategies within the same study. Moreover, studies with pragmatism research philosophy can integrate the use of multiple research methods such as qualitative, quantitative and action research methods. Hence, in order to obtain a broader understanding of the current research problem by investigating both the objective and subjective realities through the use of both quantitative and qualitative research methods, this study employs a pragmatist research philosophy.

As a result, for data gathering the *convergent parallel mixed method* that includes both quantitative and qualitative data collection techniques will be employed to examine the research questions. This is a set of procedures that researchers use to concurrently collect both quantitative and qualitative data, analyze the two datasets separately, compare and/or synthesize the two sets of separate results, and make an overall interpretation as to the extent to which the separate results confirm and/or complement each other (Creswell, 2006, 2014; Plano Clark & Creswell, 2015).

Fig 3. The Convergent parallel Mixed Method (QUAN + QUAL)



Taken from Plano-Clark & Creswell, 2015

The basic rationale for the convergent parallel method is that all data forms have strengths and weaknesses, but if combined thoughtfully, then the strengths of one data form may be able to offset the weaknesses of the other form (Plano Clark & Creswell, 2015). This mixed method is chosen to obtain more comprehensive results with regards to determining all stakeholders' opinions and perceptions towards the English language needs of engineering students at HU. Dörnyei (2007) discusses the pros and cons of combining quantitative and qualitative methods and clearly states that mixed methods research has a unique potential to produce evidence for the validity of research outcomes through the convergence and corroboration of the findings.

Needs analysis requires qualitative methods in order to access the subjective views of the people involved and to explore the language used in the target situation. However, it also requires quantitative methods to quantify results for the purposes of curriculum development. The task-based needs analysis has also been widely employed in English for Specific Purposes (ESP) courses since the need to use real-world target tasks matches well with this task-based syllabus (Huh, 2006).

The importance of the triangulation of methods and sources in task-based needs analysis has been duly emphasized. Triangulation is a process of comparing data from different sources or methods

with one another to validate the data and ultimately to increase credibility of the interpretation of the data (Long, 2005). Long advocates the utilization of multiple sources and methods in needs analysis in order to achieve triangulation. Hence, in this needs assessment study the triangulation of data from different sources (i.e engineering students, engineering instructors, engineers, employers and English instructors) and methods of data collection (i.e. questionnaires, semi-structured interviews, classroom observation and document analysis) has been made.

3.2 The Research Setting and Participants of the Study

3.2.1 The Research Setting

The setting of this research is the Institute of Technology of Hawassa University and Hawassa Industrial Park. The Institute of Technology is one of the academic units in Hawassa University which was established substituting the Faculty of Technology as of July 2009. It is one of the re-structuring outcomes through the Business Process Reengineering (BPR) initiative. The institute, currently, has 442 academic staff and 11,841 students (9,795 regular and 2,046 CEP. Postgraduate students account for 7.09% and the proportion of female student is 22.26% of the total.

According to the newly developed organizational structure of Hawassa University, the Institute of Technology (HU-IoT) has the following five faculties:

1. ***Faculty of Manufacturing*** (a) Department of Mechanical Engineering (b) Department of Electro-mechanical Engineering (c) Department of Industrial Engineering (d) Department of Chemical Engineering (e) Department of Textile Engineering (f) Department of Garment Engineering
2. ***Faculty of Biosystems & Water Resources Engineering***
   (a) Department of Biosystems & Environmental Engineering (b) Department of Water Supply & Environmental Engineering (c) Department of Water Resources & Irrigation Engineering (d) Department of Hydraulics &Water Resources Engineering
3. ***Faculty of Civil Engineering &Built Environment*** (a) Department of Architecture (b) Department of Construction Technology & Management (c) Department of Civil Engineering (d) Department of Urban & Regional Planning

4. ***Faculty of Electrical Engineering*** (a) Department of Electrical & Computer Engineering (b) Department of Biomedical Engineering
5. ***Faculty of Informatics*** (a) Department of Computer Science (b) Department of Information Technology (c) Department of Information Systems.

In order to treat the English language needs of engineering students in particular, this research focuses on the sixteen engineering departments of the first four faculties of Institute of Technology (IOT), with the exclusion of the faculty of informatics.

Hawassa University has been chosen for this study because it is the home university of the researcher and the place where he observed English language problems of engineering students while he was teaching English common courses to these students. He believes that being an insider can help him to have a better cooperation of the respondents and obtain more genuine and detailed information about the research problem.

While this study is situated in the Institute of Technology at Hawassa University, in order to treat the English language needs of engineering students in particular, this research focuses on the sixteen engineering departments of the four engineering faculties of IOT, with the exclusion of the Faculty of Informatics. In addition, it involves the engineering employees and their employers at Hawassa Industrial Park to obtain information about the actual work-related of English language needs of engineers in the foreign companies.

3.2.2 Participants of the Study

In order to access the necessary data for this study the following sources of information were used. These were engineering students, engineering instructors, engineers, employers and English instructors.

3.2.2.1 Engineering students

As Long (2005) underscores, it goes without saying that learners have special rights when it comes to deciding the content of courses they are to undergo, ideally assessed before classes begin, at their inception, and as they proceed. Engineering students will be involved as they are the main focus of this study. Although the purpose of this research is to identify English language needs and then establish criteria to develop an appropriate syllabus for first year engineering students, when it

comes to the informants of this study, the fifth (final) year undergraduate engineering students were selected. The rationale behind choosing the fifth 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 needed by engineering students and the difficulties they experienced while carrying out various tasks in their specialty areas.

3.2.2.2 Engineering instructors (Domain experts)

Using task as the unit of analysis (as opposed, say, to asking them about structures, notions, and functions) enables domain experts to provide quality information of the kind they do possess, with linguistic information to be obtained via analyses of target discourse samples (Long, 2005: 28).
Engineering instructors who were teaching different engineering courses in the institute and assigning various tasks and assignments to these students to be carried out in the target language and thereby assessing their works were another potential source of information to find out the students' academic and work-related English language needs and the difficulties experienced by engineering students. They were appropriate to identify and give information about the students' English language needs and difficulties and the target tasks and activities the students were required to carry out throughout their study.

3.2.2.3 Engineers/Employees

Engineers who were once engineering students at Hawassa University and others and by the time this research was undertaken working in different companies of HIP can provide important information regarding the kinds of English engineering students need in their future work environment and the difficulties they experience while carrying out communicative tasks in English. For this reason, engineering employees working at Hawassa Industrial Park particularly where the employers are foreigners and the medium of communication is English were selected and contacted to respond to questionnaire and interview.

3.2.2.4 Foreign Company Employers

Foreign employers who have recruited engineers in their foreign companies could provide important information for the study since the working language is English, and they could witness where the engineers needed English in the work place and the difficulties they experienced while carrying out or performing various tasks at Hawassa Industrial Park. Therefore, foreign employers or supervisors/ managers of the engineers at HIP were contacted for carrying out interviews.

3.2.2.5 English instructors

English instructors of Hawassa University who have been offering English common courses to engineering students were also believed to be important sources to contribute significantly to the study because they had experiences of teaching other ESP courses and the students' feedback to the courses together with their proficiency level and their English language problems.

3.3 Sampling and Sampling Techniques

To select the participants from the corresponding groups and to determine the size of the sample for this study the following sampling techniques have been employed.

There were 1202 final (fifth) year engineering students at IoT in HU in the 2020/21 academic year (2013 E.C) in the thirteen engineering departments (since three of the departments did not have final year students). Therefore, to respond to students' questionnaire, 312 samples of fifth year engineering students were selected to participate in the main study using Yamane (1967) formula of sample size determination of a single population for a survey study. After determining the sample size, the samples were selected using the n^{th} number of students from the list using systematic random sampling technique. In the selection of the engineering students, although the four engineering faculties were considered, it was difficult to involve each department due to the emergence of Covid-19 as there was a very tight schedule. Therefore, 312 samples of students from 9 major engineering departments were selected to respond to the students' questionnaire (See Table 4.1A).

Similarly, in the four engineering faculties there were 442 instructors during the data collection period based on the information from the IOT Human Resources Department, of which 231 were assistant lecturers, 196 lecturers, 14 assistant professors and 2 associate professors. From this number, since 40 of them participated in the pilot study, they were excluded from the main study. Therefore, to respond to the instructors' questionnaire, 25 percent of the 402 instructors, which is about 100, based on Singh (2006), who suggests for descriptive survey research 10 to 25 percent of the total population can be sufficient, were selected proportionally from each engineering department using a stratified random sampling technique. Although the majority of the instructors were assistant lecturers by the time, more samples were taken from instructors with the rank of lecturers and above with the expectation that the more qualified and experienced instructors might have better knowledge and exposure and hence can provide more accurate information about the research problem (See Table 4.1B). Consequently, 100 copies of instructors' questionnaires were distributed to a sample of 26 assistant lecturers, 64 lecturers and 10 assistant professors.

The engineers' questionnaire was administered to about 120 respondents using availability sampling technique at 11 companies of Hawassa Industrial Park to find out their perceptions concerning the English language needs of engineers for their workplace communication at different foreign companies. There were 22 companies in HIP, out of which 20 were owned by foreign investors and 2 by Ethiopian investors. From these 20 foreign investor owned companies, 11 companies were selected on the basis of their willingness to participate in the study. The availability sampling technique was employed because of the relative difficulty of getting the total population of engineers working in the park for sampling. Although the engineers' questionnaire was distributed to 11 foreign companies at HIP, the questionnaires returned from 1 foreign company, namely JP Textile Factory, was excluded because the working language there was Chinese. After being informed of the working language at the factory was not English, the researcher has excluded the 12 copies of the returned questionnaire from the total number of questionnaires used for this study. Hence, the analysis of engineers' questionnaire was carried out using only the correctly filled and returned 70 copies from the remaining 10 foreign companies where English was used as a working language at the park (See 4.1C).

For students' semi-structured interview, 5 respondents from fifth year engineering departments from the four faculties were selected on the basis of their capacity to give the required information. The selection was made based on the comments of instructors who taught them major area courses and know them well. Then interviews were conducted with the selected students about the academic and anticipated future work-related English language needs of these students and the problems they face in carrying out different tasks.

Similarly, for engineering faculty, 5 instructors were selected on the basis of purposive sampling involving directors of the institute, faculty deans, and other more qualified and experienced instructors involving the four faculties. The reason behind doing this was that instructors with better experience and academic status were believed more likely to provide more accurate information about the research problem than otherwise. The inclusion of instructors holding different offices was to find out their opinions or positions regarding the importance of English language for engineering study and the position they had about the course 'Technical and Report Writing.'

In addition, 3 engineers who were then working for different foreign companies at Hawassa Industrial Park, and 3 foreign employers or chief supervisors of engineers were selected for a semi-structured interview using availability sampling technique.

In the same way, 3 English language instructors who have experiences of teaching English courses, particularly 'Technical and Report Writing' to engineering students, teaching and/or conducting researches in English for specific or academic purposes courses were involved in the interview on the basis of purposive sampling.

For the administration of the IELTS test, four groups of engineering students with the average of 25 students from each faculty and a total of 100 samples were randomly selected to take the test. They were some of those students who were selected to complete the students' questionnaire.

3.4 Instruments of Data Gathering

To collect the necessary data for this study, five tools of data gathering were employed. These were questionnaires, semi-structured interviews, tests, classroom observation and course material analysis.

3.4.1 Questionnaires

Questionnaires are one of the most common instruments used in needs analysis. They are relatively easy to prepare; they can be used with large numbers of participants and used to obtain information that is relatively easy to tabulate and analyze. For this needs assessment study questionnaire is an appropriate tool for gathering the necessary data because it enables the researcher to obtain the opinions and preferences of many respondents easily about the English language needs of engineering students for their academic study and workplace communication.

In order to collect the relevant data to meet the research objectives of this study three sets of related questionnaire have been developed by the researcher for engineering students and engineering instructors of HU and engineers working at different foreign companies at Hawassa IPDC. The questionnaires were adapted mainly from related sources such as Hyland (2006, 2009), Kawpet (2009), Evans and Green (2007), Brown (2016) and Woodrow (2018). Incorporating the comments obtained from the pilot study, the researcher has employed the questionnaires as one of the main instruments. 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 and engineers at work, engineering students' and engineers' perceived level of English language proficiency, expressing the level of need of carrying out tasks for engineering students' academic study and workplace communication, their opinion about how far the courses they took at the university address their English language needs for their academic study and workplace communication.

The questionnaires were administered to the participants after validating through the comments from colleagues and supervisors for content and language clarity and through the pilot study to verify their validity and reliability.

3.4.1.1 Engineering Students' Questionnaire

A detailed questionnaire was prepared and administered to a sample of 312 engineering students in order to gather the necessary data about the English language needs of engineering students for their academic and future workplace communication. The students' questionnaire has five purposes: i)

to find out the general information about the respondents' background; ii) to elicit their perception about the degree of importance of English language skills for engineering students' academic study; iii) to find out their self-rated current level of proficiency of English in each of the language skills iv) to find out their perceptions about the level of need of carrying out skills-based tasks in their respective fields for academic and future work-related purposes; v) to find out the level of difficulty of carrying out different academic tasks in English and vi) to find out their opinion about the extent to which the English courses they took at university addressed their academic and work-related English language needs.

3.4.1.2 Engineering instructors' questionnaire

Since the engineering instructors are the most crucial sources to obtain information about the English language needs and the difficulties engineering students experience while carrying out different tasks for their academic study and future career, a similar questionnaire was prepared and administered to a sample of 100 engineering instructors to establish students' needs and by doing so to triangulate the data obtained from the students' questionnaire. The engineering instructors' questionnaire has the following purposes: i) to elicit their background information such as their field of specialization, their academic status, and year of experience at university; ii) to find out their perceptions about the extent of importance of English language skills for engineering students' academic study and future career; iii) to assess their students' perceived proficiency of their overall English language and its skills; iv) to elicit their students' level of need of carrying out academic and work-related tasks in their respective disciplines; and v) to find out the level of difficulty engineering students experience while carrying out different academic tasks at university.

3.4.1.3 Engineering Employees' questionnaire

A sample of engineers who were working for different foreign companies at Hawassa Industrial Park were given and completed a questionnaire at their workplace. The purpose of the questionnaire was to obtain their views about the importance of English and the language skills for their current work and the level of need of carrying out tasks for their workplace communication and the level of difficulty the engineers might experience carrying out different work-related tasks at HIPDC.

3.4.2 Semi-structured Interviews

The semi-structured interview is extremely useful in needs analysis. Semi-structured interviews consist of questions which have been carefully thought out and selected in advance. Because the interviewer has key questions which everyone is asked, comparisons can be made. Additional questions may be asked to follow up responses for clarification and more detail. Semi-structured interviews are time consuming but provide valuable information that we may not otherwise obtain. There should be an agreed time limit for the interview, where possible it should be recorded so that the interviewer can really listen rather than take lots of notes (Dudley-Evans and St John, 1998).

This method of gathering information is strongly favored and its advantages are highlighted by Mackay (1978) as cited in Jordan (1997) ─ firstly, since the gatherer is asking the questions, none of them will be left unanswered as frequently happens in questionnaires. Second, the gatherer can clarify any misunderstanding which may crop up in the interpretations of the questions. Thirdly, the gatherer can follow up any avenue of interest which arises during the question and answer session but which had not been foreseen during the designing of the semi-structured interview.

Hence, the 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, tests, classroom observation and document analysis.

The interview guides (See Appendices D, E, F, G and H) mainly include questions concerned with:

- The most important English language skills for engineering students' academic study and for their future workplace communication
- The most common academic tasks assigned to engineering students to be carried out in English in each of the language skills
- The most common work-related tasks required by engineers to be carried out in English in each of the language skills
- The English language problems or difficulties of engineering students and engineers at work
- The extent to which the English courses they took in the university helped them to carry out the tasks they are required for academic study and workplace communication effectively.

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 and work-related English language needs of engineering students and engineers at work. Similarly, 3 engineers and 3 employers of engineers were involved in the interview to obtain information about the actual work-related English language needs of engineers at Hawassa IPDC.

In addition, 3 English instructors who have the experience of teaching English courses to engineering students, particularly 'Technical Report Writing' or those who have the exposure to discipline specific English language teaching or research were selected and conducted interview with using a purposive sampling technique.

The engineering and English instructors' interviews lasted on average for 50 minutes, and engineering students, engineers, and their employers' interviews each lasted for average of 30 minutes. Finally, all interviews were recorded and transcribed verbatim for a thematic analysis (See Appendices P, Q, R, S &T).

3.4.3 Tests

In this study tests have been used on the ground to see if the engineering students' response for self-rated proficiency of English is in incongruence with their actual English language proficiency in English standard tests, in this case the IELTS. So, the purpose of administering the test was to find out how far the engineering students were effective for the academic and future workplace communication needs or demands.

The International English Language Testing System (IELTS) assesses the English language proficiency of people who want to study or work where English is used as the language of communication. It provides a fair, accurate and relevant assessment of language skills, based on well-established standards, and covers the full range of proficiency levels from non-user to expert user. There are two versions of IELTS from which test takers can choose either IELTS Academic or IELTS General Training. Both versions of the test consist of four separate components, assessing the four language skills_ Listening, Reading, Writing and Speaking. The distinction with IELTS Academic lies in the subject matter and tasks of the Reading and Writing components. The

Listening and Speaking components are the same. IELTS results are reported on a 9-band scales (0-9 points) designed to be simple and easy to understand. (See Appendix J.)

Therefore, for the purpose of this study the IELTS Academic has been chosen on the ground that these students were required to carry out mainly different academic tasks in their stay at university with regard to reading and writing skills besides their future work-related communication tasks.

The IELTS takes altogether 2:45 hours. The Listening test lasts for 30 minutes and test takers listen to four recorded texts, monologues and conversations by a range of native speakers, and write their answers to a series of questions. The Reading test takes 60 minutes and the **Academic** version includes three long texts which range from the descriptive to the discursive and analytical. The texts are authentic and are taken from books, journals, magazines and newspapers, all of which have been selected for a non-specialist audience. In the same way, the Writing test takes 60 minutes and the **Academic** version includes two tasks, which are topics of general interest to, suitable for and easily understood by the test takers. The Speaking test lasts for 11 to 14 minutes and has three parts in which the test takers will be asked to speak about themselves, their families, their hometowns and their likes and dislikes for 4 to 5 minutes and in the second part the test taker is asked to describe an event or a situation from their memory or

So the test questions have been adapted from the general IELTS questions to suit the students' contexts by making them connected with their real life, for example, asking them to describe a moment they were very happy and/or very sad.

3.4.4 Classroom Observation

Since questionnaires and interviews deal with the respondents' opinions (subjective needs), the analyst needs to supplement these with direct observation, that is, of successful target-level behavior and of students' present, presumably defective, performance (objective needs) (Robinson, 1991). In addition, students' difficulties can be observed in English classes and in written homework assignments. This is particularly suitable for perceiving speaking and listening difficulties, and for noting students who lack self-confidence and who may need extra help (Jordan, 1997).

For needs analysis, observation can cover a range of activities from watching a particular task being performed to shadowing individuals at work (Dudley-Evans and Johns, 1998). According to them to shadow someone is to follow everything they do for a block of time such as a day, several consecutive days or one day a month. EAP examples of observation for needs analysis include sitting in on subject lectures or practical sessions. In places where English is only a medium of education, such observations have led to an understanding of how and when English and L_1 are intertwined, of the code-switching which often goes on. In EOP situations, any relevant work processes may be observed (Ibid).

Therefore, in order to identify the objective needs of engineering students in the target situation such as students' individual and group presentation skills and difficulties they experience, classroom observations were carried out while a sample of engineering students (in this case students of Chemical engineering, Mechanical engineering, Hydraulic and Water Resources and Civil engineering) were presenting and defending their internship reports and final year research projects and while they were listening to their examiners' questions and how they were responding to defend their works using observation checklists and taking notes. (See Appendix I). These departments were selected on the basis of representation of the four faculties of engineering and availability of the observed tasks during the data gathering period since each department has a specific time arranged for the presentation of these tasks, particularly internship defense periods.

On the other hand, for the workplace communication events, the researcher has also made indirect observations of how the engineers would communicate with their foreign supervisors and heads while they were carrying out communication tasks such as face-to-face conversations, telephone conversations and giving and taking instructions during the extended period of data gathering.

3.4.5 Course Materials Analysis

Instructional materials will need to be evaluated to ensure that they correspond to learner needs, reflect real language uses and facilitate the learning process (Cunningsworth, 1995; Kawpet, 2009). In the immediate current Ethiopian Harmonized Modular Curriculum all first year university students take Communicative English Skills I and II courses irrespective of their disciplinary

differences. Engineering students alike take these two courses as supportive courses with aim of preparing them to effectively carry out both academic and future work-related target tasks.

Hence, to find out whether the currently offered English course materials in use address the English language needs of engineering students or not, the course materials were evaluated for their contents and tasks based on identified English language needs of engineering students in this study.

3.5 Validity and Reliability of Research Instruments

The content and face validity of the three sets of questionnaires designed to collect data from engineering students, engineering instructors and engineering employees was ascertained by four experts (three TEFL PhD staff and one engineering lecturer) who also validated the interview guides besides the comments given by the thesis supervisors.

Based on the comments given a lot of improvements have been made to the content validity and clarity of questions including clarifying instructions, re-arranging the order of items. For example, the items with the skills- based tasks under instruction III for engineering instructors and students' questionnaires have been categorized as 'Academic tasks' and 'Work-related tasks' under each skill for ease of responding. In addition, certain items which were found less relevant for this study have been excluded and other items which were found relevant but missing have been included, for instance, 'listening to You Tube videos'.

Moreover, for the structured interview guides based on the comments given prompting or probing questions have been added for most of the questions so that interviewees can easily understand and respond. (See appendices D, E, F and G.)

Regarding the reliability of the questionnaire items, Cronbach's alpha test was run to ensure internal consistency and the reliability coefficient was found to be 0.95 for students' questionnaire, 0.96 and 0.96 respectively for those of instructors' and engineers' questionnaires.

3.6 Pilot Study and the Lessons Learned for the Main Study

3.6.1 Its Purpose and the Participants

The pilot study was conducted mainly to get insights for establishing appropriate design and procedures for the main study i.e., to check the appropriateness of instruments and overall procedures as well as to make the necessary revisions before they were used in the main study. The pilot study was carried out by using some selected samples of engineering instructors, final-year engineering students, engineering employees and their employers, which would not be included in the main study in the second semester of 2011 of the Ethiopian academic year from late March, 2019 to mid of September, 2019.

Since the purpose of the pilot study was to refine the viability of the research instruments for the main study, the researcher did not need to involve representative samples from each engineering department. Thus, the questionnaire for engineering instructors was administered to 40 instructors involving almost all engineering departments which would not participate in the main study. Out of these only 34 respondents who correctly filled the questionnaire items were considered for pilot study. The students' questionnaire was administered to 62 respondents from the four faculties and five final year engineering departments. The researcher himself administered the students' questionnaire in person and explained the purpose of the study. All the respondents filled in and returned the questionnaires. Out of these only 46 copies of the questionnaire which were correctly filled were taken for the pilot study. In the same way, 30 copies of the questionnaire were distributed to engineer employees at Hawassa Industrial Park with the help of some agents working in the industrial park. From these, 22 copies were returned and out of these only 16 copies, which were correctly filled were considered for the pilot study.

For the semi-structured interviews, the researcher conducted interviews with 3 engineering instructors and 3 engineering students at HU, 3 engineers and 2 employers at Hawassa Industrial Park using interview guides. Using these respondents taken from the study population the 3 types of questionnaires and interview guides were pilot tested. Finally, the data were transcribed, analyzed and the findings were reported at the upgrading stage with the lessons learned for the main study.

3.6.2 The Lessons Learned for the Main Study

Based on the lessons learnt from the pilot study questionnaire items which had some sort of redundancy have been omitted and some items have also been added in sharpening the instruments especially for the questionnaire items. Some items which were vague for the respondents despite the clarity in the construction of the items have been modified so that respondents can easily comprehend them and reply. For instance, several respondents had problems in responding to questionnaire item 2 in Part II, which asked respondents to rank the language skills in order of importance for engineering study by writing 4 for the most important and 1 for the least important. Despite the clarity in the construction of the item, several respondents replied by writing 4 to all of the items instead of ranking them from 4 to 1. So to solve this problem for the main study the respondents were asked to rate the degree of importance of each language skill for their academic and future careers and the order of importance of the language skills for academic and future career was elicited through the semi-structured interviews (See appendices A, B & C).

The other major improvement made was that most of the semi-structured interview guides have been refined and sharpened by adding either prompting or probing questions so that the informants can better understand them and respond accordingly based on the pilot study (See Appendices D, E, F & G). The researcher has also learned the skill of conducting interviews effectively. During the pilot study the researcher had limitations in properly prompting or eliciting the interviewees or asking follow-up questions while answering questions. Sometimes he did not prompt or elicit them at all or at other times he did not tolerate the respondents until they explained or finished their points by intervening too often. So the pilot study has helped the researcher sharpen the skill of interviewing as to when to prompt or intervene and when not.

While the researcher carefully selected instructors for interviews with the consideration of their experience and knowledge of the field, he had limitations in the selection of student interviewees as he used students from different departments on the basis of their availability. So for the main study it was learned that student interviews are to be carried out besides the involvement of students from different engineering fields, the researcher would select them with the consideration of their capability to provide the necessary information through the comments of the department instructors or group leaders.

3.7 Procedures of Data Collection

In order to gather the necessary data for this study the following procedure was followed. First, the semi-structured interviews were carried out with purposively selected engineering students, engineering instructors, engineers, employers and English instructors to elicit information about the English language problems and the target needs of the students and engineers working at foreign companies using interview schedules. The interviews were conducted first with the intention to see if there were any important points that could be incorporated in the questionnaire were missing.

Following the semi-structured interviews, the three 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' questionnaires were distributed individually so that they could fill them in and return them in their time of convenience, the students' questionnaires were 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 increase their return rate. On the other hand, the engineers' questionnaires were distributed to the respondents via my former engineering students who were then working as engineers for different companies and some former colleagues who were working at different managerial positions at Hawassa Industrial Park and contacting the human resources heads myself with the written request letters for cooperation from both Addis Ababa University and Hawassa University.

Thirdly, a series of classroom observations were made when different engineering department students were presenting and defending their internship reports, research proposals and research projects with an observation checklist and taking notes. Since these presentations were made at different seasons of the academic year, the observations were also made accordingly on those occasions.

Fourthly, the IELTS test was administered to the selected sample students from the four engineering faculties to determine the engineering students' actual proficiency levels in English language.

Finally, after establishing the engineering students' English language needs the document analysis of the general English course syllabuses and materials was carried out to see if they address the identified English language needs of engineering students. To this end, the syllabuses and course materials for *Communicative English Skills I* and *Communicative English Skills II* were evaluated based on the identified academic and work-related needs in this study.

3.8 Methods of Data Analysis

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. Finally, along with the data obtained through classroom observation, they were analyzed thematically for their contents.

On the other hand, the data collected through the questionnaires were first coded and entered into 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, and inferential statistics using independent samples T-test and One-way ANOVA to see if there is a statistically significant mean difference between/among the different groups of respondents with the help of the statistical software.

Test of Normality

Before running parametric tests like t-tests and ANOVA, one of the most common assumptions is to check that the frequency of the data used must be normally distributed. For this there are two

tests of normality: analytic and graphical. To check the normal distribution of data analytically, there are tests like Kolmogorov-Smirnov test and Shapiro-Wilk test. Whether the data is normally distributed or not, we have to check if the p-value is less/greater than 0.05. That is, if the p-value is less than 0.05, the data is not normally distributed, and if it is greater than 0.05, then statistically the data is normally distributed.

Table 3.1 Test of normality for academic needs of engineering students

Tests of Normality							
		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
Academic needs		Statistic	df	Sig.	Statistic	df	Sig.
Academic Reading needs	instructors	.101	87	.096	.955	87	.090
	students	.061	258	.082	.981	258	.078
Academic Writing needs	instructors	.122	87	.129	.947	87	.073
	students	.103	258	.061	.946	258	.283
Academic Speaking needs	instructors	.178	87	.273	.904	87	.093
	students	.128	258	.481	.934	258	.638
Academic Listening needs	instructors	.148	87	.073	.918	87	.093
	students	.141	258	.095	.928	258	.084
Academic Difficulty	instructors	.098	87	.066	.971	87	.056
	students	.060	258	.075	.979	258	.066

a. Lilliefors Significance Correction

As it is presented Table 3.1 above, in both Kolmogorov-Smirnov and Shapiro-Wilk tests the p-value/sig. for normality test is greater than the cut of point 0.05 in each case for the respondents of both students and instructors. Moreover, the sample visual inspection of their histograms also revealed that the data are approximately normally distributed. Therefore, the data are appropriate to use for a parametric T-test.

Table 3.2 Test of normality for work-related needs of engineering students

Tests of Normality							
Variables	Categories	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
Work-related Reading needs	Instructors	0.119	87	0.054	0.961	87	0.056
	Students	0.077	258	0.071	0.978	258	0.132
	Engineers	0.144	70	0.091	0.925	70	0.060
Work-related	Instructors	0.093	87	0.063	0.954	87	0.146

Writing needs	Students	0.101	258	0.081	0.924	258	0.058
	Engineers	0.144	70	0.110	0.935	70	0.100
Work-related Speaking needs	Instructors	0.130	87	0.059	0.926	87	0.069
	Students	0.130	258	0.120	0.940	258	0.091
	Engineers	0.120	70	0.104	0.943	70	0.061
Work-related Listening needs	Instructors	0.163	87	0.071	0.917	87	0.098
	Students	0.157	258	0.090	0.880	258	0.068
	Engineers	0.218	70	0.061	0.857	70	0.069

a. Lilliefors Significance Correction

In the same way, as Table 3.2 above provides the p-value in both Kolmogorov-Smirnov and Shapiro-Wilk tests is greater than 0.05 showing that there is a normal distribution of data for the respondents of students, instructors and engineers. In addition, the visual inspection of their histograms also revealed that the data are approximately normally distributed. Therefore, the data are appropriate to use a parametric one-way ANOVA test.

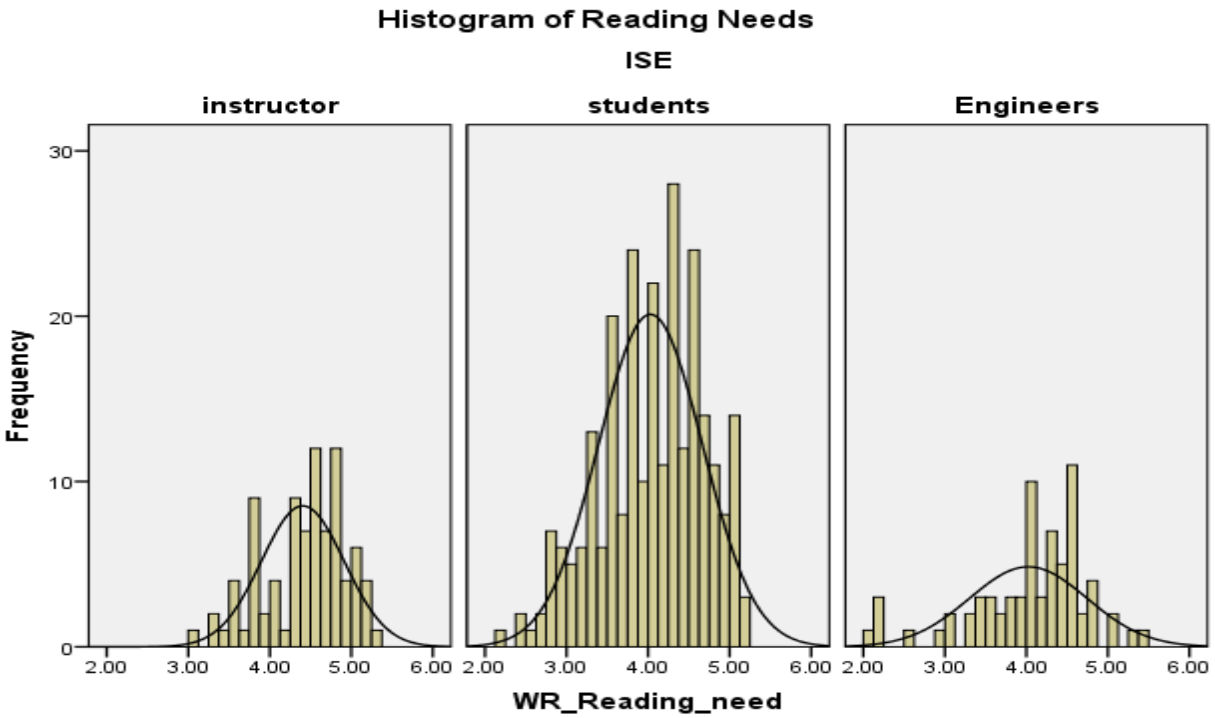


Fig. 4. Histogram of Work-related Reading needs

CHAPTER FOUR

4. DATA ANALYSIS AND RESULTS

This chapter presents the results of the analysis of data for the main study carried out through both quantitative and qualitative tools in order to achieve the objectives of the study. In Part 1, the results of the quantitative data obtained through questionnaire and proficiency test have been presented and in Part 2 the results of the qualitative data obtained through semi-structured interviews and classroom observations have been carried out under section 4.2.

4.1 Results of Questionnaires and IELTS Test

In this section, the results of the analysis of the three sets of questionnaires from the samples of correctly filled in and returned 258 engineering students, 87 engineering instructors and 70 engineering employees were presented by triangulating the results from the three data sources using percentages and mean scores, independent samples t-tests and one-way ANOVA together with the results of IELTS test administered to engineering students to cross-check what the engineering students' self-rated proficiency of English and their overall actual proficiency in standard tests were like. The presentation of the analysis of results has been made in the order of the research objectives given in Chapter One. Before presenting the results of the questionnaires for each research question, the background information about the respondents of the questionnaires is presented below.

4.1.1 Background information about the Respondents of the Questionnaires

Table 1A: Demography of engineering students who participated in responding to questionnaire (N=258)

Demography of Engineering students		**Count**	**Percent**
Faculty of Engineering students	Manufacturing	74	28.7
	Bio-systems & Water Resources	43	16.7
	Civil Engineering & Built Environment	80	31.0
	Electrical & Biomedical Engineering	61	23.6
Department of students	Mechanical	23	8.9
	Electromechanical	21	8.1
	Chemical	29	11.2
	Water Resources & Irrigation	25	9.7

	Hydraulics & Water Resources	18	7.0
	Architecture	29	11.2
	Construction Technology & Management	23	8.9
	Civil	29	11.2
	Electrical & Computer	61	23.6
Sex	Male	205	79.5
	Female	53	20.5
Type of school attended	Government school	190	73.6
	Private school	68	26.4

Table 1B: Demography of engineering instructor respondents of the questionnaire (N=87)

Demography of Engineering instructors		**Count**	**Percent**
Faculties of Engineering instructors	Manufacturing	30	34.5
	Biosystems & Water Resources	19	21.8
	Civil Engineering & Built Environment	25	28.7
	Electrical & Biomedical Engineering	13	14.9
Department of engineering instructors	Mechanical	12	13.8
	Electromechanical	6	6.9
	Industrial	2	2.3
	Chemical	9	10.3
	Textile&Garment	1	1.1
	Biosystems&Environmental	2	2.3
	Water Supply & Environmental	2	2.3
	Water Resources & Irrigation	4	4.6
	Hydraulics &Water Resources	11	12.6
	Architecture	4	4.6
	Construction Technology & Mangment	11	12.6
	Civil	7	8.0
	Urban & Regional Planning	3	3.4
	Electrical & Computer	11	12.6
	Biomedical	2	2.3
Sex of instructors	Male	78	89.7
	Female	9	10.3
	1-3 years	23	26.4
	4-6 years	32	36.8
	7-9 years	15	17.2
	10-12 years	12	13.8
	13 and above years	5	5.7

Years of Service at University	Assistant Lecturer	18	20.7
	Lecturer	59	67.8
	Assistant Professor	10	11.5

Table 1C: Demography of engineers working at different foreign companies of HIP (N=70)

Demography of Engineers		**Count**	**Percent**
Specialization of engineers	Mechanical	25	35.7
	Electromechanical	6	8.6
	Industrial	3	4.3
	Chemical	5	7.1
	Textile&Garment	12	17.1
	Construction Technology & Mangment	2	2.9
	Civil	6	8.6
	Electrical & Computer	11	15.7
University engineers graduated from	Hawassa university	20	28.7
	Dilla university	3	4.3
	Arba Minch university	2	2.9
	Wolaita University	5	7.1
	Addis Ababa Science & Technology	4	5.7
	Adama Science & Technology University	5	7.1
	Jimma University	6	8.6
	Wachemo university	3	4.3
	Wolkite University	4	5.7
	Haramaya University	2	2.9
	Addis Ababa University	2	2.9
	Bahir Dar University	14	20.0
Company engineers working for	EPIC Apparel Group	6	8.6
	Silver Spark Apparel	9	12.9
	Zero Liquid Discharge Plant	13	18.6
	PVH Arrivind Manufacturing PLC	14	20.0
	Quadrant Apparel Group	5	7.1
	Isabella Socks Manufacturing PlC	5	7.1
	Indochine Apparel	5	7.1
	KGG Garments PLC	10	14.3
	Hindramani Garment PLC	3	4.3
Years of Service	1-3 years	53	75.7
	4-6 years	16	22.9
	7-9	-	-
	10 years and above	1	1.4%

Tables 1A, 1B and 1C present engineering students, engineering instructors, and engineering employees' background information respectively about their specialty in engineering fields, academic status and work experience for engineering instructors and engineer employees. Accordingly, the engineering students were composed of the four faculties of engineering and 9 departments, namely departments of Mechanical, Chemical, Electromechanical, Water Resources and Irrigation, Hydraulics and Water Resources, Civil, COTM, Architecture and Electrical and Computer engineering (Communications and Power streams). 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 samples of engineering instructors were composed of all of 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, 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.

Regarding the participant engineers at HIPDC, 25 (35.7%) of them were mechanical engineers, 12 (17.1%) were textile and garment engineers, 11 (15.7%) were electrical and computer engineers, 6 (8.6%) were electromechanical, 6 (8.6%) were civil engineers, and the remaining were chemical, industrial and construction and technology management in descending order. Of these engineers, 20 (28.7%) graduated from HU, 14 (20.0%) from Bahir Dar University, 6 (8.6%) from Jimma University and the rest engineers graduated from 9 other public universities. Concerning their years of service at foreign companies, most of the respondents i.e. 53 (75.7%) of them had only 1 to 3 years of service followed by 16 (22.9%) having 4 to 6 years of work experience at foreign companies in Ethiopia. This seems to imply that most of the engineers who were working at HIP had fewer years of work experience at foreign companies and as a result, they had insufficient experience of using English for workplace communication with their foreign supervisors or heads.

4.1.2 English Language Skills important for Engineering study and Future workplace communication

Table 2: Students, instructors and engineers' responses about the level of importance of English language skills for engineering students' academic study and workplace communication (students, N=258; instructors, N=87; engineers, N=70)

Importance of English Skills	Students		Instructors		Engineers	
	Mean	SD	Mean	SD	Mean	SD
Reading	4.87	0.39	4.77	0.45	4.79	0.54
Writing	4.63	0.63	4.84	0.37	4.67	0.61
Speaking	4.56	0.68	4.60	0.56	4.67	0.61
Listening	4.73	0.49	4.74	0.47	4.81	0.52

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

Table 2 presents data from the samples of engineering students and instructors about the level of importance of English language skills for engineering study at HU while at the same time it presents information from samples of engineers about the level of importance of English language skills for workplace communication.

Based on the participants' responses it is possible to note that all English skills were important for engineering students' academic study and engineers' workplace communication in general with the mean scores greater than 4.5 i.e. between "important" and "very important". 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 on the writing skill for engineering study with the highest mean scores of 4.84. Regarding the speaking skill for engineering study, it appears that the respondents of engineering students and instructors showed relatively less importance to this skill as compared to the other skills with the lower mean scores of 4.56 and 4.60 respectively. On the other hand, most of the respondents of both engineering students and instructors showed almost the same kind of importance to the listening skills for engineering study with the mean scores of 4.73 and 4.74. The respondents of engineers at HIP appeared to place the highest level of importance to

the listening skill with the highest mean score of 4.81 and followed by the reading skill with the mean score of 4.79, and then speaking and writing skills with the same mean score of 4.67.

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 and workplace communication. Hence, the respondents of engineering students put reading skills as the first most important, listening skills as the second most important, writing skills as the third most important and speaking skills 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. On the other hand, according to the respondents of engineers at HIP listening skills stood out as the first most important, reading as the second most important, speaking as the third most important and writing as the fourth most important skill for workplace communication needs of engineers working at foreign companies.

4.1.3 English Language Proficiency of Engineering Students and Engineers

Table 3A: Engineering students, instructors and engineers' responses about the perceived level of proficiency in English skills (Students, N=258; instructors, N=87; engineers, N=70)

Proficiency of Skills	**Students**		**Instructors**		**Engineers**	
	Mean	**SD**	**Mean**	**SD**	**Mean**	SD
Reading	2.98	0.92	2.92	0.88	3.56	0.69
Listening	2.57	0.85	2.61	0.85	3.33	0.72
Speaking	2.09	0.79	2.01	0.71	2.76	0.82
Writing	2.71	0.89	2.23	0.83	3.23	0.82

Scale: 1=Weak 2=Average 3=Good 4=Very good 5=Excellent

Table 3A above asked engineering students and engineers in the workplace to rate their own perceived English language proficiency while engineering instructors were asked to rate their students' English language proficiency in general in each of the language skills.

Thus, based on the mean scores of the respondents of engineering students and engineering instructors, the English language skills engineering students had the highest perceived proficiency

to the lowest proficiency levels at HU were reading (2.98), writing (2.71), listening (2.57), and speaking (2.09) and engineering instructors reading (2.92), listening (2.61), writing (2.23) and speaking (2.01). In the same way, the perceived proficiency of engineers working at HIP from the highest to the lowest proficiency levels were also reading (3.56), listening (3.33), writing (3.23) and speaking (2.76). This implies that in both cases of engineering students and engineers, the respondents had the highest proficiency mean score in reading and the lowest proficiency mean score in speaking. Moreover, the grand mean scores for the proficiency of engineering students and engineering instructors were respectively 2.77 and 2.44. For interpreting the mean scores from a Likert scale Pimentel (2010) has suggested the following scheme: 1.00-1.80, Weak; 1.81-2.60, Average; 2.61-3.40, Good; 3.41-4.20, Very good; 4.21-5.00, Excellent. Therefore, according to this scheme, engineering students' overall self-rated English language proficiency falls under the "good" level whereas engineering instructors' response about their students' perceived proficiency falls under the "average" level. On the other hand, the Grand mean score for the perceived proficiency of engineers at HIP was 3.22 suggesting that they had a "good" level of English language proficiency. In addition, the independent sample t-test was run to see if there is a significant mean difference in engineering students' overall proficiency of English between the respondents of engineering students and instructors as presented in Table 3B.

Table 3B: Independent samples T-test result of English language proficiency of the respondents of engineering students and instructors

Group Statistics

	IS	N	Mean	Standard deviation	Std. Error Mean
Overall English proficiency mean score	Instructors	87	2.44	0.643	0.069
	Students	258	2.77	2.261	0.141

Independent Samples Test

Dependent Variable	T	df	95% Confidence Interval of the Difference		p-value (two-tailed)
			Lower	Upper	
Overall English Proficiency	-1.349	343	-.815	0.152	0.178

* = significant at 5 % level of significance

As the independent samples T-test results in Table 3B (t=-1.349, df=343, P-value=0.178), there is no a statistically significant mean difference between the respondents of engineering students and instructors in engineering students' overall proficiency of English as the coefficient of probability of occurrence (P-value=0.178) is greater than the cut of point (0.05).

4.1.3.1 Results of IELTS Test

Table 3C: Overall Band Scores of IELTS Proficiency test of Sample Engineering students

No.	Department	Reading	Listening	Speaking	Writing	**Overall band score**
1	ECE	5.5	4.5	5	6	5.5
2	COTM	5	4.5	5	4.5	5
3	WRIE	5	3.5	4	4.5	4
4	Chemical	5	3	4.5	5	4.5
Average Mean		5	4	4.5	5	5

Key: ECE =Electrical and Computer Engineering; COTM=Construction and Technology Management Engineering; WRIE=Water Resources and Irrigation Engineering

IELTS Scale: 1=Non user, 2=Intermittent user, 3= Extremely limited user, 4= Limited user, 5= Modest user, 6= Competent user, 7=Good user, 8= Very good user, 9=Expert user

The overall band score of the engineering students in this IELTS proficiency test was 5. This score of the IELTS proficiency test suggests that engineering students were just "modest users" of English based on the interpretation of the IELTS overall band score. According to the IELTS scores interpretation, this means they had partial command of the language, coping with overall meaning in most situations, though were likely to make many mistakes. Hence, such groups of language users were expected to handle basic communication in their own field.

In addition, the Common European Framework of Reference for Language (CEFR), which is a description of the language abilities of students at different levels of learning, can be used to compare standards in language learning programs. The CEFR grades language skills at six levels:

- A1 and A2 indicate the elementary and pre-intermediate level of ability (Basic users)
- B1 and B2 indicate the lower-and -upper-intermediate levels (Independent users)
- C1 and C2 indicate advanced level and complete proficiency in the language (Proficient users)

Hence, the engineering students' IELTS overall band score at HU can be categorized under the B1 level, that means the first level of the independent user or the lower-intermediate level for test takers who score an overall band score of 4 to 5 (Taylor, 2004a).

4.1.4 Level of Carrying out Academic Tasks for Engineering Study at HU

4.1.4. 1. Academic Reading tasks

Table 4A: Engineering students and instructors' responses about the level of need to carry out reading tasks for academic study (students, N=258; instructors, N=87)

Academic reading tasks	**Students**		**Instructors**	
	Mean	SD	Mean	SD
1. Lab manuals	4.16	0.93	4.46	0.59
2. Textbooks (handouts)	4.38	0.73	4.61	0.54
3. Reference books	4.18	0.86	4.56	0.60
4. Lecture notes	4.42	0.83	4.52	0.65
5. Exercises/ test questions	4.50	0.75	4.50	0.61
6. Academic journals	3.61	1.06	4.34	0.80
7. Design reports	3.98	0.97	4.31	0.77
8. Project reports	4.17	0.90	4.48	0.63
9. Research papers/thesis	4.30	0.94	4.47	0.73
10. Safety signs, rules and notices	4.00	1.01	4.23	0.82
11. Model codes	3.68	1.14	4.15	0.86

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

Table 4A presents engineering students and instructors' responses about the level of need to carry out reading tasks for engineering students' academic study at HU. The fact that the data from both

groups of respondents show the mean scores of all the reading tasks were greater than the average mean i.e., 3 (moderate need) implies that engineering students need to carry out all the given reading tasks for engineering study though with different levels of need.

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 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, model codes and design reports with their mean scores of 3.61, 3.68 and 3.98 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 contrast, the respondents of engineering instructors replied to all the given reading tasks with a mean score of greater than 4 (high need) implying that engineering students are highly or very highly required to carry out the reading tasks for their academic endeavor. According to the respondents of engineering instructors, although all the reading tasks are generally highly needed tasks, 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 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 in their five years of academic study period at HU.

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. Moreover, the grand mean

scores for the respondents of engineering students and engineering instructors, as presented in Table 8B below, were respectively 4.09 and 4.41 and this suggests that in general engineering instructors placed a greater level of importance on the academic reading tasks than did the respondents of engineering students. In order to see if there is a statistically significant mean difference between the two groups of respondents, the independent samples T-test was run and its result is presented in Table 4B below.

Table 4B: Independent Samples T-test result about the level of need of carrying out academic reading tasks for engineering study

Group Statistics

	IS	N	Mean	Standard deviation	Std. Error Mean
Academic reading need mean score	Instructors	87	4.41	0.445	0.048
	Students	258	4.09	0.570	0.036

Independent Samples T-test

Dependent variable	t	df	95% Confidence Interval of the Difference		P-value (2-tailed)
			Lower	Upper	
Academic reading needs	4.829	343	0.207	0.442	0.000*

* = significant at 5 % level of significance

As the independent samples T-test results in Table 4B (t=4.829, df=343, P-value= 0.000) shows there is a statistically significant mean difference in the academic reading needs of engineering students between the respondents of engineering instructors and students as a p-value (0.000*) is less than 0.05. Thus, in this case the null hypothesis is rejected and the alternate hypothesis is accepted as there is a significant mean difference between the two groups.

In addition, as Table 4A above shows it is the respondents of engineering instructors that replied with higher mean scores wherever there is a mean difference. This might imply that the respondents

of engineering instructors are more cognizant of the need to read those reading tasks for engineering study because of their broader knowledge and exposure than the respondents of engineering students.

4.1.4.2 Academic Writing tasks

Table 5A: Engineering students and instructors' responses about engineering students' level of need to carry out academic writing tasks (Students, N=258 & instructors, N=87)

Academic writing tasks	Students		Instructors	
	Mean	SD	Mean	SD
1. Laboratory reports	4.36	0.75	4.42	0.62
2. Assignments	4.22	0.81	4.30	0.65
3. Exam answers	4.39	0.79	4.48	0.61
4. Research proposals	4.55	0.73	4.66	0.50
5. Research projects or thesis	4.63	0.72	4.66	0.52
6. Field visit reports	4.22	0.79	4.28	0.71
7. Internship reports	4.52	0.68	4.37	0.67
8. Presentation slides	4.43	0.71	4.26	0.67
9. Design reports	4.06	0.99	4.24	0.73

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

Table 5A presents data from the respondents of engineering students and engineering instructors about the level of need to carry out academic writing tasks for engineering study. According to the respondents of engineering students the first six prominently needed writing tasks for engineering study made 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 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 greater than 4 means that they were of a high level of importance for engineering study.

It is also important to note that the grand mean scores of the two groups of respondents as presented in Table 5B below were 4.38 for engineering students and 4.41 for engineering instructors implying that both groups showed almost similarly high level of need to carrying out the above academic writing tasks for engineering study 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.

Table 5B: Independent Samples T-test result on the level of need of carrying out academic writing tasks for engineering study

Group Statistics

	IS	N	Mean	Standard deviation	Std Error Mean
Academic Writing need mean score	Instructors	87	4.38	0.448	0.048
	Students	258	4.34	0.532	0.033

Independent Samples T-test

Dependent variable	**t**	**df**	95% Confidence Interval of the Difference		**P-value (2-tailed)**
			Lower	**Upper**	
Academic writing needs	0.682	343	-.082	0.168	0.496

* = significant at a 5 % level of significance

Moreover, the results of independent samples t-test in Table 5B (t=0.682, df=343, P-value=0.496) also shows there is no statistically significant mean difference in the academic writing needs of

engineering students between the respondents of engineering students and instructors because the p-value (0.496) is greater than 0.05. In addition, if the confidence interval includes 0 between the lower limit and upper limit, there is no statistically significant mean difference between the two groups of respondents in comparison. This indicates that both groups of respondents replied to the level of need to carry out academic writing tasks almost indifferently or similarly. Hence, in this case the alternate hypothesis is rejected and the null hypothesis is accepted since there is no significant mean difference between the two groups of respondents.

4.1.4.3 Academic Speaking Tasks

Table 6A: Engineering students and instructors' responses about engineering students' level of need to carry out academic speaking tasks (Students, N=258 & Instructors, N=87)

Academic speaking tasks	**Students**		**Instructors**	
	Mean	**SD**	**Mean**	**SD**
1. Asking and answering questions in class and lab sessions	4.20	0.90	4.25	0.79
2. Introducing yourselves and others in class and during field visits in foreign companies	4.20	0.87	4.29	0.71
3. Delivering oral presentations of internships, research reports, projects, etc.	4.29	0.83	4.34	0.69
4. Expressing their opinions or ideas freely during group discussions	4.18	0.87	4.22	0.84
5. Defending their positions during defense sessions	4.25	0.84	4.30	0.73

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

Table 6A presents data from the respondents of engineering students and engineering instructors regarding the level of need to carry 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 from the highest to the lowest with their mean scores were delivering oral presentation of their internships, research proposals and research reports or projects (4.29), defending their internship or research works (4.25), introducing themselves and others (4.20), asking and answering questions in class (4.20), and expressing their opinions or ideas in group discussions (4.18).

Similarly, the respondents of engineering instructors put the following speaking tasks as highly needed for engineering study from the highest to the lowest based on their mean scores: delivering oral presentation of their internships, research proposals and research reports or projects (4.34), defending their internship or research works (4.30), introducing themselves and others (4.29), asking and answering questions in class (4.25), and expressing their opinions or ideas in group discussions (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 grand mean scores for the level of need to carry out speaking tasks as presented in Table 5B below were 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.

Table 6B: Independent samples T-test results about the level of need to carry out academic speaking tasks from the respondents of instructors and students

Group statistics

	IS	N	Mean	Standard deviation	Std Error Mean
Academic Speaking need mean score	Instructors	87	4.28	0.658	0.071
	Students	258	4.21	0.695	0.043

Independent Samples t-test

Dependent variable	**t**	**df**	95% Confidence Interval of the Difference		**P-value (2-tailed)**
			Lower	**Upper**	
Academic Speaking needs	0.794	343	-.100	0.235	0.428

* = significant at 5 % level of significance

The independent samples T-test result presented in Table 6B (t=0.794, df=343, P-value= 0.428) indicates that there is no statistically significant mean difference in the academic speaking needs of engineering students between the respondents of engineering instructors and students. This implies that the two groups of respondents replied to the academic speaking tasks almost in the same way. Thus, in the case of the academic speaking needs of engineering students, the null hypothesis is accepted because there is no significant mean difference between the two groups of respondents.

4.1.4.4 Academic Listening Tasks

Table 7A: Engineering students and instructors' response about engineering students' level of need to carry out academic listening tasks (Students, N=258 & instructors, N=87)

Academic Listening tasks	Students		Instructors	
	Mean	SD	Mean	SD
1. Listening to lectures	4.53	0.71	4.47	0.66
2. Listening to presentations or discussions	4.39	0.72	4.39	0.64
3. Receiving spoken instructions/advice	4.37	0.77	4.33	0.66
4. Listening to instructor questions during class/defense	4.45	0.75	4.40	0.64
5. Listening to online sources (Youtube videos)	4.32	0.80	4.25	0.70
6. Listening and taking notes	4.35	0.83	4.37	0.80

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

Table 7A presents information about the level of need to carry out academic listening tasks for engineering students from the respondents of engineering students and engineering instructors. Accordingly, for the respondents of engineering students, the listening tasks highly needed for engineering study from the highest to the lowest with their mean scores were: listening to lectures (4.53), listening to instructor questions during class/defense (4.45), listening to presentations or group discussions (4.39), receiving spoken instructions in class or lab sessions from their instructors or lab assistants (4.37), listening and taking notes (4.35) and listening to online sources such as Youtube videos (4.32).

In the same way, from the engineering instructors' response, the listening tasks highly needed for engineering study from the highest to the lowest with their mean scores were: listening to lectures (4.47), listening to instructor questions in class or defense sessions (4.40), listening to presentations or discussions (4.39), receiving spoken instructions in class or lab sessions (4.33), listening and taking notes (4.37) and listening to online sources such as Youtube videos (4.25).

In general, it is possible to note here that higher importance was placed on all of the given academic listening tasks for engineering study by both groups of respondents with nearly the same order of ranking of the tasks and with very close grand mean scores of 4.38 for engineering students and 4.37 for engineering instructors as compared to the academic tasks above. However, it is also important to notice that relatively greater importance was given to the listening tasks by the respondents of engineering students than those of the engineering instructors.

Table 7B: Independent samples T-test result about the level of need of carrying out academic listening tasks from the respondents of instructors and students

Group Statistics

	IS	N	Mean	Standard deviation	Std Error Mean
Academic Listening need mean score	Instructors	87	4.37	0.560	0.060
	Students	258	4.38	0.546	0.034

Independent Samples Test

Dependent variable	**t**	**df**	95% Confidence Interval of the Difference		P-value (2-tailed**)**
			Lower	Upper	
Academic Listening needs	-.129	343	-.143	0.125	0.897

The independent samples T-test results as presented in Table 7B (t=-0.129, df=343, P-value=0.897) show there is no statistically significant mean difference in the academic listening needs of engineering students between the respondents of engineering students and instructors at HU as the

p-value (0.897) is greater than 0.05 and the confidence interval includes 0 between the lower limit and upper limit. This implies that the two groups of respondents unanimously perceived the high importance of the academic listening tasks for engineering study at HU. Hence, the alternate hypothesis is rejected and the null hypothesis is accepted since there is no significant mean difference between the two groups.

4.1.5 Level of need of carrying out Tasks for Engineers' Workplace Communication

Next the tasks needed for engineers' workplace communication in each language skill have been discussed based on the responses from the samples of engineering students, engineering instructors and engineers working at Hawassa IPDC.

4.1.5.1 Work-related Reading Tasks

Table 8A: Engineering students, instructors and engineers' responses about the level of need to carry out future work-related reading tasks for workplace communication (Eng. students=258, instructors=87 & engineers=70)

Work-related reading tasks	Students		Instructors		Engineers	
	Mean	SD	Mean	SD	Mean	SD
1. Product manuals	4.26	0.88	4.51	0.61	4.61	0.67
2. Feasibility study reports	4.10	0.88	4.41	0.72	4.10	0.95
3. Safety signs and notices	4.23	0.91	4.40	0.78	4.49	0.88
4. Research journals	3.89	0.92	4.40	0.60	3.39	1.14
5. Abstracts of seminars	3.96	0.97	4.46	0.61	3.70	1.17
6. Project documents	4.23	0.86	4.55	0.57	3.90	1.18
7. Professional texts	4.0	0.97	4.34	0.74	4.0	0.96
8. Office documents	3.81	1.03	4.23	0.83	3.94	1.0
9. Design reports	4.11	0.93	4.38	0.69	4.19	1.0
10. Project reports	4.14	0.86	4.41	0.80	4.20	0.96
11. Design codes	3.84	1.05	4.33	0.76	3.96	1.17
12. Training manuals	4.12	0.97	4.37	0.70	4.40	0.81

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

Table 8A presents data from the respondents of engineering students, engineering instructors and engineers about the level of need to carry out work-related reading tasks for engineers' workplace

communication. From the data it is possible to note that the respondents of engineering students had relatively lower mean scores and higher standard deviations probably because they did not have sufficient information to anticipate the kinds of reading tasks and the level of need of carrying out them for their future workplace communication. On the other hand, the respondents of engineering instructors appeared to indicate that they were in a much better position to identify the potential work-related reading tasks for their students' future workplace communication needs. In addition, the data obtained from the engineers working at HIP could be seen as focused and limited to what they were doing in the foreign companies at their workplace while the data obtained from the engineering instructors were expected to better anticipate the broader contexts in which the graduate engineers could be employed and work. Hence, it appears that the information obtained from engineering instructors and to some extent the engineers working at foreign companies of HIP were more reliable in determining the work-related reading tasks than the data from engineering students.

In general, it is possible to see that the reading tasks for engineers' workplace communication varied from company to company and highly depended on the kinds of work an engineer could be doing. According to the data from engineering students, reading product descriptions and manuals, reading safety signs and notices, reading project documents, reading project reports, reading training manuals, design reports and feasibility reports consisted of relatively highly required work-related reading tasks for engineers' workplace communication needs with their mean scores of respectively 4.26, 4.23, 4.23, 4.14, 4.12, 4.11,and 4.10. For the respondents of engineering instructors reading project documents, reading product descriptions and manuals, reading abstracts of projects or seminars, reading project reports, reading feasibility reports, reading safety signs and notices, and reading research journals appeared to be highly needed reading tasks for engineering students' future workplace communication with their mean scores of respectively 4.55, 4.51, 4.46, 4.41, 4.41, 4.40, and 4.40.

On the other hand, according to the respondents of engineers at HIP reading product descriptions and manuals, reading safety signs and notices, reading training manuals (e.g. of sewing machines, maintenance, etc.), reading project reports, reading design reports and feasibility reports stood out as highly needed reading tasks for engineers' workplace communication with the scores of respectively 4.61, 4.49, 4.40, 4.20, 4.19, and 4.10. Therefore, from the three groups of respondents

it is possible to identify that reading product descriptions and manuals, reading safety signs and notices, reading training manuals, reading project documents, reading project reports, reading abstracts of seminars and reading design reports were the common highly needed reading tasks for engineers' future workplace communication.

In addition, the grand mean scores of the three groups of respondents as presented in Table in 8B below were 4.03, 4.40 and 4.01 respectively for the respondents of engineering students, engineering instructors and engineers implying that the respondents of engineering instructors placed higher level of need on almost all of the work-related reading tasks than those of engineering students and engineers working at foreign companies at HIP. In addition, in order to see if there is a significant mean difference among the three groups of respondents the one-way ANOVA was run as presented in Table 8B below.

Table 8B: One-Way ANOVA results about the level of need of carrying work-related reading tasks from the respondents of students, instructors and engineers

Descriptives

	ISE	N	Mean	Standard deviation	Std. Error Mean
Work-related reading need mean score	Instructors	87	4.40	0.49	0.053
	Students	258	4.03	0.64	0.039
	Engineers	70	4.01	0.70	0.084

ANOVA				
Work-related reading need	Sum of Squares	df	F	Sig
Between Groups	9.486	2	12.246	0.000*
Within Groups	159.574	412		
Total	169.060	414		

* = significant at a 5 % level of significance

Furthermore, as the one-way ANOVA results in Table 8B (F=12.246, P-value=0.000) shows, there is a statistically significant mean difference among the respondents of engineering students, instructors and engineers for engineering students' future workplace reading communication since the p-value (0.000) is less than the cut of point (0.05). However, it is not clear from the one-way ANOVA result that between which groups of respondents the mean difference actually exists. Therefore, to show the groups between which the mean difference actually exists, it is essential to run a Post hoc test which is presented below in Table 8C.

Table 8C. Post hoc test result about the level of need to carry out work-related reading tasks from the respondents of engineering students, instructors and engineers

Multiple Comparisons

Dependent Variable: Work-related reading needs

Tukey HSD

ISE	ISE	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Instructors	Students	.36814*	.07716	.000	.1867	.5496
	Engineers	.38250*	.09992	.000	.1475	.6175
Students	Instructors	-.36814*	.07716	.000	-.5496	-.1867
	Engineers	.01436	.08387	.984	-.1829	.2116
Engineers	Instructors	-.38250*	.09992	.000	-.6175	-.1475
	Students	-.01436	.08387	.984	-.2116	.1829

*. The mean difference is significant at a 0.05 level.

Table 8C reveals that the significant mean difference actually exists between the respondents of instructors and those of engineering students and between instructors and engineers and vice versa. On the other hand, there is no significant mean difference between the respondents of engineering students and engineers and vice versa. Therefore, this indicates that respondents of engineering instructors replied to the engineering students' future workplace reading communication needs with significantly greater mean difference than the other two groups. This could be because the instructors were more cognizant of the broader context of the engineering students' future workplace communication requirements as a result of their relatively vast knowledge and exposure.

4.1.5.2 Work-related Writing Tasks

Table 9A: Engineering students, instructors and engineers' response about the level of need to carry out work-related writing tasks for workplace communication (students=258, instructors=87 & engineers=70)

Work-related writing tasks	Students		Instructors		Engineers	
	Mean	SD	Mean	SD	Mean	SD
1. Daily or periodic performance reports	4.16	0.86	4.29	0.70	4.30	1.00
2. Product manuals	4.11	0.86	4.32	0.76	4.06	0.99
3. Feasibility study reports	4.09	0.90	4.44	0.68	3.84	1.04
4. Project proposals	4.32	0.82	4.52	0.59	3.81	1.09
5. Project progress or completion reports	4.29	0.82	4.45	0.70	3.87	1.15
6. Problem investigation reports	4.17	0.89	4.37	0.78	3.99	1.06
7. Job applications	4.26	0.97	4.38	0.70	4.06	0.99
8. Business letters	4.26	0.86	4.24	0.70	3.56	1.15
9. E-mails	3.87	1.03	4.29	0.70	4.13	1.01
10.Minutes of meetings	3.70	1.06	4.25	0.78	3.81	1.09
11. Contractual agreements	4.07	0.97	4.34	0.73	3.49	1.31
12. Abstracts of projects	4.05	0.96	4.53	0.61	3.65	1.16
13. Presentation slides	4.21	0.88	4.33	0.66	3.80	1.09

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

From Table 9A we can see that the responses of engineering students, engineering instructors and engineers were somehow varied in their prioritization of the work-related writing tasks. For engineering students writing project proposals, writing job applications, writing business letters, writing presentation slides, writing problem investigation reports and writing daily or periodic performance reports stood out as the first six highly needed writing tasks for engineers' workplace communication with their mean scores of respectively 4.32, 4.26, 4.26, 4.21, 4.17 and 4.16. On the other hand, the respondents of engineering instructors had similar views on some of the work-related writing tasks with engineering students but with special emphasis given to project related writing tasks. For them writing abstracts of projects, writing project proposals, writing project progress or completion reports, writing feasibility reports, writing job applications, writing problem investigation reports, and writing contract agreements were the top mostly required writing tasks for their students' future workplace communication with their mean scores of respectively 4.53, 4.52,

4.45, 4.44, 4.38, 4.37 and 4.34. On the other hand, the respondents of engineers on their part replied that the highly required work-related writing tasks for them were writing daily or periodic performance reports, writing e-mails, writing job applications, writing product manuals or descriptions and writing problem investigation reports with their mean scores of respectively 4.30, 4.13, 4.06, 4.06 and 4.00.

In addition, the grand mean scores of the three groups of respondents as presented in Table 9B below were respectively 4.09, 4.44 and 3.85 for engineering students, engineering instructors and engineers. This also implies that greater importance was placed for work-related writing tasks by the respondents of engineering instructors with the highest total mean score of 4.44 than those of engineering students or engineers at work at HIP.

In general, although the prioritization of the three groups of respondents were varied, the more common and frequent work-related writing tasks would include writing project proposals, project reports, daily or periodic performance reports, job applications, problem investigation reports, contract agreements and e-mails.

Table 9B: One-Way ANOVA result about the level of need to carry work-related writing tasks from the respondents of engineering instructors, students and engineers

Descriptives

	ISE	N	Mean	Standard deviation	Std. Error Mean
Work-related writing need mean score	Instructors	87	4.44	0.91	0.10
	Students	258	4.09	0.63	0.04
	Engineers	70	3.85	0.79	0.09

ANOVA				
Work-related writing need	Sum of Squares	df	F	Sig
Between Groups	14.603	2	13.948	0.000*

Within Groups	215.672	412		
Total	230.274	414		

* = significant at 5 % level of significance

The results of one-way ANOVA as presented in Table 9B (F= 13.948, P-value=0.000) also shows that there is a significant mean difference among the respondents of engineering students, instructors and engineers for engineering students' future workplace writing communication needs as the P-values is less than the cut of point (0.05). Since the One-way ANOVA alone does not show which two groups the mean difference actually exists, it is important to run the post hoc test that is presented in Table 9C below.

Table 9C: Post hoc test result about the level of need of carrying out future work-related writing tasks of engineering students for the respondents of engineering students, instructors and engineers

Multiple Comparisons

Dependent Variable: Work-related Writing needs
Tukey HSD

		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Instructors	Students	.35678*	.08970	.000	.1458	.5678
	Engineers	.59639*	.11617	.000	.3231	.8696
Students	Instructors	-.35678*	.08970	.000	-.5678	-.1458
	Engineers	.23960*	.09750	.038	.0103	.4690
Engineers	Instructors	-.59639*	.11617	.000	-.8696	-.3231
	Students	-.23960*	.09750	.038	-.4690	-.0103

*. The mean difference is significant at the 0.05 level.

As Table 9C clearly shows there is a statistically significant mean difference between the respondents of engineering instructors and students, engineering instructors and engineers, and engineering students and engineers and the vice versa. That is, there is a significant mean

difference among the three groups of respondents in the work-related writing needs of engineering students for their workplace communication.

4.1.5.3 Work-related Speaking Tasks

Table 10A: Engineering students, instructors and engineers' response about the level of need to carry out work-related speaking tasks for workplace communication (Engi. students=258, instructors=87 & engineers=70)

Work-related speaking tasks	Students		Instructors		Engineers	
	Mean	SD	Mean	SD	Mean	SD
1. Introducing themselves and others	4.27	0.79	4.30	0.75	4.47	0.76
2. Making business negotiations	4.24	0.93	4.31	0.83	3.60	1.28
3. Talking on the phone with foreigners	4.09	1.04	4.30	0.72	4.41	0.91
4. Attending and contributing to meetings	4.04	0.97	4.20	0.73	4.39	0.82
5. Talking about everyday tasks and duties	4.45	0.73	4.47	0.70	4.33	0.72
6. Making an oral report of a project or field visit	4.13	0.95	4.20	0.83	4.22	0.84
7. Giving an interview	4.16	0.97	4.46	0.71	4.34	0.68

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

Tables 10A, 10B and 10C present the responses of engineering students, engineering instructors and engineers respectively about the level of need to carry out carrying out work-related speaking tasks. For engineering students talking about everyday tasks and duties at work with foreigners, introducing themselves and others in a variety of situations to foreign supervisors or co-workers, making business negotiations with foreign agents and giving job and other interviews making an oral report of a project or field visit and were the top four highly needed speaking tasks for engineers' workplace communication in foreign companies with their mean scores of respectively 4.45, 4.27, 4.24, 4.16, and 4.13. In the same manner, for engineering instructors the top five highly required work-related speaking tasks for engineering students future workplace communication were talking about everyday activities and duties, giving job and other interviews, making business negotiations with foreign agents, talking on the phone with foreign employers or seniors and

introducing themselves and others in a variety of situations with their mean scores of respectively 4.47, 4.46, 4.31, 4.30 and 4.30.

On the other hand, according to the respondents of engineers who were actually working at different foreign companies at HIP the top five highly required speaking tasks for engineers' workplace communication were introducing themselves and others in a variety of situations to their foreign supervisors and co-workers, talking on the phone, participating and contributing to meetings with foreigners, giving job and other interviews, talking about everyday activities and duties with their foreign supervisors or seniors with their mean scores of respectively 4.47, 4.41, 4.39, 4.34 and 4.33.

In addition, the grand mean scores for the three groups of respondents as presented in Table 10B below were 4.11, 4.28 and 4.23 respectively for engineering students, engineering instructors and engineers at work implying that engineering instructors have relatively placed the highest level of need for work-related speaking tasks for engineers' workplace communication from the three groups.

Table 10B: One-Way ANOVA result about the level of need to carry work-related speaking tasks from the respondents of instructors, students and engineers

Descriptives

	ISE	N	Mean	Standard deviation	Std. Error Mean
Work-related speaking need	Instructors	87	4.28	0.61	0.06
	Students	258	4.11	0.74	0.05
	Engineers	70	4.23	0.62	0.07

ANOVA				
Work-related Speaking need	Sum of Squares	df	F	Sig
Between Groups	2.232	2	2.297	0.102

Within Groups	200.138	412		
Total	202.370	414		

* = significant at 5 % level of significance

The one-way ANOVA results presented in Table 10B (F=2.297, P-value=0.102) shows that there is no significant mean difference among the respondents of engineering students, instructors and engineers in the future workplace speaking needs of engineering students as the p-value (0.102) is greater than the cut of point 0.05. This means the three groups of respondents replied to the work-related speaking needs of engineering students almost in a similar way.

4.1.5.4 Work-related Listening Tasks

Table 11A: Engineering students, instructors and engineers' response about the level of need of carrying out work-related listening tasks for workplace communication (Engineering students=258, instructors=87 & engineers=70)

Work-related listening tasks	Students		Instructors		Engineers	
	Mean	SD	Mean	SD	Mean	SD
1. Receiving spoken instructions/ advice from supervisors/seniors	4.36	0.78	4.43	0.69	4.51	0.65
2. Listening to meeting discussions	4.13	0.95	4.33	0.66	4.24	0.91
3. Listening to trainings/ seminars	4.25	0.80	4.21	0.72	4.47	0.68

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

Tables 11A present data respectively of the respondents of engineering students, engineering instructors and engineers about engineers' level of need of carrying out listening tasks for engineering students' future workplace communication. From the data it is possible to see that listening to spoken instructions or advice from supervisors or seniors stands out as the first highly needed listening task for engineering students' future workplace communication particularly for those working at foreign companies for all the three groups of respondents with the highest mean scores of 4.36, 4.43 and 4.51 respectively for engineering students, engineering instructors and engineers working at HIP. Following this, for the respondents of engineering students and engineers

at HIP listening to trainings/seminars and listening to meeting discussions appear to stand out the second and third highly required listening tasks for engineers' workplace communication with the mean scores of respectively 4.25 and 4.13 for engineering students and 4.47 and 4.24 for engineers at work. According to engineering instructors, however, listening to meeting discussions appears to be more highly required than listening to trainings and seminars with the mean scores of respectively 4.33 and 4.21.

In addition, the grand mean scores of the listening tasks for the three groups of respondents as provided in Table 11B below were 4.25, 4.27 and 4.41, respectively for engineering students, engineering instructors and engineers implying that the work-related listening tasks are a bit more valued by the respondents of engineers at work in the foreign companies. In general, this seems to indicate that all the three listening tasks prove to be of high requirement for engineers' workplace communication with relatively higher mean scores.

Table 11B: One-way ANOVA results about the level of need of carrying work-related listening tasks from the respondents of instructors, students and engineers

Descriptives

	ISE	N	Mean	Standard deviation	Std. Error Mean
Work-related listening need mean score	Instructors	87	4.27	0.78	0.08
	Students	258	4.25	0.72	0.04
	Engineers	70	4.41	0.63	0.07

ANOVA				
Work-related listening need	Sum of Squares	df	F	Sig
Between Groups	1.465	2	1.412	0.245
Within Groups	213.667	412		
Total	215.131	414		

* = significant at 5 % level of significance

In addition, the one-way ANOVA results presented in Table 11B above (F=1.412, P-value=0.245)) shows that there is no significant mean difference among the respondents of engineering students, instructors and engineers in the future workplace listening needs of engineering students since the P-value (0.245) is greater than 0.05. This means the three groups of respondents replied to the work-related listening needs of engineering students nearly in a similar way.

4.1.6 Level of Difficulty of Carrying out Academic and Work-related Tasks in English

The fourth research question deals with investigating the level of difficulty of carrying out some of the more common academic and work-related tasks for engineering study at HU and engineers' workplace communication at HIPDC.

4.1.6.1 Level of Difficulty of Carrying out Academic Tasks

Table 12A: Engineering students and instructors' response about the level of difficulty of carrying out academic tasks in English (Students, N=258; instructors, N=87)

Academic tasks	Students		Instructors	
	Mean	SD	Mean	SD
1. Reading and understanding lecture notes	3.47	1.11	3.43	0.77
2. Reading and understanding textbooks and other reference books	3.49	1.01	3.17	0.78
3. Writing well-organized accurate internship reports	3.36	1.00	2.76	0.74
4. Writing coherent research proposals and reports	3.23	0.93	2.52	0.71
5. Asking and answering questions in class or lab sessions	3.23	1.02	2.79	0.77
6. Making oral presentations for different tasks	3.22	1.00	2.68	0.65
7. Expressing opinions in group/seminar discussions	3.33	1.03	2.86	0.71
8. Listening to lectures given by foreign instructors	3.19	1.06	2.83	0.83
9. Listening to lectures given by Ethiopian instructors	3.77	1.16	3.59	0.77

10. Listening to Youtube lectures	3.51	1.07	3.17	0.83
11. Listening to and taking lecture notes	3.59	1.07	3.11	0.86

Scale: 1=Very difficult, 2=Difficult, 3= Neutral, 4= Easy, 5= Very easy

Table 12A presents data from engineering students and engineering instructors about the difficulty level of carrying out some of the common academic tasks for engineering study at HU. According to Pimentel's (2010) scheme for interpreting the mean scores from a Likert scale, i.e. 1= Very difficult (1.0-1.80), 2=Difficult (1.81-2.60), 3= Neutral (2.61-3.40), 4=Easy (3.41-4.20), 5= Very easy (4.21-5.0). Based on the data the respondents of engineering students and instructors replied to the level of difficulty of reading and understanding lecture notes replied with nearly closer mean scores of 3.47 and 3.43 respectively. This tends to imply that reading and understanding lecture notes falls under the neutral level of difficulty for engineering students to carry out. Regarding the difficulty level of reading and understanding textbooks and other references the respondents of students replied with a mean of 3.49, which falls at easy level, whereas the respondents of instructors responded with a mean of 3.17 implying that their students were in a neutral level of difficulty.

The response of the respondents of engineering students to the difficulty level of writing well-organized and accurate internship reports with mean of 3.36 implies that carrying out this task is neutral, that is neither difficult nor easy to carry out while that of engineering instructors with a mean of 2.76 appears to indicate that the task is also a neutral level of difficulty to carry out. Similarly, concerning the level of difficulty of writing coherent research proposals and research reports engineering students replied with a mean of 3.23 which indicates that they find it neutral for them to carry out, whereas the respondents of instructors replied with a mean of 2.52 implying that it is difficult for their students to carry out.

Regarding the level of difficulty of carrying out asking and answering questions in class or lab sessions the respondents of engineering students replied with a mean of 3.23 and those of engineering instructors with a mean of 2.79 implies that the task falls under the neutral level to carry out for both groups. In the same token, for the level of difficulty of making well-organized oral presentations of different tasks, the respondents of students answered with the mean of 3.22

implying that the task is something between neutral and easy while the respondents of instructors replied with the mean of 2.68 indicates that it is also in a neutral level of difficulty to carry out for their students.

With regard to the level of difficulty of listening to lectures given by foreign instructors, the respondents of engineering students replied with 3.19 mean score implying that the task is neutral for them to carry out and for the respondents of engineering instructors with the mean of 2.83 means carrying out the task is also in a neutral level of difficulty. On the other hand, for the level of difficulty of listening to lectures given by Ethiopian teachers the respondents of students and instructors replied with the mean scores of respectively 3.77 and 3.59 implying that both groups of perceive that carrying out the task is easy for engineering students do. Likewise, regarding the level of difficulty of listening to online lectures such as Youtube video lectures the respondents of students replied with the mean of 3.51 implying that it is easy while for the respondents of instructors with a mean score of 3.17 means that it is in a neutral level of difficulty for their students to perform. Finally, to the level of difficulty of listening to and taking lecture notes engineering students responded with a mean of 3.59 indicating that executing this this task is neutral and those of instructors replied with a mean score of 3.11 meaning that carrying out the task has also a neutral level of difficulty.

In general**,** the grand mean scores of both groups of respondents for the level of difficulty of carrying out the above common academic tasks were respectively 3.38 and 2.98 for engineering students and engineering instructors. This indicates that the respondents of engineering students generally perceived most of the common academic tasks easier to execute than did the corresponding engineering instructors think the tasks were for their students even though their mean scores fell in the same category in Pimentel's (2010) scheme. In addition, the independent samples T-test was run to see if there is a significant mean difference between the respondents of engineering students and instructors in the level of difficulty of the common academic tasks which is presented in Table 12B below.

Table 12B: Independent Samples T-test results about the level of difficulty of carrying out academic tasks for engineering study

Group Statistics

	IS	N	Mean	Standard deviation	Std. Error Mean
of Difficulty Level of academic tasks mean scores	Instructors	87	2.98	0.502	0.054
	Students	258	3.38	0.781	0.049

Independent Samples Test

Dependent variable	**t**	**df**	**95% Confidence Interval of the Difference**		**P-value (2-tailed)**
			Lower	**Upper**	
Difficulty Level of common Academic tasks	-4.443	343	-.573	-.221	0.000*

* = significant at 5 % level of significance

As it is presented in Table 12B the independent samples T-test results (t=-4.443, df=343, P-value=0.000) shows that there is a statistically significant mean difference as the p-value (0.000*) is less than 0.05 between the respondents of engineering students and engineering instructors for the level of difficulty of carrying out the common academic tasks for engineering study.

4.1.6.2 Level of Difficulty of Carrying out Work-related Tasks

Table 13: Engineers' response about the level of difficulty of carrying out work-related tasks in different English skills (N=70)

Work-related tasks for engineers	**Level of difficulty %**			**Mean**	**SD**
	Difficult	**Neutral**	**Easy**		
1. Reading different manuals	8.6	32.9	58.6	3.74	1.01
2. Reading office documents	12.8	10.0	77.1	3.94	1.13
3. Reading project reports	10.0	14.3	75.7	4.01	1.08
4. Reading design reports	18.8	17.4	63.7	3.61	1.14
5. Writing job application letters and CVs	7.1	21.4	71.4	3.99	0.97
6. Writing business letters	20.0	31.4	48.6	3.39	1.05

7. Writing project proposals and reports	15.7	27.1	57.1	3.61	1.03
8. Writing product descriptions/ manuals	15.7	24.3	60.0	3.64	0.98
9. Writing minutes of meetings	7.2	36.2	56.5	3.68	0.92
10. Making oral report of projects	8.7	36.2	55.0	3.68	1.01
11. Participating and contributing to meetings or seminars	5.7	31.4	62.9	3.79	0.90
12. Talking on the phone with foreigners	10.0	28.6	61.4	3.69	0.97
13. Making business negotiations	20.2	29.0	50.7	3.43	1.09
14. Talking about everyday tasks and duties with supervisors	11.4	20.0	68.5	3.77	0.95
15. Listening to instructions or advice	7.2	34.3	58.6	3.74	0.99
16. Listening to trainings/seminars	8.6	24.3	67.1	3.86	1.01

Scale: 1=Very difficult, 2=Difficult, 3= Neutral, 4= Easy, 5= Very easy

Table 13 presents data about the level of difficulty of carrying out the common work-related tasks that engineers working at foreign companies might experience. From the data it appears that the respondents perceived that most of the tasks were generally easy or neutral for them to carry out though not all of them were equally relevant for each engineer working at HIP because of their work positions or specialization. Except for a few of the tasks such as writing business letters and making business negotiations with the mean scores of respectively 3.39 and 3.43, the mean scores for the remaining work-related tasks were closer to 4, which means that the tasks are generally easy to carry out according to Pimentel's (2010) scheme. In addition, the fact that the grand mean score for work-related tasks was 3.73 implies that the tasks were generally easy for the engineers to carry out. However, this result was corroborated with the findings of other sources such as the interview results in the discussion section. Please see Chapter 5 Section 5.5.

4.1.7 On the Effectiveness of English Courses for Engineering Study and Future Workplace Communication

Table 14: Engineering students' opinion concerning the effectiveness of English courses they took at University (N=258)

Items	**Level of Agreement (%)**				
	Disagree	**Und**	**Agree**	**Mean**	**SD**
1. English courses address engineering students' academic needs in general.	19.8	10.5	69.8	3.65	1.24

2. The topics and tasks in English courses are related to their fields of study.	23.6	15.1	61.2	3.43	1.18
3. English courses address their personal needs of English language.	19.2	21.1	59.7	3.49	1.14
4. English courses have enabled them to carry out different academic tasks.	21.8	19.5	58.8	3.49	1.17
5. English courses have prepared them for their future work place communication.	25.5	22.7	51.8	3.34	1.16
6. English courses have helped them improve their overall proficiency.	23.9	20.8	55.3	3.39	1.24
7. English courses have familiarized them with engineering vocabulary.	27.0	24.2	48.8	3.29	1.18
8. The tasks involve critical thinking and/or problem solving in engineering fields.	23.6	25.2	51.2	3.30	1.19
9. English courses contain meaningful and/motivating tasks for engineering fields.	26.8	24.5	48.6	3.26	1.17
10. English courses focus on practical tasks in English (e.g. practicing speaking, writing, etc.).	22.5	19.8	65.9	3.38	1.25

Note: SD= Strongly disagree D= Disagree Un= Undecided A= Agree SA= Strongly Agree

Table 14 elicits engineering students' perception about the effectiveness of English courses they took at university for their academic study and their future workplace communication. Consequently, with regard to the first item stating that English courses address engineering students' academic needs in general, the majority of the respondents (69.8%) replied that they agreed with the claim that the courses addressed their academic needs while 19.8% of them disagreed and 10.5% of them were unsure of the claim. Hence, this appears to suggest that the courses generally addressed their academic English needs.

Concerning the relatedness of the topics and tasks in English courses to their engineering fields of study, 61.2% of the respondents said that the topics and tasks in English courses were related to their fields of study whereas 23.6% and 15.1% of them respectively replied that they disagree and unsure of the claim. This suggests that the topics and tasks in English courses were partly related to their fields of study. With regard to whether the courses addressed engineering students' personal needs of English language like listening to media, talking to foreigners for social purposes etc., 59.7% of the respondents replied that the courses addressed their personal needs while 21.1% and

19.2% of them were respectively undecided and disagreed with the claim. This appears to suggest that the courses generally addressed their personal needs of English.

Regarding the item stating if English courses enabled them to carry out different academic tasks, still the majority of the respondents (58.8%) replied that the courses have enabled them to carry out different academic tasks while 21.8% and 19.5% of them said respectively they disagreed and were unsure of the claim. This implies that the courses have generally enabled engineering students to carry out different academic tasks although a significant number of the respondents (41.3%) either disagreed or were unsure of the claim. With regard to the role of the English courses preparing engineering students for future workplace communication, 51.8% of them replied that the courses have prepared them for future workplace communication while 25.5% and 22.7% of them disagreed and were unsure of the claim respectively. This appears to suggest that the courses have only partly prepared them for the future workplace communication.

With regard to whether English courses have helped engineering students improve their overall English language proficiency, more than half of the respondents (55.5%) replied they agreed that the courses have helped them improve their overall English proficiency whereas 23.9% and 20.9% on their part said that they disagreed with and were uncertain about the courses helped them achieve this objective. Concerning the point that English courses have familiarized them with engineering vocabulary, only less than half of the respondents (48.8%) said that the courses contain such content-related technical words while 27% replied that the English courses did not contain engineering-specific vocabulary and 24.2% said they were uncertain of the fact that the courses familiarized them with such vocabulary.

With regard to the item that the tasks involved critical thinking and/or problem solving in engineering fields, 51.2% of the respondents replied that the tasks incorporate such critical thinking and problem solving activities whereas 25.2% and 23.6% of them responded respectively that they were uncertain of the fact and the tasks did not involve such features. In response to the proposition that claims English courses contained meaningful or motivating tasks for engineering fields, just 48.6% of the respondents replied that they contained such tasks while 26.8% and 24.5% of them respectively said that they disagreed with and were uncertain of the claim. Finally, concerning the

issue that English courses focused on practical tasks such as practicing speaking, writing etc., 65.9% of the respondents were of the view that the courses focused on such tasks while 22.5% of them disagreed with the claim and the remaining 19.8% were uncertain of the proposition that the courses focused on practical tasks.

Put together, the data appear to suggest that the courses generally address the academic and work-related English needs of the participant engineering students at HU. However, for a few of the items such as whether the English courses familiarized them with engineering vocabulary and contained meaningful and motivating tasks for engineering fields the majority of the respondents replied with uncertainty and disagreement.

4.2 Qualitative Data Analysis

In this section the results of interview data and classroom observation have been presented. The purpose of conducting interviews in this research was to elicit in-depth data from the participants' perspective to consolidate, intensify and verify information obtained through the quantitative tools i.e. questionnaire and tests about the English language needs of engineering students at HU for their academic and workplace communication. Hence, for this study in-depth semi-structured interviews were carried out with 5 engineering students, 5 engineering instructors and 3 English instructors at HU, and 3 engineering employees and 3 employers at Hawassa Industrial Park (HIP). So the analysis of the interview data was carried out thematically by corroborating the information provided from different sources (i.e. engineering instructors, students, English instructors, engineers and their employers), together with the results of the classroom observation where appropriate to substantiate the themes concerning the research problem.

(Note that 'EI' stands for 'Engineering Instructor'; ES =Engineering Student; EE= Engineer Employee; EEmp= Engineer Employer; EngI= English instructor)

4.2.1 Important of English Skills for Engineering Students' Academic Study and their Future Workplace communication

Under this research question, the level and order of importance of English language skills for engineering students' academic study and their future workplace communication have been presented.

4.2.1.1 Important English Language Skills for Academic Study

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 the most important English skills appeared to be the literacy skills, i.e. reading and writing followed by the oral skill of listening. The literacy skills were preferred to the oral skills because most of their routine academic engagements were connected 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' success or failure since most of their works were communicated through the medium of writing to their instructors. Having a poor skill of writing can be equated with being a failure in one's academic career according to ES1, EI4 and EI5. For instance, EI5 stressed the importance of writing for engineering students' academic study as follows: "*So if they are really good at both things, then it is smart. But if we have to prioritize, then I think writing should come first*. *If they cannot speak and if they are really good at writing, it is ok. But (they are) really good at speaking but very poor at writing, they will be in trouble.*"

Similarly, the listening skill is needed in almost equal amount with the literacy skills because most of the students' time was spent in listening to their instructors' lectures and other resources like the Youtube. Unless they were engaged in active listening, they might not be able to grasp the main ideas of the lecture classes. On the other hand, as the engineering students were required to make presentations only sometimes (commonly 3 to 4 times) during their overall university stay, it appeared that they could survive even with poor skill of speaking provided that they were good in

the rest of the skills. Probably this could be the reason why the students had not developed their speaking skills and experienced the most kind of difficulty in this skill whenever they were required to make presentations.

> Yeah, all of them are very important, but for our learning the very important thing is listening and writing. Reading is also very important. So maybe I put reading first, next writing, then listening and speaking. The main thing in university is to put your ideas on paper well. If you can't do that, you are failed. In order to write properly we have to read because we bring our knowledge from reading, reading lecture notes (handouts). Our teachers also ask questions for mid and final exams from their oral lectures, so listening is very important. And speaking is the last I think. (ES1)

> For engineering students… reading and interpreting those documents is very vital. Unless you understand these, you can't put them into real work. So the most required skills are writing, reading, listening and speaking. For me writing is the first because if you face difficulties in speaking and then if you write the proper document or report, you are tolerable and can still communicate with your report. Therefore, for engineering students writing is the basic and the most important thing. (EI4)

> I think for engineering students the very important English skills are reading, writing and listening. In engineering, wherever you go, you have to read, you have to have your own analysis, and you have to write something. So communication is by writing, not by talking or by another skill. So in order to communicate, to convince the other people, I think first they should have to read, they should have a good understanding and then they should have a good writing skill. So they have to have a very good skill of reading, a very good skill of writing, and a very good skill of listening because the lecturer is right there and he is talking a lot. Unless the students understand him, it is like a movie actor. (EI5)

> I think they have to engage first in active listening. Active listening is very important for them. And the other thing is they have to read. Reading is very important for engineering students because they have to refer to different books and concepts; they have to address their gaps through reading, not only through official lecture. The other thing is writing because doing their projects, they express their ideas. So, for writing I give the third position in the level of importance. The fourth is speaking because they have to share some of their ideas through the medium of speaking and they are required to do only sometimes. (EI2)

4.2.1.2 Important Language skills for engineers' Workplace communication

In response to the question which language skills were most important for engineers' workplace communication, the participant engineering instructors replied all English skills were needed at various degrees depending on what the engineers were doing with whom and for which organization considering the wider context. Engineering instructors EI1 and EI3 who also had experiences of working as project engineers and consultants for different organizations prior to joining HU as academic staff, and were still working then as consultants stressed that all language skills were required for engineers' workplace communication. For instance, EI3 states this as follows:

> I can say all. As I have said they have to read the contract document to understand. Otherwise they cannot translate the drawings and other things to this building and the infrastructure. They have to report to the counter parts, so the writing skill is required. Again they have to communicate if you take some international companies, for instance, Chinese companies are there, Indian companies are there, and different companies are there. Our graduates work with them. So they have to communicate that speaking skill is also required. By default listening skill is also part of the process. (EI3)

On the other hand, the engineers and their employers at HIP replied that especially for engineers working at foreign companies like theirs the oral skills were more important than the literacy skills because most of their daily communications involved the oral skills, with the listening skill being the most needed followed by speaking skill. The listening skill stood first since most of their work was related with listening to what their employers or supervisors required them to do like taking their instructions, advice or suggestions. Next to listening skill came the speaking skill because they were often required to carry out mostly technical conversations with their supervisors or production managers. In the third place they put the writing skill since they were required to write different business letters, performance reports and order sheets, and at last they placed the reading skill probably because they were not required to read different documents as frequently as they did the other skills. Here are some of the responses in the participants' actual words:

> I think it depends on the work area. Here in my work area from my experience in Hawassa IPDC, I meet different foreigners most of the time. So I am very much required to listen and speak with them than write and report. Most of the time, I am engaged with them to communicate verbally [orally]. I am also required to write and report, but that does not happen many times. For example, this morning I was with some investors in some shades

talking about their problems, what service we should provide them. So from my point of view, here in Hawasa Industrial Parks the first skill should be the listening part. First, you need to understand what they want to say. Second, the speaking part comes after you understand what they want to say. So even if you don't speak to him, if you listen what he said you can give him what he wants. The first thing is the listening part, and then comes the speaking part. After that reading and writing skills follow. (EE2)

I'd say all the language skills are important as an engineer for the work place communication. In order of importance, the first thing is listening. If you listen well, you will also respond or speak. I'd say first listening, then speaking, then writing and reading. If you can't read, how can you write? So, for the work place communication, let me put in order. The first thing is listening, then speaking, then writing and finally reading. (EE3)

4.2.2 Academic Tasks for Engineering Study

In this sub-section the tasks which engineering students were required to carry out for their academic study have been discussed under each language skill by referring to the participants' responses.

4.2.2.1 Academic Reading Tasks

The responses of engineering instructor and student participants in the interview appeared to indicate that the kinds of reading tasks that engineering students were required to carry out for their academic study varied in nature and frequency of their appearance from their first year to the final year. Hence, the following have been identified as the major academic reading tasks for engineering students at IoT in HU based on their responses.

i. Reading Lecture notes (Slides) and Handouts

Accordingly, the first most common and most frequent reading task that undergraduate engineering students were required to carry out for their academic pursuit throughout their university stay was reading lecture notes (slides) and handouts (course modules). They needed to be engaged with the reading of these materials because, except for very few practical courses, almost all of the courses they took involve the reading of their lecture notes and handouts to fulfill the requirements of the course assessment, i.e. to pass their tests, mid and final exams and others. However, the engineering instructors complained that most of the students were accustomed to reading merely the very short

lecture notes (PP slides) given by their instructors rather than reading longer and detailed soft and hard copy handouts and textbooks and reference materials which could better equip them with better knowledge and broaden their understanding of their subject matter. Hence this appeared to suggest that most of the students did not have the courage and motivation to dig out different reference books to deepen their knowledge of the subject matter. Instead, they were likely to be satisfied with just reading the very short and ready-made lecture slides prepared by their instructors to fulfill the minimum requirements of the courses. Here are some of the engineering instructors and students' responses to evidence this point:

> In our case students are supposed to read, I don't think this is a good habit; they are usually limited to reading some handouts that are prepared by their instructors. But usually at the junior level they only read these handouts, or lecture materials. These days they are more interested in the soft copy, but previously we used to give them a bunch of hard copy materials. (EI1)
>
> Yeah, based on their academic year, for example, if they are first and second year, they focus on reading lecture notes, textbooks, and slides. (EI4)
>
> Well we are usually accustomed to prepare handouts. Students need to read that handouts as their textbooks. (EI2)
>
> We mostly read in our academic class, lecture notes (slides) and pdfs (handouts). (ES1)

ii. Reading Reference books and materials

The other common reading task for engineering students' academic study apart from their lecture notes and handouts (course modules) was the reading of reference books and other materials, which were usually online resources especially when they were required to do different course assignments.

> They will refer to different reference books as per our recommendations any available materials, especially online (resources). Since the majority of the students do have their own laptops and these plant sheets, they refer online resources and read whatever resources those are relevant for their study and courses. (EI2)
>
> There are a lot of (reference) books. …so they are prepared or written in English. There are hard and soft copy materials. Some of them are reference books that are prepared by native writers. So we read these materials. (ES4)

iii. Reading Lab Manuals

In addition to the above very common and frequent reading tasks engineering students were also required to read or refer to laboratory manuals to get familiar with the formats and procedures of lab reports in order to conduct the practical lab experiments almost every semester in their specific areas of study. These manuals and guidelines were said to be available for the students to refer in each of the department lab rooms whenever they were conducting lab experiments and writing their reports for comparing and contrasting their results. For instance, ES2 and EI3 responded to this need as follows.

> Yes, there is a laboratory manual (to refer to) to do the practical lab experiment. After accomplishing this laboratory work, the students should submit their experimental results with a report. (ES2)

> We do have a kind of format that the students will have to follow like the analysis and the apparatus they have used to do and then the process, the results and then the discussion and the conclusion. That is, this kind of format they usually follow to present the lab report. (EI1)

> The other mandatory material in my perception is laboratory manuals because to construct a building we have to test the concrete, sand and the aggregate, everything. So they have to read these laboratory manuals. (EI3)

iv. Reading Project Manuals (Guidelines) or Codes

The other reading task that engineering students were required to carry out when they got into their senior years particularly in their fourth and fifth years included the reading of different project manuals and design codes, internship report manuals or handbooks which they could refer to as a guide to produce their project reports accordingly. The participant engineering instructors EI1 and EI3 emphasized the importance of referring to these documents to prepare their design and integrated project reports at their senior years.

> Yeah, we do have manuals, actually some handbooks, design manuals. These types of materials are actually recommended for them at a senior level when they are in a 4^{th} or 5^{th} year. Maybe when they are doing their final year projects, they are supposed to read some design codes, manuals. For instance, we have the Ethiopian building code of standard. So this is a manual reference to guide them different standards set by this organization. (EI1)

> Not only (lab) manuals but we are checking the minimum requirement of those materials by referring to the codes and standards. So, there are national codes and standards. For instance, if you are checking the strength of the reinforcement bar, you have to check the Ethiopian standards. What is the requirement, different parameters for the tensile

> strength, so many technical issues are there. Apart from this, our national codes have some limitations. So, they have to read international codes also. There are internationally accepted standards, rules and regulations for technical purposes. …Yes in their internship actually in the ninth semester, we expect them to refer to contract documents. (EI3)

v. Reading Research materials (BSc thesis, journal articles and research methodology books)

Moreover, starting from the fourth year through the final year engineering students were required to refer to different research materials and documents like previous local and international B.Sc. research papers, journal articles and research projects when they took research methodology course to equip them to write their final year project or B.Sc. thesis. Engineering instructors' EI3 and EI4 expressed this need as follows:

> Especially starting from fourth year, second semester, they have to research also because in the eighth semester they take the research methods course. At least, they have to refer to research papers. Actually we do not expect undergraduate students to refer to masters' theses or Ph.D. dissertations, but at least they have to refer to B.Sc. theses. As I have told you in our department B.Sc thesis is a requirement. So they have to refer to that also. (EI3)

> When they become senior level, for example, on the fourth and fifth years there is research methodology course. In that case, they are expected to review some journal articles and they are introduced to some scientific outputs. In the fourth and fifth years they are expected to read some projects, research papers carried out by their senior students and other international researchers. (EI4)

In general, 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.

4.2.2.2 Academic Writing Tasks

Similar to the academic reading tasks, from participants' response it appeared evident that engineering students were required 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 writing 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. They have been presented as follows:

i. Writing Course Assignments and case studies

The first very common and very frequent writing task for engineering students' academic study involved the writing of course work assignments and case studies to check their understanding and application capacity of their subject matter. Since the current modular curriculum was based on the continuous assessment approach, the students were required to write down and submit different kinds of assignments on their courses individually or in groups by referring to all the available online and hard copy materials to fulfill their course assessment requirements. The participants ES2, ES1 and EI3 testify the need to carry out these tasks:

> Ok, most of the writing part will be seen on the assignment parts. There are different assignments. There are many different courses and most of them have assignments. So most of the writing part is covered with assignments (ES2)
>
> In academic classes we mostly give answers to questions by writing. That is, after we read the assignments; we try to rewrite based on what we read. (ES1)
>
> Concerning the writing you know that we are following continuous assessments. So, writing assessments always are part of the evaluation. Assignments are usually there when they get to senior classes; we give them like case studies. When they are given case studies, they have to read those cases. They have to identify the problems and they have to write a remedial as a solution because in the real life they encounter those things and they have to give a solution. So case studies they have to write. (EI3)

ii. Writing Lab Reports

As the participants underscored many of engineering courses involved the writing of lab reports because they were required to conduct practical experiments in the laboratory or workshop to test the theory in practice. Although the lab report has got the same genre name for all engineering departments, the contents and focus of the lab experiments differed from department to department and subject to subject. For example, in some departments like the Construction and Technology

Management the lab report was about testing the strength of concrete, metals, and related issues while in others like Industrial Engineering it was about computer based programs. That is, if it was about program writing, they had to write the report following all the instructions in that program or if it was manufacturing workshop, they might be expected to write up all the manufacturing processes from the input stag to the output stage. Here are some of the participants' actual responses in support of this point:

> Actually, there are many things in the laboratory. In my case, for example, concrete related issues, metal related issues, electrical related issues, etc. They have to write what the objective of that test is and what are the procedures to conduct that test. Then they have to write about what the engineering implication of that test, the results. That is not only for the academic exercise only but also to understand the implication. This is the general framework, but it differs from subject to subject. (EI3)

> Most of the activities of laboratories carried out are computer based programs. In that case all the analysis and input design and other requirements must be given. For example, if it is program writing, they must write following all the instructions in that program. In other cases, for example, if it is manufacturing workshop, it may be expected to write up all the manufacturing processes. They may be given one project. Based on that project they are expected to write all the process from input stage to output stage. They are expected to write the flow process. Before they go into the project they are given the guideline they have to follow to write the report. (EI4)

> The other one that we are facing is the laboratory part. There is a laboratory manual to do the practical lab experiment. After accomplishing this laboratory work, the students should submit their experimental results with a report. Every lab report should be written with its proper format and submitted to each lab assistant. (ES2)

iii. Writing Design reports

As the respondents stressed engineering is a hard applied science and is mostly concerned with designing a solution to different real world human problems like hearing problems, walking problems, housing problems, transportation problems, and so on, engineering students were often required to be engaged in designing tasks in their areas of specialty. One engineering instructor (EI2) underscored that designing is very important for engineering and is a typical issue in engineering which differentiates it from other natural sciences to the extent that there is no engineering without a design. He also added that "When you call engineering, we give you a specific solution to your

specific problem in a way that is accessible or usable or very friendly or understandable and tangible solution." Therefore, many of the courses in engineering involved students in sketching a new design or modifying previous ones and each design work had to be described in a clear language so that others could read it and understand. At the end of the design work, they were needed to write and submit a number of design reports each year especially in their third, fourth and fifth years.

> Design report is the most common kind of report for engineering students. Students will be given the architectural design of a building. It could be this building (the staff building)). We have the drawing, the architect's drawing. We give them to design, the structural part of this building to determine the reinforcement requirement: the concrete quality and so forth. So these kinds of process need them to understand the code and to apply the formulas and the theories behind that they have been learning. Well, at the end they need to write it as a report all the processes they have carried out during the designing process as design report. (EI1)

> It is common for every engineering department, and every engineering student has to do this design project. But the number is not limited and the same. Say, for example, in some engineering departments the number of design report might be two; in other departments it might be three or four. The design project will be repeated again and again. For example, when they become third year, they will do one design project. When they become fourth year, they will do another design project, and when they become fifth year, etc. It is like a laboratory report common and mandatory for all engineering students. (EI5)

> Yeah, they will do projects, and projects need detailed analysis, designs and so forth. Hence, they have to communicate their works, their designs, and their findings through writing. So, they report their works to their respective lecturers about their findings. (EI2)

iv. Writing Internship reports

According to the respondents, the internship report was the written report of engineering students' four months or one whole semester stay at different industries or enterprises in relation to their specialty with the aim of letting them acquire practical lessons from directly participating or engaging in the actual engineer's work, i.e. from observing what the other workers were doing and how the organization was functioning to actually doing the engineering work themselves under the supervision of the site and university advisers in that specific organization or enterprise. At the end of

their internship period, they were required to write and submit their internship report compiling all their daily, weekly and monthly reports which they had been reporting to their site and university advisers. Therefore, the internship report was a long and wide report that required a great skill of writing and was equivalent to six or seven courses value or 30 ECTS. So, it was very important for engineering students to properly organize, write and submit to their respective departments upon their return from their internship.

> The internship report is a long or wide report which should be submitted to the department and it should be presented. So, most of the time, the internship reports are theoretical. Everything is written with theoretical part; there is no calculation part. It needs critical thinking: what we see, our observations and clear explanations of what they see. It is completely theoretical. (ES2)

> In internship we take four and five months and from there we do the internship with the engineers and construction site manager and day-laborers and we talk about every activity in the site with them. So, most of the site advisers ask us to bring them our daily reports. We have to write a daily report and we have to include every conversations made with contractors and engineers. That is the most important part of the internship report. We write daily report, weekly report, and monthly report. Lastly, we change the daily report, weekly report and monthly report we write it, arrange it into a big document or final report. It is very important writing (task) especially. (ES1)

> Even in the internship one mandatory document is their report. They present two types of report. One is the daily activity which they are performing. The other one is to our department they must come up with a project, the real problem they faced and what they did for that problem. Sometimes they may even come up with a design idea that can be extended to their graduation project. Therefore, they must come up with two reports one as a daily activity report and the other as a final report. (EI4)

> Sometimes we want them to experience the practical world, and in the meantime we give them one semester internship period, it's fully practical work in the sites, and they work as an office or site engineer. And accordingly, they will be given tasks and in the meantime they will come up with a report and those reports are from a practical world. This internship is a long term visit. It's one semester course. It has 30 ECTS, equivalent to 6 to 7 courses in a semester. This is one of the mandatory things. (EI2)

v. Writing Field or industry visit reports

In addition to the internship report, engineering students were also required to write and submit a number of field or industry visit reports. While the internship report was the report of a long stay (one whole semester) as described above, field or industry visit reports were the reporting of shorter visits (one or two weeks) at industries or companies before the internship as part of the course work requirement to help them gain practical knowledge and experience going to the actual work sites and industries. Therefore, upon their return, they were needed to write a report describing what they felt about that site, the practical lessons they learnt from that trip or visit and submit to the respective instructors. Participants ES2, EI5 and EI2 describe the need to write this task as follows:

> Sometimes there is a trip, such as a field visit or industrial visit. So the department provides (arranges) such visits, they need a report: what the students felt about that place and what they gained from the visit. Most of the time, such kinds of reports are there. (ES2)

> The other is field visit report. Once they made ample visit, they will report us in written format. While the internship report is four months activity; it is like a semester wise. Industry visit maybe one week or two weeks. They will go there, they will visit and ask what is going on there and they will report what they have got after the visit is over. (EI5)

> Sometimes the students are helped with visits. That is, they practically go to work places. May be in the construction industry, they will see how the construction is undergoing. Then, whatever they have learned in the classroom with whatever they see in the workplaces, they will try to bridge and report whatever their findings are. (EI2)

vi. Writing Final Year project or Thesis Proposals and reports

In their fifth year, engineering students were required to write and submit a final year project or thesis proposal and a report individually or in groups to accomplish their studies. In some departments like COTM, as the participants (EI3 and ES1) informed, the students were required to actually carry out the full scale research by developing proposals and instruments and directly going to the sites to gather data, analyze data and write a report and finally submit it to the department for defense while in others the students were engaged in developing some projects usually a design project as a solution to some human problems like developing a machine that

shelled peanut and produced peanut butter as the researcher has observed this during their final projects presentation and defense of Mechanical engineering students. Therefore, whether it was a thesis or a design project, at the end the students were needed to write the report and submit it to their respective departments for defense usually by a group of examiners. The responses of EI1, EI3, EI4, and ES2 describe and emphasize its importance:

> A final thesis is usually a design problem, a design process. They call it a final thesis but it is a kind of design report. (That is), engineering students usually at their final year they will be engaged to do some design modification or to design a new structure. It could be a highway, it could be a building, it could be an irrigation structure, irrigation scheme facilities, for these kinds of design work, they need to apply the theories and design principles. The one that is done by our students is still a design report but it is for academic purpose, it is more of theoretical. Even it is at undergraduate level and we are not going to implement it. But still we can call it a design report. (EI1)

> The other thing is they have to write thesis. They have to go through all the process of the research. They have to write a proposal, and they have to defend the proposal. Again, they have to collect data, analyze the data and write that report and defend it. (EI3)

> And when they come to the senior class, they must work on their graduation paper sometimes individually and sometimes in groups and they must submit it. (EI4)

> Similar to the internship report, the final year project or thesis report has a theoretical part. Final year or graduating students in the previous trend submit an original thesis work. It has its own content. So, most of the time, it has a theoretical part. (ES2)

4.2.2.3 Academic Speaking Tasks

Based on the participants of engineering students and engineering instructors, unlike the academic reading and writing tasks engineering students at HU were not as such required to make many presentations during their overall stay at university for various reasons. However, there were certain speaking tasks that all engineering students were commonly required to carry out and there were also other speaking tasks they were required to present not unanimously depending on the interests and commitments of the course instructors of the respective departments. 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. Let us discuss each of the speaking tasks in turn.

i. Presentation of Internship Reports

As the informants underscored the presentation and defense of the internship report was one of the major mandatory speaking tasks that each engineering student had to carry out to qualify for the requirements of the internship. After the submission of the written report, they were required to present and defend it by answering all the possible questions that could be raised from a team of examiners concerning its genuineness. The responses of EI4, ES1 and ES3 provided evidence for the need of performing this task.

> Yes especially for the internship they must not only prepare the report but also they must present it because the presentation part has also its own marks. The paper has its own mark. Therefore if one submits only the paper, he will not be qualified. So he must present that part. (EI4)

> For internship also after our return we prepare for some days, we submit the final report and defend our work when they ask sometimes confusing questions by using clear language and with full confidence. (ES1)

> The more difficult and complicated presentation was internship. After we get back from internship, we have to explain what we have seen and done or our stay in the company. (ES3)

In addition, the researcher has also confirmed this to be true in his classroom observation while engineering students of the departments of Chemical, Mechanical and Hydraulic engineering were making presentations of their internship reports in the first semester of 2020/2013E.C. For this the students were making their presentations individually using PP slides for about 15 minutes in front of a group of examiners comprising 2 to 5 instructors and their classmates followed by question and answer session which lasted also for about 15 minutes. The researcher observed that it was a demanding speaking task for these students, especially the question and answer session was the

toughest in which the students were asking their examiners for repetition of questions and mostly they gave answers to the questions mixing up English and Amharic or exclusively in Amharic. Moreover, following the students the examiners would also change sometimes the medium of the defense session from English to Amharic.

ii. Presentation of Final Year Project or Thesis Proposal and Report

The other major speaking task for engineering students at the end of fifth year was the presentation and defense of their final year research project or thesis proposal and the report usually in groups. Depending on the requirement of each department, engineering students had to first present and defend their research project or thesis proposal before they were engaged in the actual project work. After they had completed their project or thesis, they were also required to make the presentation of the report and defend it by answering questions which were raised by their examiners to check whether they have done it themselves or not. The responses of participants ES3 and ES4 provide evidence for the need of carrying out this task as follows:

> The other is the presentation of our proposal. And there is also a presentation for our final year project which is two weeks away from now. (ES3)

> Mostly in our class teachers order us in order to present our proposal... and so on in English… After preparing proposals we present it and defend it, and also the final research report. (ES4)

Moreover, the researcher made series of classroom observations of the final year project or thesis presentation in four engineering departments, namely Mechanical, Chemical, COTM, and Hydraulics and Water Resources to triangulate with the results of the interview. He noticed that a group of students consisting of 3 to 4 in Mechanical and Chemical engineering departments and 6 to 8 students in Hydraulics and Water Resources were making a presentation of a part or portion of their project or thesis work to a team of internal examiners comprising 2 to 5 instructors and interested classmates and were defending the practicality and genuineness of their project or research work for the intended purpose by answering questions. He also observed that many of the students were simply reading the Power Point slides without much explanation while a few of them were making their presentations explaining in good English.

iii. Presentation of course assignments and Mini Projects

As the participants replied some of the engineering instructors depending on their courses might require their students to make presentations of their course work assignments such as case studies, mini projects and term papers usually in groups because of their large class size to verify whether they did it themselves or not. However, the problem appeared to be the lack of commitment in assigning such tasks from the instructors' part for strict implementation. Particularly the young instructors were less committed for such tasks because of their lack of experience and less qualification as some of the informant instructors complained. The responses of participants ES1 ES4, EI1 and EI4 can attest for these kinds of needs:

> We make presentations mostly when our instructors give us assignments and projects to go to construction sites and we gather information and we write it down as a report and then we present it to our classes and teachers…The teachers want to make sure that we understand that course. They can make it sure by giving us projects and that is not enough because the writing can be copied from others. So to make sure they ask us to make presentations and ask questions and we have to answer it, explain everything what we have written. (ES1)

> When the course is broad, the teachers are worried about the portion. The students must submit the course by making presentations. In addition to this the students are given assignments; they dig out and make presentations in front of the class. (ES4)

> And very rarely some instructors arrange presentations by assigning certain tasks on the course work. There is a mini project in a particular course. For instance, in 'Structure I' students are taught how to design some irrigation structures, they could be asked to design an irrigation scheme for a simple plot of land or something. Then after completing this mini project, the instructor may arrange a presentation. This kind of presentations can be arranged but in general the attention given to speaking or inviting students to present their works is quite limited. (EI1)

> Regarding the speaking activities, for example, if there is a mini project and some other tasks, if the time permits not only preparing their papers, they are also expected to present in front of the students. (EI4)

iv. Presentation of Semester Project or Design Project Reports

In addition to the aforementioned major speaking tasks, many of the engineering departments also required their students to make a presentation on the semester project or design report for which they had to go to industries or enterprises and design projects in their specialty areas usually in their fourth

years. After they had finished the project work, apart from the submission of the written report, they were also required to present it to the class usually in groups as the responses of ES3, ES1, and EI4 below testify.

> The second one is the fourth year semester project. Our semester project was designing a circular micro strip patch antenna. This is an antenna in our cell phones. There are two kinds of antennas. There are rectangular and circular antennas and we have done a simulate on a software. And we have designed the model on the equipment on modeling software which called console software. We have done with the model. There are different types of parameters describing the performance of the antenna. In short, that was about our semester project. So there is a presentation at the end. (ES3)

> We make presentations mostly when our instructors give… projects to go to construction sites and we gather information and we write it down as a report and then we present it to our classes and teachers. (ES1)

> And sometimes based on the course as I said for my course actually there is no such a big scenarios to be presented, but in the fourth year first semester there is a project. That project must be presented. The courses are Operations Research I and II. One is third year second semester and the other is fourth year. Therefore, in that case they must carry out the project in the industries and finally they present that. So there are such presentations even in other departments. It is as big as compared to the written assignments. (EI4)

But apart from the above few speaking tasks, it appeared evident from the informants' response that undergraduate engineering students were not as such required to make many presentations or participate in seminar discussions and contribute to the seminar since there were no such experiences at the time at IOT in HU except for asking and answering questions with their lecturers in the classroom.

> But in the lower levels (freshman and junior years), except for the asking and answering in the classroom, I don't think there are as such big tasks to be given and presented. (EI4)

4.2.2.4 Academic Listening Tasks

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 YouTube resources. Hence, the most frequent and most common 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. Let us see each one in turn.

i. Listening to Lectures

All of the informant engineering instructors and students underscored that most of engineering students' class time was spent listening to their instructors' lectures and tutorials and instructions in the lab sessions. This was because as regular students most of the courses were delivered in face-to-face mode by their instructors. In addition, based on the respondents, most of the lecture classes were teacher-fronted in which the instructor dominantly talked and the students' role was to listen to the lecture throughout the class time with the exception of asking and answering questions. Therefore, listening to lectures could be taken as the most common and the most frequent listening task for engineering students. This was also confirmed by the researcher during his long data collection period as the students were busily engaged in attending their long lecture classes every day to the extent of sparing no time even to respond to the research tools. The contacted instructors complained that engineering courses had very long portions or chapters and they were always busy trying to cover their courses on time. Hence, this over-dominance of the teacher-fronted lecture was usually dependent on reading PP slides without much discussion and explanation as complained by the participant students during the interview. This appeared to imply that most of the students' time was spent listening passively to their instructors and the students were not made to take part actively in their classes by being engaged in real world problem-solving activities through group and seminar discussions. This sort of discussions would also give them a freer opportunity for practicing and developing the speaking skills. While an active listening to lectures is very important for engineering students to acquire the subject matter knowledge from their instructors, students also need to be given time to learn on their own by engaging them in real world problem solving activities.

> Yes, to be honest, more than 90% of their activity is to listen to instructors what they are saying. They are supposed to listen to what the instructor is saying, that is, to lectures… Sometimes listening is more important to listen to foreign lecturers, including Indians with a different accent. I know that some people have some difficulty to fully understand some Indians. But in general, listening is very, very important. (EI1)

> It's very important because some lecturers when they give their lectures in the class, I think it's very important to listen to them. Listening needs a habit and exercise. So sometimes when we do final and mid exams, we don't understand some questions. They bring it not from lecture notes (handouts) but from their oral explanations and illustrations of their life experiences during the lecture. They ask us questions from Ethiopian contexts and the examples they used in class. So the listening skill is very important in that area. (ES1)

> It's very important because if it is only Ethiopian students may be some instructors translate into Amharic, but in our classes there are students from other countries like South Sudan and Somalia. They only hear English, so we learn in English. Also we have foreign instructors (expatriates), so they speak and we have to have a good listening skill. (ES4)

On the other hand, this over dominance of the class time almost solely to listening to their instructors' lectures might have significantly contributed to poor development of the productive oral skills (speaking skills). However, the case of being required to listen to lecturers does not necessarily mean that they have developed even a good skill of listening either. This could be due to the fact that some of instructors were not using English for delivering their lectures. Rather they were using Amharic instead.

ii. Listening to YouTube Video Lectures

As all of the informant engineering instructors and students emphasized, listening to You tube video lectures was very essential source of information for engineering students as it would enable them to easily access on their own and by their instructors to demonstrate and familiarize students with such very useful technological facilities which might not be easily found in the university labs and workshops. Besides enriching their knowledge of their subject matter, listening to You tube videos had a further advantage of developing engineering students' English language and familiarizing them with the correct and native accents of English as most of these resources were prepared and uploaded by native or proficient speakers of English. The participants underscored the utter importance of using these resources in addition to the classroom lecture to facilitate the teaching and learning process and to make it more practical and motivating in their responses next.

> It is also very important to listen to the internet and Youtube and search everything with pictures and videos which we can't get from our teachers. We don't have such labs or they don't show us such things in the labs. So we can find those things we missed from

Youtube and Google so that we can compare and contrast with what we learned in class because modern construction technology and our local technology do not go parallel. So we have to balance (compensate for) them. The pictures and videos in the Youtube materials are more understandable than the classroom lectures. (ES1)

As I have told you, this university does not have different laboratories. When we watch the YouTube videos, most of them are live or practical videos. For example, if I want to study about a resister or about an antenna, they will show us the physical antenna and how it works, what it is used for. So by seeing all of these, we can have a better understanding about the equipment, about the different types of device. So understanding English is so important to see what is available in You Tubes as they are in English. Most of the class lectures are theoretical and they will tell you antenna will do this or that. But Youtube videos are fascinating and practical. (ES3)

In addition, in the classroom we present some videos from Youtube. For example, we don't have the ergonomic lab here. Ergonomics is a science that studies about manufacturing, for example, the way we sit, the distance from the seat and so on. We don't have such a lab. What we are going to do is we download some videos from different sources and present for them. It is not only the listening but there is a demonstration part also. For instance, this laptop is an ergonomic product. If you are going to type for a long time, there is a pain in your wrist. The pain is directly related with the force that you are applying on this keyboard. The keyboards are through time improved. … Unless the working environment and the tools are ergonomically designed, there will be stress, there will be strain developed and as a result individuals may not exert their full energy and their productivity as an individual and organization will get down. (EI4)

Also when we are watching tutorial videos since they are prepared in English, we have to understand them. There are a lot of them on the internet, so we have to understand them. It is both. The teachers give us tutorial videos and we also download from the You Tube channels. (ES4)

4.2.3 Tasks for Engineers' Workplace Communication

The engineers who graduated from HU and other Ethiopian universities work at different foreign companies of HIP used English as a working language to communicate with their foreign employers, supervisors and co-workers. The inclusion of engineers who graduated from other public universities in addition to HU was that they were educated under the same harmonized modular curriculum across the country and this also holds true for English courses. Except for

differences in the teaching materials, they were educated with the same English course syllabuses. Therefore, an attempt has been made here to identify the kinds of work-related tasks in each language skill based on the interview data obtained from the participants of engineers, employers, and engineering instructors.

4.2.3.1 Work-related Reading Tasks

It was noted earlier that the reading tasks for engineering students' academic study were almost similar across all engineering departments. In contrast, the reading tasks that engineers needed to carry out for their workplace communication generally differed from company to company and depended highly on the kind of work they were required to do in their respective foreign companies. Hence, the following have been identified as some of the major work-related reading tasks for engineers' communication at the foreign companies in Hawassa IPDC.

i. Reading Manuals

As the engineers' work often involved different activities such as installation, maintenance, construction, safety, modification, production, and so on, the reading of different manuals appears to be the most common work-related reading task for the engineers working at HIPDC. However, the kinds of manuals that engineers were required to read differ according to the kind of work they were executing and the position at which they were serving in the foreign companies. For instance, the reading manuals a maintenance engineer was required to carry out are different from that of a construction engineer. That is, a maintenance engineer was mostly required to read different installation manuals, maintenance guidelines, modification guidelines and security guidelines among other things, whereas a construction engineer was required to read different construction manuals or codes. The following responses provide evidence for these points:

> Mainly we will have to read guidelines, maintenance guidelines and modification guidelines, maintenance manuals and installation manuals. So, all of these documents are in English. So we should read these kinds of documents. For example, whenever an investor asks us for a modification, we should know each and every guideline. For example, there are structural guidelines, safety guidelines and manual alarm controls, security guidelines. There are also electrical and mechanical parts of manuals that we have to read. We have to read these materials and update ourselves. (EE3)

> Then after, there should be preventative maintenances and annual maintenances. There are entire parameters for those kinds of maintenance. They should understand those parameters which are written mainly in English, which are not common in Amharic actually. So somebody has to focus in this area. They need to understand what it means, how to maintain, what the next part is, what routines a machine needs for maintenance. Another is an engineering-related international signs are there like safety and compliance signs. So the engineers have to read and understand these signs because the working area is very dangerous. (EE1)

> We have already a Chinese construction manuals and its English version. Some of the manuals are available and we get from the Chinese suppliers. (EEmp2)

> For reading we have given so many documents like equipment manuals and how those equipment works and how to conduct the maintenance. When we are going to the fields how we have to implement the procedures and how to write the arrangement of the process. First they have to identify what the problem is and in which part of the system the problems occurred before conducting the maintenance. So we have given everything−operation manuals, maintenance manuals. When they commit mistakes we are correcting them also. So practice makes them perfect and from practice they avoid making mistakes. (EEmp3)

On the other hand, an engineer working in the production section was required to read different production manuals as the main products of the companies at Hawassa IPDC were different textiles, clothes and garments. Hence, the engineers under production section need to read different manuals related to the sewing and production equipment as each manufacturing machine provides instruction manuals and catalogues for identifying fabric, measuring, cutting, sewing, layering and packing. The responses of EE1, EE2 and EEmp1 attest this point:

> Somebody should be able to read and understand those materials before selecting and ordering the machines for the factory. Then after, the manuals of the machines are there to be read. There are different manuals: operation manuals, maintenance manuals, and product manuals also there. An engineer should have the capability of reading of those manuals and only then will they have the proper knowledge about the machines which are landing here. (EE1)

> Apart from that we also need to understand manuals because we are expected to understand everything. For example if there is a machinery manual if there is any written description we need to read and understand that description very effectively. (EE2)

> I think most of the manuals for the engineer are related to the sewing and production equipment. There is the provision of a lot of manuals. Each manufacturing machine provides instruction manuals, catalogues and etc. So, there they can get familiar if they are good in English. Of course, most of those manuals are in English. In terms of the engineering with the actual site, utility engineers are probably less in terms of the manuals and documentation to support that. So certainly for the machine engineers it's easier. …With the others it's more hands on like when somebody is shown more to do in terms of the switch-gear, the compressors or the boilers. You don't need to read the manuals for them because there's generally the equipment to give the service correctly they will operate. (EEmp1)

In general, engineers could work at different companies sometimes outside of their specialty areas and thus were expected to be able to read and understand different manuals carefully to execute their jobs effectively or to avoid any possible dangers that could occur otherwise.

ii. Reading Office Documents

On the other hand, the engineers working for construction companies like the Chinese Construction Company LTD, which built all of the company shades and was still in charge of the constructions in the park, might be required to read official letters, contract agreements and emails which were somehow different from the requirements of the other engineers. In addition, those engineers who were working at the supervisory or senior levels at different production companies were also required to read emails and different business letters such as permission and complaint letters.

> So, (they are) reading some official letters from our clients and also some main contracts between our company and our clients. It is normally like that. We also need to read emails. (EEmp2)

> So, we have given everything…formats of report writing (daily basis, monthly and so on), complaint letter writing. When they commit mistakes we are correcting them also. So practice makes them perfect and from practice they avoid making mistakes. (EEmp3)

4.2.3.2 Work-related Writing Tasks

The writing tasks engineers needed to carry out for their workplace communications depended on the company or the department they were working for. On the other hand, unlike the academic writing tasks for engineering students at university which were many and varied, it appears that the work-

related writing tasks for the engineers' workplace communication at HIPDC were limited and repetitive especially for those working as operators or general engineers. Therefore, based on the participants' responses the major work-related writing tasks were the following:

i. Writing Performance and other Reports

Keeping the record and reporting of their own and/ or other employees' daily, weekly, monthly or yearly performance and efficiency reports was the most common and most frequent work-related writing tasks almost for all engineers working at the foreign companies in HIPDC. In addition, depending on the department and positions they were working at, the engineers were also required to keep the records or checklists of the performance capacities of gas and water consumption reports of different boilers, generators, and machineries. In general, these sorts of writing tasks were mostly repetitive or routine and less demanding for the engineers as compared to the requirements of academic writing tasks. The following were some of the evidences concerning the report writing needs of engineers at HIPDC.

> As an engineering department in our company there are a lot of things that we have to write every day, including daily reports of like boiler running report. We have a huge boiler and also a generator. Every generator checklist is there, boiler checklist is there, logging sheet is there. Even for every electric-related panel, there is preventive maintenance checklist that needs to be filled every day. Somebody should be capable to fill those. Finally, there are different ways of reporting our project reports like making gun chart to display the completion of tasks and so on to show the progress of our projects to our management. (EE1)

> We are required to do many kinds of writing tasks. For example, we are supposed to collect the data from the companies. So, each month we report the tasks we have done in the previous month. We compile the report and submit it to the respective bodies or our bosses. (EE2)

> After each work we have to write a report for each completed task. So we should know how to write a report, formal report writing. There are weekly and monthly reports, and annual reports. So with an introduction and an objective we have to write such kinds of reports. (EE3)

> Okay, for the engineers here we've got two main areas. For the engineers on the machinery side they don't have the necessity to produce a lot of documents at this time. I think we have a very few basic reports that they may have to produce to sign off for the machinery was already prepared is actually at work focused on instructional manuals. The general engineers

we do have all the documentation to be some reports. But it generally relates to department heads. … He has an email account where most of the other engineers don't. So he would collect all the information and send the management. There are some key reports. (EEmp1)

They have to write reports. They need basic English to write reports. If you talk about our basic activities, they have to write daily, monthly maintenance reports using the given formats for the equipment, plant operation as well as the maintenance activities. (EEmp3)

ii. Writing Business Letters

The writing of different kinds of business letters accounted for the second major work-related writing task particularly for engineers who were working as heads or supervisors in the foreign companies in HIPDC. The correspondents the engineers wrote their business letters to include international calibration companies, Hawassa IPDC Coordination office and IPDC main office, different government offices like Ethiopian Electric Utility, business clients and consultants. In addition, the engineers also needed to write different annual leave or permission letters to request their permission. The responses of participants EE1, EE3, EEmp2 and EEmp3 attest this need as follows:

We have lots of communications especially with the foreign companies to sustain our world class standard. For calibration of our machines we will have to fill and send the company for mark and we are sending our request letters for calibration companies. When we start a project we have requisition letter from the entire company management plus industrial park management. They should have to certify us to start one project. So, based on that, they will give us their approval after our formal requisition (letter) to them. Specifically with government offices in our country, we write formal letters for example, like Ethiopian Electric utility, industrial parks corporations for whatever we require from them and whatever they require from us. There is also permission request letters when employees want their permission. (EE1)

And sometimes we have to write a formal letter for an international customer. So it should be very formal. We should know how to write those kinds of letters. (EE3)

Sometimes I would like our staff to write English (business) letters to our clients to build our image to our consultants and about English skills to be provided it seems for the importance of the English is mandatory, especially working in foreign company because for the local staffs and the foreign company I think the first language is English. And also for the writing we communicate with our clients and our consultants, so we use it the official way which is

we have to write letters. So the letter is very important. Also the English writing is the criteria how to separate the person from the others how his English skills are. (EEmp2)

Suppose they are going to apply for annual leave requests, we have a format and they have to follow that one. So they have to request the annual leave permission. (EEmp3)

iii. Writing e-mails

The engineers who were working on supervisory positions or management also had e-mail accounts and were required to write emails to their seniors or management teams. In addition, the other engineers had 'what's up' groups and communicate through this application.

He (head of utility department) has an email account where most of the other engineers don't. So he would collect all the information and send the management. (EEmp1)

So, to fulfill that, we should have direct communication with 'What's up' kinds of things. We interact with 'What's up' and we will have a brief communication with the software company to update our status of the year. We also have mail id. for internal communication and other customers. (EE1)

iv. Project Proposals and Requisition

The engineers who were working on a management levels were also required to write project and purchase proposals they needed to execute for their departments for the upcoming period of time.

The other writing task is like we are asked to produce sometimes proposals, to propose something like projects and purchasing proposals. There are some materials that we have to purchase. In that case we have to know how to write such kinds of proposals. (EE3)

4.2.3.3 Work-related Speaking Tasks

In general, based on the participant engineers and their employers' responses, the need to carry out different speaking tasks for their workplace communication was very high. However, this depended on the position they had and the nature of work they were doing. For instance, the engineers working for HIPDC under the maintenance and facilitation team had the role of providing maintenance, installation, modification, safety and other services to all of the companies in the industrial park and they met different kinds of investors or customers from many countries; therefore, their level of need of carrying out different speaking tasks was very high. On the other hand, those engineers who were working for a particular company just as an operator or general engineer had relatively limited need to carry out different speaking tasks while those engineers who were working for a particular company but at a supervisory or managerial level, for instance, like as

a head of production or utility team, their level of need of carrying out different speaking tasks was very high because they were required to meet and talk to various foreign people to run their business effectively. Hence, the following were some of the most common and frequent speaking tasks for the engineers' workplace communication at HIPDC.

i. Making Technical Conversations

Carrying out daily or periodic technical conversations appeared to be the most frequent and most common kind of speaking task for the engineers' workplace communication at HIPDC. As the engineers work with the foreign investors or supervisors from different countries, they needed to talk technically before or during providing the necessary services of maintenance, installation, or any other. That is, they might communicate using technical terms common to engineering in general or specific to their fields of study if they were all engineers, and if not in a way they could be understood for those who were not from engineering background. As the main products of Hawassa IPDC were various garments and clothing, these technical conversations were usually related with technical terminologies from textile and garment engineering, for instance different parts and kinds of sewing machines, fabrics, measuring, cutting, layering, cataloguing, and packing. In addition, it involved technical terms connected to electrical and mechanical engineering for maintenance, installation, safety and security services and somehow terms of chemical and industrial engineering for running different chemical processes. As some of the participants' responses attested below, this sort of conversation would take place almost regularly between the Ethiopian engineers and their foreign employers or supervisors:

> We communicate with the managers and also with skilled personnel to understand what they need. If there is some trouble or if there is anything to maintain or rectified, we just need to communicate on the technical issues. So, technical conversation is needed. So we need to have a good speaking skill to understand each other better. (EE2)

> Equally it means they can talk to department head who is currently an expatriate. So then the language part will be critical. The verbal communications are still essential for things like instructional manuals and technical data. The general engineers again it's not so critical because they can speak English. … It would probably be on a daily basis. The hard

mechanic would be fallen up with this team to guide them and focus on the important machinery. So that conversation would be happening almost continuously with the different mechanics because you appreciate that. If the machinery is broken, production cannot continue. So there is a pressure. If the mechanic cannot fix it quickly, he is so escalated. So the discussion is very constant in that respect. (EEmp1)

But for foreigners' communication there are lots of engineers coming from different countries here. For everyday communication our engineers are interacting and communicating with them. They may not interact through the phone or emails. But physically they communicate personally face to face and share their knowledge and attend seminars as well. (EE1)

There is a daily communication with our customers; they are international investors. In our case we are the ones who are managing the whole industrial parks. We are working in the IPDC, Hawassa Branch. So, that means our office is managing the whole Hawassa Industrial Park. All of the investors have rented the shades and we give them the necessary facilities. We have to make sure that they are getting every facility in a proper way. (EE3)

ii. Making Oral Reports or Presentations

The other speaking task that engineers were required to carry out for their workplace communication was making oral reports of their own and other employees' work performance and related issues to their foreign supervisors, employers or management body to whom they were accountable for privately in their offices or publicly for an audience. Apart from the formal written report they produced and submitted, particularly those engineers who were in charge of certain sections or team also were needed to give oral reports quite frequently to the concerned managerial bodies explaining how they were executing their responsibilities or what challenges they were facing. The following were some of evidences from the participants' responses.

The production departments are our customers. Whatever they require we have to provide them. We have a deep (detailed) reporting to the management. Whatever problems happen here we have to explain to our management in the way they can understand. Actually most

of our management members are not engineers, so we have to explain in an understandable way in English. We are reporting to our engineering head office to get whatever support we need and to give whatever support they need. (EE1)

We express our ideas, share with other people that is using English. And sometimes we just have presentations, for example, for higher government officials. We just report how the construction project is progressing to the government or to the clients in English. (EEmp2)

If they are at a senior or supervisory level, they have to make the report in English. They have to follow how we are making the report. (EEmp3)

iii. Participating in Meetings

According to the respondents, the engineers were also required to attend and discuss their day to day encounters in a meeting on a regular basis in their specific work unit or department or at a company level in solving problems and improving their own and others' performance and productivity. In addition, those engineers who were facilitators under HIP, supervisors or heads of different departments and sections were sometimes required to participate in meetings at national or international levels and discuss issues related to industrial parks development and management. Consequently, the engineers were selected to participate in such national and international meetings and seminars based on their abilities of expressing themselves and contributing to it in English.

Every morning we usually have a meeting before we start our daily work. We discuss any issues or problems that we are encountering or our department is facing. Then the group members suggest their ideas or solutions to solve the problem. So, we have to listen to that to improve work efficiency. (EE3)

And sometimes we are also required to attend meetings. Not long ago I was in Addis Ababa participating in a meeting with personnel from different international companies. Actually, my speaking skill and my language skills benefitted me a lot. If you have a good speaking skill, it helps you a lot in the engineering works. (EE2)

iv. Participating and/or Giving Seminars and Trainings

The other type of speaking task that the engineers were required to carry out was participating at national and international seminars and trainings especially for those engineers who were working

under HIPDC and other engineers who were working at a supervisory positions or senior levels of different companies on how to manage industrial parks. In addition, they were also regularly needed to prepare and give trainings to those who were working at operation, safety and compliance sections on firefighting, first aid and so on by expert engineers from HIPDC or their own experts from each company.

> For example, in the last two years we participated in two seminars abroad. That means, in China. Actually, the entire seminar was given in English. It is about industrial parks management and from the engineering perspective we take some examples from China. … So, all the training was given in English on how they developed their industrial parks. There was also a discussion. It was both seminar and training. And also we give them some kinds of training. …For example, sometimes we prepare training, so it should be delivered in English. So, English speaking skill is very important. We give the training to the safety compliance of the investors for each company. (EE3)

> There are different ways of attendances like compliance related presentations on safety training. This is a safety working area of a company which works for the social comfort of the company. These are mainly on the safety related issues like firefighting, first aid, and feel safety. Everybody should comply with the standard requirements set by the buyers of our products. There are some basic standards that we need to fulfill. (EE1)

v. Telephone Conversations

Based on the participants' response, the engineers particularly those who were in charge of facilitating the whole HIP or managing certain sections of a particular company were required to make or receive a lot of telephone calls almost constantly. Participants EEmp3 and EE1stressed the need to talk on the phone was very high and this would follow you wherever you were, and sometimes even at home at midnight as follows:

> Yes, every time. This is a big plant so the maintenance and the equipment are very tough. So we are communicating and explaining the problems every time when we are in the office or outside. They call and report every problem to us. If it is possible, we try to solve from here. If it is not and if they don't understand, we go to the plant and solve the problem or guide them. (EEmp3)

> That (our work) needs telephone communication. You may be required to answer their phone calls and explain something to them when they faced any problem in your

> department. Once upon time they called me and asked me to come to the park at midnight because they couldn't understand the operator on duty as I am the head of the department. We also communicate with our main company heads that are found in Hong Kong office in English actually. (EE1)

This was also observed by the researcher during his data collection period in the park while he was conducting interviews with the engineers that they were forced to pause the interviews a number of times to respond to the telephone calls. In addition, when he was contacting different engineers and administering questionnaires in at least ten of the companies in the park, he observed that many of them had to apologize the researcher for interrupting the talk with him to answer the telephone conversation. In fact, most of the telephone conversations he observed were made in English. This indicates that the need of making telephone conversations by the engineers is very high.

4.2.3.4 Work-related Listening Tasks

According to the respondents in the interview, the level of need of carrying out the listening tasks in foreign companies was very high, even more important than performing the speaking tasks for the engineers' workplace communication. Since the engineers were mostly facilitators and service providers for their foreign investors or employers, they were more required to listen to them than to talk in their day to day work experiences. As the employers or supervisors had different English language backgrounds or accents, the engineers reported that they often faced problems in understanding what their customers wanted them to do. Next, the more common and more highly needed listening tasks for the engineers' workplace communication have been presented.

i. Listening to Instructions or Advice

Based on the participants' responses, listening to their supervisors or seniors' instructions or advice stood out as the most common and most frequent listening task for engineers' workplace communication. Since the engineers were facilitators or service providers to their foreign customers or employers in the park or in a particular company, they were often required to take instructions, requests or advice to execute their responsibilities effectively. The foreign company owners wanted or required the engineers to carry out different activities for them through listening to their instructions first. In addition, in order to carry out their duties and tasks effectively, the engineers

needed to have a good listening ability as their foreign employers came from different countries and had different English accents which were sometimes a bit difficult for them to understand. In this regard, all the participant engineers and employers emphasized the need of engineers to execute this task:

> As I told you the most basic positions are held by the foreigners, so we should have to listen to them. We have to understand what they actually need. If there is no a good listening skill, there will be a miscommunication. That means there is no work anyhow. As we are a supporting team, maybe someone has got some electric problem, they explain the problem to the electrical engineer what is happening. The electrical engineer should understand the problem by listening and then give a solution. Most of the key positions are handled by foreigners. Requests come from them and we have to understand them. (EE1)

> It is very important as speaking. Even it is more important than speaking because you need to understand what they are saying. So, most of the time what is giving us a hard time is many people are from different parts of the world and they have their own accents of speaking English. They want to say something, but they cannot easily express it in clear and understandable English. You need to get used to listening to these people. So you need to be very smart on that. (EE2)

> That is I think the best thing from a communication part. If you don't listen well, how can you respond to them? How can you communicate? Not only as an engineer, but also as staff you have to listen to them well. They are our honorable guests and customers. So, you have to listen to them very carefully and you should be very polite while you respond. So you have to listen when we take their orders and requests. (EE3)

> For the routine work normally we just do communications because we sometimes give instructions to our local employees and also communication is the most important. Once we give instructions to our local staff, they have to listen it. They have to fully understand it. So, if their listening is not good, maybe it is difficult to understand what our foreign company gives them to do. So listening is important. (EEmp1)

ii. Listening to Meeting Discussions

The other very common and very frequent listening task for the engineers' workplace communication, mainly for those in charge of supervisor or facilitator positions was listening to meeting discussions. The respondents stressed the need to listen to meetings as they were required to attend meetings almost every morning for evaluating their daily performances and making

improvements with their foreign employers and supervisors. That is, every morning before they started their daily work, they were required to sit down in a meeting room to discuss their daily encounters with the team members who were working together in one department or management meetings at a company level. In this regard, the responses of EE1, EE3 and EE2 testified for this need:

> We have a deep reporting to the management (in a meeting). Whatever problems happen here we have to explain to our management in the way they can understand. Actually most of our management members are not engineers, so we have to explain in an understandable way in English. We are reporting to our engineering head office to get whatever support we need and to give whatever support they need. (EE1)

> Every morning we usually have a meeting before we start our daily work. We discuss any issues or problems that we are encountering or our department is facing. Then the group members suggest their ideas or solutions to solve the problem. So, we have to listen to that to improve work efficiency. (EE3)

> And sometimes we are also required to attend meetings. Not long ago I was in Addis Ababa participating in a meeting with personnel from different international companies. (EE2)

iii. **Listening to Trainings and Seminars**

In addition, the engineers were also required to attend and listen to different trainings and seminars related with safety compliance, installation, maintenance and other related issues on how to manage industrial parks inside the park or outside at national or international levels. These trainings and seminars were usually arranged and given by foreigners or Ethiopian engineers in English. Therefore, the engineers needed a good listening skill to listen to such important trainings and seminars locally and internationally.

> There are different ways of attendance like compliance related presentations (trainings). This is a safety working area of a company which works for the social comfort of the company. These are mainly on the safety related issues like firefighting, first aid, and feel safety. Everybody should comply with the standard requirements set by the buyers of our products. There are some basic standards that we need to fulfill. (EE1)

> For example, in the last two years we participated in two seminars abroad. That means, in China. Actually, the entire seminar was given in English. It is about industrial parks management and from the engineering perspective we take some examples from China. …

So, all the training was given in English on how they developed their industrial parks. There was also a discussion. It was both seminar and training. (EE3)

iv. Listening to Compact Discs (CDs)

In addition to the above major listening tasks, the engineers were sometimes required to listen to different compact discs or videos that were attached and sent with the products such as sewing machines, generators or boilers on how to operate them properly apart from the written manuals.

There are also CDs (compact discs) coming with the machines for somebody to listen and understand. So, these are the ways they are delivering the services with the machines. (EE1)

4.2.4 English Language problems/Difficulties of Engineering Students and Engineers

4.2.4.1 English Language problems of engineering Students for their Academic Study

Besides investigating the tasks that engineering students needed for their academic study and workplace communication, this study also attempted to examine the English language problems or difficulties that these students experience while carrying out the tasks during their academic study at university and in their future career and the reasons behind these problems. While it was true that engineering students experienced difficulties in the other skills as well, for example, in critical reading and listening to native speakers, based on the responses of the participants to this research question, it was identified that speaking in general and making oral presentations in particular, and producing coherent and accurate piece of writing stood out as the most difficult tasks for engineering students. Next, let us see each one in turn.

4.2.4.1.1 Speaking Problems or Difficulties and the Reasons behind them

Almost all of the participants of engineering instructors, engineering students, and English instructors admitted that the first and most difficult academic tasks for engineering students were speaking tasks in general and making oral presentations in front of their classmates and instructors in particular. The respondents stressed that many engineering students experienced difficulty when they were required to make presentations of their internship reports, research proposals and research reports and so on. They expressed this difficulty as some of the students were frustrated to speak or become uncomfortable and could not explain their ideas clearly in English in front of their classmates and teachers. As a result, they started making their presentations or explaining their

ideas in English, but they immediately found it difficult to continue and finish in English and shifted the medium into Amharic by saying 'I mean …'

They explained the seriousness of this problem as follows:

> The first one is presentation. During presentations students won't be able to explain what they are trying to say, what they know or what they think. They have detailed information about it but they lack the ability to explain. You know the teachers give grades on what they hear or listen. So if they are not able to express themselves, they won't get good grades. They won't be understood by their teachers. (ES3)

> From my observation the speaking part is difficult. Maybe it is because of their background or some individuals may fear to stand in front of their classmates and also instructors. Anyway the hardest and most difficult part is speaking, …but while presenting they don't even have experiences. There, they feel ashamed to stand and also there is language barrier. (EI4)

> But in my experience I found that speaking is a very big problem for them. May be some of them want to speak but they are frustrated. They will say like: what if my accent is not good? What if my grammar is not correct? Maybe the students may laugh at me. So I found out that many of them don't like to speak. They would like to read, they like to write, but to speak out loud is very challenging for them. (EI5)

1. Reasons for the Problems of Speaking

The researcher also attempted to elicit from the informants the potential factors that resulted in engineering students' very low level of performance in making presentations and defending their works. The following were some of the reasons identified behind their poor level of speaking performances:

i. Poor Backgrounds of Students' speaking English

The first and most contributing factor for engineering students' speaking difficulty or problems was their poor background of speaking English. Based on the participants' responses, particularly most of the students who came from government schools had barely ample opportunities of practicing speaking in front of their classmates and teachers probably due to large class size, lack of teacher commitment, poor teacher training or other reasons. Consequently, these students experienced the most difficulty whenever they were asked to speak or make presentations in English at university because of their lack of exposure at their primary or secondary schools. Similar to any other language

skill, the development of speaking skill in general or making presentations in particular highly depends on one's exposure to practice it. In addition, making presentations or public speaking also needs training on how to prepare the speech, how to organize it, how to practice and finally how to deliver it and manage speech anxiety. It appears that most of the engineering students had neither the exposure nor the necessary skills on how to make well-organized presentations in their senior or final years at HU.

> From my observation the speaking part is difficult. Maybe it is because of their background or some individuals may fear to stand in front of their classmates and also instructors. Anyway the hardest and most difficult part is speaking because in the other areas for example, in the writing they may refer different books, google different sites but while presenting they don't even have experiences. There, they feel ashamed to stand and also there is language barrier. (EI4)

> One of the challenges is their background because most of them come from government schools. Students from government schools do not have the required level of proficiency. (EngI1)

> Engineering students face a lot of obstacles due to English language because everyone in the university came from different kinds of backgrounds or areas. Most of the students learned in government schools and some are from private schools. So, how they learned English language is different from those who come from government schools. And when they learn, everything depends on their teachers. For example, in my primary school, our English teachers force (encourage) us to do dramas and dialogues. Like that every time we exercise these in English. Our tongues are flexible. And the speaking part needs exercise (practice) and these students didn't develop that exercise (skill). Maybe it's because of their teachers didn't give them such assignments and force them to do these things. And they don't have a society who speaks English. The third may be they don't have interest to do that. Until it's a must to do it, it's a very hard for them because their tongues are not flexible to talk. (ES1)

> I think the first problem is their background of learning English, the place they come from. They did not get good English learning opportunities. (ES3)

> And lower grade schools don't provide the basis. And also when we compare with private schools, public schools do not provide students with good chances to practice speaking. (ES4)

ii. Limited Opportunities of Making presentations at University

Besides their poor background of speaking English, the other major reason for engineering students' difficulty of making presentations was that they were not often encouraged or asked to present their works in class by their instructors at university through which they could develop the skill of making presentations in front of others. On the contrary, they were provided with very limited opportunities of making presentations in their final years at university, three or four times throughout their five years stay at university; as a result, they found these tasks the most frustrating and difficult for them to perform. Because of their large class size and tight schedules, the informants reported that most instructors evaluated their students' works simply by collecting their written assignments and assigning marks without letting students present their works. The following are some of the evidences:

> They are actually our products actually. That is, most of the problems are the instructors' only (also). We do not provide them that platform to present what they have done. For example, we collect their assignments, we evaluate them and we give them marks only. The class size is very large and difficult to manage actually. There are still some instructors who are arranging assignments and semester projects for presentation. But most of us simply collect and evaluate and give marks. Even they don't evaluate their language. The class size is one thing but from my experience I haven't observed instructors at least trying to do that. (EI3)

> The time also does not permit us. The class size is very large and usually the second semester is very tight to present. There are many closings and holidays, but there are critical tasks that must be presented. But in the lower levels (freshman and junior years), except for asking and answering in the classroom, I don't think there are as such big tasks to be given and presented. (EI4)

In fact, the effects of providing very few speaking opportunities (presentations) to engineering students at university was not only limited there but its negative effects also affects their future academic and professional lives of engineers as some of the informant instructors and engineers underscored this from their experience and observation. For instance, as one participant engineering instructor (EI1) lamented his observation of this during his scholarship in the Netherlands, many Ethiopian students who were pursuing their M.A. and Ph.D. studies there had the difficulty of

confidently presenting their works orally in front of the audience although they were very hard working and competent in the written exams and paper works.

> Yes, but I see the effect of this lack of sufficient presentation time for the students in senior level. When I was doing my second degree in the Netherlands, you know, by chance there were a lot of Ethiopians who got the scholarship and pursuing their Master's degree. So, one professor who was teaching there understood the problem with the Ethiopian students. He said that the Ethiopian students are very good at written exams, but you know in foreign countries I have followed group work and presentations are very frequent and really tough kind of assessment. So in such kinds of events the Ethiopian students are lacking. They are not confident enough to present what they have done. They have already executed the job, but some other group members from other countries were presenting. So he said: "You really don't need to be shy; you have to present it; you have to dare to speak; otherwise, we don't know whether you have done it or not. So, that was the observation by one of the professors there. Even my senior students who were doing their PhDs in that same university were usually fearful to speak in front of the audience. (EI1)

Furthermore, the participant graduating students and graduates also complained that this lack of providing sufficient speaking opportunities at university has affected their confidences of making presentations and carrying out conversations with foreigners later at workplaces in foreign companies. Informants EE1 and ES3 expressed this as follows:

> Actually most of our people, especially the engineers are academically or technically good. But most of the time their spoken English is of a very low quality. Sometimes there are misunderstandings I have observed here. This is our challenge. The Asian English is somehow different from the others. Sometimes you may be confused by their English. The way they speak English is not the proper way. The correct sentence order is not there. They speak as they like. They only assemble words and implement like that, no arrangement, no proper English actually. (EE1)

> … even if they want to share their information, they can't do so. The interviewers (employers) don't want to have a hard time understanding people, they want people that make their life easier or easily understand them. (ES3)

iii. Lack of engineering instructors' Modeling themselves in using English

The other potential factor for the students' speaking difficulty could be associated with the failure or inability of quite many of the engineering instructors in modeling themselves in teaching their

courses using English in the classroom. That is, engineering students did not often have ample opportunities of acquiring and imitating good spoken English while their instructors were teaching their courses using it in class or in lab rooms. Almost all of the informant engineering instructors and students underscored that except a few experienced and competent instructors, many of them were less experienced and less qualified and had the difficulty of explaining their ideas clearly in English, and as a result they simply read their lecture slides and gave explanations in Amharic sometimes mixing up English and Amharic. Thus, they often failed to present themselves as good users of English for their students so that they could imitate them and build their confidences of speaking English. The following responses attest this:

> But the problem is when they are teaching; they try to teach the students in Amharic. They read the slides on the projectors or in hard copy papers in English, but they try to teach (explain) in Amharic. I think the problem for this is not only on the students but also the teachers. They know very well, but when they teach there is a gap because it's not effective. They use and take a lot of time to explain a given concept and it's not understandable for the students. By the way this is not the case for all of the teachers but for some instructors. There are some instructors who are very good in explaining everything in English in a very clear way. (ES2)

> Mostly because of lack of motivation, most of the Ethiopian teachers don't teach in English only. They mix it up with Amharic and other local languages. And such things mostly hinder the students. Students don't feel to try speaking in English. (ES5)

> I believe that other subject teachers are also English teachers. If they don't deliver their lessons in English medium institutions very well in English, directly or indirectly students may not get exposure to learn English because the only environment students have opportunities is the classrooms. So, those engineering instructors are teaching in Amharic or other languages that could be one major factor. I have conducted one research when I was at Dilla University on using English as a medium of instruction in content classes. I observed some instructors; half of the teachers use Amharic in their classes. An English teacher has three or four hours per week, but the major subject teachers have more than 30 hours per week. So if those subject teachers are competent and deliver their lessons only in English with good English, the students can get English experience implicitly. So that could be one factor. (EngI1)

> The problem is not only in our students but also in our instructors because we are flowing

through the same pipe. Unless we change that pipe, the output is always the same. I see difficulties in different areas, in pronunciation and so on, so we need to work hard in those areas. (EI4)

iv. Large Class Size

Some of the reasons according to the participants' response were because of the large class size it was unmanageable to often let students carry out presentations, the trend of over-reliance of instructors on written individual or group assignments and reports for easier assessment based on the modular curriculum approach and due to their poor background of speaking experience, the students lacked interest and performed very poorly even when they were asked to make oral presentations.

4.2.4.1.2 Writing Problems of Engineering Students and their Reasons

Next to the speaking tasks, the participant students and instructors reported that engineering students experienced higher level of difficulty in carrying out different writing tasks for their academic study. The writing tasks that these students experienced the most amount of difficulty included writing internship reports, writing research proposals and writing final research projects or thesis. The respondents stressed that the most common limitations or errors noticed in these students' written works were the problems of both content and format. First, they had the problems of organizing content in some logical order. That is, they failed to put related ideas in a coherent way, for instance, arranging sentences in order of their occurrence in time or procedures of doing something from starting to its finishing and using appropriate cohesive devices. Moreover, the participant English and engineering instructors complained that their students' reports or other written assignments contained a lot of unrelated and fragment sentences written in informal English which was inappropriate for an academic context. The other major problem was also their failure to observe the conventions of writing such as using inappropriate formats, ungrammatical sentences, incorrect punctuation, capitalization and spelling.

> The first thing is they can't articulate things together. If you take the writing, the tense issues are there, even organizing the content. When you are reading their report, you can't get consistency even in a single paragraph. The first statement is talking about one thing and the second is about a different thing. The other is there is a problem in presenting the

introduction, the body and the conclusion of their writings. It is also associated with lack of technical knowledge. They don't actually know what they are writing. They also don't give attention to format and mechanical issues like spelling and capitalization. … The other thing is if you see their thesis, you can see citation problems. They don't know how to cite, what the styles are and how to organize those things. (EI3)

The other could be those from private schools also have difficulties. They usually use more informal English, not the required academic English. The academic English and informal English are different. So they use very informal texts when they write paragraphs. So regarding the difficulties I feel writing is the most difficult skill for them during my teaching experience. For example I have taught Basic Writing to civil engineering students some two or three years back at this university. They can read and comprehend, but to write a paragraph and essay or a kind of report, they have lots of difficulties. They have lack of producing ideas, organizing a paragraph or an essay and stating their ideas clearly. And they write lots of sentences which are not related. They have the problem to write in concise and clear English. So, one of the major difficulties for them is writing. In their writing they have challenges of using appropriate vocabulary and grammar. (EngI1)

They have serious challenges in writing. They try to write what they speak. Spoken and written English are different. They don't give emphasis to mechanical aspects of writing. For example, they write the first person 'I' in small letter. They don't worry about the punctuations, grammar elements, and they have such kinds of writing problems. (EngI2)

From my observation it is particularly in the writing skills. Some of the students do not have the basic skills, and knowledge of how to compose ideas, how to express their ideas in English. … Even they don't know how the language works, the grammar. They do not have the exposure to the language. For example, when you ask them to write a paragraph or a sentence, they don't know even the mechanical issues, content problems, organizational problems. (EngI3)

Similar to the problems of speaking, the writing problems of engineering students had their own reasons based on the responses of the participants. The first one could be the students' lack of practice in writing at secondary schools. English teachers might not have exposed these students to writing for various reasons like large class size, lack of commitment, poor training and so on. As a result, there was a mismatch between teaching and testing as the teachers focus on language aspects such as reading, grammar and vocabulary ignoring especially the productive skills.

One is I think lack of practice. I don't think if students have well practiced writing when they were at high schools. Another is there is a mismatch between teaching and testing

> because at secondary level most teachers focus mostly on grammar than other skills. Similarly, for example, writing is not included, especially those productive skills. I think these are the major factors that make students to experience difficulties in these areas. (EngI1)

4.2.4.2 English Language problems of engineers for Workplace Communication

As making oral presentations was the most difficult and demanding task for engineering students in their academic study at HU, engineers working at foreign companies of HIP found carrying out writing tasks particularly writing formal business letters the most difficult and demanding. Both the participant employers and engineers openly admitted that the engineers needed to improve their writing of business letters because it was an official document and it must be written formally in accordance with the standards set and conventions of business letter writing. The engineers admitted that this difficulty resulted from lack of adequate or no exposure to business letters at university stay. According to the participants, writing in general was demanding and writing business letters was in particular requires accuracy of language and formality. Writing was especially difficult for the engineers because unlike speaking and listening in which they were just required to communicate or understand each other, in writing they were highly required to be accurate and formal.

> Personally, I think writing is more difficult because we write letters for maintenance to international companies. You need to meet the standards to be very formal. So due to our teaching process we are not get used to this formal writing and the writing part is a little bit difficult. But the speaking and listening skills you are expected to understand each other. So they will also understand because English is not our first language. But the letter you are writing and which is sent to a company will reach everybody. It needs to be as formal as it can be because once it is written and sent, there is no chance to explain what you want to say. (EE2)

> In my perspective, I would say writing because while you write it becomes testimony for everybody. They are living documents. So you have to be very careful while you write. Writing is very sensitive. In speaking for example you can readjust and correct yourself. But in writing once you write and send or give it to others, it is no longer in your control. You have to be very careful while you write business letters and also reports. So your report and everything you write should be to the standard and should be very formal. (EE3)

In addition to the writing problems, the engineers also faced problems from high accents or non-standard pronunciations of non-native speakers of English, particularly the Asian speakers because of their accents were highly influenced by their first languages. One Chinese employer confirmed this and he believed that they were giving some kind of hard time for the local staff, i.e. Ethiopian engineers and other employees working with them.

> I think they face some problems with Chinese or Indian accents because some of the Chinese accents are not very correct. Maybe we give some difficulty for the local staff. And also the way some Indians say, their accent is not clear. But there is no problem with native English speakers or Europeans. The Americans and other Europeans speak more clearly and it is easier for them to understand. (Emp2)

4.2.5 Results of Classroom Observation

In order to verify the genuineness of the participants' responses about the importance of carrying out speaking tasks for academic study and the related problems or difficulties, the researcher also conducted classroom observation while some engineering department students were making presentations on their internship reports, and final year research projects at three departments, namely Chemical engineering, Mechanical engineering and Hydraulic engineering. Consequently, the researcher observed that the majority of the students were simply reading the prepared slides with little explanation in English and sometimes explaining certain points in Amharic. For the internships, the presentation was individual in which each student was making the oral report of the internship activity they carried out during the four months at different companies or factories in relation to their fields of study. After each student made the presentation for about 15 minutes, it was followed by responding to the questions of a board of 3 to 5 examining instructors for about 10 to 15 minutes with a set of criteria.

While listening to questions from the examiners, some of the students were observed to have difficulty of listening as they got closer and closer to the examiners, and asked for repetition a number of times. And in responding to the questions the examiners raised, the students mostly started in English and shortly switched the medium into Amharic. It was also observed that the examiners tolerated the students' use of Amharic and the medium of the defense session became Amharic afterwards.

During the final year research project defense sessions the presentations were in groups ranging from 3 to 4 in Mechanical and Chemical engineering departments and 6 to 8 in Hydraulic and civil engineering departments. The students presented part of the research project using the power point slides and at the end the examiners asked them certain questions to verify the procedures and genuineness of the research project.

4.3 Analysis of English Course Materials/Modules

The purpose of analyzing course materials was to see whether the currently used English courses would address the English language needs of engineering students for their academic and future workplace communication. Hence, the analysis was carried out based on whether the currently used course modules contain entirely or partly the identified English language needs of engineering students for their academic study and future workplace communication using the instruments employed for this study in the previous sections.

The main reason behind focusing on the currently in use course books (modules) was that to look for ways of improving them for future use.

4.3.1 The General Overview of the Course Books (Modules)

The modules for the Courses Communicative English Skills I (EnLa 101) and Communicative English Skills II (EnLa 102) were written for all first year students who are joining Ethiopian universities. Each module had commonly five units with emphasis given to different skills and language areas. The course book for 'Communicative English Skills I' focused primarily on the listening and reading skills and attempted to integrate these two skills with speaking and writing activities while 'Communicative English Skills II' claimed to mainly target on developing the students' productive skills (speaking and writing skills) integrating these skills with reading and listening activities as indicated in the introduction part of Module One.

4.3.2 Brief Analysis of the course book of 'Communicative English Skills I (EnLa 101)'

The module clearly stated that the main objective of the course was to enable the students to communicate in English with acceptable accuracy and fluency by using English appropriately in different contexts in congruence with the objectives of the Communicative English Skills Syllabus

in the Modular Curriculum. In addition, it described the detailed general and specific objectives of the course and the respective units in terms of the language skills and areas of grammar focus and the level of proficiency required of the students. The module contained a table of contents so that everybody could make use of the material easily. The course book was organized around multi-layered syllabus types of topical, skills-based and structural syllabuses according to Brown (1995) in that all the skills-based and grammatical and lexical activities were developed around the topical issues raised in each unit such as Study Skills, Health and Fitness, Cultural Values, Wildlife, and Population. It was skills-based since different language skills and strategies developing these skills such as listening to lecture, listening for a gist, listening for specific information, purposes of reading, and so on were thoroughly treated and presented. The course book was also structural as it presented different grammar points such as modals, tense, conditionals, voice and revisions of these and strategies of learning vocabulary such as guessing meaning from context, denotative and connotative meaning, and collocation.

Each unit had seven sections: listening, grammar, reading, grammar, reflections, self-assessment and summary. This course book attempted to give due attention to the 'listening skills' which appeared to have been often neglected in many other Communicative English course books to the best of the researcher's knowledge. To this end, each unit began with the 'listening section', which was not very common in other course books of similar kinds, with potentially interesting topics and detailed activities.

Although the module was very elaborate in its organization and description of general and specific objectives, it was silent with regard to whether the course book was developed on the identified target and learning needs of students. It was of a general academic English nature in its appearance in that it did not target any group of students.

4.3.3 Brief Analysis of The Course book for "Communicative English Skills II (EnLa 102)"

Unfortunately, the course book (module) for 'Communicative English Skills II' did not provide a clear description of the general and specific objectives about the course either. The module also did not specify who the writer(s) was or were. It directly began with 'Unit One' and a very brief description about that the topic of the unit was 'Life Skills' and that the activities in the unit would

help students develop their speaking, reading, and writing skills and the grammar focus to be learnt in the unit. In the same way each unit provided a brief description of the lessons or activities and the expected outcomes or objectives at the end.

Similar to Module I, this module also comprised five units and each unit presented four sections namely reading, grammar, speaking and writing. In fact, an attempt has been made to make the activities in each unit and section communicative and contextualized.

CHAPTER FIVE

5. DISCUSSION OF RESULTS

This chapter presents the discussion or interpretation of both the quantitative and qualitative data analysis carried out in Chapter 4. As it was described in the Introduction Chapter, the main objective of this study was to identify the academic and work-related English language needs of undergraduate engineering students at HU. The purpose of this chapter is, therefore, to merge the results from the quantitative and qualitative sources and then compare and contrast them with other current studies. Hence, the discussion is made against each research question given in the Introduction Chapter in the same order. These research questions are:

(1) Which English language skills do engineering students need most for their academic study and future workplace communication?

(2) What are the current English proficiency levels of engineering students at HU and Engineering employees at HIP?

(3) What are the academic English language needs of undergraduate engineering students in terms of the target skills-based tasks they are required to carry out at HU?

(4) What are the work-related English language needs of engineers working at foreign companies in terms of the target skills-based tasks?

(5) What are the English language problems/difficulties of undergraduate engineering students at HU? What does the students' current English language proficiency in standard tests look like?

(6) How far do the currently used English course materials address the academic and work-related English language needs of engineering students?

(7) a. Is there is a statistically significant mean difference between the different groups of respondents of engineering students and engineering instructors in the perceived English language proficiency of engineering students at HU?

b. Is there is a statistically significant mean difference between the different groups of respondents of engineering students and engineering instructors in the academic English needs of engineering students at HU?

c. Is there a statistically significant mean difference among the respondents of engineering students, instructors and engineers (employees) in the future work-related English language needs of engineering students at HU?

5.1 Important language skills for engineering students' Academic study and Workplace Communication

5.1.1 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. 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 probably 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.

The qualitative results from interviews of the participant engineering students and engineering instructors also indicated that the most important English skills for engineering study appeared to be the literacy skills followed by the oral skills which also confirmed the quantitative results of the engineering instructors' response given above. 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 participants 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 because 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 online sources 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. Similar findings were also reported in Buriro and Soomro's study (2013) where engineering instructors rated the reading skill as the most important for engineering study closely followed by writing while engineering students preferred the productive skills over the receptive skills.

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. Probably this could be one of the reasons why the students did not properly develop their speaking skills and experienced the highest amount of difficulty in this skill whenever they were required to make presentations as most of the respondents expressed it in response to questionnaires and interviews, and as the researcher also observed the defense sessions of their internships and final year projects.

5.1.2 Important Language skills for Engineers' Workplace communication

Based on the results of the questionnaire, the respondent engineers at Hawassa Industrial Park appeared to place the highest level of importance to the listening skill and followed by the reading

skill, and then speaking and writing skills. This shows that the receptive skills were more important than the productive skills in the foreign company work situations. The interview results from the participant engineers and their employers at HIP partly support this finding when they replied that especially for engineers working at foreign companies like theirs, the oral skills are by far more important than the literacy skills because most of their daily communications involved the oral skills, with the listening skill being the most needed followed by speaking skill. The listening skill stood first since most of their daily work activities were related with listening to what their employers or supervisors required them to do like taking their instructions or advice. Next to listening skill comes the speaking skill because they are often required to carry out mostly technical conversations with their supervisors or production managers about their daily tasks and duties.

Although the writing skill was mentioned as the second most important in the quantitative results, the interview results show it was in the third place since they were mostly required to write performance reports, and only sometimes to write different business letters and write order sheets, and at last they placed the reading skill because they were not required to read different documents as frequently as they did the other skills.

On the other hand, based on the responses of the participant engineering instructors at HU who had vast experiences of working as consultants for different governmental and non-governmental organizations, all English skills were needed at various degrees depending on what the engineers were doing with whom and for which organization considering the wider context. This implies that the responses of the engineers and their employers were based on their experiences of the foreign companies the engineers were working at whereas the engineering instructors' replies appeared to consider the wider picture that all the engineers could be working at. In accordance with this, Spence and Liu's (2013) and Kawpet's (2009) studies about the engineers' workplace communication need respectively at a Semiconductor Manufacturing Company in Taiwan and at different Thai companies in Thailand also found out that all four English skills were required for their workplace communication. However, in their studies the reading and writing skills were of particular importance as these skills were used as the basic for the vast majority of the engineers in a stark contrast to the finding of this study in the foreign companies of HIP. Another study by Cal et al. (2022) in the context of Turkish companies showed that English played a major role in employment and career

advancement of engineers, and the most important language skill was reading and the least important skill was speaking which is completely in contradiction with the results the present study.

5.2 English Language Proficiency of Engineering Students and Engineers

Based on the mean scores of the respondents of engineering students and engineering instructors for the English language proficiency level of engineering students in the questionnaire, from the highest proficiency to the lowest proficiency levels at HU were reading, listening, writing and speaking. In the same way, based on their mean scores, the English language proficiency of engineers working at HIP from the highest proficiency to the lowest proficiency levels were also reading, listening, writing and speaking. This implies that in the cases of both engineering students and engineers, the respondents perceived that they had the highest proficiency in reading and lowest proficiency in speaking.

Moreover, the grand means for the overall proficiency of English for the respondents of engineering students and engineering instructors were respectively 2.77 and 2.44 implying that engineering students at HU had good and average levels of English language proficiency based on the previously mentioned scheme by Pimentel (2010). However, the independent samples t-test results show that there is no significant mean difference between the two groups of respondents as the p-value (0.178) is greater than the cut of point 0.05. On the other hand, the grand mean score for the overall proficiency of English for the respondents of engineers at HIP was 3.22 suggesting that engineers had a good level of English language proficiency.

Furthermore, the results of the IELTS test scores of the participants of engineering students also confirmed the reality of the aforementioned results obtained through questionnaires, interviews and classroom observation. That is, the overall band score of the IELTS test for the participants of engineering students was 5 (**modest level of proficiency**) which means that the participants of engineering students at HU had partial command of English language, coping with overall meaning in most situations, though they were likely to make many mistakes. In addition, according to the Common European Framework of Reference for language ability (CEFR), which has six levels from “Beginner” to “Proficient user” of language, the engineering students’ overall band score fell under the “Lower-intermediate” level or first level of independent user of language ability.

Thus, there appears to be a relationship between the IELTS test overall band score result which is a modest/lower-intermediate level of proficiency and engineering instructors' response which falls under the 'average' level of proficiency whereas engineering students' response of good level of proficiency appears to deviate from the overall band score result to some extent.

5.3 Tasks for Engineering Students' Academic Study at HU

5.3.1 Academic Reading Tasks

Based on the quantitative results from both groups of respondents of engineering students and engineering instructors, it is possible to see that the most common and highly required academic reading tasks for engineering study at HU in a descending order of importance were the reading of textbooks (handouts), lecture notes/slides, exercises/test questions, reference books, research papers/thesis, and lab manuals. In addition, the grand mean scores of the respondents of engineering students and engineering instructors for the level of need of reading tasks were respectively 4.09 and 4.41. This suggests that in general engineering instructors placed greater level of importance for the academic reading tasks than did the respondents of engineering students. Moreover, the independent samples t-test also showed that there was a statistically significant mean difference in the academic reading needs of engineering students between the respondents of engineering students and engineering instructors at HU.

On the other hand, from the qualitative results 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. theses or projects, journal articles, and research methodology books. Some of these like reading lecture notes (slides) and reading handouts, reading references and reading lab manuals appeared to be the most common and frequent reading tasks needed throughout their engineering study period, whereas other tasks such as reading project manuals or codes and reading research materials were mostly needed in their final years.

Therefore, putting together both the quantitative and qualitative results, 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. Kawwet's (2009) study on the academic English needs of engineering students at Thai Universities also came up with similar findings. 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.

5.3.2 Academic Writing Tasks

Based on the quantitative results from both groups of the respondents of engineering students and engineering instructors, the most prominently required academic writing tasks for engineering study at HU in a descending order of importance appeared to be the writing of research proposals and research projects/thesis, internship reports, exam answers, lab reports, presentation slides and writing course work (library) assignments. In addition, the independent samples t-test also showed that there was no a statistically significant mean difference in the academic writing needs of engineering students between the respondents of engineering students and engineering instructors at HU. That means both groups of respondents responded to the level of need of carrying out academic writing tasks almost in the same way.

In the same token, from the qualitative results of participants' interviews, it appeared evident that engineering students were required 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 undergraduate study time. These tasks included mainly writing 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 very highly needed but infrequent writing tasks for engineering study especially in their senior years were the writing of internship reports, writing research project proposals and project/ thesis reports since they were required to carry out these tasks once in their final years.

Hence, by merging together the quantitative and qualitative results, it is possible to identify 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 (others writing included summary/reactions, case studies and library research paper.

5.3.3 Academic Speaking Tasks

According to the quantitative results the highly needed speaking tasks for engineering study in a descending order of importance were delivering oral presentation of their internships, research proposals and research reports and other coursework assignments, defending their works, introducing themselves and others in a variety of situations, asking and answering questions in class and lab sessions, and expressing their opinions or ideas in group discussions. In addition, the independent samples t-test also showed that there was no a statistically significant mean difference in the academic speaking needs of engineering students between the respondents of engineering students and instructors. This implies that both groups of respondents had similar perception on the level of need of carrying out the speaking tasks for engineering study at HU.

In the same way, based on the qualitative results while there were other speaking tasks such as asking and answering questions and expressing their opinions and ideas in group discussions, the most common and highly needed speaking tasks for engineering students were the presentation and defense of their internship reports, final year research or project proposals and reports or thesis. In addition, depending on the teachers' commitment and availability of time, instructors might require their students to make presentation of their course assignments such as case studies, term papers, mini projects and semester or design projects.

Merging together the quantitative and qualitative results, the more common and highly needed academic speaking tasks for engineering students were 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.

However, in comparison with the academic reading tasks and writing tasks, there were only fewer number of speaking tasks engineering students were required 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. Hence, this indicates that engineering students were not given sufficient opportunities of practicing and developing academic speaking tasks particularly delivering oral presentations on the pretext of large class size and time constraints.

5.3.4 Academic Listening Tasks

According to the quantitative results or the respondents of both engineering students and engineering instructors' questionnaire, the 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 and listening to/ watching internet resources such as Youtube lecture videos. In addition, the independent samples t-test also indicated that there was no a statistically significant mean difference in the academic listening needs of engineering students between the respondents of engineering students and instructors. This implies that both groups of respondents had similar perception on the level of need of carrying out the listening tasks for engineering study at HU.

The qualitative results also confirm the findings from the quantitative results, and the most common and frequent listening tasks for engineering students' academic study 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.

5.4 Tasks for Engineers' Workplace Communication at HIP

5.4.1 Work-related Reading Tasks

According to the quantitative results, the very frequent and highly needed reading tasks for engineers' workplace communication included reading product descriptions and manuals, reading safety signs and notices, reading training manuals, reading project documents and reading project reports. In addition, the one-way ANOVA result showed that there was a statistically significant mean difference in the work-related reading needs of engineering students among the respondents of engineering students and instructors at HU and engineers at HIP. The post hoc test that was run to see which groups of respondents the mean different exists indicated that a statistically significant mean difference was between the respondents of engineering students and instructors, and between instructors and engineers. However, there was no statistically significant mean difference between the respondents of engineering students and engineers. Thus, the source of difference was the highest grand mean score from the respondents of engineering instructors. (See Chapter 4, Section 4.1.3.1.)

This was probably because they had worked at different organizations before they joined university as academic staff or were still working with different government and non-government organizations/companies as consultants or when they sent or took their students to different organizations/companies for internships or shorter industry/field visits based on the researcher's informal conversations carried out with the engineering instructors during the long data collection period and the formal interviews carried out with them for the pilot and main study.

In addition, based on the qualitative results, the most common and most frequent work-related reading tasks for engineers involved the reading of different manuals (e.g. maintenance manuals, construction manuals, production manuals and so on) which varied from company to company depending on the kind of work they were doing. Moreover, some of the engineers particularly those working on the supervisory positions were also required to read office documents such as official business letters, contract documents, project reports and emails.

Merging together the quantitative and qualitative results, the more common reading tasks for engineers' workplace communication were reading product descriptions and manuals, reading

safety signs and notices, reading training manuals, reading project documents and reports, and reading business letters and e-mails. This implies that since the reading tasks engineers were required to read for their workplace communication were diverse and sometimes different from their specialty areas. Hence, they need to be prepared to manage all these reading tasks effectively in their stay at university. Similar kinds of findings were also reported in Çal, Admiraal & Mearns' (2022) and Chew's (2006) studies in which reading manuals and instructions was the most frequent reading task in the workplace for engineers.

5.4.2 Work-related writing tasks

Based on the quantitative results, the more common and highly required work-related writing tasks for engineers' workplace communication according to the respondents of engineering students and engineering instructors at HU were writing project proposals, writing project progress or completion reports, writing abstracts of projects, writing problem investigation reports, writing job applications and writing daily or periodic performance reports. On the other hand, according to the respondents of engineers at HIP the highly required writing tasks for their workplace communication were writing daily or periodic performance reports, writing e-mails, writing job applications, writing product descriptions and writing problem investigation reports.

The responses of engineering instructors for engineers' work-related writing tasks envisaged the wider context in which all of the graduate engineers could be carrying out when they are employed in different governmental and non-governmental organizations, whereas the engineers' responses appeared to be confined in scope and based on what they were actually doing in the foreign companies of HIP and did not appear to show the bigger picture that all graduate engineers could be engaged in. In addition, the one-way ANOVA showed that there was a statistically significant mean difference in the future work-related writing needs of engineering students at HU among the respondents of engineering students, instructors and engineers. The post hoc test that was run to see which groups of respondents the mean different exists indicated that there was a statistically significant mean difference between the respondents of engineering students and instructors, and between instructors and engineers and between the respondents of engineering students and engineers.

Based on the qualitative results the most common and most frequent writing task for engineers' workplace communication at HIP was the writing of daily or periodic performance and other reports. In addition, depending on the positions and the company the engineers are working for, some of them are also required to write formal business letters and emails to different local and global organizations.

Putting together both the quantitative and qualitative results, it is possible to identify that the more common writing tasks for engineers' workplace communication were writing daily or periodic performance reports, writing e-mails, writing job applications, writing product descriptions, writing project proposals, writing project progress or completion reports, business letters and writing problem investigation reports. While Kassim and Ali (2010) identified report and proposal-writing as the most important writing task for engineers' workplace communication which is similar to the findings in this study, Çal et al. (2022) found that writing presentation slides followed by writing emails and reports and Evans (2010) also mentioned writing e-mail messages as being the most important writing task.

5.4.3 Work-related Speaking Tasks

According to the quantitative results for the respondents of engineering students and engineering instructors the more common and highly needed speaking tasks for engineers' workplace communications were talking about everyday activities and duties at work with foreigners, giving job interviews, making business negotiations with foreign customers, talking on the phone with foreigners, and introducing themselves and others in a variety of situations. On the other hand, for engineers who were actually working at different foreign companies at HIP the top five highly required speaking tasks for engineers' workplace communication are introducing themselves and others in a variety of situations to their foreign supervisors and co-workers, talking on the phone, participating and contributing to meetings with foreigners, giving job and other interviews, talking about everyday activities and duties with their foreign supervisors or seniors.

From the quantitative results, it is possible to note that the priorities of engineering students and engineering instructors for work-related speaking tasks appeared to be more of a general communication and included such tasks as making business negotiations which was not given much

emphasis by the respondents of engineers at HIP in relation to their specific context. This could be because they were not as such required to make business negotiations in their workplaces. Engineers on their part appeared to give more emphasis to speaking tasks like participating and contributing to meetings. In general, from the three groups of respondents although in varying degrees of priority, the more common and highly required speaking tasks for engineers' workplace communication were talking about everyday activities and duties at work with foreigners, giving job and other work-related interviews, introducing themselves and others in a variety of situations and talking on the phone with their foreign supervisors and co-workers. On the other hand, the one-way ANOVA results showed that there were no statistically significant mean difference in the future work-related speaking needs of engineering students at HU among the three groups of respondents.

Based on the qualitative results, the more common and highly needed speaking tasks for engineers' workplace communication at HIP were making technical conversations with foreign supervisors or employers for providing different services, making oral reports or presentations about the company performances and related issues, participating and contributing to meetings, participating and/or giving seminars and trainings and talking on the phone with their foreign supervisors and customers.

In general, putting both quantitative and qualitative results together, it is possible to note that the more common and highly required speaking tasks for engineers' workplace communication were making technical conversations with foreign supervisors or employers while providing different services, making oral reports or presentations about the company performances and related issues, participating and contributing to meetings, participating and/or giving seminars and trainings, talking on the phone with their foreign supervisors and customers and introducing themselves and others in a variety of situations. Similar findings have also been reported in Spence and Liu's (2013) study at a semiconductor manufacturing company in Taiwan where process integration engineers commonly needed oral events that include meetings, teleconferences, and presentations.

5.4.4 Work-related Listening tasks

According to the quantitative results the most common and highly required listening task for engineers' workplace communication at foreign companies was listening to instructions or advice from their supervisors or seniors. The other highly needed work-related listening tasks were listening to trainings/seminars and listening to meeting discussions. In addition, the one-way ANOVA result also showed that there was no a statistically significant mean difference in the future work-related listening needs of engineering students at HU among the three groups of respondents.

Similarly, the qualitative results also confirmed that listening to their supervisors or seniors' instructions or advice stood out as the very highly and very frequently required listening task for engineers' workplace communication. Since the foreign supervisors and seniors had different English language backgrounds sometimes with hard accents, understanding their instructions or advice is essential for the engineers even for retaining their jobs. In addition, they were also required to listen to meeting discussions regularly and to attend and listen to trainings and seminars in relation to their work for their workplace communication at HIP. With a slight difference, a similar finding was reported in Çal, Admiraal & Mearns' (2022) study in which the most frequently practiced listening tasks were listening to presentations and meeting discussions.

5.5 Difficulty level of Carrying out Academic and Work-related Tasks

5.5.1 Level of Difficulty of Carrying out Academic Tasks for engineering students at HU

With regard to the level of difficulty of carrying out the more common academic tasks, the respondents of engineering students perceived the tasks were in general either easy or neutral for them to carry out. In the same token, the respondents of engineering instructors also replied that except for the academic writing and speaking tasks which they perceived as neutral or difficult, the reading and listening tasks were generally either neutral or easy.

Although the quantitative results from the responses of engineering students indicated that carrying out the academic tasks were generally easy or neutral, the qualitative results from semi-structured interviews and classroom observations indicated that many engineering students experience

difficulty in effectively carrying out particularly academic writing and speaking tasks. The specific tasks that engineering students experienced difficulty included writing well-organized and coherent internship reports and research proposals and research reports and making well-organized presentations and defending of their positions and expressing their ideas clearly in group discussions.

5.5.2 Level of Difficulty of Carrying out Work-related Tasks for Engineers at HIP

The results from the quantitative sources regarding the level of difficulty of carrying out work-related tasks of the engineers working at HIP suggest that except for a few tasks such as writing business letters and making business negotiations which were of a neutral difficulty for the participant engineers, the rest work-related tasks were generally easy for them to carry out. In addition, the engineers' response from the rating of their own perceived English language proficiency indicated that they had a good level of proficiency and the English skills from the least difficult to the most difficult were reading, listening, writing and speaking.

Similarly, the qualitative results also indicated that the engineers had more difficulty in writing and speaking skills in general. While it was not common for all engineers in the foreign companies of HIP, for those engineers who were required to produce, writing formal business letters and writing formal reports, and making business negotiations with foreign customers were of a particular difficulty. In addition, the engineers faced problems in listening to some of the foreign supervisors and managers, i.e. understanding some of the Asian employers' English accents because of their hard accents. This implies that the major difficulties that engineering students at HU and engineers at the foreign companies of HIP experienced revolved around speaking, writing and listening skills. Hence, English courses for engineering students should give due emphasis to writing, speaking skills to enhance their capacity so that they can properly carry out both the academic and work-related tasks more effectively.

5.6 On the Effectiveness of English Courses and Course Materials

The quantitative results appeared to suggest that the courses generally address the academic and work-related English needs of the participant engineering students at HU. However, for some of the items such as whether the English courses familiarized them with engineering vocabulary and

contained meaningful and motivating tasks for engineering fields, the majority of the respondents replied with uncertainty and disagreement. On the other hand, the qualitative results showed that the English courses and the topics and tasks were very general in their nature and they addressed the academic and work-related English needs of engineering students only to some extent. In addition, the overall analysis of the course books of Communicative English Skills I and II against the identified academic and work-related English needs of engineering students also showed that the course books only partly address the academic and workplace communication needs of engineering students.

CHAPTER SIX

6. SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter will conclude the study by summarizing the key research findings in relation to the research objectives and the value and contribution thereof. It will also highlight the implications of the findings for classroom use and a framework for a syllabus and the limitations of the study.

6.1 Summary and Conclusion

Based on the findings and the discussions carried out in the preceding chapters, the following conclusions could be drawn in line with the research questions.

6.1.1 English Skills important for Engineering Study and Workplace Communication

The first specific objective aimed to identify which English skills were of particular importance for undergraduate engineering students' academic study at HU and for engineers' workplace communication at Hawassa Industrial Park. This study achieved this objective by finding that all four English skills were important for engineering study in general. However, the literacy skills (reading and writing) were of a particular importance for engineering students' academic study over the oral skills (listening and speaking) at HU because most often these students were required to read different materials and documents, and communicate their understanding of these materials through the writing of various assignments and reports.

Similarly, concerning the English skills important for engineers' workplace communication, this study found that in general all skills were important for engineers' workplace communication in the wider context based on the informants of engineering instructors of HU. Nevertheless, at the foreign companies of HIP, the oral skills were more important than the literacy skills. In particular, the listening skill was of a special importance for the engineers' workplace communication at HIP followed by the speaking skill. This is because most of the engineers' daily activities were highly connected with listening to their foreign employers or supervisors' instructions and acting accordingly and carrying out different technical conversations with them. Although to a lesser degree in comparison with the oral skills, the writing skill was also required when the engineers

needed to write different performance and other reports and business letters, and the reading skill was important when they needed to read different manuals and safety guidelines.

6.1.2 English Language Proficiency of Engineering Students and Engineers

Concerning the proficiency levels of the respondent engineering students, the English language skills from the highest proficiency to the lowest proficiency levels at HU were reading, listening, writing and speaking. In the same way, based on their mean scores, the proficiency of engineers working at HIP from the highest proficiency to the lowest proficiency levels were also reading, listening, writing and speaking. This implies that in the cases of both engineering students and engineers, the respondents had the highest proficiency in reading and lowest proficiency in speaking. Moreover, the independent samples t-test results show that there is no significant mean difference between the respondents of engineering students and instructors although there is a difference in the grand means which fall under the good level of proficiency for engineering students and an average level for engineering instructors.

From the IELTS test results, the overall band score of for the participants of engineering students was “5” (in the overall band score from o to 9) or “modest” level of English language proficiency which means that the participant engineering students at HU had partial command of English language, coping with overall meaning in most situations, though they were likely to make many mistakes. In addition, according to the Common European Framework of Reference for language ability (CEFR), which has six levels from “Beginner” to “Proficient user” of language, the engineering students’ overall band score falls under the “Lower-intermediate” level of language ability.

Thus, there appears to be a relationship between the IELTS test overall band score result which is a modest/lower-intermediate level of proficiency and engineering instructors’ response which falls under the ‘average’ level of proficiency whereas engineering students’ response of good level of proficiency appears to deviate from the overall band score result.

6.1.3 Level of need of Academic Tasks for Engineering Study

Concerning the third 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 of lecture notes, textbooks/ handouts, reference books, lab manuals, project manuals or codes, exercises/test questions and research materials.

Secondly, concerning the writing tasks, the most frequent and 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 proposals and project/ thesis reports.

Thirdly, regarding the speaking skill the more common and highly needed academic speaking tasks for engineering students at HU were making presentations and defending 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 frequent and most common 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 such as documentaries.

In addition, the independent samples t-test results indicated that there was a statistically significant mean difference in the academic reading needs of engineering students between the respondents of engineering students and instructors at HU whereas there was no statistically significant mean

differences in the academic writing, speaking and listening needs of the same students between the two groups of respondents.

6.1.4 Work-related Tasks for engineers' workplace communication

The fourth specific objective aimed to identify the more common and highly needed work-related tasks for engineers' workplace communication at HIP and others in each skill. Accordingly, this study found that, firstly, the more common reading tasks for engineers' workplace communication were reading product descriptions and manuals, reading safety signs and notices, reading training manuals, reading project documents and reports, and reading business letters and e-mails.

Secondly, the more common writing tasks for engineers' workplace communication at HIP and other organizations were writing daily or periodic performance reports, writing e-mails, writing job applications, writing product descriptions, writing project proposals, writing project progress or completion reports, and writing problem investigation reports.

Thirdly, the more common and highly needed speaking tasks for engineers' workplace communication were making technical conversations with foreign supervisors or employers while providing different services such as maintenance and installation, making oral reports or presentations about the company performances and related issues, participating and contributing to meetings, participating and/or giving seminars and trainings, talking on the phone with their foreign supervisors and customers and introducing themselves and others in a variety of situations.

Fourthly, the most common and very highly required listening task for engineers' workplace communication in general, and in the foreign companies of HIP in particular was listening to instructions or advice from their supervisors or seniors followed by listening to meeting discussions and listening to trainings/seminars.

In addition, the one-way ANOVA results indicated that there was a statistically significant mean differences in the future work-related reading and writing needs of engineering students among the respondents of engineering students and instructors at HU and of engineers at HIP whereas there was no statistically significant mean differences in the work-related speaking and listening needs of the same students and engineers among the three groups of respondents.

6.1.5 Difficulty Level of Academic and Work-related tasks for engineering students

With regard to the difficulty level of carrying out work-related tasks, based on the results from different sources, while most of the engineering students did not have much difficulty in carrying out academic reading and listening tasks in general, many engineering students experienced difficulty in effectively carrying out academic writing and speaking tasks. The specific tasks that engineering students faced the most difficulty included writing well-organized and coherent internship reports and research proposals and research reports, and making well-organized presentations and defending of their works for their internships and research projects and expressing their ideas clearly in group discussions. The reasons identified behind many engineering students' poor presentation skills or performances of their works were attributed to poor background of speaking English before joining HU, limited opportunities provided for making presentation at HU, failure of some engineering instructors' in modeling themselves in using English as a medium while teaching their subjects, and large class size that made it difficult for providing ample speaking opportunities. Besides, the factors for engineering students' writing problems were their lack of practice in writing at schools, and lack of proper training given to formal and academic writing techniques at university.

Regarding the difficulty level of carrying out work-related tasks for the respondents of engineers at HIP, although the quantitative results appeared to show that most of the tasks for workplace communication were generally easy for engineers, the qualitative results indicated that the engineers had more difficulty in writing and speaking skills, particularly writing formal business letters, writing formal reports, and making business negotiations with foreign customers. In addition, the engineers at HIP had problems in listening to some of the foreign supervisors and managers, i.e. in understanding some of the Asian employers' English because of their hard accents.

6.1.6 Whether the current English courses and course materials address engineering students' academic and work-related needs

Both the quantitative and qualitative results from the different sources showed that the English courses and the topics and tasks were very general in their nature and they address the academic and work-related English needs of engineering students only to a limited extent. Most of the tasks that

they were identified as very needed tasks for their academic study and workplace communication were neither included nor given adequate emphasis either in the English courses they took at university or in the current 'Communicative English Skills' courses.

6.2 Implications and Recommendations

Based on the findings and conclusions of the study it is important to suggest their implications and recommendations for classroom use, syllabus design and materials writing in order to address the academic and workplace communication needs of engineering students at HU.

The findings of the study have several implications for engineering education programs. To begin with, engineering education at HU and other similar institutions in Ethiopia, will benefit from teaching English courses on academic and workplace communication because having such kinds of communicative competence in English increases employability, especially in the foreign companies of Ethiopia and beyond.

In terms of the importance of the language skills for academic study and workplace communication the findings have implications for equal treatment of the four language skills at university. It is underlined in the findings that the literacy skills (reading and writing) are very important for engineering students' academic study and they need to be given due emphasis in English courses for engineering students. On the other hand, although the oral skills appeared to be less needed for academic study, they are highly required for engineers' workplace communication especially at foreign companies. As it has already been noted in the 'Introduction Chapter' Ethiopia has given a great opportunity for foreign investors and as a result they are they are making a lot of investments in most of the companies of the industrial parks at Hawassa and others recently. Thus, English is used dominantly in almost all of them for communication among the foreign investors/ chief supervisors and the Ethiopian engineers. Therefore, English courses for engineering students ought to treat the language skills equally and should prepare the students not only for undertaking the academic studies effectively but also for future workplace communication.

It was also noted that communicative needs and priorities of the workplace vary from company to company depending on the kinds of duties the engineers were executing. Therefore, the Institute of

Technology at HU and other similar higher education institutions may use the findings of this study in designing English for Specific Purposes (ESP) courses to identify which skills and tasks are more relevant for which type of company in their local context.

The findings also have implications for engineering candidates. It is noted that workplace communication needs differ from each other depending on type and operations. Nevertheless, diverse needs and priorities mat not be easily met through the higher education curriculum due to feasibility and practicality concerns regarding course design and implementation. Therefore, ESP courses in higher education may be limited in terms of addressing the general requirements of the workplace. In such a case, graduates can compensate for any potential gap of communicative skills for the workplace through internships and in-service training. Ultimately, such initiatives taken by the higher education institutions and graduates themselves will contribute positively to overcoming mismatches between the expectations of the industry and skills with which graduates are equipped. It must be taken into account that exploring the existence of a gap in engineers' communicative skills after they graduate from university is too late and requires attention at an earlier stage in engineering education.

It is to be recalled from the background section in Chapter One and the literature review in Chapter Two that students are highly motivated and find it relevant and meaningful to learn a course or a material which is prepared based on the specific needs of a group of students. Thus, as Richards (2001) underscores a curriculum should above all focus on knowledge and skills that are relevant to the learners' everyday life needs and that it should be planned to meet the practical needs. In addition, Berwick (1989) points out that a curriculum that is designed around the needs and interests of learners constitutes a sound foundation for instruction.

Depending on the level of progressions and needs of learners, flexible combinations of approaches of EGAP and ESAP courses may be useful for engineering students of HU and similar settings throughout their university lives. For instance, when students have concrete needs in learning English for specific academic fulfillment in their disciplinary areas, ESAP approaches may be beneficial. However, when students move to highly advanced or professional levels to solve problems in real world situations, the engineering discipline might require students to communicate

in English with people from diverse backgrounds in multicultural settings. This requires students to have a convincing level of general communication competence and cultural sensitivity best taught by using an EGAP approach. In this way, students may learn a certain level of general English knowledge up to the lower undergraduate level, then more onto subject-specialized English, and return to general English for Communication competence at a professional level (Shin, 2008; Dudley-Evans & St John, 1998).

The level of generality is usually dictated by the homogeneity of the students and the resources available, such as materials, courses designers and specialized teachers. A general ESP course will be applicable to a much wider range of students and purposes, and it can use published materials and be taught by ESP practitioners without subject expertise. At the most specific end of the continuum of specificity are content-based courses taught in English. This has developed into an approach in its own right, labeled by some as 'content-based instruction' (CBI) and others as 'content and language integrated learning' (CLIL), depending on the setting (Woodrow, 2018:72).

In Task-based Language Learning (TBLI), texts are the manifest of language as a system for making meaning (Halliday, 1994). Learning language means experiencing a text because language as texts is the fabric of life (Mickan, 2013a). Learning the meaning of texts is a social process. In other words, students learn language through working with texts in contexts. It is widely known that texts in language learning and teaching (language pedagogy) play a crucial role as a meditational means of socializing learners to language use in real-life contexts of situation and culture (Widodo,2015).

Pedagogically speaking, engaging students with texts means that students not only make meaning or sense of meanings, but also get things done, depending on the context of situation and the context of culture. With this in mind, texts are a systemic or semiotic resource for students' construction of meanings and for familiarizing students with social practices through texts in that the texts comprise different registers (the context of situation) and genres (the context of culture) (Widdodo, 2015). This has two pedagogical implications. First, teachers should assist students to exploit uses and forms of a variety of specialized texts. The students can communicate and act in

discipline specific domains. In other words, pedagogical tasks or activities are geared to lead students to recognize different texts based on discipline-specific practices and goals (Ibid).

The second pedagogical implication is that students need to recognize that the nature of discipline-specific texts is always multimodally diverse. For example, computer engineering texts contain numerous visuals to facilitate meaning making. This indicates the definition and scope of text expanded beyond printed words. Students are fully aware that a variety of semiotic resources, which take the form of verbals and visuals, operate within discipline-specific texts. This awareness is a starting point for construing such semiotic resources in discipline specific communicative settings (Widdodo, 2015).

However, currently there are two general and almost similar academic English courses that are taught to all first year university students across the country irrespective of their disciplinary differences. Therefore, instead of teaching two general academic English courses, it is much more beneficial if engineering students are offered just one general academic English course and two other discipline related English courses in line with the identified needs in this study.

The first course could be "English for Engineering Students" involving all language skills by picking general engineering and technology related topics presented/introduced through reading and listening texts and integrated with speaking and writing tasks. The texts and tasks should take into account both academic and workplace English communication needs of engineering students. For this course topics like the following can be considered: The History of Engineering, Developments in Engineering, Technology in Use, Home Appliances (functions and operations), Forms of Transportation, Inventions and their Inventors, Materials Technology, Technology and Society, Manufacturing and Assembly, Medical Technology, Sports and Technology, Atomic and Nuclear Weapons and so on. When students are exposed to such topics and tasks designed from these texts, they can learn both content and language at the same time. That means, they can easily be familiarized with different field related terms and concepts that will equip them to communicate more effectively for their academic and future workplace communication demands.

As it has been discussed in the previous sections in Chapters 4 and 5, engineering students had difficulty of producing coherent and accurate reports of their labs, internships, research projects at university and writing performance and business letters at work for national and international companies or organizations. Therefore, to help students overcome these problems, a course in 'Technical and Report Writing' could be a good option and this might be offered in their second or third year in preparation for the tasks particularly in their senior years.

This writing course should focus on the identified academic and workplace communication needs in this study. That is, it should aim at improving students' writing of variety of reports such as lab reports, internship reports, project or design reports, performance reports, business letters and job applications. To equip the students to carry out these tasks effectively, there should be a separate writing course presented with appropriate reading sample texts so that students can imitate the correct formats and be familiar with the types of writing requirements. The course may be entitled as "Technical and Report Writing for Engineering Students." In this course students can be provided with sufficient and relevant sample texts that can serve as good models to help them guide and imitate the formats of different writing genres.

Regarding the content and topic/ text selection, the EAP teacher can work in co-operation with the domain experts (i.e., engineering instructors) in finding the most appropriate and relevant topics and texts (Dudley Evans & St John, 1998). That is, the English instructor can consult voluntary engineering instructors while selecting texts and designing tasks.

6.3 Limitations of the Study

Any human endeavor may not be totally free of some weaknesses. This work too was open to the following limitations despite the efforts made to avoid them.

1. In the process of administering the IELTS test all the purpose and procedure of the test were made clear to the engineering students, and as a result, most of the students were positive and put their maximum efforts to test their English language proficiency in standard tests. However, very few of them appeared to be reluctant and did not take the purpose of the test seriously particularly in the listening and writing tests. This may have some limitation on

revealing the reality of the English language proficiency of the participant engineering students in the test.

2. Because the study focused on finding the work-related English language needs of engineers where English was used as working language, the data were collected from the samples of engineers and their employers only from ten foreign companies of Hawassa Industrial Park. This might not depict the full picture of other engineers who could be working in different local organizations where the engineers would use local languages for their daily conversations whereas they mostly use English language to refer to documents or codes and prepare different reports based on the information from engineering instructors who also work as consultants for different organizations

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APPENDICES

Appendix A. Engineering Students' Questionnaire

Dear students:

The purpose of this questionnaire is to gather information for an assessment of academic and work-related English language needs of undergraduate engineering students with reference to Hawassa University. Your cooperation in providing genuine response to the questionnaire items that best describes your opinion will enable the researcher make the right decision about the research problem. The data obtained from this questionnaire will be confidential and be used only for the purpose of this study. Hence, you are very kindly requested to openly respond to the items regarding the English language skills or kinds of tasks that you need to carry out for your academic study in the university and for your future work.

Thank you in advance for your time and cooperation.

Note: **You do not need to write your names on the questionnaire.**

I. Background information

The following questions are intended to gather information related to your personal details. Please, read each item carefully and put a tick (√) mark in the appropriate box that is given adjacent to each option. And, for item 1 below write your answer on the space provided.

1. Faculty: _____ Department: _____

2. Sex: A) Male ☐ B) Female ☐

3. In which school type did you attend your secondary and/or preparatory school education?
A) Government school ☐ B) Boarding school ☐

C) Private school ☐ D) If Other, please state_____

II. Importance of Language Skills

1. How important do you think English is for engineering students' academic study and future career/ workplace communication?

Very important ☐ Important ☐ Medium importance ☐

Less important ☐ Not important at all ☐

1. Please indicate the degree of importance of each of the following language skills for engineering students' academic study by putting a tick mark (√) in the appropriate column.

Skills/ Areas	Very important	Important	Medium importance	Less important	Not important
Reading					
Writing					
Speaking					
Listening					

III. Level of need of Carrying out Academic tasks for Engineering Study

To respond to the items next, please express the **level of need** you are required to carry out the following academic tasks in English for your engineering study at university in each language skill. Then, please put a tick mark (√) in the columns which you think are most appropriate for each item.

Key: 5 =Very high need 4 =High need 3= Moderate need 2 =Little need 1= No need at all

1. Academic Reading tasks	**Level of Need**				
	5	4	3	2	1
1. Reading laboratory manuals					
2. Reading textbooks					
3. Reading reference books					
4. Reading lecture notes/handouts					
5. Reading exercises, assignments, test questions					
6. Reading academic journals/ publications					
7. Reading design reports					
8. Reading project reports (e.g. internship reports, integrated project reports)					
9. Reading research papers/ theses					
10. Reading safety signs, rules and notices in a laboratory					
11. Reading model codes					

2. Academic Writing Tasks	Level of need				
	5	**4**	**3**	**2**	**1**
1. Writing laboratory reports					
2. Writing (library) assignments					
3. Writing examination answers					
4. Writing research proposals					
5. Writing BSc research projects or thesis					
6. Writing field/ industry visit reports					
7. Writing internship/apprenticeship reports					
8. Writing presentation PowerPoint Slides					
9. Writing design reports					
3. Academic Speaking tasks	**Level of need**				
	5	**4**	**3**	**2**	**1**
1. Asking and answering questions in class and lab sessions					
2. Introducing yourself and others in a variety of situations (e.g. in class with instructors/ expatriates, during field visit or internship with foreign company owners)					
3. Delivering oral presentation (e.g. internship reports, research, proposals, research reports, seminars, etc.)					
4. Expressing their opinions or ideas freely about different topics during group discussions					
5. Defending their positions during defense sessions (e.g. while defending their internships, research reports, etc.)					
4. **Academic Listening Tasks**	**Level of need**				
	5	**4**	**3**	**2**	**1**

1. Listening to lectures					
2. Listening to presentations and /or discussions					
3. Receiving spoken instructions /advice from instructors, advisers or supervisors during internship					
4. Listening to instructor questions during class or paper defense					
5. Listening to Internet Resources (e.g. watching YouTube materials)					

IV. Level of Need of Carrying out Work-related Tasks

To respond to the following work-related tasks, please express the extent you **need** to carry out these tasks in English for your future workplace communication in each language skill. Then, please put a tick mark (√) in the columns which you think are most appropriate for each item.

Key: 5 =Very high need 4 =High need 3= Moderate need 2 =Little need 1= No need at all

1. Work-related Reading Tasks	**Level of Need**				
	5	4	3	2	1
1. Reading product descriptions, manuals or instructions					
2. Reading feasibility study reports					
3. Reading safety signs, rules and notices in a factory/ industry					
4. Reading research journals/ publications					
5. Reading abstracts of projects/seminars					
6. Reading project documents (e.g. project proposals, contractual agreements)					
7. Reading professional texts					
8. Reading office documents (e.g. business letters, memos)					
9. Reading design reports					

10. Reading project reports (e.g. progress reports, completion reports, problem investigation reports)					
11. Reading design codes					
12. Reading training manuals (e.g. maintenance procedures, modification manuals)					
2. Work-related Writing tasks	**5**	**4**	**3**	**2**	**1**
1. Writing daily or periodic reports of work performance					
2. Writing product descriptions, manuals or instructions					
3. Writing feasibility study reports					
4. Writing project proposals					
5. Writing project progress and/or completion reports					
6. Writing problem investigation reports					
7. Writing job application letters and/or resumes/ CVs					
8. Writing business letters					
9. Writing e-mails/ communicating through e-mails					
10. Writing minutes of meetings					
11. Writing contractual agreements					
12. Writing abstracts of projects/ seminars					
13. Writing presentation PowerPoint Slides					
3. Work-related Speaking tasks	**5**	**4**	**3**	**2**	**1**
1. Introducing yourself and others in a variety of situations (e.g. to seniors, subordinates, co-workers)					
2. Making business negotiations/ agreements with foreign investors or agents					
3. Talking on the phone with foreign supervisors, colleagues or employers or customers					
4. Attending and contributing to meetings/seminars					

5. Talking about everyday tasks and duties (e.g. coordinating work, conversing in a professional context)					
6. Making an oral report of a project or field visit to company or project owners					
7. Giving an interview (e.g. job interview, professional an interview on how a company is progressing or functioning)					
4. Work-related Listening Tasks	**5**	**4**	**3**	**2**	**1**
1. Receiving spoken instructions /advice from foreign seniors, supervisors or employers					
2. Listening to meeting discussions					
3. Listening to trainings/seminars					

V. **Investigating the Current English language abilities of engineering students**

Please rate your own English language ability in each of the following skills by putting a tick mark (√) in the appropriate column.

Key: 1= Weak 2=Average 3= Good 4= Very good 5=Excellent

Skills/Areas	**Weak**	**Average**	**Good**	**Very good**	**Excellent**
Reading					
Listening					
Speaking					
Writing					

VI. Level of difficulty you experience to carry out the following academic tasks

Please indicate the level of difficulty you might experience to carry out the following academic tasks by putting a tick mark (√) in the appropriate column you think.

Key: 1= Very difficult 2= Difficult 3= Average 4= Easy 5= Very easy

Level of Difficulty of academic tasks	**1**	**2**	**3**	**4**	**5**
1. Reading and understanding different engineering lecture notes/ handouts					
2. Reading and understanding different engineering reference books					
3. Writing well-organized, accurate internship reports					
4. Writing coherent and well-organized research proposals and reports					
5. Expressing opinions and/or answering questions during class discussions					
6. Making well organized oral presentations (e.g. internship reports, research reports, project reports etc.)					
7. Expressing opinions during group discussions					
8. Listening to lectures given by foreign (Native or Near-native) instructors					
9. Listening to lectures given by Ethiopian instructors					
10. Listening and understanding to academic YouTube video lectures/tutors					
11. Taking notes from lectures or seminars					

V. On the Effectiveness of English Courses /Materials

The following table presents items or statements regarding the effectiveness of the English courses (*Communicative English Skills, Basic Writing Skills*) taken in the university for academic study and possibly for future work situation. Please show the extent you agree or disagree with the statements

about the effectiveness of English courses you took in the university by putting a tick (√) mark in the appropriate columns.

Key: SD= Strongly Disagree D= Disagree Un= Unsure A= Agree SA= Strongly Agree

Statements on the effectiveness of English courses	**SD**	**D**	**Un**	**A**	**SA**
1. On the whole the courses address my English language needs for my academic study.					
2. The topics and tasks in the English courses are related with my field of study.					
3. On the whole the courses address to my personal needs of English.					
4. The courses have enabled me carry out the different tasks and assignments given in engineering fields in English effectively (e.g. giving oral presentations, writing various reports, etc.).					
5. I feel that the courses have prepared me for an effective work place communication in my future career.					
6. The courses have helped me to improve my overall proficiency of English.					
7. The courses have familiarized me with different engineering concepts and vocabulary.					
8. The tasks set in the English courses involve critical thinking and/or problem solving activities in relation to engineering fields.					
9. The courses contain meaningful and/or motivating tasks in relation to engineering fields.					
10. Mostly the courses focus on providing opportunity for the students to carry out different tasks in practice (e.g. engaging students in actual writing, speaking, listening, reading)					

Thank you once again!

Appendix B. Questionnaire for Engineering Instructors

Dear Colleagues:

The purpose of this questionnaire is to gather information for an assessment of academic and work-related English language needs of undergraduate engineering students with reference to Hawassa University. Your cooperation in providing genuine response to the questionnaire items will enable the researcher make the right decision about the research problem. The data obtained from this questionnaire will be confidential and be used only for the purpose of this study. Therefore, you are very kindly requested to openly respond to the items regarding the English language skills or kinds of tasks that engineering students need for their study in the university and their future work place communication.

Thank you in advance for your cooperation.

I. Background information

Please respond to the following items about your professional and personal background information by putting a tick (√) mark in the boxes and write your response for item 1 on the spaces provided.

i. Faculty:_____ Department: _____

ii. Gender: Male ☐ Female ☐

iii. **Years of service at university**: A. 1-3 years ☐ B. 4-6 years ☐ C. 7-9 years ☐ D 10-12 years ☐ E. 13 years and above ☐

iv. Academic rank: A. Graduate Assistant ☐ B. Assistant Lecturer ☐ C. Lecturer ☐ D. Assistant Professor ☐ E. Associate Professor ☐ F. Professor ☐

II. English Language Skills

1. How important do you think English is for your students to study engineering fields effectively and for their future work? Please put a tick (√) mark in the appropriate box.

Very important ☐ Important ☐ Medium importance ☐

Less important ☐ Not important at all ☐

2. Please indicate the degree of importance for each of the following language skills for engineering students' academic study and future work-related communication by putting a tick mark (√) in the appropriate column.

Skills	Very important	Important	Medium important	Less important	Not important
Reading					
Writing					
Speaking					
Listening					

III. Level of Need of Engineering Students to Carry out Academic Tasks

To respond to the items next, please express the extent your students need to carry out the following academic tasks in English for their engineering study at university in each language skill. Then, please put a tick mark (√) in the columns which you think are most appropriate for each item.

Key: 5 =Very high need 4 = High need 3=Moderate need 2 = Little need 1=No need at all

1. Academic Reading tasks	Level of Need				
	5	4	3	2	1
1. Reading laboratory manuals					
2. Reading textbooks					
3. Reading reference books					
4. Reading lecture notes/handouts					
5. Reading exercises, assignments, test questions					
6. Reading academic journals/ publications					
7. Reading design reports					
8. Reading project reports (e.g. internship reports, integrated project reports)					
9. Reading research papers/ theses					
10. Reading safety signs, rules and notices in a laboratory					
11. Reading model codes					

2. Academic Writing Tasks	**5**	**4**	**3**	**2**	**1**
1. Writing laboratory reports					
2. Writing (library) assignments					
3. Writing examination answers					
4. Writing research proposals					
5. Writing BSc research projects or thesis					
6. Writing field/ industry visit reports					
7. Writing internship/apprenticeship reports					
8. Writing presentation PowerPoint Slides					
9. Writing design reports					
3. Academic Speaking tasks	**5**	**4**	**3**	**2**	**1**
1. Asking and answering questions in class and lab sessions					
2. Introducing themselves and others in a variety of situations (e.g. in class with instructors/ expatriates, during field visit or internship with foreign company owners)					
3. Delivering oral presentation (e.g. seminars, internship reports, research proposals, research reports, etc.)					
4. Expressing their opinions or ideas freely during group discussions					
5. Defending their positions in defense sessions of their internships, research proposals and research projects, etc.					
4. Academic Listening Tasks	**5**	**4**	**3**	**2**	**1**
1. Listening to lectures					
2. Listening to presentations and /or discussions					
3. Receiving spoken instructions /advice from instructors, advisers or supervisors during internship					

4. Listening to instructor questions during class or paper defense					
5. Listening to Internet Resources (e.g. watching YouTube videos)					

IV. Level of Need of Carrying out Work-related Tasks

To respond to the items next, please express the extent your engineering students **need** to carry out these work-related tasks in English for their future workplace communication in each language skill. Then, please put a tick mark (√) in the most appropriate column you think.

Key: 5 =Very high need 4 =High need 3= Moderate need 2 =Little need 1= No need at all

1. Work-related Reading Tasks	**Level of Need**				
	5	**4**	**3**	**2**	**1**
1. Reading product descriptions, manuals or instructions					
2. Reading feasibility study reports					
3. Reading safety signs, rules and notices in a factory/ industry					
4. Reading research journals/ publications					
5. Reading abstracts of projects/seminars					
6. Reading project documents (e.g. project proposals, contractual agreements)					
7. Reading professional texts					
8. Reading office documents (e.g. business letters, memos)					
9. Reading design reports					
10. Reading project reports (e.g. progress reports, completion reports, problem investigation reports)					
11. Reading design codes					
12. Reading training manuals (e.g. maintenance procedures, modification manuals)					

2. Work-related Writing tasks	**5**	**4**	**3**	**2**	**1**
1. Writing daily or periodic performance reports					
2. Writing product descriptions, manuals or instructions					
3. Writing feasibility study reports					
4. Writing project proposals					
5. Writing project progress and/or completion reports					
6. Writing problem investigation reports					
7. Writing job application letters and/or resumes/ CVs					
8. Writing business letters					
9. Writing e-mails/ communicating through e-mails					
10. Writing minutes of meetings					
11. Writing contractual agreements					
12. Writing abstracts of projects/ seminars					
13. Writing presentation PowerPoint Slides					
3. Work-related Speaking tasks	**5**	**4**	**3**	**2**	**1**
1. Introducing themselves and others in a variety of situations (e.g. to seniors, supervisors, heads)					
2. Making business negotiations/ agreements with foreign investors or agents					
3. Talking on the phone with foreign supervisors, colleagues or employers or customers					
4. Attending and contributing to meetings/seminars					
5. Talking about everyday tasks and duties (e.g. coordinating work, conversing in a professional context)					
6. Making an oral report of a project or field visit to company or project owners					

7. Giving an interview (e.g. job interview, professional an interview on how a company is progressing or functioning)					
4. Work-related Listening Tasks	**5**	**4**	**3**	**2**	**1**
1. Receiving spoken instructions /advice from foreign seniors, supervisors or employers					
2. Listening to meeting discussions					
3. Listening to trainings/ seminars					

V. Current English language abilities of engineering students

Please rate your engineering students' current English language ability in each language skill by putting a tick mark (√) in the appropriate column.

Key: 1= Weak 2= Average 3= Good 4= Very good 5= Excellent

	Weak	**Average**	**Good**	**Very good**	**Excellent**
Reading					
Listening					
Speaking					
Writing					

VI. Level of difficulty of engineering students in carrying out academic tasks

Please indicate the level of difficulty your students might experience carrying out the following academic tasks by putting a tick mark (√) in an appropriate option against each item.

Key: 1= Very difficult 2= Difficult 3= Average 4= Easy 5= Very easy

Level of Difficulty	**1**	**2**	**3**	**4**	**5**
1. Reading and understanding different engineering lecture notes/ handouts					

2. Reading and understanding different engineering reference books					
3. Writing well-organized, accurate internship reports					
4. Writing coherent and well-organized research proposals and reports					
5. Expressing opinions and/or answering questions during class discussions					
6. Making well organized oral presentations (e.g. internship reports, research reports, project reports etc.)					
7. Expressing opinions during group discussions					
8. Listening to lectures given by foreign instructors					
9. Listening to lectures given by Ethiopian instructors					
10. Listening and understanding to academic YouTube video lectures/tutors					
11. Taking notes from lectures or seminars					

Thank you once again for your time and cooperation

Appendix C. Questionnaire for Engineer Employees

Dear Engineers:

The purpose of this questionnaire is to gather information for an assessment of work-related English language needs of engineers working in different foreign companies or organizations. Your cooperation in providing genuine response to the questionnaire items will enable the researcher make the right decision about the research problem. The data obtained from this questionnaire will be confidential and will be used only for the purpose of this study. Hence, you are very kindly requested to openly respond to the items regarding the English language skills or tasks that you need to carry out for the work place communication.

Thank you in advance for your cooperation.

Note: **You do not need to write your names on the questionnaire.**

I. General Background information

Please respond to the following items about your background.

i. Specialization:_____

ii. University graduated:_____

iii. Name of the company_____

iv. Work unit/ department: _____

v. Years of service in foreign companies: _____

II. Language Skills

1. How important do you think English is for your current job in this company/ enterprise?

   Very important ☐ Important ☐ Moderately important ☐

   Less important ☐ Not important at all ☐

2. Please indicate the degree of importance for each of the following English language skills/ areas for engineers' workplace communication by putting a tick mark (√) in the appropriate columns.

Skills	Very important	Important	Moderately important	Of little importance	Not important
Reading					
Writing					
Speaking					
Listening					

III. Current English Language Proficiency or Abilities in each skill

Please rate your current English language ability in each skill by putting a tick mark (√) in the appropriate column.

Skills/areas	**Very weak**	**Weak**	**Just okay**	**Strong**	**Very strong**
Reading					
Listening					
Speaking					
Writing					

IV. Work-related Skills-based Tasks

To respond to items next, please express the extent you need to carry out the following work-related tasks in English in each skill for your current job. Then, please put a tick mark (√) in the in the appropriate column.

Key: 5= very high need 4 = High need 3= Moderate need 2 = Little need 1 =No need at all

1. Work-related Reading Tasks	**Level of Need**				
	5	4	3	2	1
1. Reading product descriptions, manuals or instructions					
2. Reading feasibility study reports					
3. Reading safety signs, rules and notices in a factory					

4. Reading research journals/ publications					
5. Reading abstracts of projects /seminars					
6. Reading project documents (e.g. proposals, lists of building materials, contractual agreements)					
7. Reading professional texts					
8. Reading office documents (e.g. business letters, memos)					
9. Reading Internet Resources (e.g. reading pdf or word materials)					
10. Reading design reports					
11. Reading project reports (e.g. progress reports, completion reports, problem investigation reports)					
12. Reading design codes					
13. Reading training manuals (e.g. maintenance procedures, modification manuals)					
2. **Work-related Writing Tasks**	**5**	**4**	**3**	**2**	**1**
1. Writing daily /periodic performance reports					
2. Writing manuals, product descriptions, instructions					
3. Writing feasibility study reports					
4. Writing project proposals					
5. Writing project progress and/or completion reports					
6. Writing problem investigation reports					
7. Writing job application letters and/or Resumes/ CVs					
8. Writing business letters					
9. Writing e-mails/ communicating through e-mails					

10. Writing minutes of meetings					
11. Writing contractual agreements					
12. Writing research articles and reviews for scientific journals					
13. Writing abstracts of projects/ seminars					
14. Writing presentation PowerPoint Slides					
3. **Work-related Speaking Tasks**	**5**	**4**	**3**	**2**	**1**
1. Participating and contributing actively in meetings/ seminars					
2. Introducing yourself and others in a variety of work-related situations (e.g. during industry visit, new employees to seniors, etc.)					
3. Delivering oral presentations (e.g. seminars, project reports, etc.)					
4. Making business negotiations/ agreements with foreign investors or agents					
5. Talking on the phone (e.g. with foreign colleagues, supervisors, investors)					
6. Making an oral report of daily/ periodic activities					
7. Giving an interview (e.g. job interview, professional interview on how a company is functioning or progressing)					
8. Talking about everyday tasks (e.g. coordinating work, conversing in a professional context)					
4. **Work-related Listening tasks**	**5**	**4**	**3**	**2**	**1**
1. Receiving spoken instructions/ advice from seniors or employers					

2. Listening to meeting discussions					
3. Listening to trainings/seminars					

V. Level of difficulty of carrying out work-related tasks for engineers

Please indicate the level of difficulty you might experience carrying out the following work-related tasks by putting a tick mark (√) against each item.

Key: **1= Very difficult 2= Difficult 3= Neutral 4= Easy 5= Very easy**

Difficulty level of carrying out work-related tasks	**1**	**2**	**3**	**4**	**5**
1. Reading and understanding different manuals					
2. Reading office documents					
3. Reading project reports					
4. Reading design reports/codes					
5. Writing job applications and/or CVs					
6. Writing formal business letters					
7. Writing project proposals and/or reports					
8. Writing product descriptions, manuals or instructions					
9. Writing minutes of meetings					
10. Making an oral report of a project or field visit to company or project owners					
11. Attending and contributing to meetings/seminars					
12. Talking on the phone with foreign supervisors, colleagues or employers					
13. Making business negotiations/ agreements with foreign investors or agents					

14. Talking about everyday tasks and duties (e.g. coordinating work, conversing in a professional context) with supervisors					
15. Listening to and taking spoken orders/ advice from foreigners					
16. Listening to trainings and seminars					

Thank you once again!

Appendix D. Interview Guide for Engineering Students

3. How important is English language for engineering students for their academic study and their future career or workplace communication? (Prompt: How important is English to carry out your academic and workplace tasks effectively?)

4. What kinds of reading tasks and assignments are engineering students required or assigned to carry out for their academic study and future workplace communication? (Prompt: What kinds of reading materials or documents are you required to read?)

5. What kinds of writing tasks and assignments are engineering students required to carry out for their academic study and future workplace communication? (Prompt: What kinds of documents or projects are they required to produce or write?)
6. What kinds of speaking tasks and assignments are engineering students required to carry out for your academic study and future workplace communication? (Prompt: When are they required to speak or make presentations for your academic study?)
5. What kinds of listening tasks and assignments are engineering students required to carry out for their academic study and future workplace communication? (Prompt: When are they required to listen in the academic setting? Or when is listening skill important or called for?)

6. What are the English language problems or difficulties of engineering students? (Probing questions: 1) Which tasks or assignments do they generally find easy to carry out in English 2) Which tasks do they find rather difficult or demanding in each of the language skills? 3) What do you think are the main reas9ons for these problems?

7. How far did the English courses (*Communicative English skills and Basic Writing skills*) you took in the university address the English language needs of engineering students? (Probing questions: 1)Were the topics and tasks relevant for engineering fields? 2) Did they help you to carry out the required academic tasks effectively? 3) What did you like about the courses and what you did not? 4) What language skills or genres (types of texts) do the English courses lack?

8. Which English language skill(s) or sub-skills do you think you need most for your academic study and for your future workplace communication? (Prompt: What language skills or sub-skills should be given due emphasis in English courses for engineering students at university?)

9. Have you taken any course related to technical report writing that will help you to effectively handle various writing tasks like laboratory reports, internship reports, project reports, etc.? (Probing questions: 1) If so, how far did the course help you with the tasks? 2) Who taught you the course- English instructors or subject specialists? 3) What were the strengths and drawbacks of the course? 4) What should be done so that students could get the most out the course?

Appendix E. Interview Guide for Engineering Instructors

1. How important is English for engineering students for their academic study and for their future career/work place communication? (Prompt: How important is English to carry out their academic and workplace tasks effectively?)

2. What kinds of reading tasks and assignments are engineering students assigned to read for their academic study and future workplace communication? (Prompt: What kinds of reading materials or documents are they required to read?)

3. What kinds of writing tasks and assignments are engineering students assigned/ required to carry out for their academic study and future workplace communication? (Prompt: What kinds of documents or projects are they required to produce or write?)

4. What kinds of speaking tasks and assignments are engineering students required to carry out or perform for their academic study and future workplace communication? (Prompt: When are you required to speak or make presentations for your academic study?)

5. What kinds of listening tasks and assignments are engineering students assigned/ required to carry out for their academic study and future workplace communication? (Prompt: When are you required to listen? Or when is listening skill important or called for?

6. What are the English language problems or difficulties of engineering students and what are the main reasons for these problems? (Probing questions: 1) Which tasks or assignments do they generally find easy to carry out in English 2) Which tasks do they find rather difficult or demanding in each of the language skills? 3) What do you think are the main reasons for these problems?

7. Which English language skill(s) or genres do you think engineering students need most for their academic study and for their future work place communication? (Prompt: What language skills or sub-skills should be given due emphasis in English courses for engineering students at university?)

8. Do engineering students take any course related to technical report writing to enable them properly handle various writing tasks like laboratory reports, internship reports, project reports, etc.? (Probing questions: 1) If so, how far does the course help them with the tasks? 2) Who teaches the course- English instructors or subject specialists? 3) What are the strengths and drawbacks of these and the course? 4) What should be done so that students could get the most out this course?

Appendix F. Interview Guide for Engineers Working at Foreign Companies

1. How important is English for your workplace communication in this foreign company? (Prompt: How important is English to carry out your workplace activities or duties effectively?)

2. What reading tasks are you required to carry out in English in this company? (Prompt: What materials or documents are you required to read in relation to your work?)

3. What writing tasks are you required to carry out in English in this company? (Prompt: What kinds of documents or projects are you required to produce or write?)

4. What speaking tasks are you required to carry out in English in this company? (Prompt: When are you required to talk in English or make presentation in relation to your work?)

5. What listening tasks are you required to carry out in English in this company? (Prompt: When are you required to listen or when is the listening skill important or called for in relation to your work?)

6. What are the English language problems or difficulties of engineers working in foreign companies like this? (Probing questions: 1) Which tasks do you generally find easy to carry out in English? 2) Which tasks do you find rather difficult or hard to carry out in English in each of the language skills? 3) What do you think are the main reasons behind these problems?

7. Which English language skill(s) and sub-skills do you think you need most for work place communication in this company? (Prompt: What language skills or sub-skills should be given due emphasis in English courses for engineering students at university?)

8. How far have the English courses you took in the university helped you to carry out the required tasks and assignments in your work places in English effectively? (Probing questions: 1)Were the topics and tasks relevant for engineering fields? 2) Did they help you to carry out the required tasks effectively? 3) What did you like about the courses and what you did not? 4) What language skills or genres do the English courses lack?

9. Have you taken any course(s) on technical report writing that could enable you to properly handle various writing tasks like business letters, project documents, reports etc.? (Probing questions: 1) If so, how far did the course help you with the tasks? 2) Who taught you the course− English instructors or subject specialists? 3) What were the strengths and drawbacks of the course?

Appendix G. Interview Guide for Employers of Engineers at Foreign Companies

1. How important is English for engineers working in your company for effective communication? (Prompt: How important is English to carry out their workplace activities or duties effectively?)

2. What reading tasks are the engineers required to carry out in English in this company? (Prompt: What materials or documents are they required to read in relation to your work?)

3. What writing tasks are the engineers required to carry out in English in this company? (Prompt: What kinds of documents or projects are they required to produce or write?)

4. What speaking tasks are the engineers required to carry out in English in this company? (Prompt: When are they required to talk in English or make presentation in relation to their work?)

5. What listening tasks are they required to carry out in English in this company? (Prompt: When are they required to listen or when is the listening skill important or called for in relation to their work?)

6. What are the English language problems or difficulties of engineers working in a foreign company like this? (Probing questions: 1) Which tasks do the engineers generally find easy to carry out in English 2) Which ones do they find rather difficult or hard to carry out in English in each of the language skills? 3) What do you think are the main reasons behind these problems?

7. Which English language skill(s) and genres do you think the engineers need most for work place communication in this company/organization? (Prompt: What language skills or sub-skills should be given due emphasis in English courses for engineering students at university?)

Appendix H. Interview Guide for English instructors

1. How important is English for engineering students for their academic study and for their future career/work place communication?
2. What are the English language problems and difficulties of engineering students from your observation? What specific English language problems do they experience?
3. How motivated or interested do think are the students in English courses?
4. How do you evaluate the general/overall English language proficiency of engineering students?
5. How far do you think do the currently offered English courses address the English language needs of engineering students?
6. Do you think it is important to develop a separate English course(s) for engineering students to better address their English language needs?
7. How important do you think technical report writing is for engineering students? How do see the relevance of the contents of the course for engineering students? What does it lack?

Appendix I −Classroom Observation Checklist

Teacher's Evaluation: Mason (1995)

PRESENTATION EVALUATION FORM

NAME OF PRESENTER _____

OVERALL IMPRESSION:_____

PREPARATION:

CLEAR OBJECTIVE YES/NO
SPEAKER HAD CONSIDERED THE AUDIENCE YES/NO
CONTENT - relevant to topic YES/NO
too much suitable amount too little
ORGANISATION:
CLEAR, LOGICAL STRUCTURE YES/NO
GOOD INTRO/LINK TO NEXT SPEAKER/ CONC. YES/NO
(depending on position in group)

REFERRED TO QUESTIONS? YES/NO

DELIVERY:
BODY LANGUAGE (mannerisms, posture, positioning, etc.) YES/NO
EYE CONTACT: enough YES/NO
shared round audience YES/NO
VISUAL MATERIALS: were there any? YES/NO
too much on transparencies YES/NO
positioning OK? YES/NO
spelling/other errors on transparencies: _____

VOICE PROJECTION: loud enough? YES/NO
PACE: too fast fine too slow
INDEPENDENCE OF NOTES: YES/NO

GRAMMAR & VOCABULARY: PRONUNCIATION:

Source: Jordan (1997:325)

Appendix J. IELTS Proficiency Test for Engineering Students

Part I. Reading test

This booklet consists of IELTS reading test questions. You have 60 minutes to work on this part and write all your answers on the separate answer sheet provided at the end only following the specific instructions under each section.

Reading Passage 1

You are advised to spend about 20 minutes on Questions 1-14

The Discovery of Uranus

Someone once put forward an attractive though unlikely theory. Throughout the Earth's annual revolution around the sun, there is one point of space always hidden from our eyes. This point is the opposite part of the Earth's orbit, which is always hidden by the sun. Could there be another planet there, essentially similar to our own, but always invisible?

If a space probe today sent back evidence that such a world existed it would cause not much more sensation than Sir William Herschel's discovery of a new planet, Uranus, in 1781. Herschel was an extraordinary man — no other astronomer has ever covered so vast a field of work — and his career deserves study. He was born in Hanover in Germany in 1738, left the German army in 1757, and arrived in England the same year with no money but quite exceptional music ability. He played the violin and oboe and at one time was organist in the Octagon Chapel in the city of Bath. Herschel's was an active mind, and deep inside he was conscious that music was not his destiny; he, therefore, read widely in science and the arts, but not until 1772 did he come across a book on astronomy. He was then 34, middle-aged by the standards of the time, but without hesitation he embarked on his new career, financing it by his professional work as a musician. He spent years mastering the art of telescope construction, and even by present-day standards, his instruments are comparable with the best.

Serious observation began in 1774. He set himself the astonishing task of 'reviewing the heavens', in other words, pointing his telescope to every accessible part of the sky and recording what he saw. The first review was made in 1775; the second, and most momentous, in 1780-81. It was during the latter part of this that he discovered Uranus. Afterwards, supported by the royal grant in recognition of his work, he was able to devote himself entirely to astronomy. His final achievements spread from the sun and moon to remote galaxies (of which he discovered hundreds), and papers flooded from his pen until his death in 1822. Among these, there was one sent to the Royal Society in 1781, entitled An Account of a Comet. In his own words:

On Tuesday the 13th of March, between ten and eleven in the evening, while I was examining the small stars in the neighbourhood of H Geminorum, I perceived one that appeared visibly larger than the rest; being struck with its uncommon magnitude, I compared it to H Geminorum and the small star in the quartile between Auriga and Gemini, and finding it to be much larger than either of them, suspected it to be a comet.

Herschel's care was the hallmark of a great observer; he was not prepared to jump any conclusions. Also, to be fair, the discovery of a new planet was the last thought in anybody's mind. But further observation by other astronomers besides Herschel revealed two curious facts. For the comet, it showed a remarkably sharp disc; furthermore, it was moving so slowly that it was thought to be a great distance from the sun, and comets are only normally visible in the immediate vicinity of the sun. As its orbit came to be worked out the truth dawned that it was a new planet far beyond Saturn's realm, and that the 'reviewer of the heavens' had stumbled across an unprecedented prize. Herschel wanted to call it Georgian sidus (Star of George) in honour of his royal patron King George III of Great Britain. The planet was later for a time called Herschel in honour of its discoverer. The name Uranus, which was first proposed by the German astronomer Johann Elert Bode, was in use by the late 19th century.

Uranus is a giant in construction, but not so much in size; its diameter compares unfavourably with that of Jupiter and Saturn, though on the terrestrial scale it is still colossal. Uranus' atmosphere consists largely of hydrogen and helium, with a trace of methane. Through a telescope, the planet appears as a small bluish-green disc with a faint green periphery. In 1977, while recording the occultation 1 of a star behind the planet, the American astronomer James L. Elliot discovered the presence of five rings encircling the equator of Uranus. Four more rings were discovered in January 1986 during the exploratory flight of Voyager 22. In addition to its rings, Uranus has 15 satellites ('moons'), the last 10 discovered by Voyager 2 on the same flight; all revolve about its equator and move with the planet in an east-west direction. The two largest moons, Titania and Oberon, were discovered by Herschel in 1787. The next two, Umbriel and Ariel, were found in 1851 by the British astronomer William Lassell. Miranda, thought before 1986 to be the innermost moon, was discovered in 1948 by the American astronomer Gerard Peter Kuiper.

Glossary:

'Occultation': in astronomy, when one object passes in front of another and hides the second from view, especially, for example, when the moon comes between an observer and a star or planet.

'Voyager 2': an unmanned spacecraft sent on a voyage past Saturn, Uranus and Jupiter in 1986; during which it sent back information about these planets to scientists on earth.

Questions 1- 14

Complete the table below. Write a date for each answer.

Write your answers in boxes 1-5 on your answer sheet.

Event	Date
Example William Herschel was born	Answer 1738
Herschel began investigating astronomy	(1)…….
Discovery of the planet Uranus	(2)…….
Discovery of the moons Titania and Oberon	(3)…….
First discovery of Uranus' rings	(4)…….
Discovery of the last 10 moons of Uranus	(5)…….

Questions 6-10

Do the following statements reflect the claims of the writer of the Reading Passage?

In boxes 6-10 on your answer sheet write

YES if the statement reflects the claims of the writer

NO if the statement contradicts the writer

NOT GIVEN if it is impossible to say what the writer thinks about this

Example Answer

Herschel was multi-talented YES

6. It is improbable that there is a planet hidden behind the sun.
7. Herschel knew immediately that he had found a new planet.
8. Herschel collaborated with other astronomers of his time.
9. Herschel's newly-discovered object was considered to be too far from the sun to be a comet.
10. Herschel's discovery was the most important find of the last three hundred years.

Questions 11-14

Complete each of the following statements (Questions 11-14) with a name from the Reading Passage.

Write your answers in boxes 11-14 on your answer sheet.

The suggested names of the new planet started with (11)....., then (12) ....., before finally settling on Uranus. The first five rings around Uranus were discovered by (13)……. From 1948 until 1986, the moon (14) ..... was believed to be the moon closest to the surface of Uranus.

Reading Passage 2

You should spend about 20 minutes on Questions 15-25, which are based on the following reading passage 2:

THE ROCKET - FROM EAST TO WEST

A The concept of the rocket, or rather the mechanism behind the idea of propelling an object into the air, has been around for well over two thousand years. However, it wasn't until the discovery of the reaction principle, which was the key to space travel and so represents one of the great milestones in the history of scientific thought, that rocket technology was able to develop. Not only did it solve a problem that had intrigued man for ages, but, more importantly, it literally opened the door to the exploration of the universe.

B An intellectual breakthrough, brilliant though it may be, does not automatically ensure that the transition is made from theory to practice. Despite the fact that rockets had been used sporadically for several hundred years, they remained a relatively minor artefact of civilization until the twentieth century. Prodigious efforts, accelerated during two world wars, were required before the technology of primitive rocketry could be translated into the reality of sophisticated astronauts. It is strange that the rocket was generally ignored by writers of fiction to transport their heroes to mysterious realms beyond the Earth, even though it had been commonly used in fireworks displays in China since the thirteenth century. The reason is that nobody associated the reaction principle with the idea of traveling through space to a neighbouring world.

C A simple analogy can help us to understand how a rocket operates. It is much like a machine gun mounted on the rear of a boat. In reaction to the backward discharge of bullets, the gun, and hence the boat, move forwards. A rocket motor's 'bullets' are minute, high-speed particles produced by burning propellants in a suitable chamber. The reaction to the ejection of these small particles causes the rocket to move forwards. There is evidence that the reaction principle was applied

practically well before the rocket was invented. In his Noctes Atticae or Greek Nights, Aulus Gellius describes 'the pigeon of Archytas', an invention dating back to about 360 BC. Cylindrical in shape, made of wood, and hanging from string, it was moved to and fro by steam blowing out from small exhaust ports at either end. The reaction to the discharging steam provided the bird with motive power.

D The invention of rockets is linked inextricably with the invention of 'black powder'. Most historians of technology credit the Chinese with its discovery. They base their belief on studies of Chinese writings or on the notebooks of early Europeans who settled in or made long visits to China to study its history and civilisation. It is probable that, sometime in the tenth century, black powder was first compounded from its basic ingredients of saltpetre, charcoal and sulphur. But this does not mean that it was immediately used to propel rockets. By the thirteenth century, powder propelled fire arrows had become rather common. The Chinese relied on this type of technological development to produce incendiary projectiles of many sorts, explosive grenades and possibly cannons to repel their enemies. One such weapon was the 'basket of fire' or, as directly translated from Chinese, the 'arrows like flying leopards'. The 0.7 metre-long arrows, each with a long tube of gunpowder attached near the point of each arrow, could be fired from a long, octagonal-shaped basket at the same time and had a range of 400 paces. Another weapon was the 'arrow as am flying sabre', which could be fired from crossbows. The rocket, placed in a similar position to other rocket-propelled arrows, was designed to increase the range. A small iron weight was attached to the 1.5m bamboo shaft, just below the feathers, to increase the arrow's stability by moving the centre of gravity to a position below the rocket. At a similar time, the Arabs had developed the 'egg which moves and burns'. This 'egg' was apparently full of gunpowder and stabilised by a 1.5m tail. It was fired using two rockets attached to either side of this tail.

E It was not until the eighteenth century that Europe became seriously interested in the possibilities of using the rocket itself as a weapon of war and not just to propel other weapons. Prior to this, rockets were used only in pyrotechnic displays. The incentive for the more aggressive use of rockets came not from within the European continent but from far-away India, whose leaders had built up a corps of rocketeers and used rockets successfully against the British in the late eighteenth century. The Indian rockets used against the British were described by a British Captain serving in India as 'an iron envelope about 200 millimetres long and 40 millimetres in diameter with sharp points at the top and a 3m-long bamboo guiding stick'. In the early nineteenth century, the British began to experiment with incendiary barrage rockets. The British rocket differed from the Indian version in that it was completely encased in a stout, iron cylinder, terminating in a conical head, measuring one metre in diameter and having a stick almost five metres long and constructed in such a way that it could be firmly attached to the body of the rocket. The Americans developed a rocket, complete with its own launcher, to use against the Mexicans in the mid-nineteenth century. A long cylindrical tube was propped up by two sticks and fastened to the top of the launcher, thereby

allowing the rockets to be inserted and lit from the other end. However, the results were sometimes not that impressive as the behaviour of the rockets in flight was less than predictable. Since then, there have been huge developments in rocket technology, often with devastating results in the forum of war. Nevertheless, the modern day space programs owe their success to the humble beginnings of those in previous centuries who developed the foundations of the reaction principle. Who knows what it will be like in the future?

Questions 15-19

Reading passage 2 has five paragraphs labeled A-E.

Choose the most suitable headings for paragraphs A-E from the list of headings below.

Write the appropriate numbers (i-viii) in boxes 15-19 on your answer sheet.

Paragraphs	**List of Headings**
15. Paragraph A	i. How the reaction principle works
16. Paragraph B	ii. The impact of the reaction principle
17. Paragraph C	iii. Writer's theories of the reaction principle
18. Paragraph D	iv. Undeveloped for centuries
19. Paragraph E	v. The first rockets
	vi. The first use of steam
	vii. Rockets for military use
	viii. Developments of fire

Questions 20 and 21

Choose the appropriate letters A-D and write them in boxes 20 and 21 on your answer sheet.

20. The greatest outcome of the discovery of the reaction principle was that

A. rockets could be propelled into the air. B. space travel became a reality.

C. a major problem had been solved. D. bigger rockets were able to be built.

21. According to the text, the greatest progress in rocket technology was made

A. from the tenth to the thirteenth centuries.

B. from the seventeenth to the nineteenth centuries.
C. from the early nineteenth to the late nineteenth century.
D. from the late nineteenth century to the present day.

Questions 22-25

From the information in the text, indicate who FIRST invented or used the items in the list below.

Write the appropriate letters A-E in boxes 22-25 on your answer sheet.

NB. You may use any letter more than once.

Example Answer

rockets for displays A

Inventions	**FIRST invented or used by**
22. black powder	A. the Chinese
23. rocket-propelled arrows for fighting	B. the Indians
24. rockets as war weapons	C. the British
25. the rocket launcher	D. the Arabs
	E. the Americans

READING PASSAGE 3

You should spend about 20 minutes on Questions 26-40 which are based on Reading Passage 3 below:

A spark, a flint: How fire leapt to life

[The control of fire was the first and perhaps greatest of humanity's steps towards a life-enhancing technology.]

To early man, the fire was a divine gift randomly delivered in the form of lightning, forest fire or burning lava. Unable to make flame for themselves, the earliest peoples probably stored fire by keeping slow burning logs alight or by carrying charcoal in pots.

How and where man learnt how to produce flame at will is unknown. It was probably a secondary invention, accidentally made during tool-making operations with wood or stone. Studies of primitive societies suggest that the earliest method of making fire was through friction. European

peasants would insert a wooden drill in a round hole and rotate it briskly between their palms This process could be speeded up by wrapping a cord around the drill and pulling on each end.

The Ancient Greeks used lenses or concave mirrors to concentrate the sun's rays and burning glasses were also used by Mexican Aztecs and the Chinese.

Percussion methods of fire-lighting date back to Paleolithic times, when some Stone Age toolmakers discovered that chipping flints produced sparks. The technique became more efficient after the discovery of iron, about 5000 years ago In Arctic North America, the Eskimos produced a slow-burning spark by striking quartz against iron pyrites, a compound that contains sulphur. The Chinese lit their fires by striking porcelain with bamboo. In Europe, the combination of steel, flint and tinder remained the main method of fire lighting until the mid-19th century.

Fire-lighting was revolutionized by the discovery of phosphorus, isolated in 1669 by a German alchemist trying to transmute silver into gold. Impressed by the element's combustibility, several 17th-century chemists used it to manufacture fire-lighting devices, but the results were dangerously inflammable. With phosphorus costing the equivalent of several hundred pounds per ounce, the first matches were expensive.

The quest for a practical match really began after 1781 when a group of French chemists came up with the Phosphoric Candle or Ethereal Match, a sealed glass tube containing a twist of paper tipped with phosphorus. When the tube was broken, air rushed in, causing the phosphorus self-combust. An even more hazardous device, popular in America, was the Instantaneous Light Box — a bottle filled with sulphuric acid into which splints treated with chemicals were dipped.

The first matches resembling those used today were made in 1827 by John Walker, an English pharmacist who borrowed the formula from a military rocket-maker called Congreve. Costing a shilling a box, Congreves were splints coated with sulphur and tipped with potassium chlorate. To light them, the user drew them quickly through folded glass paper.

Walker never patented his invention, and three years later it was copied by a Samuel Jones, who marketed his product as Lucifers. About the same time, a French chemistry student called Charles Sauria produced the first "strike-anywhere" match by substituting white phosphorus for the potassium chlorate in the Walker formula. However, since white phosphorus is a deadly poison, from 1845 match-makers exposed to its fumes succumbed to necrosis, a disease that eats away jaw-bones. It wasn't until 1906 that the substance was eventually banned.

That was 62 years after a Swedish chemist called Pasch had discovered non-toxic red or amorphous phosphorus, a development exploited commercially by Pasch's compatriot J E Lundstrom in 1885. Lundstrom's safety matches were safe because the red phosphorus was non-toxic; it was painted on

to the striking surface instead of the match tip, which contained potassium chlorate with a relatively high ignition temperature of 182 degrees centigrade.

America lagged behind Europe in match technology and safety standards. It wasn't until 1900 that the Diamond Match Company bought a French patent for safety matches — but the formula did not work properly in the different climatic conditions prevailing in America and it was another 11 years before scientists finally adapted the French patent for the US.

The Americans, however, can claim several "firsts" in match technology and marketing. In 1892 the Diamond Match Company pioneered book matches. The innovation didn't catch on until after 1896, when a brewery had the novel idea of advertising its product in match books. Today book matches are the most widely used type in the US, with 90 percent handed out free by hotels, restaurants and others.

Other American innovations include an anti-after-glow solution to prevent the match from smoldering after it has been blown out; and the waterproof match, which lights after eight hours in water.

Questions 26- 33

Complete the summary below. Choose your answers from the box at the bottom of the page and write them in boxes 26-33 on your answer sheet.

NB. There are more words than spaces so you will not use them all. You may use any of the words more than once.

EARLY FIRE-LIGHTING METHODS

Primitive Societies saw fire as a …….(Example)…..… gift. Answer: heavenly

They tried to (26) ..... burning logs or charcoal (27) .... that they could create fire themselves. It is suspected that the first man-made flames were produced by (28) ….....

The very first fire-lighting methods involved the creation of (29).....by, for example, rapidly (30) .... a wooden stick in a round hole. The use of (31) ..... or persistent chipping was also widespread in Europe and among other peoples such as the Chinese and (32)..... European practice of this method continued until the 1850s (33) …..... the discovery of phosphorus some years earlier.

List of Words

Mexicans	random	rotating	despite	preserve	sunlight	lacking
heavenly	percussion	Chance	friction	unaware	without	make
heating	Eskimos	surprised	until	smoke	realizing	

Questions 34-40

Look at the following notes that have been made about the matches described in Reading Passage 3. Decide which type of match (A-H) corresponds with each description and write your answers in boxes 34-40 on your answer sheet.

NB There are more matches than descriptions so you will not use them all. You may use any match more than once.

Example	Answer
could be lit after soaking in water	H

NOTES	**Types of Matches**
34. made using a less poisonous type of phosphorus	A. the Ethereal Match
35. identical to a previous type of match	B. the Instantaneous Light box
36. caused a deadly illness	C. Congreves
37. first to look like modern matches	D. Lucifers
38. first matches used for advertising	E. the first strike-anywhere match
39. relied on an airtight glass container	F. Lundstrom's safety match
40. made with the help of an army design	G. book matches
	H. waterproof matches

Answer Sheet

Name _____ ID. No. _____Department _____

I. Reading

1. _____	11. _____	21. _____	31. _____
2. _____	12. _____	22. _____	32. _____
3. _____	13. _____	23. _____	33. _____
4. _____	14. _____	24. _____	34. _____
5. _____	15. _____	25. _____	35. _____
6. _____	16. _____	26. _____	36. _____
7. _____	17. _____	27. _____	37. _____
8. _____	18. _____	28. _____	38. _____
9. _____	19. _____	29. _____	39. _____
10. _____	20. _____	30. _____	40. _____

Part II. IELTS Writing Test

Name: _____ Id.No. _____ Department_____

Writing Task 1

You should spend about 20 minutes on this task.

Underground Railway Systems

The Table below gives information about the underground railway systems or networks in six cities. Write an essay interpreting (comparing and contrasting) the data in terms of their age, size and the number of people who use them each year.

You should write at least 150 words.

City	Date opened	Kilometers of route	Passengers per year (in millions)
London	1863	394	775
Paris	1900	199	1191
Tokyo	1927	155	1927
Washington DC	1976	126	144
Kyoto	1981	11	45
Los Angeles	2001	28	50

Table

1. **Writing Task 1 (30%)**

Topic: Underground Railway Systems

Writing Task 2 (60%)

You should spend about 40 minutes on this task.

Write an essay about the following topic.

The Contributions of Engineers to Society

Who are engineers and what do they do in their profession? Write an essay analyzing or discussing in what ways engineers contribute to the development of a society.

You should write at least 250 words

Part III. IELTS Listening Test

Name:_____Id.No. _____ Department_____

PART 1 Questions 1_10

Complete the form below

Write ONE WORD ONLY AND/OR A NUMBER in each gap.

Hostel Accomodation

Top End Backpackers

- Price per person: $19
- Comments and reviews: + parking available
  + staff are _____(1)
  + nice pool
  + air-conditioning is too_____(2)

Gum Tree Lodge

- Price per person: $ _____(3)
- Comments and reviews: + good quiet location
  + _____(4) in the dormitories

Kangaroo Lodge

- Price per person: $22
- Comments and reviews: + downtown location
  + reception at the lodge is always open
  + no lockers in the rooms
  + the _____(5) are very clean.
  + seems to be a _____ (6) every night.

Questions 7-10

Write ONE WORD ONLY AND/OR A NUMBER in each gap.

Hostel Accomodation

Kangaroo Lodge

- Address: On _____(7) Lane

Hostel information: + sheets are provided

+ can hire a/an _____ (8)

+ _____ (9) is included

+ a shared _____(10) is available

PART 2 Questions 11-20

Questions 11-16

Complete the correct letters, A,B or C.

Anglia Sculpture Park

11. The land where the Sculpture Park is located was previously

A. completely covered by forest. B. the site of a private house C. occupied by a factory

12. What is unusual about the Anglia Sculpture Park?

A. Artists have made sculptures especially for it.

B. Some of its sculptures were donated by its artists.

C. It only shows contemporary sculptures.

13. What is the theme of Joe Tremain's 'burnt' sculptures?

A. the contract between nature and life B. the effect of man on the environment

C. the violence of nature

14. The path by the Lower Lake

A. is rather wet in some places. B. has recently been repaired. C. is difficult to walk on.

15. What does the speaker say about the Visitor Centre?

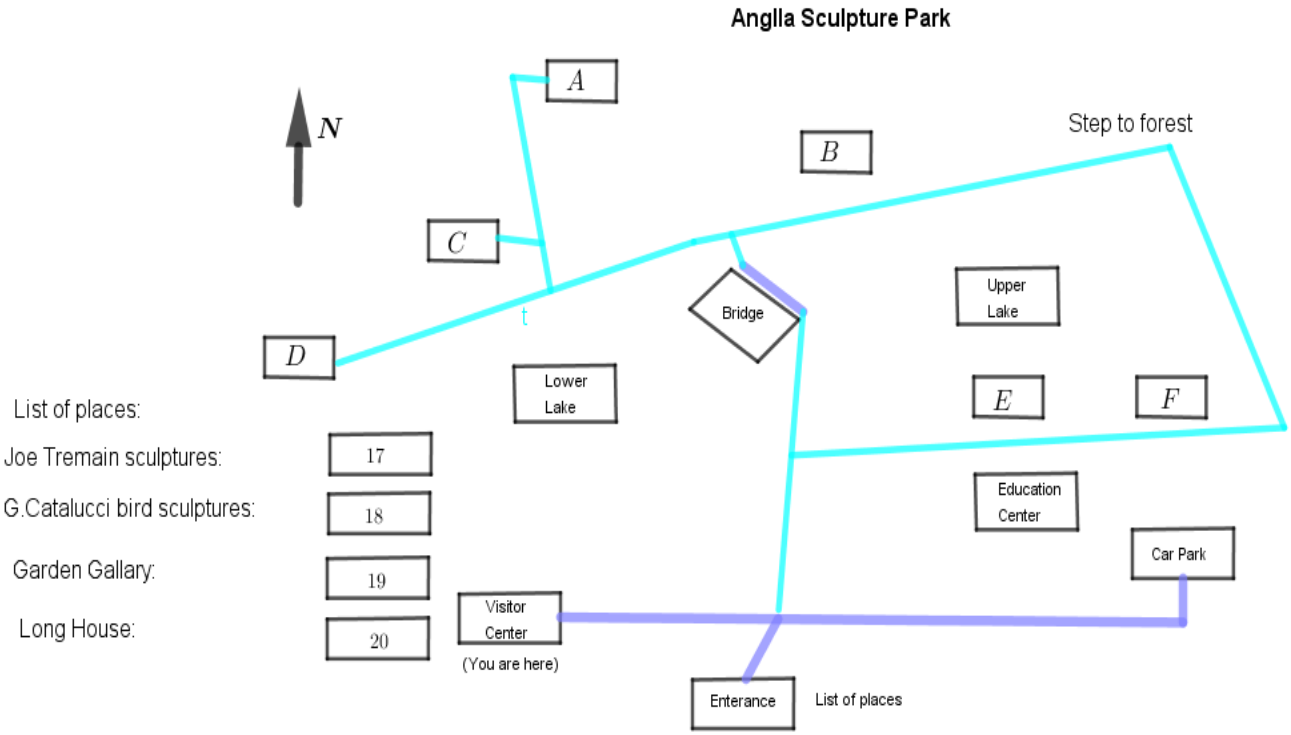
A. It is being enlarged at present. B. It has received an international award.
C. It was designed by a Canadian architect.

16. Today, visitors can buy snacks and sandwitches

A. at the kiosk B. in the Terrace Room C. at the Lower Lake Café.

Questions 17-20

The map has six gaps, A-F. Choose the correct gap and move it into the suitable place.



PART 3 Questions 21-30

Questions 21-26

Choose the correct letters, A,B or C.

Making Report

21. Why did Leo choose instant coffee as the topic for his marketing report?

A. He found plenty of material on the topic. B. He had some practical experience in the area.

C. He had an idea of a brand he wanted to target.

22. Leo discovered that in Australia, recent technological developments

A. are producing less healthy types of instant coffee.

B. are reducing the demand for instant coffee.

C. are improving the quality of instant coffee.

23. What do the speakers agree about Leo's table of coffee products?

A. It needs more explanation in the text. B. It is factually inaccurate in some places.

C. It would be best to put this in the appendix.

24. What do they decide about the description of Shaffers coffee as a market follower?

A. Leo needs to define his terms. B. Leo needs to provide more evidence.

C. Leo needs to put it in a different section.

25. What does Anna say about originality in someone's first marketing report?

A. Clear analysis of data can be considered original.

B. Graphs and diagrams should be original, not copied.

C. Reports should contain some original data collected by the students.

26. What difference between his school assignments and this report has surprised Leo?

A. Not knowing the criteria for getting a good mark

B. Being required to produce work without assistance

C. Having to do a great deal of research

Questions 27-30

Complete the notes below. Write ONE WORD ONLY in each gap.

Notes on the Specific Sections of Marketing Report

Executive Summary:

- give a brief overview including the _____(27)

Problems:

- link each problem to a/an _____(28) which explains it.

Implementation:

- practical solutions to problems
- include details such as participants, _____(29) and sequence
- section is often poorly done because of lack of _____(30)

Conclusion:

- don't use new material here

PART 4 Questions 31-40

Complete the notes below.

Write ONE WORD ONLY in each gap.

History of Fireworks in Europe

13th – 16th Centuries:

- fireworks were introduced from China
- their use was mainly to do with:

+ war
+ _____(31) (in plays as festivals)

17th Century:

- various features of _____(32) were shown in fireworks displays.
- Scientists were interested in using from fireworks displays:

+ to make human _____ (33) possible
+ to show the formation of _____(34)

London:

- Scientists were distrustful at first.
- Later, they investigated _____(35) uses of fireworks (e.g. for sailors)

St Petersburg:

- Fireworks were seen as a method of _____(36) for people.

Paris:

- Displays emphasized the power of the _____(37)
- Scientists aimed to provide _____(38)

18th Century:

- Italian fireworks specialists became influential.
- Servandoni's fireworks display followed the same pattern as a/an _____(39)
- The appeal of fireworks extended to the middle classes.
- Some displays demonstrated new scientific discoveries such as _____(40)

Answer Sheet

Department _____ Id. No. _____

Part 1	Part 2	Part 3	Part 4
1. _____	31. _____	11. _____	21.
2. _____	32. _____	12. _____	22.
3. _____	33. _____	13. _____	23.
4. _____	34. _____	14. _____	24.
5. _____	35._____	15. _____	25.
6. _____	36. _____	16. _____	26.
7. _____	37. _____	17. _____	27.

8. _____ 18. _____ 28. _____ 38. _____

9. _____ 19. _____ 29. _____ 39. _____

10. _____ 20. _____ 30. _____ 40. _____

Part IV. IELTS Speaking Test Questions (11 -14 minutes)

Part 1 Speaking about yourself (4 to 5 minutes)

1. Tell us about yourself and/or your family/ your home town/home village
2. What do you often do at weekends?
3. What are your hobbies?
4. What is/are your favorite sports/subjects/food? Why?

Part 2 Description of an event /memory/place (3 minutes) Ask anyone of these two questions Prepared on a task card.

1. **Describe a holiday or trip that you remember well.**

Say when and where this was
What you did
Who you went there with
And say why you remember this holiday or trip so well.

2. **Describe the moment you were very happy and the moment you were very sad**.

When this happened and where
What happened to you?
Who you were with
And say why you were happy and/or sad

Prepare for 1 minute, and then speak for between 1 and 2 minutes.

Part 3 Discussion question (4 to 5 minutes) Ask anyone of these two questions with the follow-up questions.

1. What are the challenges of attending/studying university for students and how do they manage them?

- What challenges have you faced yourself at university?
- How is it different from school life? Or

2. Please tell us what COVID-19 is, how is transmitted from one person to another and how we can prevent its transmission.

- Do you think people are taking enough care of this deadly pandemic including university students? If not, why?

-Do you think the world will overcome this deadly disease very soon or it will take a longer?

Appendix K: IELTS Writing Test Scores in each criterion components

Electrical and Computer engineering- Communications stream 5th Year students' IELTS writing test scores in each criterion component by Rater 1

No	St.ID	Task 1 (30% Value)				Task 2 (60% Value)				Average
		TA	CC	LR	GRA	TR	CC	LR	GRA	
1	0069/09	7	7	8	6	6	5	6	6	6.17
2	0115/09	4	5	4	5	5	4	5	6	4.83
3	0146/09	8	7	8	6	6	6	6	5	6.25
4	0184/09	7	7	6	6	7	6	6	6	6.33
5	0464/09	4	4	5	4	4	4	5	5	4.42
6	0558/09	8	7	7	7	4	3	3	4	4.75
7	0559/09	6	6	6	5	7	7	7	7	6.58
8	0588/09	8	7	7	7	7	6	7	5	6.5
9	0692/09	4	5	5	5	6	6	7	6	6
10	739/08	4	5	6	5	5	5	6	5	5.17
11	0782/09	6	5	6	6	8	7	7	7	6.75
12	1020/09	7	7	6	6	7	7	7	7	6.83
13	1108/09	7	7	7	6	7	6	7	6	6.58
14	1114/09	6	6	6	5	7	6	6	6	6.08
15	1120/09	7	6	5	5	6	6	6	6	5.92
16	1195/09	6	5	6	5	6	7	6	5	5.83
17	1336/09	-	-	-	-	7	7	6	6	4.33
18	1509/09	8	7	7	7	7	7	7	6	6.92
19	1525/09	7	7	7	6	6	7	7	7	6.75
20	1723/09	6	6	6	5	6	6	5	5	5.83
21	1969/09	6	5	6	6	7	6	7	6	6.25

Key: TA=Task Achievement, TR= Task Response, CC= Coherence and Cohesion, LR= Lexical resource, GRA= Grammatical range and accuracy

Electrical and Computer engineering- Communications stream 5th Year Students' IELTS Writing test scores in each criterion component by Rater 2

N	St.ID	Task 1 (30% Value)				Task 2 (60% Value)				Average
		TA	CC	LR	GRA	TR	CC	LR	GRA	
1	0069/09	6	6	7	6	5	5	5	5	5.42
2	0115/09	4	4	5	4	5	4	4	4	4.25
3	0146/09	7	7	7	6	6	5	5	5	5.75
4	0184/09	6	6	5	5	6	6	6	6	5.83
5	0464/09	4	4	4	4	4	4	5	5	4.33
6	0558/09	7	7	6	6	4	4	3	3	4.5
7	0559/09	6	6	5	5	6	6	6	6	5.83
8	0588/09	7	7	7	6	7	6	7	6	6.58
9	0692/09	4	4	4	5	6	6	6	6	5.5
10	0739/08	4	4	5	5	5	5	5	5	4.83
11	0782/09	6	5	5	5	7	6	6	6	6
12	1020/09	7	6	6	5	6	6	6	6	6
13	1108/09	7	7	6	6	6	7	6	7	6.5
14	1114/09	6	6	6	6	6	5	5	6	5.67
15	1120/09	6	5	6	6	6	5	6	5	5.58
16	1195/09	5	5	5	6	6	6	6	6	5.75
17	1336/09	-	-	-	-	6	7	6	6	4.17
18	1509/09	7	7	7	7	7	6	7	6	6.67
19	1525/09	7	7	6	6	6	6	6	6	6.17
20	1723/09	6	5	5	5	6	6	7	6	5.92
21	1969/09	6	5	6	5	6	6	6	6	5.83

Key: TA=Task Achievement, TR= Task Response, CC= Coherence and Cohesion, LR= Lexical resource, GRA= Grammatical range and accuracy

Construction Technology and Management 5th Year Group 4 Students' IELTS Writing Test Scores by Rater 1

N	St.ID	Task 1 (30% Value)				Task 2 (60% Value)				Average
		TA	CC	LR	GRA	TR	CC	LR	GRA	
1	0346/09	6	5	8	6	6	7	7	6	6.42
2	0390/09	6	4	4	6	6	6	6	5	5.58
3	0395/09	5	3	6	5	4	4	5	4	4.42
4	0562/09	5	4	6	5	7	6	7	5	5.83
5	0603/08	4	2	2	2	3	2	3	2	2.5
6	0609/09	2	6	6	6	5	6	6	5	5.33
7	0757/08	5	2	4	3	1	1	1	1	1.83
8	0858/09	5	5	5	6	6	6	5	5	5.42
9	0868/09	7	7	5	7	5	5	6	6	5.83
10	0880/09	5	4	5	4	5	5	5	4	5.0
11	0926/09	3	2	3	3	4	2	2	2	2.58
12	0980/09	8	7	6	6	4	5	5	5	5.75
13	0990/09	6	8	8	8	7	6	6	6	6.67
14	1030/09	4	4	5	5	2	2	3	3	3.17
15	1484/09	6	6	7	8	7	7	6	6	6.58
16	1537/09	5	5	4	5	5	5	6	5	5.08
17	1574/09	6	6	5	6	5	6	5	5	5.41
18	1753/09	4	5	4	5	4	3	4	4	4.0
19	1793/09	7	6	5	6	5	6	6	5	5.67
20	1811/08	7	6	6	6	4	4	5	5	5.08
21	2076/08	5	4	4	4	4	4	4	5	4.25

Key: TA=Task Achievement, TR= Task Response, CC= Coherence and Cohesion, LR= Lexical resource, GRA= Grammatical range and accuracy

Note: Each of these criteria receives a score from 0 to 9 points

Construction Technology and Management 5th year Group 4 students' IELTS Writing Test Scores by Rater 2

N	St.ID	Task 1 (30% Value)				Task 2 (60% Value)				Average
		TA	CC	LR	GRA	TR	CC	LR	GRA	
1	0346/09	6	5	6	6	6	6	6	5	5.75
2	0390/09	5	5	5	5	6	5	5	5	5.33
3	0395/09	4	4	5	5	4	4	4	4	4.17
4	0562/09	5	4	5	4	6	5	6	5	5.17
5	0603/08	3	2	2	2	3	2	3	2	2.42
6	0609/09	3	4	4	5	5	5	5	5	4.67
7	0757/08	4	3	3	3	1	1	1	1	1.75
8	0858/09	4	5	5	5	6	5	5	5	4.75
9	0868/09	6	6	6	6	5	5	5	5	5.33
10	0880/09	4	4	4	4	5	5	4	4	4.33
11	0926/09	3	2	3	3	3	2	2	2	2.42
12	0980/09	7	7	6	6	4	4	4	4	4.83
13	0990/09	5	7	7	7	6	6	6	6	6.17
14	1030/09	4	4	4	4	2	2	2	2	2.67
15	1484/09	5	5	6	6	6	6	5	5	5.5
16	1537/09	4	4	4	4	4	4	5	5	4.33
17	1574/09	6	5	5	5	5	4	5	5	4.92
18	1753/09	4	4	4	4	4	3	3	3	3.5
19	1793/09	6	6	5	5	6	5	5	5	5.33
20	1811/08	6	5	5	5	4	4	4	4	4.42
21	2076/08	4	4	4	4	4	3	4	4	3.83

Water Resources and Irrigation engineering 5th Year Students' IELTS Writing Test Scores by Rater 1

N	St.ID	Task 1 (30% Value)				Task 2 (60% Value)				Average
		TA	CC	LR	GRA	TR	CC	LR	GRA	
1	0032/08	7	5	6	5	5	4	5	4	4.92
2	0078/09	3	4	4	5	6	5	5	6	5.0
3	0089/09	5	3	5	5	5	5	5	4	5.0
4	0181/09	5	5	3	4	1	1	1	1	2.08
5	0183/09	5	4	3	4	-	-	-	-	1.33
6	0192/09	4	5	5	5	5	5	4	4	4.58
7	0195/09	6	5	6	6	6	5	4	5	5.25
8	0466/09	3	3	2	4	3	2	3	2	2.67
9	0832/08	8	7	7	6	6	5	5	5	5.83
10	0856/09	6	7	5	5	5	5	5	5	5.25
11	0863/09	1	2	2	2	1	1	1	1	1.25
12	0864/09	5	5	5	5	4	3	4	2	3.83
13	0920/08	8	6	6	6	7	6	7	6	6.5
14	1049/09	7	6	6	6	-	-	-	-	2.08
15	1206/09	7	7	6	6	7	5	5	5	5.83
16	1320/09	6	7	7	8	7	6	7	7	6.75
17	1487/09	5	5	5	5	4	3	3	4	4.0
18	1631/09	6	6	6	6	5	6	7	6	6.0
19	1669/09	4	5	5	4	5	6	6	6	5.33
20	179109	7	6	7	6	6	5	5	5	5.67
21	2054/08	4	4	4	5	4	3	4	4	3.92

Key: TA=Task Achievement, TR= Task Response, CC= Coherence and Cohesion, LR= Lexical resource, GRA= Grammatical range and accuracy

Note: Each of these criteria receives a score from 0 to 9 points

Water Resources and Irrigation engineering 5th Year Students' IELTS Writing test Scores by Rater 2

N	St.ID	Task 1 (30% Value)				Task 2 (60% Value)				Average
		TA	CC	LR	GRA	TR	CC	LR	GRA	
1	0032/08	6	5	5	5	5	4	4	4	4.75
2	0078/09	3	4	4	4	6	5	5	5	4.75
3	0089/09	5	4	4	4	5	5	4	4	4.42
4	0181/09	4	4	3	3	2	2	2	2	2.5
5	0183/09	5	4	4	4	-	-	-	-	1.42
6	0192/09	4	4	4	4	5	4	4	4	4.17
7	0195/09	5	5	6	5	5	4	4	5	4.75
8	0466/09	3	3	3	3	3	2	3	2	2.67
9	0832/08	7	7	7	6	6	5	5	5	5.75
10	0856/09	6	6	5	5	5	4	5	4	4.83
11	0863/09	2	2	2	2	1	1	1	1	1.33
12	0864/09	5	5	5	5	4	3	4	3	4
13	0920/08	7	6	6	6	6	5	6	5	5.75
14	1049/09	7	7	6	6	-	-	-	-	2.17
15	1206/09	7	7	6	6	6	5	5	5	5.67
16	1320/09	6	7	7	7	6	6	6	6	5.92
17	1487/09	5	5	5	5	4	3	3	3	3.83
18	1631/09	6	6	5	5	5	5	6	6	5.5
19	1669/09	4	5	5	5	5	5	6	6	5.17
20	179109	6	6	6	6	5	5	5	5	5.33
21	2054/08	4	4	4	4	4	3	4	3	3.67

Chemical Engineering 5th Year Group 3 Students' IELTS Writing Test Scores by Rater 1

N	St.ID	Task 1 (30% Value)				Task 2 (60% Value)				Average
		TA	CC	LR	GRA	TR	CC	LR	GRA	
1	0212/09	6	6	6	6	3	4	3	3	4.17
2	0223/09	4	5	6	6	6	5	5	4	5.08
3	0335/09	5	5	5	6	4	5	6	5	5.1
4	0352/09	8	8	8	8	5	6	6	6	6.5
5	0369/09	5	7	6	7	-	-	-	-	2.08
6	0441/09	8	7	7	7	4	3	3	4	4.75
7	0543/09	5	5	6	5	6	6	5	6	5.58
8	0557/09	7	6	7	6	5	6	5	5	5.67
9	0608/09	8	7	7	6	7	6	6	6	6.5
10	0669/09	7	7	7	7	5	5	6	5	5.83
11	0806/09	5	5	6	6	6	5	6	6	5.67
12	0881/09	4	4	5	5	5	5	5	6	5.0
13	0918/09	4	4	5	4	3	4	3	3	3.58
14	1112/09	8	7	7	6	6	5	6	5	6.0
15	1187/09	6	6	8	7	6	6	6	5	6.08
16	1400/09	4	7	7	5	5	4	5	4	4.92
17	1526/09	4	7	7	7	6	5	6	6	5.92
18	1654/09	7	7	6	7	5	5	6	5	5.75
19	1824/09	7	6	5	7	5	6	6	6	5.92

Key: TA=Task Achievement, TR= Task Response, CC= Coherence and Cohesion, LR= Lexical resource, GRA= Grammatical range and accuracy

Chemical Engineering 5th Year Group 3 Students' IELTS Writing Test Scores by Rater 2

N	St.ID	Task 1 (30% Value)				Task 2 (60% Value)				Average
		TA	CC	LR	GRA	TR	CC	LR	GRA	
1	0212/09	5	5	5	5	3	3	3	3	3.67
2	0223/09	4	4	4	5	4	4	5	5	4.08
3	0335/09	5	5	5	5	4	4	5	5	4.67
4	0352/09	7	7	7	7	5	5	6	6	6
5	0369/09	5	6	6	6	-	-	-	-	1.91
6	0441/09	7	7	6	6	4	3	3	3	4.33
7	0543/09	5	5	5	5	6	5	5	5	5.17
8	0557/09	6	6	6	6	5	5	5	5	5.33
9	0608/09	7	7	6	6	7	6	6	6	6.33
10	0669/09	6	7	7	7	5	6	6	5	5.91
11	0806/09	5	5	5	5	6	5	5	5	5.17
12	0881/09	4	4	5	5	5	5	5	5	4.83
13	0918/09	4	4	4	4	3	3	3	3	3.337
14	1112/09	7	7	7	7	6	5	5	5	5.83
15	1187/09	6	6	7	7	6	6	5	5	5.83
16	1400/09	4	6	6	6	5	4	4	4	4.67
17	1526/09	5	6	6	5	5	5	5	5	5.17
18	1654/09	7	7	6	6	5	4	5	5	5.33
19	1824/09	6	6	6	6	5	6	5	6	5.67

Note: Each of these criteria receives a score from 0 to 9 points

Appendix L: IELTS Speaking Test Scores in each criterion components

Electrical and Computer engineering- Communications stream 5th year students' IELTS speaking test scores in each criterion component by Rater 1

N	St.ID	Fluency & Coherence	Lexical resource	Grammatical range & accuracy	Pronunciation	Average band score
1	0069/09	6	5.5	5.5	5.5	5.63
2	0115/09	4	3.5	3.5	3.5	3.63
3	0146/09	4.5	4.5	4	4	4.25
4	0184/09	3.5	3	3	3.5	3.25
5	0464/09	5	5	4.5	5	4.88
6	0558/09	4	4.5	4	4	4.13
7	0559/09	4	4	4	4	4
8	0588/09	5	5	5.5	5	5.13
9	0692/09	4	4.5	4	4.5	4.25
10	0739/08	4.5	4.5	4	4	4.25
11	0782/09	6.5	6.5	6	6	6.25
12	1020/09	5	5	5	5.5	5.13
13	1108/09	7.5	7.5	7.5	7.5	7.5
14	1114/09	4.5	4	4	4	4.13
15	1120/09	6	6	4.5	5	5.38
16	1195/09	6	5.5	5	5.5	5.5
17	1336/09	5.5	5.5	5	5	5.25
18	1509/09	6	6	6	6	6
19	1525/09	5.5	6	6	5.5	5.75
20	1723/09	5	4.5	4.5	4.5	4.63
21	1969/09	4.5	3.5	4.5	4	4.13

Note: Each of these criteria receives a score from 0 to 9 points

Electrical and Computer engineering- Communications stream 5th year students' IELTS Speaking Test scores in each component by Rater 2

N	St.ID	Fluency & Coherence	Lexical resource	Grammatical range & accuracy	Pronunciation	Average band score
1	0069/09	5	4	4	3	4
2	0115/09	3	3	4	3	3.25
3	0146/09	4.5	4	4.5	4	4.25
4	0184/09	4	3	4	3	3.5
5	0464/09	4	3.5	4	4	3.88
6	0558/09	4.5	4	4.5	4	4.25
7	0559/09	4.5	4.5	4	4.5	4.38
8	0588/09	5	4.5	5.5	5	5
9	0692/09	4.5	3.5	4.5	4.5	4.25
10	0739/08	4.5	4	4.5	4.5	4.38
11	0782/09	4	4	4	5	4.25
12	1020/09	4	4	4	3	3.75
13	1108/09	8.5	6.5	7	6	6.88
14	1114/09	5	5	7	6	5.75
15	1120/09	4	4	5	4	4.25
16	1195/09	6	5	7	6	6
17	1336/09	5	5	6.5	5	5.38
18	1509/09	5	5	6	4	5
19	1525/09	8	7	4	7	6.5
20	1723/09	5.5	4.5	4	4	4.5
21	1969/09	4.5	4.5	4.5	4.5	4.5

Note: Each of these criteria receives a score from 0 to 9 points.

Construction Technology and Management 5th year Group 4 Students' IELTS Speaking Test Scores in each criterion components by Rater 1

N	St.ID	Fluency & Coherence	Lexical resource	Grammatical range & accuracy	Pronunciation	Average band score
1	0346/09	4.5	4.5	4.5	4.5	4.5
2	0390/09	6	6	6	6	6
3	0395/09	6.5	6.5	6.5	6.5	6.5
4	0562/09	5	5	5	5	5
5	0603/08	4	3.5	3.5	4	3.75
6	0609/09	5	4.5	4.5	4.5	4.63
7	075708	3.5	3.5	3.5	3.5	3.5
8	0858/09	4	3.5	4	4	3.88
9	0868/09	6	5.5	6	6	5.88
10	0880/09	3.5	3	3.5	3	3.25
11	0926/09	7	7	6.5	7	6.88
12	0968/09	3	2.5	3	2.5	2.75
13	0980/09	5.5	5.5	5.5	5.5	5.5
14	0990/09	4	4	4	4	4
15	1030/09	4.5	4	4	4	4.13
16	1041/08	3.5	3.5	3	3	3.25
17	1484/09	6	6	6	6	6
18	1537/09	4.5	4	4	3.5	4
19	1574/09	4.5	4.5	4	4	4.25
20	1753/09	4	4	4	4	4
21	1793/09	7.5	7.5	7.5	8	7.63
22	1811/08	4	3.5	4	4	3.88
23	2076/08	4	4	3.5	4	3.88

Note: Each of these criteria receives a score from 0 to 9 points.

Construction Technology and Management 5th year Group 4 Students' IELTS Speaking Test Scores in each criterion components by Rater 2

N	St.ID	Fluency & Coherence	Lexical resource	Grammatical range & accuracy	Pronunciation	Average band score
1	0346/09	4.5	4	4	4	4.13
2	0390/09	6.5	6.5	6.5	6	6.38
3	0395/09	8.5	7.5	7.5	7.5	7.75
4	0562/09	6	5.5	5	5	5.38
5	0603/08	4.5	4	4	4	4.13
6	0609/09	6.5	6	6.5	6.5	6.63
7	075708	4	4	3.5	3.5	3.75
8	0858/09	4.5	4	4.5	4	4.25
9	0868/09	6.5	7	7.5	7	7
10	0880/09	4	3.5	4	3.5	3.75
11	0926/09	8	7	7	7	7.25
12	0968/09	4	3	3	3	3.25
13	0980/09	6	5.5	5.5	5.5	5.63
14	0990/09	4.5	4.5	4	4	4.25
15	1030/09	5	4.5	4.5	4.5	4.63
16	1041/08	4	4	4	4	4
17	1484/09	8.5	8	8	8	8.13
18	1537/09	4.5	4.5	4	4	4.25
19	1574/09	5	4.5	4.5	4.5	4.63
20	1753/09	4.5	4.5	4	4	4.25
21	1793/09	8.5	8.5	8.5	8.5	8.5
22	1811/08	4.5	4	4	4	4.13
23	2076/08	5	4.5	4	4.5	4.5

Note: Each of these criteria receives a score from 0 to 9 points.

Water Resources and Irrigation engineering 5th year students' IELTS speaking scores in each criterion components by Rater 1

N	St.ID	Fluency & Coherence	Lexical resource	Grammatical range & accuracy	Pronunciation	Average
1	0032/08	3.5	3.5	3.5	3.5	3.5
2	0078/09	3	3	2.5	2.5	2.75
3	0089/09	3.5	3.5	3	3	3.25
4	0181/09	4	3.5	3.5	3.5	3.63
5	0183/09	3.5	3.5	3.5	3.5	3.5
6	0192/09	3.5	3.5	3.5	3.5	3.5
7	0195/09	4	4	4	4	4
8	0466/09	3	3	3	3	3
9	0832/08	4	3.5	3.5	3.5	3.63
10	0856/09	4.5	4.5	4.5	4.5	4.5
11	0863/09	4	3	3	3	3.25
12	0864/09	4	4	3.5	3.5	3.75
13	0920/08	5.5	4.5	4.5	4.5	4.75
14	1049/09	4	4	4	4	4
15	1206/09	4	3.5	3.5	3.5	3.63
16	1320/09	4.5	4	4	4	4.13
17	1487/09	3	3	3	3	3
18	1631/09	4	4	4	4	4
19	1669/09	4	4	4	4	4
20	1791/09	4.5	4.5	4	4	4.25
21	2054/08	3	3	3	3	3

Water Resources and Irrigation engineering 5th year students' IELTS speaking scores in each criterion components by Rater 2

N	St.ID	Fluency & Coherence	Lexical resource	Grammatical range & accuracy	Pronunciation	Average
1	0032/08	5	4	4	5	4.5
2	0078/09	4	3	3	3	3.25
3	0089/09	4	4	3.5	3.5	3.75
4	0181/09	4	4	4	4	4
5	0183/09	4.5	4	3.5	3.5	3.63
6	0192/09	4	4	3.5	3.5	3.75
7	0195/09	4.5	4.5	4	4	4.25
8	0466/09	4	3	3	3	3.25
9	0832/08	4.5	4	4	4	4.13
10	0856/09	5	4	4	4	4.25
11	0863/09	4.5	3.5	4	4	4
12	0864/09	4	4	4	3.5	3.88
13	0920/08	4	4	3	5	4
14	1049/09	4.5	4.5	4.5	4.5	4.5
15	1206/09	4.5	4	4	4	4.13
16	1320/09	5	4	4	4	4.25
17	1487/09	3	4	4	4	3.75
18	1631/09	4.5	4	4	4	4.13
19	1669/09	4.5	4.5	4.5	4.5	4.5
20	1791/09	6	7	7	6	6.5
21	2054/08	4	3.5	4	4	3.88

Note: Each of these criteria receives a score from 0 to 9 points.

Chemical engineering 5th year Group 3 students' IELTS speaking test scores in each criterion components by Raters 1

N	St.ID	Fluency & Coherence	Lexical resource	Grammatical range & accuracy	Pronunciation	Average
1	0212/09	4	4	4	4	4
2	0223/09	4.5	4.5	4.5	4.5	4.5
3	0335/09	4	4	4	4	4
4	0352/09	4.5	4	4	4	4.13
5	0369/09	5	5	5	5	5
6	0441/09	4.5	4.5	4.5	4.5	4.5
7	0543/09	4.5	4.5	4.5	4.5	4.5
8	0557/09	5	4	4	4	4.25
9	0608/09	5	5	5	5	5
10	0669/09	5	4.5	5	5	4.88
11	0806/09	5	5	5	5	5
12	0881/09	4.5	4	4	4	4.13
13	0918/09	3.5	3.5	3.5	3.5	3.5
14	1112/09	6.5	5.5	5.5	5.5	5.75
15	1187/09	4	3.5	3.5	3.5	3.63
16	1400/09	4.5	4	4	4	4.13
17	1526/09	5	4.5	4.5	4.5	4.63
18	1654/09	4	4	4	4	4
19	1824/09	4	3.5	3.5	3.5	3.63

Note: Each of these criteria receives a score from 0 to 9 points.

Chemical engineering 5th year Group 3 students' IELTS speaking scores in each criterion components by Rater 2

N	St.ID	Fluency & Coherence	Lexical resource	Grammatical range & accuracy	Pronunciation	Average
1	0212/09	4.5	4.5	4.5	4.5	4.5
2	0223/09	4.5	4.5	4.5	4.5	4.5
3	0335/09	4	4	4	4	4
4	0352/09	4.5	4.5	4	4	4.25
5	0369/09	5	5	5	5	5
6	0441/09	5	5	4.5	4.5	4.75
7	0543/09	5	5	5	5	5
8	0557/09	5	4.5	4.5	4	4.5
9	0608/09	5.5	5.5	5	5	5.25
10	0669/09	6	5	5	5	5.25
11	0806/09	5.5	5.5	5.5	5.5	5.5
12	0881/09	4.5	4.5	4.5	4.5	4.5
13	0918/09	4	4	4	4	4
14	1112/09	6	6	6	6	6
15	1187/09	4	4	4	4	4
16	1400/09	4.5	4.5	4.5	4.5	4.5
17	1526/09	5	5	5	5	5
18	1654/09	4.5	4.5	4.5	4.5	4.5
19	1824/09	4	4	4	4	4

Note: Each of these criteria receives a score from 0 to 9 points.

Appendix M: Overall IELTS Band Scores of each Department in Language skills

Electrical and Computer Engineering – Communications stream students' overall IELTS band scores in each language skill

No	St.ID	Reading		Listening		Speaking		Writing		**Overall rounded band score**
		Raw score 40%	Band score	Raw score 40%	Band Score	Ave. of Raters 1&2	Band score	Ave. of Raters 1&2	Band score	
1	0069/09	23.5	6	14	4.5	4.81	5	5.80	6	5.5
2	0115/09	15	4.5	6	3	3.44	3.5	4.54	4.5	4
3	0146/09	19	5.5	12	4	4.25	4.5	6.0	6	5
4	0184/09	17.5	5	10	3.5	3.38	3.5	6.08	6	4.5
5	0464/09	25	6	18	5.5	4.38	4.5	4.38	4.5	5
6	0558/09	30	7	18	5	5.06	5	4.63	4.5	5.5
7	0559/09	21	5.5	10.5	3.5	4.19	4	6.21	6	5
8	0588/09	30	7	17	5	5.06	5	6.54	6.5	6
9	0692/09	23	6	10	3.5	4.25	4.5	5.63	5.5	5
10	0739/08	21	5.5	14	4.5	4.31	4.5	5.0	5	5
11	0782/09	18	5.5	16	5	5.25	5.5	6.38	6.5	5.5
12	1020/09	21	5.5	13	4.5	5.06	5	6.42	6.5	5.5
13	1108/09	26	6.5	35	8	7.19	7	6.54	6.5	7
14	1114/09	14	4.5	28	6.5	4.69	4.5	5.88	6	5.5
15	1120/09	17.5	5	6	3	5.06	5	5.75	6	5
16	1195/09	22	5.5	8	3.5	5.75	6	5.79	6	5.5
17	1336/09	23	6	3	2	5.31	5.5	4.25	4.5	4.5
18	1509/09	24	6	29	6.5	5.5	5.5	6.80	7	6.5
19	1525/09	17	5	5.5	2.5	6.13	6	6.46	6.5	5
20	1723/09	23	6	11.5	4	4.56	4.5	5.88	6	5
21	1969/09	18	5.5	15.5	4.5	4.31	4.5	6.04	6	5
Ave. Mean			5.5		4.5		5		6	5.5

Construction Technology and Management Group 4 students' IELTS overall band scores in each language skill

No	St.ID	Reading		Listening		Speaking		Writing		**Overall Rounded band score**
		Raw score 40%	Band score	Raw score 40%	Band score	Ave. of Raters 1&2	Band score	Ave. of Raters 1&2	Band score	
1	0346/09	18	5.5	12	4	4.31	4.5	6.09	6	5
2	0390/09	18	5.5	21	5.5	6.19	6	5.46	5.5	5.5
3	0395/09	20	5.5	28	6.5	7.13	7	4.30	4.5	6
4	0562/09	18	5.5	12	4	5.19	5	5.5	5.5	5
5	0603/08	12.5	4	10	3.5	3.94	4	2.46	2.5	3.5
6	0609/09	24	6	25	6	5.63	5.5	5.0	5	5.5
7	0757/08	12	4	9	3.5	3.63	3.5	1.79	2	3.5
8	0858/09	15	4.5	9	3.5	4.06	4	5.09	5	4.5
9	0868/09	24.5	6	22	5.5	4.56	4.5	5.58	5.5	5.5
10	0880/09	10	3.5	7	3	3.5	3.5	4.67	4.5	3.5
11	0926/09	14	4.5	14	4.5	7.06	7	2.5	2.5	4.5
12	0980/09	17	5	21	5.5	5.56	5	5.29	5.5	5.5
13	0990/09	18.5	5.5	9	3.5	4.13	4	6.42	6.5	5
14	1030/09	20	5.5	12	4	4.38	4.5	2.92	3	4.5
15	1484/09	21	5.5	22	5.5	7.06	7	6.04	6	5.5
16	1537/09	14.5	4.5	10	3.5	4.13	4	4.17	4	4
17	1574/09	14.5	4.5	11	4	4.45	4.5	5.17	7	5
18	1753/09	16.5	5	10	3.5	4.13	4	3.75	4	4
19	1793/09	20.5	5.5	24	6	8.06	8	5.5	5.5	6.5
20	1811/08	15	4.5	8	3.5	4	4	4.75	5	4.5
21	2076/08	13	4.5	9	3.5	4.19	4	4.04	4	4
Ave. Mean			5		4.5		5		4.5	5

Water Resources and Irrigation engineering students' overall IELTS band language scores in each skill

No	St.ID	Reading		Listening		Speaking		Writing		**Overall rounded band score**
		Raw score 40%	Band score	Raw score 40%	Band score	Ave. of Raters 1&2	Band score	Ave. of Raters 1&2	Band score	
1	0032/08	11	4	10.5	3.5	3.94	4	4.84	5	4
2	0078/09	9	3.5	5	2.5	3	3	4.88	5	3.5
3	0089/09	17	5	3	2	3.5	3.5	4.71	4.5	4
4	0181/09	13	4.5	9	3.5	3.81	4	2.29	2.5	3.5
5	0183/09	11	4	7	3	3.56	3.5	1.38	1.5	3
6	0192/09	13	4.5	7.75	3	3.63	3.5	4.38	4.5	4
7	0195/09	16	5	13.5	4.5	4.13	4	5.0	5	4.5
8	0466/08	9	3.5	4.5	2.5	3.13	3	2.67	2.5	3
9	0832/08	17.5	5	12	4	3.88	4	5.79	6	5
10	0856/09	20.5	5.5	27.5	6.5	4.38	4.5	5.04	5	5.5
11	0863/09	8	3.5	4	2.5	3.63	3.5	1.29	1.5	3
12	0864/09	19.5	5.5	6	3	3.81	4	3.92	4	4
13	0920/08	16	5	11	4	4.38	4.5	6.13	6	5
14	1049/09	22	5.5	12	4	4.19	4	2.13	2	4
15	1206/09	19.5	5.5	6	3	3.88	4	5.75	6	4.5
16	1320/09	21	5.5	11	4	4.19	4	6.34	6.5	5
17	1487/09	13	4.5	10.5	3.5	3.38	3.5	3.92	4	4
18	1631/09	18	5.5	13	4.5	4.06	4	5.75	6	5
19	1669/09	19	5.5	13	4.5	4.25	4.5	5.25	5.5	5
20	1791/08	29	6.5	13.5	4.5	5.38	5.5	5.5	5.5	5.5
21	2054/08	11	4	7	3	3.44	3.5	3.80	4	3.5
Ave. Mean			5		3.5		4		4.5	4

Chemical engineering Group 3 students' overall IELTS band scores in each language skill

No	St.ID	Reading		Listening		Speaking		Writing		**Overall rounded band score**
		Raw score 40%	Band score	Raw score 40%	Band score	Ave. of Raters 1&2	Band score	Ave. of raters 1&2	Band score	
1	0212/09	13	4.5	5	2.5	4.25	4.5	3.92	4	4
2	0223/09	26	6.5	5	2.5	4.5	4.5	4.58	4.5	4.5
3	0335/09	9	3.5	4	2.5	4	4	4.89	5	4
4	0352/09	21	5.5	6.5	3	4.19	4	6.25	6.5	5
5	0369/09	21	5.5	20	5.5	5	5	2.0	2	4.5
6	0441/09	26	6.5	11.5	4	4.63	4.5	4.54	4.5	5
7	0543/09	18	5.5	4	2.5	4.75	5	5.38	5.5	4.5
8	0557/09	19	5.5	3	2	4.38	4.5	5.5	5.5	4.5
9	0608/09	19	5.5	9	3.5	5.13	5	6.42	6.5	5
10	0669/09	16	5	4	2.5	5.07	5	5.87	6	4.5
11	0806/09	22	5.5	13.5	4.5	5.25	5.5	5.09	5	5
12	0881/09	18	5.5	3	2	4.32	4.5	4.92	5	4.5
13	0918/09	14	4.5	3	2	3.75	4	3.46	3.5	3.5
14	1112/09	30.5	7	20	5.5	5.88	6	5.92	6	6
15	1187/09	12	4	4	2.5	3.82	4	5.96	6	4
16	1400/09	21	5.5	7	3	4.32	4.5	4.80	5	4.5
17	1526/09	18	5.5	11	4	4.82	5	5.55	6	5
18	1654/09	15	4.5	8	3.5	4.25	4.5	5.54	6	4.5
19	1824/09	12	4	3	2	3.82	4	5.80	6	4
Ave. Mean			5		3		4.5		5	4.5

Appendix N: IELTS Scores and Interpretation

9	**Expert user**	Has fully operational command of the language: appropriate, accurate and fluent with complete understanding.
8	**Very good user**	Has fully operational command of the language with only occasional unsystematic inaccuracies and inappropriate words. Misunderstandings may occur in unfamiliar situations. Handles complex detailed argumentation well.
7	**Good user**	Has operational command of the language, though with occasional inaccuracies, inappropriate words and misunderstandings in some situations. Generally handles complex language well and understands detailed reasoning.
6	**Competent user**	Has generally effective command of the language despite some inaccuracies, inappropriate words and misunderstandings. Can use and understand fairly complex language particularly in familiar situations.
5	**Modest user**	Has partial command of the language, coping overall meaning in most situations, though is likely to make many mistakes. Should be able to handle basic communication in own field.
4	**Limited user**	Basic competence is limited to familiar situations. Has frequent problems in understanding and expression. Is not able to use complex language.
3	**Extremely limited user**	Conveys and understands only general meaning in very familiar situations. Frequent breakdowns in communication occur.
2	**Intermittent user**	No real communication is possible except for the most basic information using isolated words or short formulae in familiar situations and to meet immediate needs. Has great difficulty understanding spoken and written English.
1	**Non user**	Essentially has no ability to use the language beyond possibly a few isolated words.
0	**Did not attempt the test**	No assessable information provided.

Appendix O: Sample Essay for Task 1 (182 words, 10 sentences, 4 paragraphs, 9 bands)

Underground Railway Systems

The table shows data about the underground rail networks in six major cities.

The table compares the six networks in terms of their age, size and the number of people who use them each year. It is clear that the three oldest underground systems are larger and serve significantly more passengers than the newer systems.

The London underground is the oldest system, having opened in 1863. It is also the largest system, with 394 kilometers of route. The second largest system, in Paris, is only about half the size of the London underground, with 199 kilometers of route. However, it serves more people per year. While only third in terms of size, the Tokyo system is easily the most used, with 1927 million passengers per year.

Of the three newer networks, the Washington DC underground is the most extensive, with 126 kilometers of route, compared to only 11 kilometers and 28 kilometers for the Kyoto and Los Angeles systems. The Los Angeles network is the newest, having opened in 2001, while the Kyoto network is the smallest and serves only 45 million passengers per year.

Appendix P: Engineering Instructors' Interview

Abbreviations: Q= Question, R= Response, P= Prompt

Interview with Instructor 1 (EI1)-Hydraulic and Water Resources engineering

Interviewer: Thank you very much for being voluntary for this interview and being part of my study. I'm going to ask you a few questions regarding the English language needs of undergraduate engineering students. Would you introduce yourself first please?

R: Thank you very much for inviting me to be part of your research. My name is **EI1**, an instructor of this institute and particularly in the department of Hydraulic and Water Resources engineering. Previously I was a lecturer in the Civil Engineering department. Coming back from my Ph.D study, I have been assigned to another department following my specialization. I think they have been doing such kinds of reforms to reshuffle staff members according to their specialty. So I'm now in the Hydraulic and Water Resources engineering department. In fact, it has been 12 years serving this university as an academic staff.

Q1. Thank you very much for detailed introduction of yourself and your specialty. So, how important do you think English is for engineering students for their academic study and future workplace communication?

R: I see this question from two aspects. The first one is English as language is a tool for any kind of international communication. So from this perspective I think it's quite important not only for engineering students but also for all of us. We are also following English as a medium of instruction starting from high schools and even in some cases before. So it is very important for almost all students to comprehend all instructions, all the lessons, lectures and so on. To understand the textbooks, it's critical I think. On the other hand, particularly for engineering students I think in their work after graduation, they will be engaged in different kinds of activities. So, their reports, their activities, their work will be communicated in English in most cases. In my own experience, before I joined this university, I had been working in some governmental organization as a project engineer. After doing some kind of survey or design, everything was supposed to be compiled in English. So it is very important. The other thing I can mention at this point, maybe you may raise in another question, is in general it's a critical issue or a common problem that we are facing on our students or even in ourselves while we were students at different stages. I think, to answer this question in short, English is really important for engineering students.

Q2. What kinds of reading tasks are engineering students required to carry out for their academic study?

R: I don't think this would not be different from students of other streams. In our case students are supposed to read, I don't think this is a good habit; they are usually limited to read some handouts

that are prepared by their instructors. But they are also supposed to read reference materials, textbooks, and different kinds of books. Maybe, one of the slight differences from other departments could be this kind of engineering courses in most cases, they don't need to know a very much sophisticated kind of English to understand the concepts in the handouts and textbooks and in some engineering reference books. They are presented in very simple English I would say. So the students can understand easily. They are not so much deeper in terms of grammar or vocabulary. That is why, maybe, the students are a bit reluctant to go and more develop their English, to enhance their English speaking quality (capacity/proficiency) I guess. Usually the handout materials are prepared by lecturers in the institute. You can imagine how easily they can be understandable for the students. But in general we recommend the students to read first the handouts, and then to better understand the subject matter or to widen their understanding we recommend them to read lots of reference books. These days I think the reference books are better in the library. Previously when I was employed in this institute, maybe 2 years after the institute is formed. That time it was actually a technology faculty. That time there was a very big challenge for the students to get reference materials. Now I think the libraries are enriching their different varieties. They can easily get access to books if they are really dedicated to read. In general the books are understandable and in very simple English, maybe like law school or they are not really abstract. In my own experience, I think I assume myself to understand English better but if I just for my hobby or if I read some fictions or others even some journals like Time Magazine and so on, the English I found there are quite different from what I know in our textbooks. So, students are not engaged in other kinds of readings like fictions, and magazines and so on. They may think that they know English well. That could be the problem I guess.

Prompt: Are they also required to read other materials like manuals and so on?
R: Yeah, we do have manuals, actually some handbooks, design manuals. These types of materials are actually recommended for them at a senior level when they are in a 4^{th} or 5^{th} year. Maybe when they are doing their final year projects, they are supposed to read some design codes, manuals. For instance, we have the Ethiopian building code of standard. So this is a manual reference to guide them different standards set by this organization. But usually at the junior level they only read these handouts, lecture materials. These days they are more interested in the soft copy, but previously we used to give them a bunch of hard copy materials. That was the experience I know.

Prompt: Are they required to read research articles or journals?

R: In the undergraduate they are not so. In engineering schools this is to let them do some design work, not do some research. In some particular courses, some lecturers give them to review certain articles and to present their opinion and to summarize some literatures, but honestly speaking this is not a common event or phenomena. It's not a common practice.

Q3. **What kinds of writing tasks and assignments are engineering students required to carry out or produce for their academic study?**

R: Well, depending on the particular department, maybe it's slightly different, but in general like I said in the previous question, engineering students usually at their final year they will be engaged to do some design modification or to design a new structure. It could be a highway, it could be a building, it could be an irrigation structure, irrigation scheme facilities, for these kinds of design work, they need to apply the theories and design principles. It's not much about writing but it's about calculating and determining certain parameters. So in such cases, reading is still critical but not in terms of English. Like I said they can understand all the theories that are presented in simple English form and they need to apply these principles, formulas and so on to design their particular problem. I am not sure about electrical engineering, informatics and so on but in civil and hydraulic engineering usually they will be engaged in a particular design problem. First of all they will analyze the design problem of a certain thing. Then they try to invent something new, to design something new.

For instance, what I know in the previous experience, students will be given the architectural design of a building. It could be this building. We have the drawing, the architect's drawing. We give them to design, the structural part of this building to determine the reinforcement requirement: the concrete quality and so forth. So these kinds of process need them to understand the code and to apply the formulas and the theories behind that they have been learning. Well, at the end they need to write it as a report all the processes they have carried out during the designing process as design report. Design report is the most common kind of report for engineering students.

Prompt: What about the other kinds of writing tasks such as lab reports and internship reports?

R: Yes these are the most common ones for engineering students; at least they have lots of laboratories actually. There is a kind of format to follow and present their lab report. So it's about filling that format. Even in our laboratory manual, I'm not sure about the present situation because I was away for the last four years for my study. We do have a kind of format that the students will have to follow like the analysis and the apparatus they have used to do and then the process, the results and then the discussion and the conclusion. That is, this kind of format they usually follow to present the lab report.

Well, after coming from their internship they have to submit their report and they have to present it. The final year is the design report. And in some cases some instructors ask the students to certain kinds of review, journal review. That is the common type of report. As you know there is one course, Technical Report Writing, in that course also…

Prompt: I think there is also a final year thesis, isn't it?

R: A final thesis is usually a design problem, a design process. They call it a final thesis but it is a kind of design report. Usually they do certain design so I don't know the exact difference between the design report and final thesis. To call it a design report, it must be pragmatic or must be implemented. That is, once you design it, you give it to the contractor to do. So that is the actual design report. The one that is done by our students is still a design report but it is for academic purpose, it is more of theoretical. Even it is at undergraduate level and we are not going to implement it. But still we can call it a design report. Usually we call it final year thesis or design project.

Prompt: How about a project report?

R: It's just a progress report. I have been also working in design at a private consultancy firm as a project coordinator. We had a client, that is, if you understand the difference between contractor and consultant. I had been working at a consultancy firm. That means, I was working on behalf of the client or the owner. So there was a contractor who was doing the actual task, constructing or building that particular project and the consultant is supervising the contractor, how he is doing the project. So, the contractor will present a kind of raw data to the consultant or he will present the weekly report that as executed. The consultant will compile it in a standard report format a progress report and give it to a client. The client understands how the project work is going on. So this we call it a progress report. The project report, I'm not sure, could be at the final stage when the project is finished, there will be a summarized report of all completion report. It is the same as a project report.

Q4. What kinds of speaking tasks and assignments are engineering students required to carry out or perform?

R: I think this is not a very good experience. That is our students are not very much engaged in lots of presentations during their whole course or their stay in the university. But I think it's from the curriculum. Even in a continuous assessment system that we have been following for the last seven or eight years, presentation is not very much included or integrated in most cases. But commonly, coming back from their internship, they present it. And also their final project, they present it. And very rarely some instructors arrange presentations by assigning certain tasks on the course work. There is a mini project in a particular course. For instance, in 'Structure I' students are taught how to design some irrigation structures, they could be asked to design an irrigation scheme for a simple plot of land or something. Then after completing this mini project, the instructor may arrange a presentation. This kind of presentations can be arranged but in general the attention given to speaking or inviting students to present their works is quite limited. Also in technical report writing, I don't know about it in this campus honestly speaking, my own experience in Arba Minch University is students will be arranged in groups of four or five, then they would be allowed to choose their own titles to do a mini research. So they can be engaged in some kind of project. The

whole semester will, in fact, be dedicated for this task. The instructor will first brief how to do the technical report writing and so on. Then the remaining few sessions are to consult their instructor on their progress while they were writing. Finally it's a very interesting presentation.

Prompt: Who taught you the course, English or engineering instructor?

R: And it was taught and arranged by English instructors. They have been teaching us sophomore English and Technical report writing while we were in the 4th year. We were taught by the same instructors.

Prompt: So the speaking tasks are only rarely needed, aren't they?

R: Yes, but I see the effect of this lack of sufficient presentation time for the students in senior level. When I was doing my second degree in the Netherlands, you know, by chance there were a lot of Ethiopians who got the scholarship and pursuing their Master's degree. So, one professor who was teaching there understood the problem with the Ethiopian students. He said that I remember: "The Ethiopian students are very good at examinations; they are very hard workers in written exams, but you know in foreign countries I have followed group work and presentations are very frequent and really tough kind of assessment. So in such kinds of events the Ethiopian students are lacking. They are not confident enough to present what they have done. They have already executed the job, but some other group members from other countries are presenting. So he said: "You really don't need to be shy; you have to present it; you have to dare to speak; otherwise, we don't know whether you have done it or not. I know that you are good in written exams; you are hard working, but unless you present it for the white people I think it is through speaking that they trust it and that they can understand you. So, that was the observation by one of the professors there. Even my senior students who were doing their PhDs in that same university were usually fearful to speak in front of the audience.

Prompt: What do you think is the problem with speaking?

R: I don't know; it could be a culture or maybe it's actually I understand it both: cultural influence or lack of confidence in our English skills.

Q5. What kinds of listening tasks are engineering students required to carry out? Or when are they required to listen?

R: Yes, to be honest, more than 90% of their activity is to listen to instructors what they are saying. They are supposed to listen to what the instructor is saying, that is, to lectures. Sometimes, some instructors give them some documentary movies. For instance, a teacher who is giving a course on hydropower engineering, he would like to show them how hydropower tunnel construction. So he can bring them and give them to see the movies. In that case it may be from the Youtube or sometimes from his own source, some movies are available. Sometimes listening is more important

for foreign lecturers, including Indians with a different accent. I know that some people have some difficulty to fully understand some Indians. But in general, listening is very, very important.

Prompt: How about when instructors giving instructions before project works or lab works?

R: Yes, instructions are given but at this point to be clear and honest, in the laboratory and field visits and so on, it's usually the local language to be closer to the students and make sure that they have understood everything. Sometimes in the laboratory it could be dangerous to make some mistakes. Well, there is a briefing in the laboratory. The theoretical background is briefed before they start the actual experimental duties. That theoretical background can be presented in English, but when they are engaged in the actual touch of the instruments and devices, we usually guide them in Amharic.

Prompt: Is it because the students don't understand English?
R: Yes, one factor is to make sure they understand everything. The other thing is the difficulty of explaining in English also on our side. Sometimes giving a lecture in English is not so difficult, but explaining the phenomena or the situation in the laboratory in English could be difficult. Yes, it's not like a formal speaking in the lecture, but it's like more practical speaking. In that case we also want to express the real situation clearly. So we use Amharic. That is the common experience.

Q6. What are the English language problems or difficulties of engineering students from your observation?

R: I see it is difficult to say because we haven't made any assessment. But the most difficult tasks I've observed with the students are speaking and writing. We read their exam papers, their reports and so on to assess how good they are in writing. We see a very big gap, big challenge. Sometimes, it is difficult to understand their exam papers, you know. Well, in fact if you see or if I show you some engineering students' exam papers, it's not more about writing; it's about calculations and so on. But there are some conceptual questions that they have to explain in words. There it's difficult to understand. In most cases, I'd say, it's a rough assessment, but around 75% of the students are not writing in a proper grammar or not using a proper vocabulary. Writing is a very serious challenge.

And the other is speaking. In fact, I mentioned that speaking, the presentation sessions are limited, and not so much sufficiently we evaluate their speaking. But usually we spend lots of time or give them more chance to speak during presenting their final year projects. That time we see that the students are facing a big problem in presenting what they have done already. Some of the students during their project work we know them that they are really engaged in the activities, but when they present it, they are not so good. To add some more on this issue actually I see some progress. In the past this problem was a very serious. Now we see a little improvement. Maybe the students' background is better improving somehow I think. Still it is not supported by evidence, but I see

some improvement on a rough assessment again. Listening like I said is not assessed, but I see that the students understand lectures and so on. Reading is not much problem. Like we discussed at the beginning, the level of English in the reference materials in the handouts and so on are presented in a very understandable way. So their two challenges are speaking and writing.

Prompt: If you were to put the language skills in order of difficulty from the most difficult to the least difficult, how do you put them?

R: The first one I think is writing problem, then speaking, then I'd say then listening and reading.

Q7. Do your students take any course related with technical report writing? If so, who offers that course, English instructors or engineering instructors?

R: Again I'm not certain about it. For one thing, as I was not engaged in internal activities here; I was engaged in my own research. But in the past I know that technical report writing was there as a course in the curriculum. In that course some of the points you have mentioned were included, not business letters and so on, but how to prepare a report from the topic up to the conclusion part. What are the overall contents of the technical report writing. These have been discussed in detail. My own experience as a student was that we were engaged in a kind of small research. We did a survey and we have a methodology, we set some objectives, we wrote the background and the introduction and we followed some methodology to analyze our data. And then we put the results and discussed the results and finally concluded. So this all content we learned from the common contents of technical report writing. These kinds of things were given in that institute also. And the course was offered by English instructors.

Prompt: So how do you see the importance of this course including your exposure at foreign universities abroad?

R: Like I said if it is in the present form you mentioned, that it is merged with Research Methodology, it would be then covered by research methods I guess. My own experience is I took the course separately as a Technical Report Writing. I believe it was very useful for writing our final year project and also for writing the internship report. So I suggest that system is better. That is, the words: "Technical report writing" should exist as a separate course. In a graduate study, it is there under the 'Research Methods.' There is a research methods course and some of contents are parts of the technical report writing. That is: how to present, how to write a report, and so on. But in undergraduate level I suggest that technical report writing is more important than the research methodology because here the students are not supposed to do the actual research. They are only supposed to know, not to explore at that level. Giving research methodology is still ok but if you have to give a priority, you should give it to technical report writing. That is my suggestion.

My experience abroad is that they are more focused to following their formats, technical formats. You have to respect all the protocols. I don't remember actually this was given as a course, but we are supposed to know the guidelines by reading from their websites. You have to go either in the library or in their own lab documentation. You have to see all the requirements or the technical aspects of your report of what it should be. So, they are very strict in that aspect. If you don't follow even the formats, the font size, the content and so on, your report may not be acceptable. So my suggestion is to keep the former way of giving technical report writing course separately.

Q8. What do you suggest to promote the English language skills of engineering students for the future?

R: Like we have stated before, the biggest gap is in speaking and writing. Well, I don't think there will be an abrupt change in their skills in the university level. It should be from the lower levels. Certain improvements have to be made there also. But once they are in the university level, higher institution, I think better emphasis shall be given to speaking and writing. These English courses at a freshman level or maybe at sophomore level, they should be more engaged in speaking and writing. If these two skills can be developed, automatically they will develop their reading and listening. If they have to present something they will read on it and they will discuss and will present in a written form and so on. So these speaking and writing shall be given due attention. Maybe the English courses to engineering students or to other students also at the university level shall focus on writing and speaking to encourage them some short essays and to present this. The students may not be happy maybe if they are supposed to present. Maybe they may not be very much interested, but it should be. That should be the culture. That is my opinion.

Thank you very much for your really insightful and crucial information you provided me. I'm very grateful to you.

Interview with Engineering instructor 2 – (EI2) Structural Engineer

Interviewer: Thank you very much for being voluntary for this interview. Could you introduce yourself, please?

Response: Thank you very much for involving me in your research. My name is (MEI2). I am from a civil engineering department. My specialization is more of structural engineering. And I have been here since 2001 E.C.

Q1. **How important is English language for engineering students' academic study and their future workplace communication?**

R: Well, it is needless to explain that as we all know in our universities the education is English based. That is the medium of communication is English. So, we need English to communicate in the campus. Especially since we are talking about engineering, this profession has already

developed a western technology that we used. They deliver their information and findings through this medium, which is English. It is so important. Even after they go for work after classes, they need to communicate to any kind of professional using this language. That is it.

Q2. What kinds of tasks or materials are engineering students required to read for their academic study?

R: Well we are usually accustomed to prepare handouts. Students need to read that handouts as their textbooks. They will refer accordingly different reference books as per our recommendations any available materials, especially online (resources). Since the majority of the students do have their own laptops and these plant sheets. They refer online resources and read whatever resources those are relevant for their study and courses.

Prompt: Can you explain what you mean by plant sheets?

R: Yeah. I mean any kind of soft copy reading equipment, like laptop, what you call mobile phones. Any type of materials like IPads, tablets they can use to access the internet and search for relevant materials.

Q3. What kinds writing tasks or assignments are engineering students required to write or produce for their academic study?

R: Yeah, they will do projects, and projects need detailed analysis, designs and so forth. Hence, they have to communicate their works, their designs, and their findings through writing. So, they report their works to their respective lecturers about their findings. The other things are lab reports. They have to write all the necessary laboratory procedures for the different laboratory courses. Field visits are sometimes reported. Assignments and classroom works and of course sometimes quizzes and tests are reported most of the time through writing, sometimes orally and practical lessons will be there of course. Sometimes they may be needed to deliver (present) a written report for these practical activities as well. And at last may be their thesis works or their graduation works. After they have done it they have to report it through writing.

They have to report also orally, especially for practical courses like projects, and semi-projects and semester projects. There are group assignments; they may be needed to present.

Prompt: You also mentioned about field visits and projects. Can you explain what these exactly are?

R: Sometimes the students are helped with visual aids. That is, they practically go to work places. May be in the construction industry, they will see how the construction is undergoing. Then, whatever they have learned in the classroom with whatever they see in the workplaces, they will try to bridge and report whatever their findings are. Plus to that, sometimes we want them to

experience the practical world, and in the meantime we will give them one semester internship period, it's fully practical work in the sites, and they work as an office or site engineer. And accordingly, they will be given tasks and in the meantime they will come up with a report and those reports are from a practical world. This internship is a long term visit. It's one semester course. It has 30 ECTS, equivalent to 6 to 7 courses in a semester. This is one of the mandatory things.

Q4. For what kinds of speaking tasks or assignments are engineering students required to make a presentation?

R: Well, it's a pity that the majority of the students use the local languages instead of English, even when they make presentations in the graduating classes. But officially they have to communicate in English. And all these activities, especially the ones which need presentations, they have to be communicated in English. So presentation is one of the tasks they will do. So whatever questions they don't understand, when we ask them to respond, that is a speaking task, but I am afraid they use English as their priority. They mostly go for their comfort zone which is Amharic or their local language.

Prompt: So what is the cause of this problem? Why can't they communicate in English?

R: Yes. Actually the problem goes back to their high school and elementary grades, not in the university because here they will spend almost for four to five years. But pre-campus years, they spend almost 12 years. They are not fully engaged or indulged in using English as medium of communication. It's known that English is a medium of instruction starting from grade 7 excepting some regional states. But even the teachers in the pre-campus life, I'm not sure, if they are encouraging them to use English. So the problem goes back there, not here. … One more problem actually is because to learn a language you don't need go to the formal education only. It's not the only way. That is also an impact if they want to develop their English.

Q5. Thank you. For what kinds of tasks or activities do the students need the listening skill?

R: The students are directly related with the listening skill. They have to listen a lot and speak less. The thing is they are students after all and lecturers are teachers. We teach them; they learn by listening and by seeing also. And lectures they have to listen. Instructions they have to listen. They go to the sites and communicate with local people and daily laborers, and they have to listen. May be some videos and audio lectures they have to listen. In the classroom, they will have to listen to each other, peer learning or group discussion and so forth. Learning is all about listening and then reflecting. We sometimes suggest them to watch some construction materials, some designs and they refer to You Tubes and listen. So mostly they are engaged with listening.

Q6. So from the tasks you mentioned so far: reading tasks, writing tasks, speaking tasks and listening tasks, which ones do engineering students generally find easier to carry out and which ones do they find more difficult or demanding to perform?

R: Well, the listening tasks appear to be the easiest to carry out and they don't need to reflect. They need to be attendant. When they speak, students find (feel or get) it very anxious. They become very nervous. They don't prefer the speaking. They find it more difficult for them. Even they don't ask in the classroom even if they have a question. They keep it with them. Sometimes they will ask you personally (outside) in other languages, especially if you use English in the classroom. Sometimes the lecturers use Amharic, but if you use English, somehow they are afraid. Some of the students find the writing tasks very difficult. Mostly one or two students write and the rest students will copy. That is the case. So the writing tasks are demanding. We need them to write. At least those students who are afraid of speaking, they have to express themselves through writing. They are not as such equipped with writing.

Q7. **In general, what do you think are the English language problems of engineering students?**

R: Well, it's actually multifaceted problem. They do have a lot of problems in all of the skills to use English. Listening mostly appears the easiest, but they do have a problem in listening. In the classroom if you teach 100 percent English as a medium of instruction, they may understand, I may be mistaken, around 60 or 70 percent. Listening is one of the problems. The other thing, the writing is also a problem. They are equipped with copying than writing by themselves. When we talk about writing, it's not about a hand-writing. It's about generating ideas and putting it on paper. That thing is the biggest problem. Sometimes even though they have the ideas to write, they don't know how to put it on paper. They are not used to writing. They do have also a speaking problem. Speaking actually needs more indulgence than the others as I guess. When it comes to talking, they have to be involved with interaction. Engagement is required. So is the major problem, I guess. … Reading is also another problem because the students are engaged with reading when they do have exams, when they do assignments, when they have quizzes or tests, but usually they don't like reading.

Prompt: Do they have much problem in reading?

R: I guess so. Well, in engineering fields, we don't check them how they read whether they have problems while reading or not. We check them if they know something, if they understand the concept. But it is difficult to check if they have read something or not. We cannot exactly pinpoint if they know something through reading or not as we do in listening or other practical things, such as writing and speaking. It is somehow difficult to judge if they have reading problems or not.

Prompt: If you were asked to put the language skills in order of difficulty for engineering students, how would you put them?

R: Well, from the easiest, I guess listening is somehow the easiest, may be reading comes in the second place because it is personal. They can read it and understand somehow. The third appears like writing and the fourth and the most difficult thing is speaking.

Prompt: what do you think about the listening skill, if they were taught by a native speaker of English, would it be the same?

R: Well, this is somehow subjective. It depends because our students come from different backgrounds and places. Especially those students who come from Addis, they may not have such a big problem because they are accustomed to the native intonations, accents and pronunciations through movies and videos. But those coming from rural areas, they may have some difficulties.

Prompt: You said students copy from one another and they don' produce their own work, why is it so?

R: Yeah, as I said it before when it comes to writing, almost all of them, especially speaking and writing, they have to indulge (engage/ involve) themselves in the task. I guess in their pre-campus life they don't have much experience of writing. They go to their comfort one which is copying. That is the common problem. They copy because they have difficulties in expressing what they know through writing. In keeping the flow of ideas, when they start writing, their ideas become disintegrated. They try to find words that can express their ideas; in the meantime they are not focused on the ideas, so they will go astray from the main point. They may start something explaining, and they may end up concluding something different. So, I think that is the problem.

Q8. **How do you put the four skills in order of importance for engineering students for their academic study?**

R: I think, they have to engage first in active listening. Active listening is very important for them. And the other thing is they have to read. Reading is very important for engineering students because they have to refer to different books and concepts or the same concept with different approaches; they have to address their gaps through reading, not only through official lecture. The other thing is writing because doing their projects, they express their ideas. Sometimes they discover something. They come through some challenging issues and come up with the solutions. When they come up with a solution, it is not about some numerical manipulations of ideas, but they have to put it on paper so that any layman can understand. That is done through writing. So, for writing I give the third position in the level of importance. The fourth is speaking because they have to share some of their ideas through the medium of speaking (and they are required to do only sometimes).

Q9. How important is technical and report writing for engineering students? And who is offering the course if there is one?

R: Ok, technical report writing as the name signifies is a discipline oriented. So all the disciplines in any engineering field, they have to follow some techniques. Mostly what we do is we give them some set of guidelines. For example, when it comes to laboratory report, they have to go to the lab and they will examine some experiments and we give them some manuals of reporting. They play around only the numerical values. But the general ideas or the manuscript becomes somehow similar unless and otherwise some students come up with exceptional results. They will follow the same procedures. And the approaches are discipline-oriented, discipline-specific, so this technical report writing for me is preferable that students learn through the discipline professionals. If they are civil engineering students, I advise technical report writing to be given by the professionals from civil engineering. That is how I think.

Prompt: how about the language aspects such as the grammatical, the formats of writing, organization of ideas, and coherence? If the discipline specialists teach the course, they may give more emphasis on the content aspects and not the language aspects?

R: I think actually the collaborative way of teaching is preferable. As you said the language aspect and the technical (content) aspect are both important at the same time. For me they have equal weight. May be the language aspect of technical writing may be covered by the language instructors, but the technical parts should be taught by the discipline specialists. Some disciplines are sensitive, for example, if you go to medical sciences and engineering, they do have different ways of reporting what they saw. May be the technical or content aspect may be covered by the civil engineering staff. So the composite way is better.

Prompt: Are the formats that are being used among different engineering disciplines the same? For example, are the lab report format, internship report formats, the research project writing and report formats the same among different engineering departments?

R: Yeah, the general outline is mostly is the same across disciplines, especially in engineering. And through time the different engineering disciplines have developed their own requirements of every description. So, mostly they have similar outlines, but when you go in detail, some of the departments have specific details. So for the report we give them the general guides for every tasks, for lab report, for thesis writing, for project writing sometimes. They are available for them in both hard copy and soft copy. Accordingly, they address each of the tasks and assignments respectively.

Q10. So for the future what aspects of English or skills should be given more emphasis for engineering students to help them to carry out the required tasks more effectively?

R: Well, I guess all the four skills are required in language learning. It should be somehow engaging. They have to be active participants whether it is listening or speaking, writing or reading. Especially English course teachers, they have to give them more tasks while listening. They have to give them more speaking tasks, more presentations and more comments. May be in the classroom

the medium of instruction, they have to be forced to use the language. Also in reading and writing, they have to be given more assignments to engage them. So in this way students will have better English language, I guess.

Prompt: What makes engineering different from the other natural sciences? What are the basics, fundamentals or the main concerns of engineering?

R: Well, natural science follows set of defined rules, formulas, whereas in engineering we don't simply follow formulas. What makes it more typical is design. So design is something that you bring for a specific problem. When you have a problem in natural science, they may address in the same way. They will be given a set of rules and guidelines, they have to follow that and find out the same results. When you come to engineering, you have one problem and if you have 50 students, you will have 50 different results which are correct. Not to say it is subjective but it is more of conceptual. The concept of this natural science and they will come up with their own interpretations, it is more engaging and it is more like engineering. Engineering gives you more room to use your own intuitions and knowledge to come up with some specific or general solutions. So engineering has no place without a problem. We like problems. Without a problem there is no engineering. You have a problem; you have a solution. So it is problem solving.

P: Can you explain for me what design means in engineering?

R: Yeah, you have a set of problems, as human beings we all have problems. I can say the majority of human problems can be addressed by engineering. If you have any difficulties with walking, we will try to design some walking-aids. If you have a problem with hearing, we will try to design a specific aid with regard to hearing. Any house problem we try to make a house affordable with your economy. If you have problems with vehicles, we try to design a solution according to the specific problem. When you design, you perfect or deliberate your issue with the needed solution. When you call engineering, we give you a specific solution to your specific problem in a way that is accessible or usable or very friendly or understandable and tangible solution.

Thank you very much for generously sharing your insights on the issues raised. I'm very grateful.

Interview with Engineering Instructor 3 (EI3) -Construction Technology & Management

I: Thank you very much for being voluntary for this interview. Would you introduce yourself please?

R: Thank you for involving me in your study. My name is (EI3). I've been working in this institute for 12 years actually. My specialization is a construction engineer.

Q1. How important is English language for engineering students for their academic and future work-related communication?

R: I'll tell you this in the context of my profession. The main thing is the practice. We are producing the students to fit for practice. To practice we use mainly contract documents in English. You can't find a single document in a local language, Amharic, Afan Oromo etc. So, knowing English is mandatory to succeed in the industry. That is the basic thing because we have to read those contract documents. Again we have to give reports, weekly reports, and monthly reports for the contracting parties in English. I can say it is mandatory for my profession. So to equip the students to fit for this purpose we have to prepare them. In the teaching process, of course, we have courses to equip them with these skills. You know those courses in the pre-engineering. They are preliminary English courses. After they have joined the department, we have certain courses like *Report writing and Research Methods*. Probably we are the only department in which students graduate by writing a thesis. In other departments they do things like technical things, projects. In our case, in COTM undergraduate students have to write a thesis as a partial fulfillment. That is the importance actually.

Q2. Which English language skills are particularly important for engineering students?

R: I can say all. As I have said they have to read the contract document to understand. Otherwise they cannot translate the drawings and other things to this building and the infrastructure. They have to report to the counter parts, so the writing skill is required. Again they have to communicate if you take some international companies, for instance, Chinese companies are there, Indian companies are there, different companies are there. Our graduates work with them. So they have to communicate (speak) that speaking skill is also required. By default listening skill is also part of the process.

P: Can you put them in order of importance for engineering students' academic study?

R: The first thing they have to read to understand. The second they have to report most of their activities, so writing is very important. For example, I was a project manager in different projects. I have to order them do this and do that. So the third is speaking.

Q3. What kinds of materials, documents or resources are engineering students required to read for their academic study?

R: They have to read technical books actually. It depends and differs from instructor to instructor. Lecture materials (notes) are mandatory, reference books. The other mandatory material in my perception is laboratory manuals because to construct a building we have to test the concrete, sand and the aggregate, everything. So they have to read these laboratory manuals. Not only are those manuals we checking the minimum requirement of those materials by referring to the codes and standards. So, there are national codes and standards. For instance, if you are checking the strength of the reinforcement bar, you have to check the Ethiopian standards. What is the requirement, different parameters for the tensile strength, so many technical issues are there. Apart from this, our

national codes have some limitations. So, they have to read international codes also. There are internationally accepted standards, rules and regulations for technical purposes. So, they have to read that. The other is that we are building infrastructure contracts. So, contractual requirements have some standards. We have national standards and we have international standards. Those things are basic actually.

P: How about reading research documents?

R: Yes, you know our engineering program is ten semesters. Especially starting from fourth year, second semester, they have to research also because in the eighth semester they take the research methods course. At least, they have to refer to research papers. Actually we do not expect undergraduate students to refer to masters' theses or Ph.D. dissertations, but at least they have to refer to B.Sc. theses. As I have told you in our department B.Sc. thesis is a requirement. So they have to refer to that also.

P: What about reading different reports like internship reports?

R: Yes in their internship actually in the ninth semester, we expect them to refer to contract documents. Again we expect them to review the progress reports of the projects. We expect them to refer to company structure, how the company is working, how the system is functioning. Again they have to write reports actually to fulfill their internship requirements. Then they have to come to present those things and we evaluate whether they have achieved the aspired objectives or not. The other main thing is I don't know how you classify that. Drawing is the basic thing. So, one engineering student has to be able to do drawing. We equally need students to read and then to sketch.

P: How much language does it need apart from the technical knowledge?

R: Of course, apart from the visual knowledge, there are different descriptions on that drawing. Legends are there. We write short notes on that, for example, for this drawing to get the detail go and read this or that national standard.

Q4. What kinds of writing tasks, activities are engineering students required to carry out for their academic purpose?

R: Concerning the writing you know that we are following continuous assessments. So, writing assessments always are part of the evaluation. Assignments are usually there when they get to senior classes; we give them like case studies. When they are given case studies, they have to read those cases. They have to identify the problems and they have to write a remedial as a solution because in the real life they encounter those things and they have to give a solution. So case studies they have to write. In most of the courses there are laboratory reports.

P: What is done in the laboratory and what does lab reports involve in engineering fields?

R: Actually, there are many things in the laboratory. In my case, for example, concrete related issues, metal related issues, electrical related issues, etc. They have to write what the objective of that test is and second what are the procedures to conduct that test. Then they have to write about what the engineering implication of that test, the results. That is not only for the academic exercise only but also to understand the implication. This is the general framework, but it differs from subject to subject.

P: What other writing tasks do they have to carry out?

R: The other thing is they have to write thesis. They have to go through all the process of the research. They have to write a proposal, and they have to defend the proposal. Again, they have to collect data, analyze the data and write that report and defend. Concerning the internship report, last year I carried out one research on how that internship is effective. Though there are problems, the actual process is they have to write a report on what they have observed. Again they have to write a monthly report to the mentor about what they have observed, the implications, the gaps and the activities. And finally they have to produce the final report and they come to defend the report.

P: How effective are the internship reports from your observation?

R: Yeah, from my observation actually there is a problem, especially internship. You know they don't have the trend of collecting the data and last semester student X has done in this company and this report is his, at least the summary. We don't have that kind of trend. There is a problem of copying; I cannot exactly say plagiarism because the format itself has a problem. In the format they are required to write large numbers of pages about the company. For instance, student X has worked in Y Company last year, and then the next student will not bring anything new because it is the same company. In my understanding we have to change that to help them write something different to improve their writing skills. That is one gap. The other thing is the same section I think in the last part of the report. They have to tell about the gaps encountered in the internship. Almost all of them write about the same thing again. Even though there is a problem they have to write on their own. So we have to change from the institute's side. The other problem concerning writing is you can collect a few theses and check. From that you can observe problems in writing formats and the language.

Q5. What kinds of speaking tasks or presentations are engineering students required to perform or carry out?

R: Look, the basic problem is in this skill. They are actually our products actually. That is, most of the problems are the instructors' only (also). We do not provide them that platform to present what they have done. For example, we collect their assignments, we evaluate them and we give them

marks only. Even in the semester projects also, we order them to conduct the projects and then we evaluate. You know the 70:30 issue for the last five or six years. That is, 70% of the students were joining science and technology. That is the problem because the class size is very large and difficult to manage actually. There are still some instructors who are arranging assignments and semester projects for presentation. But most of us simply collect and evaluate and give marks. Even they don't evaluate their language. The class size is one thing but from my experience I haven't observed instructors at least trying to do that. To say this is a challenge, we have to first try. The other thing is most of the instructors are very young in this institute as you can see. That is also a problem (They lack experience and less qualified). If you see the seniors and the juniors, there is a difference. The senior staffs are a bit serious; they try to address everything. Those problems are there.

Q6. What kinds of listening tasks are engineering students required to carry out for their academic study?

R: They have to listen to our lectures. Even though labs and demonstrations are there, most of the things are theoretical in the construction technology and management. So they have to listen to that. Apart from that in my courses sometimes I insist on students to watch some videos from You tube resources. For example, when I am teaching the technical things, I used to download those things and show them: "This is the actual practice or this is what I have been saying." So for further detail you can do this. But I cannot say this is the common practice. I also advise students to watch other videos like professional documentaries. If you are most of the time listening to or reading only the technical issues, the terminologies are limited. When you go beyond that scope, you can get more terminologies. But if you are confined, it will be difficult because if you are talking about technical materials in the construction such as the materials, the instruments and son on, they are very much limited. For students listening is a basic one.

Q7. From your observation what are the main English language problems of engineering students?

R: Yes. The first thing is they can't articulate things together. If you take the writing, the tense issues are there, even organizing the content. When you are reading a report, you can't get consistency even in a single paragraph. The first statement is talking about one thing and the second is about a different thing. The other is there is a problem in presenting the introduction, the body and the conclusion of their writings. It is also associated with lack of technical knowledge. They don't actually know what they are writing. They also don't give attention to format and mechanical issues like spelling and capitalization. Concerning the format as an institute we don't have a detailed format for BSc students. For Masters we have an SGC guideline. The other thing is if you see their thesis, you can see citation problems. They don't know how to cite, what the styles are and how to organize those things.

P: How about speaking problems?

R: Speaking they have a problem in expressing what they have done. Even they can't tell you what their interest are. If you ask them what motivated to do the kind of study they carried out, they can't tell you properly. Leave these things which are technical. If you ask the process like the objectives, the methods devised to achieve these objectives, they don't tell you properly.

P: Do they have problems in reading effectively?

R: Effective reading? Yes, if you check the literature review, you can say most of the problems you observe from their thesis are the result of lack of understanding of critical reading. If you understand, the core points of the author, you can summarize it. Again you can compare and contrast with the other authors. If you can't do these things, it means you don't have that skill. That is one indicator.

P: Can you put the language skills in order of difficulty for engineering students' academic study?
R: Ok, I can say writing is the first most difficult; then second is speaking; then reading and it is better to take the listening skill at last.

Q8. Do the students take any course related to technical report writing? If so who teaches the course?

R: I will tell you this from two dimensions. The first is the duration or the timing of the course. Look, they are taking the course, research methods and technical report writing at 7^{th} or 8^{th} semester. But they are taking most of their lab reports starting from the earlier year. So my recommendation actually is at least we have to split the research aspect and the technical report aspects and we have to give them the technical report writing early. Let us say in the second year so that they can write good reports in the second year or third year and so on. That is one problem because we are giving a single course as merged.

P: Have you ever taught that course?

R: Yes, in 2016 second semester. That time I observed the problem. One is it is difficult to give that course in a single semester. The other is that semester was the most loaded one, taking different senior year courses. Those senior courses have semester projects. The third is who is teaching that course, the instructors. We don't have many senior academic staff. Most of the staff are young. One is the timing, the other is the load and the third problem is the instructors. My recommendation is at least this course should be given centrally by the university.

P: So who should teach that course from your point of view, English instructors or subject specialists?

R: Two things: The technical reports by technical staff because the lab issues and so many things and the language and format aspect by the English department. Two instructors can teach that course; one from the language department and the other from major department. At least in that way we can improve the problem at higher education level, and the rest at primary and secondary levels.

Q9. What do you suggest for the future that English courses for engineering students should give emphasis to? Or what language skills and tasks should be given more attention?

R: We can focus on two points. The first is in construction we do everything in a team, teamwork is there, not a single company. The teams are from different companies. For example, if you are constructing one building for this university, the university is there, the consultant is there, the contractor is there, and sometimes other parties will be there. So when we teach them they have to know how to report to these different parties. They have to understand the requirements of each party, what their needs are and what the report has to fulfill for the different parties. The other thing is as an engineer we have to innovate something new. For that we have to teach how to write that new thing because you have to convince the scientists about the new innovation. In that case I think we can contextualize the communication.

I: Thank you very much for your time and giving this invaluable information.

Interview with Engineering instructor 4 (EI4)

I: Thank you so much for being voluntary for this interview. I am going to ask you a few questions about the English language needs of engineering students. First, can you introduce yourself please?

R: Thank you. My name is (EI4) and I am an instructor in the Department of Industrial engineering. And also I've been working as an associate registrar of IOT.

Q1. Thank you very much. So how important do you think English is for engineering students for their academic study and future workplace communication?

R: As you know English language is very essential first for communication. When we come to engineering aspect to the industrial world it is very critical means of communication and also a medium of instruction for students with which they understand instructions. They must also interpret it (instructions) to change it into a real work. So it is very vital not only as a means of communication but also to ease their life.

Q2. What kinds of reading tasks and assignments are engineering students required to carry out for their academic study?

R: Ok, as you know teaching and learning process is a progressive. Starting from their entry or first year there are so many courses to be offered, and those courses have their own means of

transferring information from instructor to students and also there are certain tasks and duties that the students carry out individually and also in groups. Therefore, basically each individual must be capable of introducing himself with his instructors or other students. Then after, he must be able to understand the information that is given, and also the instructions. Then, there are reading assignments that are going to be presented (given) to students. There are also many books, teaching materials, slides and the likes as a means of instruction and they must understand that. Based on the instruction, for example, for reading assignments they may have project works based on their level. There are so many reading assignments to be carried out and then presented or only submitted in paper.

Prompt: What other reading tasks are they required to carry out? Are they required to read such things as manuals, reports and so on?

R: Yeah, based on their academic year, for example, if they are first and second year, they focus on lecture notes, textbooks, slides, and sometimes videos and also audios based on the course. When they become senior level, for example, on the fourth and fifth years there is research methodology course. In that case, they are expected to review some journal articles and they are introduced to some scientific outputs. In the fourth and fifth years they are expected to read some projects, research papers carried out by their senior students and other international researchers. And also they are expected to review those papers, project works, and make presentations.

Q3. What kinds of writing tasks and assignments are engineering students required to carry out?

R: Yeah. The writing part is a must. Sometimes there are mini-projects and assignments. In that case, these have to be supported with written reports. Sometimes they may be given semester-based projects. Sometimes they are expected to review some projects and finally submit the summary of that document in the form of a written paper. Especially, in the fourth and fifth years, there are individual projects. For example, in the fourth year, there is an operation research course. Operation research individual students are given a project. That project is going to be conducted in the industry. Then they must come up with a report. And when they come to the senior class, they must work on their graduation paper sometimes individually and sometimes in groups and they must submit it. Therefore, these writing activities are expected to be done.

Prompt: Are they also required to write and submit their internship reports?

R: Of course. Even in the internship one mandatory document is their report. They present two types of report. One is the daily activity which they are performing. The other one is to our department they must come up with a project, the real problem they faced and what they did for that problem. Sometimes they may even come up with a design idea that can be extended to their graduation project. Therefore, they must come up with two reports one as a daily activity report and the other as a final report.

Q4. What kinds of speaking tasks and activities are engineering students required to perform for their academic study?

R: Regarding the speaking activities, for example, if there is a mini project and some other tasks, if the time permits not only preparing their papers, they are also expected to present in front of the students. Most of the time, especially when they reach fourth year and fifth year there are some tasks that must be presented in front of the students. But in the lower levels, except for the asking and answering in the classroom, I don't think there are such big tasks to be given and presented. But when they are in senior years, there are such activities to be presented.

Prompt: Are they also required to make presentations for tasks like internships and lab reports?

R: Yes especially for the internship they must not only prepare the report but also they must present it because the presentation part has also its own marks. The paper has its own marks. Therefore if one submits only the paper, he will not be qualified. So he must present that part. And sometimes based on the course as I said for my course actually there is no such a big scenarios to be presented, but in the fourth year first semester there is a project. That project must be presented. The courses are operation research I and II. One is third year second semester and the other is fourth year. Therefore, in that case they must carry out the project in the industries and finally they present that. So there are such presentations even in other departments. It is as big as compared to the written assignments.

Prompt: Do you mean it is not done as frequently as the writing assignments?

R: The time also does not permit us. The class size is very large and usually the second semester is very tight to present. There are many closings and holidays, but there are critical tasks that must be presented.

Prompt: How about lab reports? What is involved in lab reports? Are they also presented?

R: Most of the activities of laboratories carried out are computer based programs. In that case all the analysis and input design and other requirements must be given. For example, if it is program writing, they must write following all the instructions in that program. In other cases for example if is manufacturing workshop, it may be expected to write up all the manufacturing processes. They may be given one project. Based on that project they are expected to write all the process from input stage to output stage. They are expected to write the flow process. Before they go into the project they are given the guideline they have to follow to write the report.

Q5. What kinds of listening tasks and activities are engineering students required to carry out for their academic study? Or when are required to listen?

R: Listening is crucial. Unless and otherwise one student listens to what the instructor is saying or what other sources are trying to transfer the information through that medium, it is difficult for students. In addition, in the classroom we present some videos from You tube. For example, we don't have the ergonomic lab here. Ergonomics is a science that studies about manufacturing, for example, the way we sit, the distance from the seat and so on are studied. In that we don't have such a lab. What we are going to do is we download some videos from different sources and present for them. It is not only the listening but there is a demonstration part also. They know the physical instrument that is going to be used. For instance, this laptop is an ergonomic product. If you are going to type for a long time, there is a pain in your wrist. The pain is directly related with the force that you are applying on this keyboard. The keyboards are through time improved. If you compare the keyboards of the laptop and desktop, the forces that you are applying in both keyboards are different. Therefore, this analysis will help improve products, working environments and productivity. The main aspect is productivity. Unless the working environment and the tools are ergonomically designed, there will be stress, there will be strain developed and as a result individuals may not exert their full energy and their productivity as an individual and organization will get down. So we have to study the light, the illumination, the color and the like because they are there are many things that cause stress. That stress will hinder the productivity. Therefore they see how things are performed, how different parts of our bodies are performing. They are going to analyze the rates. They are going to design a hand tool for different purposes. So what we have as an option is to show videos and demonstrations. In that case they will listen how things are carried out.

Q6. From the tasks (reading, writing, speaking and listening tasks) which ones do engineering students experience the most kind of difficulty to carry out or perform from your observation.

R: From my observation the speaking part is difficult. Maybe it is because of their background or some individuals may fear to stand in front their classmates and also instructors. Even sometimes unless you do have a well written and well understood document, just you may fear to present it. Anyway the hardest and most difficult part is speaking because in the other areas for example, in the writing they may refer different books, google different sites but while presenting they don't even have experiences. There, they feel ashamed to stand and also there is language barrier.

Prompt: So can you put them in order of difficulty from the most difficult to the least difficult?

R: Actually, the most difficult is speaking. Next may be listening because sometimes while lecturing, it may be due to lack of interest, some may grasp the basic concept, some may divert their attention. Even discussing in a group they have listening problems. In order to write is the third difficult. If you give them some writing assignments, for example, even to express themselves in a written form I saw a difficulty. Reading may be the least difficult.

Prompt: From your observation what are the English language problems of engineering students?

R: In general, there are difficulties in all aspects. But the basic problem as to my observation is how we teach them starting from the lower level because language is developed through time. In every aspect, listening, writing, speaking and reading there are difficulties. For example, in listening, if I go back to my high school life and even in the university, we don't have as such a good skill. Only to get a pass mark, they are not developing the language. That creates a void which always presents itself. There needs to be a highly developed instruction. The problem is not only in our students but also in our instructors because we are flowing through the same pipe. Unless we change that pipe, the output is always the same. I see difficulties in different areas, in pronunciation and so on, so we need to work in those areas.

Prompt: Can you put the language skills in order of importance for engineering students?

R: For engineering students, we usually communicate through diagrams, drawings, templates and the like. Therefore, reading and interpreting those documents is very vital. Unless you understand these, you can't put them into real work. So the most importantly required skills are writing, speaking, reading and listening. For me writing is the first because if you face difficulties in speaking and then if you write the proper document or report, you are tolerable and can still communicate with your report. Therefore for engineering students writing is the basic and the most important thing.

Q7. Do (your) engineering students take any course related with technical report writing? If so, who teaches that course, engineering or English instructors?

R: In the Research Methodology part there is technical report writing. In that case they are expected to write a report. Not only writing a proposal, they are expected also to write a report based on their previous activities. And that course is given by the major department instructors. The main focus is in preparing proposals for the main project. Anyway, the technical report writing is also important for engineering students to compete in the industrial world because they have to write reports clearly and correctly. For technical graduates it is a must to write reports correctly; otherwise the final outcome will be wrong because if you miss one in a flow process, finally the product will be defective. So it is very essential to take this technical and report writing.

Q8. What do you suggest that English courses for engineering students should give emphasis to in the future to make them better address their needs?

R: All skills are essential, but as I rated earlier for engineering students I think the writing part is basic because every communication is carried out in written form. They must be capable of writing good reports. They must express the flow of a product or whatsoever in a well written form. And they must be capable of producing documents, manuals and the like. In order to write first you have

to know the language well. After writing expressing what you have written is a must. Therefore, speaking part is next to me. Then the next emphasis should be given to reading and listening. If we give our due attention in these areas we may produce competent students.

Prompt: What do you think are the reasons as some department students of engineering do not have the motivation and interest to English courses? They take only because it is in the time table or the curriculum? They don't know that they need the skills when they are in senior years.

R: I think the basic thing is to create awareness first because language is a means of communication. Unless you know the language, you will face difficulties in order to communicate whether it is in academic or work area. Therefore, they must know that. I feel the way they act in that course. Not only in that course there are some common courses which are offered by other departments. They give less attention, but when you come to language I think it is a key whether they are in the engineering aspect or social fields. I think the major area instructors should come together with the language instructors when they develop a module or whatsoever on the content or medium of instruction or on the way how to offer that course. As you can see we do have a large class size and sometimes it is difficult to read the detail of students' reports. You may just highlight it and finally you give them grades. And the students need the grades and not the skills. But the basic part of education is not the grade, but the skill. Unless and otherwise you gain that skill and use it for your future life, it will be simply a wastage of time. Therefore I think we must come together and assess the problems and then suggest the method and finally develop methodologies in order to offer that course. Not for the sake of offering but also to let the students gain the skills because our students are not competent in this area. Industry owners are always complaining. We must sit together and work in that area.

When it comes to engineering areas, in our students' mind there are rates that there are students who are placed without their preferences. Highly demanded departments are like Electrical, Civil. COTM, Mechanical and the like that students prefer to join these departments. As you know we can't accept all students in these areas. We do have around 19 departments; therefore, some departments are placed by force. Therefore, not only in the language area but also in all courses, there are some students who lack interest. Even they simply attend to survive. That also has a problem. Finally, they may survive and graduate, but when they go to the real workplace not only the language some of them lack the basic skills, knowledge, principles and the like. Therefore, the problem has also its roots in the placement. For example, in Bio-systems, Water Resources and the students always complain on the placement. There is a big gap on the performances of students of, for example, Civil and Bio-systems departments. Generally students don't like to be placed in Bio-systems, Irrigation, Environmental and Water Resources departments. That may be their 15^{th} or 16^{th} choice but they don't have another option. So this also played a role to lose interest and I think we must work on that in order to let the students accept what they got. Finally they may work in their

interest areas. So a collaborative effort is a must I think, not the effort of any single individuals or departments.

Thank you very much for providing such a critical and in-depth responses for the questions raised.

Engineering instructor interview 5 (EI5)-Chemical Engineering

Q1. How important do you think English is for studying engineering fields effectively?

Response: Language is truly important and mandatory to understand science, engineering, how science works, and how we really apply engineering and science problems. So, every book and literature, every reference, all of them you find them in English language. Unless we understand the language, we cannot grasp the basic knowledge. We cannot even do analysis in engineering. So, one is maybe due to the curriculum or the situation, every book is in English, the medium of instruction is English. So unless the students understand English, they will never understand engineering and science at all. It is a key.

Q2. What kinds of reading tasks do you assign your students to carry out or read in engineering fields?

Response: Okay, the students are supposed to read different materials. Once we give them different topics, they will find articles, published papers, books, references, they will read it and summarize. So, they will report it maybe in terms of presentation or in terms of written format. So we give them different ample solid science or some theory or concept or engineering problems. So, they will read about these things and tell by referring to many published papers, many articles and journals and we ask them to present what they really get from those books. So, we ask them to present or show us and they read it report that. And we need them to report not the details of each and everything, but the summary of it, like the executive summary, the review summary and the core idea or concept from those readings. So they will give us the report as a summary.

Q3. What writing tasks or assignments are engineering students required to write or carry out?

Response: Writing assignments are students write separate ample laboratory reports. The laboratory report is one form of writing assignment. The other is field visit report. Once they made separate ample visit, they will repot us in written format. The other is internship report.

Prompt: What is the difference between industry or field visit report and internship reports?

Response: Industry or field visit reports and internship reports are quite different. Internship report is four months activity; it is like a semester wise. Industry visit maybe one week or two weeks. They will go there, they will visit and ask what is going there and they will report what they get after the visit is over. The internship we need them to submit monthly report, weekly report, finally

the final document. That is the internship document. We need them to submit those reports in the written format. In addition, we give them pilot planned prototype production. They are engineering students; they have to practice it in the lab. So, once this schooling is over, they will be graduated and when they become in the real world, you know, they have to do their own business. So, they will prepare a business plan; they will prepare different ample project proposals. They will prepare project reports, design reports, result analysis, every research and project-related activities. Then they will write the papers and they will submit.

Prompt: Is the design report common across all engineering departments or specific to certain engineering disciplines only?

Response: It is common for every engineering department, and every engineering student should have to do this design project. But the number is not limited and the same. Say, for example, in some engineering departments the number of design report might be two; in other departments it might be three or four. The design project will be repeated again and again. For example, when they become third year, they will do one design project. When they become fourth year, they will do another design project, and when they become fifth year, etc. It is like a laboratory report common and mandatory for all engineering students.

Q3: What speaking tasks or assignments are undergraduate engineering students required to carry out or perform?

Response: Regarding speaking skill, many staffs of chemical engineering need students to summarize what they have learnt the day before. They will stand in front of the students and summarize orally. They have to tell their friends what they have learnt before. The other speaking activity is presentation. They will present their projects. They will present paper reviews. They will present about some solid engineering concepts. So, we ask the students to speak it out, and they have to tell their friends and teachers what they have done and it is supposed to in English. So, we don't need to hear any other language since the medium of instruction is English. We need them to speak in English. If they are talking in other language like Amharic, we tell them to speak in English. If it is very difficult for the students to speak in English or if they are in trouble, we let them to speak in Amharic or other language. That is exceptional, but it is supposed to be English. That is very rare. Most of the time they can speak in English, and they need to speak in English.

Q4. What listening tasks are engineering students required to carry out? How important is the listening skill for engineering students?

Response: Since the curriculum is like lecture, tutorial and lab, whenever the teacher talks, they have to listen. And the teacher tests whether students are listening or not, whether the students understand what the teacher says or not, by thirty minutes or an hour gap, the teacher checks their understanding by asking some questions. So, if they listen and understand what he says, they will

reply. If not, the teacher will repeat what he says briefly. In the lecturing section, the students are supposed to listen. And he asks them some questions, when he needs some response from the students. In general, during lecture, tutorials, seminars, lab sessions, pre-lab talks students are supposed to listen.

Prompt: Will you attend students in the laboratory workshops?

Response: Surely. This year I have ample students in the graduating class, we come up with the new idea of finding ample researches, a powerful thesis research titles. So what I did was I called them and every week we have a meeting. And in that meeting we discuss a lot how to get research title, how to read a published paper, how to get information from those published papers, and I let them to review the papers. I will give them the papers; they will review and prepare a power point or hand outs or short notes and present orally and sometimes in written form. They will tell me what they have read from those papers. We did it with more than ten staffs in this semester in every two weeks.

Prompt: Are the students required to write the laboratory report and then present?

Response: Most of the time we have this kinds of seminars in the second semester. In this year we made in both semesters. So, we have such kinds of workshops, seminars, reviews, presentations, and the like.

Q5. From the tasks you mentioned above which ones do engineering students generally find easy and which ones do they find hard or difficult to carry out or perform?

Response: Okay, if we let them to read and understand what it means, we find that it is very easy for them. Whatever difficult material you give them to read, whatever solid science it is and you tell them to read report us, they do it very easily. Writing, as compared to reading is a little bit complex for them. But in my experience I found that speaking is a very big problem for them. May be some of them want to speak but they are frustrated. They will say like: what if my accent is not good? What if my grammar is not correct? Maybe the students may laugh at me? So I found out that many of them don't like to speak. They would like to read, they like to write, but to speak out loud is very challenging for them.

Prompt: How do you generally evaluate the overall English language proficiency of undergraduate engineering students?

Response: Okay. There is a problem in the students. But if you ask me about their overall English proficiency, then I give them average. Some of them are above average; some of them are very good; some are below average. Some of the students are really good at writing, and the rest are good at speaking, the others at listening. And those who are good at speaking are not good at writing. Some of them who are good at writing are not good at speaking. So in general their

proficiency is really a big challenge for them. And there is one incident in the lab. And in that lab session, I was talking in English and it seems that everyone was listening to me. But after all I realized that they were not listening. Then I asked them, and no one would reply to me. Then I said, "What is happening? Can you speak English?" They said we can speak a little. Then I told this to my friends, and my friend told me that this is the problem of the whole country. It is the problem not only for the students; some of the staff cannot speak in English. They don't like to speak in English. So they prefer to speak in Amharic. This needs strong improvement or modification because the medium of instruction is English. They are supposed to communicate in English. They are supposed to write good English. They are supposed to listen what they are said. The other is fragmented sentences; they start to speak in English and they don't have enough words to finish it. Then they say, what I mean is … and they will continue in Amharic.

Q6. Which English language skills do you think engineering students need most for their academic study in the university and for their future work place communication or for their future career?

Response: Okay. It's my opinion. For engineering students I think the basic and the very important skills are reading and writing. When they write it means that they can read and understand. So if they can read I give them any paper, article, any journal, any published paper and they can understand and write something. So if they cannot speak or if their speaking is not good enough, but if their writing skill is smart, then they can give me in a paper form so that I can read it and understand it. So in that way they can communicate with me and with others. If they are not good at reading, if they are not good at writing, I think things will be very difficult. They cannot communicate, and cannot understand what it means. So I think writing and reading skills are very crucial. In engineering, wherever you go, you have to read, you have to have your own analysis, and you have to write something. So communication is by writing, not by talking or by another skill. So in order to communicate to be fruitful, to be a winner, to convince the other people, I think first they should have to read, they should have a good understanding and then they should have a good writing skill.

Prompt: What about the role speaking skill because especially in the work you have to carry out a lot of conversations to get things done?

Response: Okay. You asked me which ones are more important. Communication is very important, and we can communicate with people by two means. Either we have to write and we give them to read or we can tell them orally. So if they are really good on both things, then it is smart. But if we have to prioritize, then I think writing should come first. Then if they are in the work place, they have to talk. For example, in writing it may not be even convenient. If I write something that I want to say and give them to read, they may ask me: "Why don't you just tell me orally?" So I think speaking is also very important. But if we put it like in degree, reading is first, writing is second, and speaking is third. If they cannot speak and if they are really good at writing, it is ok. But he is

really good at speaking but very poor at writing, they will be in trouble because they cannot address all the people. They will not go everywhere and see then in person, tell them orally what they need. It is really difficult. If they are good at writing, and poor at speaking, it is ok.

Q7. Do your engineering students take any course related to technical report writing which will enable them to handle different technical writing tasks or assignments effectively and who teaches the course?

Response: Yeah. There is a course which is called 'Technical Report Writing.' Nowadays I am not sure whether the course is right there in the syllabus or not. The contents of that course are really mandatory. There is a course, and we assign the instructor, what he or she teaches them is really a big thing. So if the content is not really good, and if we include the course in the curriculum, it is meaningless for me. So we have to really see the contents of the course. We have to include these English skills in every subject if it important and mandatory. If they are very essential, we have to include in other subjects too. Specifically for technical report writing, we have to revise and take a look at all the contents and include all the important and mandatory topics. Technical report writing seems like it is simple, but it is mandatory. It is like food.

Prompt: If it is taught by the discipline specialists, what are the strengths and drawbacks of teaching technical report writing course by the discipline specialists?

Response: The advantage of assigning the department professionals for this course is that they can relate it to theories, they can relate it to practical and real things in that discipline. So they can give examples, illustrations. They can use videos or other things regarding their profession. They can develop a kind of strong awareness. Students will learn two things: one is the English language, and the other is the profession.

Prompt: How about the drawbacks of teaching by the discipline specialists?

Response: For me I can say that since they are either first or second year students, they have focus on basic things. Because engineering is a five year program, they will get the other detail engineering concepts, detail engineering knowledge and experience when they become second year, third year, fourth year and fifth year. So in this technical report writing, for me they have to learn the basic skills: how to write technical reports, what the format is, what the right principle is, how we can write them, why we need to write that. And the questions should be answered by English professionals. I don't think that they will get these things from the discipline professionals because the discipline professionals want to emphasize on only the engineering concepts, knowledge and experiences, the content wise. Yeah, they care about the content, not about the format. The format part when they become fifth year, when you see even what they wrote like a thesis report, may be internship report or other project or lab report, it is like the report of elementary or preparatory students' writing format. It is like full of junk and the way the sentences are organized, and the way

the contents are included in that document, the font even look somewhat silly. They write like 'Times New Roman' in page one, and in the next page, they will even change the font. And when we tell them about that the students might even challenge us telling that we don't need to care about the format and we have to care about only the content. As far as I know the content, as far as I know the concept, who cares for the format? We say that is a format. Unless we address properly, people start to ignore us. So we have to write in an appropriate format or style. We have to use very professional style. And the reason why the students are applying these things is I think because the course is given by the discipline specialists and not English professionals. If the English professionals were the ones who teach them this course, I am hundred percent sure that they will concentrate on the format and on the skeleton, not only on the content. So for me it is better if the course is taught by English professionals. They are the appropriate persons.

Q8. Which English language skills or sub-skills do you suggest should be incorporated or given emphasis to in English for engineering students?

Response: Ok. For your information I took an IELTS test just once and the very big challenge for that test was listening. The time they gave you is too short and the exam questions that you are going to answer are many. So it was very challenging. I think for engineering students the very important English skill is reading, writing and listening. These things are really important. They can talk in Amharic, they can talk in other languages, but they cannot write in Amharic, they cannot read in Amharic. They cannot even get Amharic books in engineering profession. No one is to translate those books into Amharic for them. So they have to have a very good skill of reading, a very good skill of writing, and a very good skill of listening because the lecture is right there and he is talking a lot. Unless the students understand him, it is like a movie actor or it may be like a public speech or may be some kind of guests talking a lot and finally he asks them, 'What did I say'? The students didn't even listen to him. So I think reading, writing and listening are very important for engineering students and should be given attention to these skills.

Thank you very much. I am really grateful.

Appendix Q: Engineering Students' Interview

Interview with Engineering student 1, COTM (ES1)

Thank you very much ES1, for being voluntary for this interview. I am going to ask you a few questions about the English language needs of engineering students.

Q1. So how important do you think English is for engineering students for their academic study and future workplace communication?

Response: Ok, thank you for giving me this chance. I believe that in academic setting, communication and English class is very important for engineering students. All our lessons, everything given is in English. The courses given are in English. So in order to understand those languages and to attach with the class, it is very important to learn English and communication. And after graduation, we will be in the field at work. Even in that place, starting from interview to the work area we need the language very much. Most of the construction ideas come from abroad like western countries. To figure out new things from the internet or Youtube, we are very much needed to know English.

Q2. What kinds of reading tasks and assignments are you required to carry out for your academic study? Or what kinds of materials or documents are required to read to accomplish your academic study in engineering?

R: We're required to read most of the time books and manuals. And mostly we are used to read those materials given by our teachers in the form of slides and pdfs and then sent to us. In addition to that they bring those pdfs and books from abroad or western education centers and they require us to read some scientists who do a lot of researches in engineering. So they give us assignments to read those books and literature reviews. We mostly read in our academic class, lectures (lecture notes) and pdfs. But after that they give us reading assignments on some scientific papers and researches which are found in the internet and library stores.

Q3. What kinds of writing tasks and assignments are engineering students required to carry out or produce or document?

R: In academic classes we mostly give answers to questions by writing. That is, after we read the assignments; we try to rewrite based on what we read. Or most of the time when they give us a project, the project is done not only by reading but also actively going to the construction site, we have to talk to the contractors, the foremen, the daily laborers and we have to do every activity focusing on what the assignment needed. So we write from what we hear. That is the main part that most of the students didn't like because we interview them in Amharic and we change it into English and write down with a correct grammar. So I think that is a harder part for engineering students. We do most of the time the writing tasks when they give us tests, final exams, we write

down what we understand. The hardest part is when we give questionnaires to contractors for our projects or final thesis. That is the writing part.

Prompt: Why do you have to interview your informants in Amharic and then translate into English? Is it because they don't understand English?

R: The contractors and engineers in the sites know English but as Ethiopians our first language is Amharic. So we prefer to ask them in Amharic and the detailed and more understandable language. But we can ask them in English. I believe they know English but when you go down to workers like the day-laborers, they don't know much English. So we have to and must talk in Amharic in order to get more information.

Prompt: What other kinds of writing tasks are there apart from the ones you mentioned so far?

R: We are required to write what we have learned in the lab classes. That is not from theory but what we see. We change it into words and grammar and we write those things. In internship we take four and five months and from there we do the internship with the engineers and construction site manager and day-laborers and we talk about every activity in the site with them. So, most of the site advisers ask us to bring daily reports. We have to write a daily report and we have to include every conversations made with contractors and engineers. That is the most important part of the internship report. We write daily report, weekly report, and monthly report. Lastly, we change the daily report, weekly report and monthly report we write it, arrange it into a big document or final report. It is very important writing especially.

Q4. What kinds of speaking tasks are engineering students required to carry out? When are you required to make presentations?

R: We make presentations mostly when our instructors give us assignments and projects to go to construction sites and we gather information and we write it down as a report and then we present it to our classes and teachers. So in our presentation we have to make it in a good speaking manner and we have to explain every single things that we see and hear. And we have to make sure that the listeners understand what we are talking about. So in some cases we have to present our reports and projects. The teachers want to make sure that we understand that course. They can make it sure by giving us projects and that is not enough because the writing can be copied from others. So to make sure they ask us to make presentations and asks questions and we have to answer it, explain everything what we have written. For internship also after our return we prepare for some days, we submit the final report and defend our wok when they ask sometimes confusing questions by using clear language and with full confidence.

Prompt: How frequently are you required to make presentations as compared to reading and writing?

R: Ok, the writing part is like we always have assignments, so we have to write. We have to read because we are in academic class. But oral presentation depends on the teachers actually, especially in the fourth year, we do almost most of courses with presentations. Actually when they gave projects, we have had a presentation. So not like reading and writing, presentations are carried out sometimes.

Q5. What kinds of listening tasks are engineering students required to carry out for their academic study?

R: It's very important because some lecturers and teachers when they give their lectures and teaching in the class, I think it's very important to listen to them. Listening needs a habit and exercise. So sometimes when we do final and mid exams, we don't understand some questions. They bring it not from lecture notes (handouts) but from their oral explanations and illustrations of their life experiences during the lecture. Their skills depend on their examples and they don't depend much on the slides and pdfs or books. They ask us questions from Ethiopian contexts and the examples they used in class. So the listening skill is very important in that area. It is also very important to listen to the internet and You tube and search everything with pictures and video which we can't get such things from our teachers. We don't have such labs or they didn't show us such things in the labs. So we can find those things we missed from You tube and Google so that we can compare and balance (contrast) with what we learned in class because modern construction technology and our local technology do not go parallel. So we have to balance them. The pictures and videos in the You tube materials are more understandable than the classroom lectures.

Prompt: How do you put the four language skills in order of importance from the most important to the least important?

R: Yeah, all of them are very important, but for our learning the very important thing is listening and writing. Reading is also very important. So maybe I put reading first, next writing, then listening and speaking. The main thing in university is to put your ideas on paper well. If you can't do that, you are failed. In order to write properly we have to read because we bring our knowledge from reading, reading lecture notes (handouts). Our teachers also ask questions for mid and final exams from their oral lectures, so listening is very important. But most of the questions come from lecture notes and books, so we have to read. The first thing in my opinion is reading. And after we have developed our reading, the next thing is we have to write it down on paper. Then the teacher understands it and gives us good marks. Then listening is very important. In order to speak we have to first listen to them. Before we speak we have to listen and put some knowledge to speak. And speaking is the last I think.

Q6. From your observation what are the English language problems and difficulties of engineering students?

R: Engineering students face a lot of obstacles due to English language because everyone in the university came from different kinds of backgrounds or areas. Most of the students learned in government schools and some are from private schools. So, how they learned English language is different from those who come from government schools. When we came here it's very hard to understand what the lecturers give us. Some lecturers try to explain what they have in English. Some others explain their ideas in Amharic because of lack of English. We don't understand what they are talking about. They simply try to read what they wrote in the slides and they don't have the concepts. Their lectures should teach us the concepts. Even some lecturers teach us in English but the only thing they do is reading the slides, no explanations, no details, no examples from experience in English. They don't know how to explain ideas because of lack of English. So, engineering students have a big problem in communicating with the teachers during lectures.

Prompt: Yes, that is from the teachers' side, how about the English language problems from the students' point of view?

R: So, from the students' point of view, there is a problem as I said, from their backgrounds as a pre-engineering class we take communication English classes. I think that is not enough for engineering students because the class consists of students from good English backgrounds and bad English backgrounds. Of course the communicative English class helps very much. They (the rest students) depend on students with good English for doing assignments and presentations. They'd be comfortable just to pass the class and they don't understand the effect later.

Prompt: How do you put the English language problems of engineering students from the most difficult to the least difficult?

R: Mostly speaking and listening because reading writing they have enough experience reading and copying down. Most of the students have enough skills or experience in reading and writing down on a paper, although without understanding. But the speaking and listening parts are the most challenging.

Prompt: Can you put the four language skills in order of difficulty, from the most difficult to the least difficult?

R: So as I observe, speaking is very hard for everyone, most difficult, then listening, then writing, and then reading.

Prompt: Why do you think speaking is the most difficult?

R: Yeah, it's because of how they learn it. And when they learn, everything depends on their teachers. For example, in my primary school, our English teachers force (encourage) us to do dramas and dialogues. Like that every time we exercise these in English. Our tongues are flexible. And the speaking part needs exercise (practice) and these students didn't develop that exercise

(skill). Maybe it's because of their teachers didn't give them such assignments and force them to do these things. And they don't have a society who speaks English. The third may be they don't have a need to do that. They have no interest. Until it's a must to do it, it's a very hard for them because their tongues are not flexible to talk.

Prompt: How do you describe your experiences of learning English?

R: So my experience of learning English is that I learnt at a private school at Debre Zeit town. My school name is Beza Primary School. Our English teachers were very good in teaching English and they gave us assignments a day before and we did dramas and dialogues. But mostly for me I received the experience from my dad. He tells me English (stories) and we speak in English at home.

Prompt: Was he an English teacher?

R: He is not a teacher, but he teaches us at home. So it is easy for me to speak in English. By profession he was a soldier. He does a private business. He used to live in the United States. So we speak at home with him in English. So he made me to be more flexible (relaxed) in English. Even after I came to university I have decreased my experience (of speaking) English. For me it's hard to speak English nowadays because I have no one to speak with. I know what I have to speak but tongues mouths are tied. He helped us a lot and we didn't know his purpose when he made us to speak in English. The consequence (impact) was very good. So that's my background.

Q7. How far did the English courses you took help you to effectively carry out the different tasks you were required to do?

R: The English courses follow us everywhere we go. We have to speak, we have to write; we have to read. So they help us every time from pre-engineering class to now. It helps me from those speaking and listening lessons, especially the writing part helped me very much. The teacher taught us the grammar part better than the high school class.

Q8. What should be done for the future so that engineering students could benefit better from English courses?

R: As a construction and technology management student, our most of the classes are management classes, so it's more like projects and a lot of writing and listening. But the lack of things I observed is that the teachers and the university can engage us in speaking part because it is the management staff. We can read and do some researches and explain every single idea. They can attach us with the speaking skill, develop our speaking and listening skills. I feel that they are not making that advantage to us. If you see others like mechanical and electrical engineering, their classes are more calculations.

Prompt: What should be improved in the English courses or what do they lack?

R: I think the courses should give more emphasis to building students' confidence in speaking and making presentation. If they show us some ways in the fundamental knowledge we already had in engineering part, it is going to be very easy to go and present.

Thank you very much for your insightful information you shared.

Interview with Student 2 (ES2)

I: Thank you very much for coming and being part of my study. I am going to ask you a few questions regarding the English language needs of engineering students for their academic and future work-related communication. So first would you introduce yourself and your department please?

Response: Thank you very much for inviting for this interview. My name is ES2 and I am from Civil engineering department, Hawassa University, fifth year student.

Q1. How important do you think English is for engineering students' academic study and future workplace communication?

R: Ok. There is no greater language, but the area the English language covers is large and the materials we are learning is focused and written in English language. It's obvious that English knowledge is very important for engineering students.

Q2. What kinds of reading tasks are engineering students required to carry out for their academic study? In other words, what kinds of materials, documents are they required to read?

R: Ok, there are different materials that help to study engineering courses. There are many references in the library, so the teaching learning process also goes with the English language. There are also published journals, researches written in English language. So all of the students face (come across to) such materials to read. There are many books, so all the books, research papers and journals are written in English language.

Prompt: Are you also required to read different manuals, reports and son on?

R: Yes, there is a laboratory manual to do the practical lab experiment. After accomplishing this laboratory work, the students should submit their experimental results with a report.

Q3. What kinds of writing tasks are engineering students required to carry out for their academic study?

R: Ok, most of the writing part will be seen on the assignment parts. They are different assignments. There are many different courses and most of them have assignments. So most of the writing part is covered with assignments and the other one is the report part. Experimental or laboratory parts should be submitted in written form. They are facing such like things.

Prompt: How much do the assignments involve writing as some students say engineering study mostly involves calculations?

R: As I said before engineering courses not only focus on the calculation parts. The courses normally have theoretical part because any course doesn't stand with only a calculation part. It has its own concept. So the students are also asked to know or respond to the conceptual knowledge by writing. So they should write the theoretical part also. It covers both theoretical and calculation parts.

Prompt: You also mentioned about reports, so what kinds of reports are you required to produce or write?

R: I think there are two types of reports. Sometimes there is a trip, such as a visit or field visit or industrial visit. So the school provides such visits, they need a report: what the students felt about that place and what they gained from the visit. Most of the time, such kinds of reports are there. The other one that we are facing is the laboratory part. Every lab tests should be written with its proper format and submitted to each lab assistant.

Prompt: How about the internship reports?

R: Sorry, it's what I forgot to tell you. The internship report is a long or wide report which should be submitted to the school and it should be presented. So, most of the time, the internship reports are theoretical. Everything is written with theoretical part; there is no calculation part. It needs critical thinking: what we see, our observations and clear explanations of what they see. It is completely theoretical.

Similar to the internship report, the final year project or thesis report has a theoretical part. Final year or graduating students in the previous trend submit an original thesis work. It has its own content. So, most of the time it has a theoretical part.

Q4. What kinds of speaking tasks and assignments are engineering students required to carry out or perform?

R: Most of the teaching learning process goes with the English language, so the communication medium in our universities is English language. So starting with the communication with the lecturers, for presentation of internships, and final year projects need the speaking ability to present. Not all of the tasks need a presentation. In some of the courses the teachers tell the students to read

each course and to present what they get from those courses. So it's not very frequent, but sometimes it will be required.

Q5. What kinds of listening tasks are engineering students required to carry out? When are they required to listen?

R: Ok, from the English skills that you mentioned, the listening skill is the needed in our classes, I think. It's a face to face learning process and if the students cannot listen to the teacher, there is no communication. So in every class there is a need to listen to the lectures. So not only in the teaching learning process, also there are called You Tube tutorials. As you know most of the You Tube tutorials are all produced in English. The tutors are from abroad or foreign teachers. So it's a very preferable, very useful. There are also some teachers who provide or they assist their teaching process with the tutorial videos. There are some students who open these documentary videos. They help students to wake up. So they are very important.

Q6. From the tasks you mentioned above (reading, writing, speaking and listening tasks) which tasks do engineering students find easier to carry out and which ones do they find rather more difficult to carry out or perform?

R: Ok. The main problem I think in our teaching learning process is the medium, that is, we are learning in English language. So the level of the understanding of the students is very different because they came with different background. So they are facing many problems. I am sure, they can solve many theoretical and calculations when the medium is their native language. I think the most difficult task for all of us is the speaking part. The speaking part needs integration, which means they know the thing and they want to speak but it's very challenging for them. So they are fearing to speak.

Prompt: What do you think is the reason for this?

R: The speaking needs training, I think, practice. So they didn't get training for this; even they don't communicate with their classmate or dorm mates in English. They communicate in Amharic. So they are facing difficult problems. When we see the writing part, it's relatively easier one I think for them because they are always trained with the writing part. They always face it in class; they have to write in English. So they develop their writing; they know more about the writing part. So the worst thing is the speaking part.

Prompt: If you were to put the English skills in order of difficulty from the most difficult to the least difficult for engineering students, how would you put them?

R: As I said before the most difficult one is the speaking skill in my opinion. And the second one is I think the writing part. Most of the time there are grammatical errors in our writing. And the third one is I think the listening skill and the fourth is reading; it is very easier.

Q7. How far have the English courses you have taken at university helped you to effectively carry out the academic tasks?

R: Ok. The two courses, Communicative English and Basic writing skills were given in the first year to the engineering students. They are truly helpful. When we take the Communicative skills, it's interesting and helpful. Actually, for students it's different from teacher to teacher but it's helpful. And the other one is the writing part. It's also interesting; they give something important for the students. But it's not enough.

Prompt: What's missing in the courses and what should be added?

R: Ok. Sorry to say this. We say most of the courses in the universities are just evaluation-focused. So the students also give focus on the evaluation parts. So the students are not motivated to learn. If the students are motivated to learn, it has a value to them. So it's evaluation-focused; they are not learning-focused most of the time. There is no enough time teaching these courses. So, most of the students also focus on the evaluation part the same as to schools.

Q8. Have you taken any course related to Technical and Report Writing at university?

R: Yes, there is a course called Report writing skill. It was given I think in the 3rd year. We went for internship in the 4th year and it was helpful when we were making the internship report. So this report writing course helped most of the students to write the internship report. So they were referring to the course materials when they were writing the internship report. It's helpful.

Prompt: Who taught you that course, engineering instructor or English instructor? Who should teach that course? What are the benefits and drawbacks of being taught the course by engineering and English instructors?

R: In my opinion it should be taught by engineering instructors. I have a reason for that. I think all of the engineering instructors have faced the challenges of doing researches and writing engineering reports. When it's given by English instructors they may focus only on the language part. They may not have engineering knowledge.

Q9. What should be done in English courses for engineering students so that they can benefit the most from English courses? Which language skills should be given more emphasis?

R: Ok. If the solution to the problem is rational, it should start from the beginning. The students' background should be clearly defined and they should learn the English language easily. When the students pass through all this process and come to the university, the students should have enough time. For teaching learning process, the departments should provide enough time. It is given in the first year, so it should have enough time for English courses. For writing, speaking, report writing, there should be enough time and should not be evaluation focused. The students should be

motivated to learn. And the other one is the teaching learning process should be in English language. What I mean is in our courses it is obvious that the medium is in English. But practically, I think more than 70 or 80 percent the communication medium is Amharic. So it should be English language. The students should also ask questions and other things in English.

Prompt: Why do you think do the instructors use a lot of Amharic in the classroom instead of English?

R: Ok. By the way all the power points, teaching materials hard and soft copy materials given to the students are written or prepared in English. But the problem is when they are teaching, they try to teach the students in Amharic. They read the slides on the projectors or in hard copy papers in English, but they try to teach in Amharic. I think the problem for this is not only on the students but also the teachers. Both of them share the problem. It has its own share. Most of the problem is on the students. Students don't understand the language, so they will miss something. In each lecture time they miss something. Even it's obvious if the teacher is foreign from India or other country, he doesn't know Amharic or other languages. So when he teaches in English language, students miss very much things in each lecture time. So, the teachers are forced to teach in Amharic for the benefit of the students. The other one this is not the problem of the students. When we come the instructors' part, there is a gap I think. It is obvious that not all of them do have the knowledge of the language. They have a clear and brave understanding of each course. They know very well, but when they teach there is a gap because it's not effective. They use and take a lot of time to explain a given concept and it's not understandable for the students. By the way this is not the case for all of the teachers but for some instructors. There are some instructors who are very good in explaining everything in English very clear way.

Thank you very much for your time and giving this invaluable information.

Interview with Engineering Student (ES3), Electrical and Computer Engineering

Thank you very much ES3 for being voluntary for this interview and being part of my study. I'm going to ask a few questions about the English language needs of engineering students. First can you introduce yourself please?

R: Thank you very much for giving me this chance. My name is ES3. I came from electrical and computer engineering department and communications stream. I'm a fifth year graduating student.

Q1. Well, how important do you think English is for engineering students for their academic and future work place communication?

R: The first thing is that so many students engineering streams, they think that it is only mathematical knowledge is needed. As the years passed, I heard specially when they enter the working areas, they will realize that English is very important because the first thing is that you

have to share your knowledge through language. And all the courses are given in English, so in order to understand and share your knowledge, you have to understand English. For that you have to develop your confidence. If you don't have the confidence, you won't be able to share it. Especially for students who have high grades (high CGPA) when they are interviewed; most of them will fail because they won't communicate with other people. And especially as we are a developing country, so many electrical companies are from outside, from America or from China. Like ZTE in our stream, I study communications engineering; ZTE is buying half of the Ethiopian Telecommunications Corporation. But as I think students who are graduating from Hawassa University or any other university with engineering in communication and want to join ZTE company should have the knowledge of English. They have to communicate; they have to share their information, and to know what they don't know. So, even if they want to share their information, they can't do so.

The interviewers (employers) don't want to have a hard time understanding people, they want people that make their life easier or easily understand them. Students don't think especially when they enter engineering stream at first they are taking communications and writing skills, they don't think that these skills are as important as it is. They think that the only important thing is calculating mathematical questions. As we go further, there are a lot of projects that we have to do lots presentations, especially our thesis. We have to say or speak what we have done. We have to let our information flow to other people. In order to do that, we have to know English very well. If not, what is the point? For instance if I have 3.8 CGPA and sent to attend a seminar in America or other European countries, if I don't know how to speak in English, other students from other countries or other parts of the world who know English very well, how am I going to explain what I want to say? That is why most Ethiopian students that are going abroad, abort their scholarship. They are very brilliant on the mathematical questions, but they are not so good in explaining what they in English. It should not be given as two courses in the curriculum. It should be given step by step. There should be advanced courses at the senior years. The students need to be so confident that they can say whatever they want freely. This will help them in the outside work places. This is the most difficult one. Today it is more difficult to higher people without experience or with poor communication skills especially in foreign companies.

Q2. What kinds of reading tasks and assignments are engineering students required to carry out?

R: The first one is they have to understand what they are reading. For example, I am a communication engineering student, we study about a router; it is nothing but the internet. Without routers, there is no internet. Students understand only the mathematical part, only the calculation part, but they really don't know what the routers are in detail. There are teachers who won't explain these things in detail. So we have to go from website to website, and from internet to internet and from videos to videos in order to understand it. But if we can't understand English, then what are supposed to do?

Prompt: But what specific materials are they required to read?

R: We are required to read different kinds of books that explain different kinds of equipment, what they do, what their functions are, what their relationship with other equipment are. That is, what we are trying to study in particular. So there are different reference books that we read. Others are lecture notes, soft copies, lab manuals, work sheets and so on.

Q3. What kinds of writing tasks and assignments are engineering students required to carry out?

R: Most probably we are required to write field visit reports, lab reports. We go to different kinds of labs and we see different kinds of equipment and materials. Based on the manuals, we will write what we saw in our own words. There is also internship report. For example, I went to Addis TV Broadcasting Company, in Addis Ababa. There are different parts in our internship report. Chapters one and two reports what we saw and learned and what the equipment performs in each section, for example, there are TV rooms, server rooms. After this, we try to identify the problems with the whole service in order to solve them. The other writing tasks are projects in the fourth year. We were asked to do projects. There is also the thesis project and it is the major one. There was also a proposal writing and defense.

Q4. What kinds of speaking tasks and assignments are engineering students required to carry out or perform?

R: In our department, we were having presentations not in very course, but in some courses. Especially in courses that involve not more of calculations but more of reading. The more difficult and complicated presentation was internship. After we get back from internship, we have to explain what we have seen and done or our stay in the company. The second one is the fourth year semester project. For example, our semester project was designing a circular micro strip patch antenna. This is an antenna in our cell phones. There are two kinds of antennas. There are rectangular and circular and we have done a simulate on software. And we have designed the model on the equipment on a modeling software which called console software. We have done with the model. There are different types of parameters describing the performance of the antenna. In short, that was about our semester project. So there is a presentation at the end. The other is a presentation of our proposal. And there is also a presentation for our final year project which is two weeks away from now.

Q5. What kinds of listening tasks and assignments are engineering students required to carry out?

R: The first one as I have said is there were different types of tours to different companies for field visit and we had to listen. In addition, we need to listen to lectures. These lectures are in English, but the English is not explainable. What I am trying to say is the teachers cannot explain in detail about what they are trying to say. They are reading from the slide. If we had more detailed explanation, we can understand.

Prompt: What do you think is the problem?

R: The first problem is the teachers. If they have a good English explanation, they will use explain in a way students can understand. For example, they will copy and paste from different soft wares like Google or other websites. So the students have to read different kinds of dictionaries to understand that word. But if the teachers could understand those words better, students could understand more easily.

Prompt: How important is listening to You tube videos or materials for engineering students?

R: As I have told you this university does not have different laboratories. When we watch the You Tube videos, most of them are live or practical videos. For example, if I want to study about a resister about an antenna, they will show us the physical antenna and how it works, what it is used for. So by seeing all of these, we can have a better understanding about the equipment, about the different types of device. So understanding English is so important to see what is available in You Tubes and understand as they are in English. Most of the class lectures are theoretical and they will tell you antenna will do this or that. But You tube videos are fascinating and practical.

Q6. Can you put the reading skills, writing skills, speaking skills and listening skills in order of importance for engineering students strictly speaking?

R: The first one is reading because as electrical engineering, we have to see different types of structures in detail. We have to read and understand different kinds of issues to have a good knowledge about the theoretical background of courses as the detailed information is written in books and pdfs. The second one is listening, listening to our teachers, listening to different types of videos, listening to our mentors or guides. The third one in our department is writing. The last one is speaking.

Q7. From your observations and experiences what are the English language problems and difficulties of engineering students?

R: The first one is presentation. During presentations students won't be able to explain what they are trying to say, what they know or what they think. They won't be able to discuss with their teachers. They know what they have done. They have detailed information about it but they lack the ability to explain. You know the teachers give grades on what they hear or listen. So if they are not able to express themselves, they won't get good grades. They won't be understood by their teachers. So the first one is speaking and the second one is listening. There are different kinds of English. There are teachers who talk with easy English, that is, understandable English. There are teachers who speak sophisticated English. So if we don't understand what they are saying, we can't understand what we should.

Prompt: Are there expatriate instructors in your department?

R: Yes there are Indian instructors. There were two Indian instructors who taught me courses but they were lacking in English you know. Their accent is so hard. We don't know English very well and in addition to that we don't know Indian English. So it was very confusing.

Prompt: What problems do the students have with regard to writing?

R: You know that we do a lot projects, theses. So, our main task is writing a report, writing our thesis, writing our projects. Writing is very important. We have to express ourselves in a clear English.

Prompt: So if you were to put the skills in order of difficulty, how would you put them?

R: The first one is speaking, the second one is writing, then listening and finally reading.

Prompt: So what you think are the main factors behind their lack of or their inability to speak in English?

R: I think the first problem is their background of learning English, the place they come from. They did not get good English learning opportunities.

Q8. What should be done solve or alleviate these problems?

R: The first one is the problem of speaking. I think they should be given some kind of training to students on how to be confident, how to build their self-esteem, how to express their feeling freely in English. They should build their confidence. They should not be afraid of their English grammar and so on. After these things they will build their confidence. So confidently speaking in seminars and courses should be mandatory.

Q9. How far have the courses you took at university helped you to carry out the different kinds of academic tasks effectively?

R: I think giving only two courses is not enough. For me I have a (good) background for many years from my elementary to high schools. So I can understand, I can read and write different kinds of essays and (understand) different kinds of videos. But most of the students especially in engineering departments they don't have a good background in English. So giving only two courses won't make up (prepare) for all the projects they have to do, all the presentations they have to make, all the job interviews they have to give. It is not enough. There should be mandatory English courses until the fourth year. They should build their confidence; they should build their writing skills, their grammar because it is a big problem in our country. There should be courses that prepare them how to approach a job interview and tell employers who they really are and so on.

Thank you very much for your time and sharing such insightful information

Interview with Engineering student 4 (ES4) − Mechanical engineering

I: Thank you very much for your willingness for this interview. I am going to ask you a few questions regarding the English language needs of engineering students. Can we start by introducing yourself?

Response: My name is ES4. I am a mechanical engineering fifth year student.

Q1. How do you see the importance of English language for studying engineering fields effectively?

R: Engineering is not confined only to Ethiopia. In that case we have to be competitive for the world. So in the world the only international language is English. So for that case English is very important language to study, to communicate with others. Also in engineering to transfer knowledge to others, to take technologies from others it is very important.

Q2. So what kinds of tasks are engineering students required to carry out in your major field of study? To make it more specific, what kinds of materials are you required to read?

R: There are a lot of books. There are also some lecture videos, so they are prepared or written in English. There are hard and soft copy materials. Some of them are reference books that are prepared by native writers. So it is books and some tutorial videos.

Q3. What kinds of writing tasks are engineering students required to carry out or write?

R: Yes, as fifth year student we are going to do our project, that all of us do our research project.

P: Starting from first year to final year what other writing tasks do you write?

R: For example: exams, assignments, homework, and other things are written in English. There are also lab reports, internship reports. In the fourth year we go for internship and at the end we write monthly report or final reports. As I said we write the thesis, the final research project and they are all written in English.

Q4. What kinds of speaking tasks or presentations are engineering students required to perform or make?

R: From first year up to now we have done a lot of individual and group assignments and projects. After we finish the projects, we are going to present that. So we use English and we report our teachers. And we also defend our proposals and final research reports after our presentation.

Q5. What kinds of listening tasks are you required to carry out in your major fields of study?

R: It's very important because if it is only Ethiopian students may be some instructors translate into Amharic, but in our classes there are students from other countries like South Sudan and Somalia. They only hear English, so we learn in English. Also we have foreign instructors (expatriates), so they speak and we have to have a good listening skill. Also when we are watching tutorial videos since they are prepared in English, we have to understand them. There are a lot of them on the internet, so we have to understand them.

P: Is it based on students' personal interest or when assigned by the instructors that you have to watch tutorial videos?

R: It is both. The teachers give us tutorial videos and we also download from the You Tube channels.

Q6. Which of the different tasks you mentioned so far do engineering students generally find easier to carry out and which ones do they find rather difficult to carry out or perform?

R: I think for me the easier one is listening and the difficult one is speaking. Because for listening we watch a lot of movies, so we just understand them. So we can understand what they want to say. But the speaking one is I think we fear to communicate with each other. And from lower grades schools don't provide the basis. And also when we compare with private schools, public schools do not provide students with good chances to practice speaking.

Q7. How far have the courses you took at university (communicative English skills and basic writing skills) prepare you to carry out the different tasks you are required for academic study?

R: I think it is not that much the university ones. Maybe at lower grades we learnt English from 1 up to 12. In addition we watch some movies in English. That helped us a lot. I think university courses helped us to overcome fear and to have the confidence for presentations, such like things but not much.

P: So what are your comments here with regard to the English courses for engineering students?

R: I think in the first year only, first two semesters. But they have to teach us at the lower grades more of the things needed. If we can read, if we can write in the lower grades we can easily understand English courses at university.

P: What improvements should be made in English courses given for engineering students in the university?

R: I suggest that they have to prepare us or show us not to fear. Also they have to prepare us for a lot of presentations. And the instructors must not talk in Amharic, I mean the Habesha (Ethiopian) teachers. When they speak in Amharic and English, we rather choose the Amharic one. So the

students also want to present in Amharic. They have to also prepare some panel discussion sessions by foreign instructors so that we can get good exposure and experience of speaking in English. So these things must be improved.

Q9. Have you taken any course related with technical report writing at university that might help in writing different technical reports and the like?

R: I think we took research methodology. It is a course that prepares for the context of research. That is the only course I took.

Q10. Which language skills and sub-skills do engineering students need most for their academic study and for their future work place communication?

R: I think listening, speaking and also writing are most important to communicate with others. And I prefer speaking is the most needed. Next is reading because we have to understand what others say. Writing is also important.

Thank you very much for your time and cooperation in sharing your insightful information.

Interview with Engineering Student 5 (ES5) − Civil engineering

Thank you very much for your cooperation for this interview. Can we start the interview by introducing yourself first?

R: My name is ES5, fifth year civil engineering student.

Q1. How important is English for studying engineering fields effectively?

R: Well, studying English is a matter of communication. When you take the construction industry, there may be foreign contractors and Ethiopian contractors are also there. In order to facilitate and communicate well in a construction work, you should have to learn English language in this respect. Additionally, I want to be a man of technology in the future to be engaged in the industry abroad. That is why I am learning English.

P: How about for studying engineering?

R: In my opinion, any construction materials, equipments, any methodology that we are following is derived from abroad. That is why in order to share ideas we must learn English. For example, Vatcoda- building specifications, codes, and standards are derived from Euro codes or Indians. So they are written in English. They are adapted from materials written in English because there are no codes and standards written in Amharic. There are no Ethiopian codes and standards written in Amharic for the time being. So to adapt these things English is an essential thing.

Q2. What kinds of reading tasks are engineering students required to carry out? What kinds of materials are you required to read?

R: As a department, I am a civil engineering student. We read mainly structural studies, subject matter, soil mechanics, hydraulics and bridges, highways, such like materials are recommended for us. And there are more indeed additional materials.

Q3. What kinds of writing tasks are engineering students required to carry out?

R: There are so many writing activities. The assignments are based on the subject matter. There are also projects that we develop. And the thesis is there. Integrated civil engineering design we are given and submitted last year. Integrated civil engineering design is a course that specifically given for one field of study. For example, for civil engineering in the fourth year there is a selection of elective courses entitled 'integrated civil engineering design' in order to develop design which is aimed to know and develop the mind of students. They are selectively given that focuses for civil engineering basically on construction industry. There is no more specification given. That is why we were given that project last year.

P: What other writing tasks are required?

R: There are also lab reports. Each year we have a minimum of one lab class and we write a lab report and we will present that lab report. But mostly it is submission without presentation. Only few teachers make us to present the report.

Regarding the assignments given for engineering student is different from other social sciences. That is, when the assignment is given for us there is more digging out the point which is given to us to develop what the idea is about in the construction industry in some building industry. They are written broadly and submitted in such a manner. So we dig an internet and social media and using our general knowledge we write and submit.

P: How about internship reports?

R: Yes, in the fourth year we have internship. And personally I have attended in Hawassa Yirgalem Construction. And the construction is in the site of Sidama Micro-finance and the building is G^{+7}. It has a basement floor and I attended for four months there. The activity what we have learned in the class theoretically is applied practically there. Internship is also to develop students mind. When one engineer graduates from this campus, he can develop his mind and his world through the construction industry. It is a very detailed report. So to write this report English language is very necessary. The research report course we have taken in this campus helps us to write these things.

Q4. What kinds of speaking tasks are engineering students required to carry out or perform?

R: Mostly in our class order us in order to present our proposal, assignment and so on in English. That is why we present in English only. The medium of communication is English. When the course is broad, the teacher is worried about the portion. The students must submit the course by making presentations. In addition to this the students are given assignments they dig out and make presentations in front of the class. After preparing proposals we present it and defend it, and also the final research report.

Q5. What kinds of listening tasks are engineering students required to carry out? Or when is listening skill important?

R: Actually, the speaking and listening skills are very much related. If one person speaks the other person listens. In class when Indian teachers pronounce English like Indian language. That is why we get confused. Whereas American or British teachers teach we easily get what they say.

Q6. Which of the tasks you mentioned are generally easier for engineering students to carry out and which ones do they find rather difficult?

R: In my opinion, the difficult one is speaking. Writing, reading and listening are mostly easy.

P: Why is speaking more difficult than the rest?

R: Mostly because of lack of motivation. Most of the Ethiopian teachers don't teach in English only. They mix it up with Amharic and other local languages. And such thongs mostly hinder the students. Students don't feel to try speaking in English.

Q7. How far did the English courses you took at university help you with the different tasks that you required to carry out?

R: In 2008 E.C. when we joined Hawassa University we took Communicative English and sophomore English courses. That helped me when I write proposal and research. Frankly speaking, I have attended elementary school at private school. My intensity of speaking English is from there. But I haven't seen such like motivation here. The focus is on the course matter or grammar only.

Q8. Have you taken any course related to technical report writing at university?

R: At university I haven't taken technical report writing as a course. I took research methodology and technical report writing merged as one course. I was taught by a civil engineering staff in the second year.

P: How far did that course help you with writing technical reports and documents?

R: Before I took that course, I did not have information on how to develop technical reports. Starting from that time I am preparing proposals, defenses.

Q9. What language skills and sub-skills do you suggest for engineering students to effectively carry out the tasks they are required to for their academic study?

R: Yeah. Speaking is mostly needed I think. The second one for engineering is reading. For drawing we must be able to interpreting drawing is essential. Writing is also important. So speaking should be given priority. Because Ethiopian construction industry is coined with foreign contractors, engineers must be able to communicate well to facilitate these situations.

Thank you very much for your cooperation and time to share your experiences about the English needed for engineering students.

Appendix R: Engineering Employees' Interview

Interview with Engineering employee 1 (EE1)-Mechanical engineering

I: Thank you Mr. EE1 for being voluntary for this interview. I'm going to ask you a few questions regarding the English language needs of engineers working at foreign companies like this. So would you first introduce yourself and the company you are working for please?

R: Yeah. Thank you for inviting me. My name is EE1. I am Utility and Engineering Deputy Manager at EPIC Apparel PLC, which is based on Hong Kong. Now I'm handling the entire facility for engineering departments.

Q1. From your experience and the position you are working at how important do you think English is for engineers' workplace communication at a foreign company like this?

R: Actually to work in such a huge and world class company, English requirement is not negotiable. It's mandatory and basic. In order to communicate and work with foreigners, especially most people are more intelligent people coming from abroad to work here. And to communicate and to share their knowledge and to work together with them we have to have a better listening, writing and communication skills as well. So, based on that, this is not compromised here. Even knowledge transfer should be a basic important thing and is through English language. It is unquestionable here.

Q2. What kinds of reading tasks are engineers required to carry out or read to function effectively in such foreign companies?

R: Yeah. Basically the most fundamental for this facility is the engineering department. From the beginning, from the designing of the facility our engineers should have drawing skills, reading skills. In that there are also some international signs for drawings. They should be able to do these things. Next there are catalogues. When we are selecting the machines, the entire facilities: electric, power-related, and mechanical related. When we are selecting those, all supplies have catalogues, like product catalogues. Somebody should be able to read and understand those materials before selecting and ordering the machines for the factory. Then after, the manuals of the machines are there to be read. There are different manuals: operation manuals, maintenance manuals, and product manuals also there. An engineer should have the capability of reading of those manuals and only then will they have the proper knowledge about the machines which are landing here. Then after, there should be preventative maintenances and annual maintenances. There are entire parameters for those kinds of maintenance. They should understand those parameters which are written mainly in English, which are not common in Amharic actually. So somebody has to focus in this area. They need to understand what it means, how to maintain, what the next part is, what routines a machine needs for maintenance. Another is it's an engineering-related international signs are there like

safety and compliance signs. So the engineers have to read and understand these signs because the working area is very dangerous. There are also CDs (compatible discs) coming with the machines for somebody to listen and understand. So, these are the ways they are delivering the services with the machines.

Q3. Thank you. What kinds of writing tasks are the engineers required to carry out for their workplace communication? In other words, what documents, reports or projects the engineers have to write?

R: Ok. As an engineering department in our company there are a lot of things that we have to write every day, including daily reports like boiler running report. We have a huge boiler and also a generator. Every generator checklist is there, boiler checklist is there, logging sheet is there. Even for every electric-related panel, there is preventive maintenance checklist that needs to be filled every day. Somebody should be capable to fill those. In another angle, most of the engineering materials they have part number, spare part ordering. To order those spare parts, they should be capable of understanding the part number of those materials. So these are the basic parts of writing on engineering parts.

Prompt: Are the engineers also required to write business letters, different reports like project reports and so on?

R: Thank you for reminding. We have lots of communications especially with the foreign companies to sustain our world class standard. Because of our country's current status, we are not capable to standardize such world class industries. In order to narrow the gaps we have everyday communication with the international companies like SGS- World class Certification Company for calibration. For calibration of our machines we will have to fill and send the company for mark and we are sending our request letters for calibration companies. There are also different kinds of audits that we have to attend with huge companies in the world like Intertex and SGS. These are world class companies which will give standards for companies. Those companies will give technical audit and social audit and we have to attend that every time. So we will have formal communication which we should have to reach their requirements and fill their formats delivered by them. We have to optimize our standard to deliver our products abroad. We have to fulfill their requirement to that level. So even for calibrations there are so many programs for maintenance automatic machines working with the program. So, to fulfill that, we should have direct communication with 'What's up' kinds of things. We interact with what's up and we will have a brief communication with the software company to update our status of the year.

For project-related reports, when we start a project we have requisition letter from the entire company management plus industrial park management. They should have to certify us to start one project. So, based on that, they will give us their approval after our formal requisition to them.

Finally, there are different ways of reporting our project reports like making gun chart to display the completion of tasks and so on to show the progress of our projects to our management. We also have mail i.d. for internal communication and other customers. Specifically with government offices in our country, we write formal letters for example, like Ethiopian Electric utility, industrial parks corporations for whatever we require from them and whatever they require from us. There is also permission request letters when employees want their permission.

Q4. What kinds or forms of oral communications are the engineers required to carry out or perform for their workplace communication?

R: Yeah. Actually in such a manufacturing company especially for the garment we are a supporting section or team here. There are machine operators. So our engineers will be in between them to make things faster and proper. That is our main target. The production departments are our customers. Whatever they require we have to provide them. We have a deep reporting for the management. Whatever problems happen here we have to explain to our management in the way they can understand. Actually most of our management members are not engineers, so we have to explain in an understandable way in English. We are reporting to our engineering head office to get whatever support we need and to give whatever support they need. That needs email communication, what's up communication, telephone communication is also required here. We communicate with our main company heads who are found in Hong Kong office in English actually.

Prompt: How about the other engineers? Do they have to also communicate with expatriates or through somebody?

R: There are different ways. As a hierarchy I am handling some management works. Formerly there was some expatriate actually. Now I am handling the management issues alone. But for foreigners communication there are lots of engineers coming from different countries here. For everyday communication our engineers are interacting and communicating with them. They may not interact through the phone or emails. But physically they communicate personally face to face and share their knowledge and attend seminars as well.

Prompt: Are the engineers required to attend trainings or meetings?

R: There are different ways of attendance like compliance related presentations. This is a safety working area of a company which works for the social comfort of the company. These are mainly on the safety related issues like firefighting, first aid, and feel safety. Everybody should comply with the standard requirements set by the buyers of our products. There are some basic standards that we need to fulfill.

Q5. What kinds of listening tasks are the engineers required to carry out for their workplace communication? How important is the listening for engineers' working here?

R: As I told you the most basic positions are held by the foreigners, so we should have to listen to them. We have to understand what actually they need. If there is no a good listening skill, there will be a miscommunication. That means there is no work anyhow. As we are a supporting team, maybe someone has got some electric problem, they explain the problem to the electrical engineer what is happening. The electrical engineer should understand the problem by listening and then give a solution. Most of the key positions are handled by foreigners. Requests come from them and we have to understand them.

Q6. From your observation what are the English language problems and difficulties engineers working at foreign companies like these?

R: Actually most of our people, especially the engineers are academically or technically good. But most of the time the spoken English is of a very low quality. Sometimes there are misunderstandings I have observed here. This is our challenge. The Asian English is somehow different from others. Sometimes you may be confused by their English. The way they speak English is not the proper way. The correct sentence order is not there. They speak as they like. They only assemble words and implement like that, no arrangement, no proper English actually.

Prompt: Can you put the English language skills in order of difficulty, from the most difficult to the least difficult for the engineers working here?

R: Yeah. The most difficult problem for them is speaking, speaking whatever they feel. Then, writing, then listening is better. The problems are speaking and writing, but the worst one is speaking. I don't think they had a lot of chances of presenting their ideas. Reading and listening are ok. The order is speaking, writing, listening and reading. With writing there was no much practice given to freely express our ideas (at university). We simply copied from books or other students' work. There were only few chances of making presentations at university in the fourth and fifth years such as internship and final year projects only.

Q7. Have you taken any course related with Technical and Report Writing at university?

R: I graduated from Haramaya University, The Institute of Technology. We have taken some technical writing skills, maybe in the second year. After that there was no chance to implement technical writing to other subjects.

P: So how much helpful was it to carry out the academic and workplace communication tasks?

R: I remember that course helped us to explain how to have formal communications, especially the written reports and presentations. It is because of that course that we are working here. There was no other course. This course should be developed to help students better.

Q8. How far have the courses that you took at university helped you to carry out the workplace communication requirements effectively?

R: Thank you for asking me. This was my pain actually. Normally I graduated at 2006 E.C. So the problem is it was a joke in our academic life. I am part of it and I know it. I really blame the way of teaching; that is the worst. For example, whatever I learned at university in those five years compared with what I learned in two years in this company for me this one is better. It's now I can express myself. The quality of education is very poor. Negligence of lecturers is the worst thing I have faced. Nobody is responsible or cares to empower the upcoming generation, equipping and facilitating. Look, one lecturer may cover six chapters in one day and will go home. He will run the slides and will go. You can go, read and understand it but it's unfair. There was a big lack of all facilities.

Q9. What should be done at university to improve the English language skills of engineering students? Which language skills should be given more emphasis?

R: I have interviewed a lot of engineers for employment in the last five years more than 200 engineers. I want to say to our government who is handling our university management. I want to say: please don't joke on the generation, killing generation. For example, let me tell you about one of engineering applicants whom I interviewed. He graduated from one government university with a GPA of 3.5, but he doesn't know even the very elementary formulas. I am blaming the German ECTS system of assessment. I graduated with the credit course system. We struggled to know new things but now somebody can simply get a pass mark through group work and assignments, just copying from others. He only needs to get 50% through continuous assessments; he does not even need to take mid and final exams.

P: How about English courses?

R: Yeah. English should be given every year with a new package, maybe like technical writing, writing skills, spoken English each as course depending on their level. I hope that would be fine for me.

Thank you so much.

Interview with Engineer employee 2 (EE2) –Mechanical Engineer

Interviewer: Thank you very much for your willingness for this interview. Can you start our interview by introducing yourself, please?

Response: OK. My name is EE2. I'm an engineering technician here at Hawassa IPDC (Industrial Parks Development Corporations). My background is I graduated from Hawassa University with a BSc degree in Mechanical Engineering.

I: How long have you been here? Or how many years of experience do you have here?

R: This is my first company to join after graduation. So, I graduated over four years ago. I've about four years of experience here.

Q1: OK. Thank you. So how important do you think English is for engineers to function or work effectively in a company like here?

R: Here we have many international companies. Most of the time, we are engaged in communication in this industry. There are many foreign workers from Asia and all over the world. For example, we have workers from China, from Seri Lanka, from USA, from Indonesia, from India and so many countries are also involved. So these days English is an international language. So it is really a necessity to communicate properly because they need to understand what is going on and we also need to understand between us. So it is very important for especially working here at Hawassa Industrial Pak.

Q2: So what kinds of tasks are you required to carry out through the medium of English? Or for what kinds of communication do you need English?

R: Most of the time we use our English communication skills just to understand what they need us to do in the manufacturing shades. We communicate with the managers and also with skilled personnel to understand what they need. If there is some trouble or if there is anything to maintain or rectified, we just need to communicate on the technical issues. So, technical conversation is needed. So we need to have a good speaking skill to understand each other better.

P: What other tasks are you required to carry out in English other than the speaking tasks? For example, are you required to write different kinds of report and submit to your seniors and the like?

R: Ok. We do all such things. I want to stress that the communication part starts from the listening part because as I told you before, there are many people coming from the different parts of the world. And each people have their speaking accents. You need to get used to listening to these people. So you need to be very smart on that. The other skill is writing. We also write reports many times. We write letters to one another. We also receive business letters from others. We read it and we will do our job. We just respond to their letters.

P: What about other project documents, like writing feasibility reports or documenting building materials? Are you required to document different reports?

R: Yeah, true. We are required to do many kinds of writing tasks. For example, we are supposed to collect the data. So, each month we report the tasks we have done in the previous month. We compile the report and submit to the respected bodies or our bosses. Apart from that we also need to understand writing because we are expected to understand everything. For example if there is a machinery manual of if there is any written description we need to read and understand that description very effectively.

P: As an engineer, what is your main part or role to play in the park?

R: My role here in Hawassa Industrial Park is mainly of maintenance work. I am more of a technical practitioner. If there is anything wrong with the electricity, or with the manual components or with the facility we are offering, with the maintenance we are the ones to go there and fix it for them.

P: Thank you. What other speaking and writing tasks are you required to do. For example delivering oral presentations, giving interviews on how the park is functioning, attending meetings and writing or documenting minutes, taking part in seminars?

R: Most of the time all of these tasks are required to be done by our bosses because most of the time our bosses are not the people who are technically equipped. Our managers or department heads are most of the time involved in communications, and paper work because if there is any problem, he reports to us and we go and technically fix it. And sometimes we are also required to attend meetings. Not long ago I was in Addis Ababa participating in a meeting with personnel from different international companies. Actually, my speaking skill and my language skills benefitted me a lot. If you have a good speaking skill, it helps you a lot in the engineering works.

P: Sometimes you may be required to deliver oral reports, aren't you?

R: Yes, we are required to give oral reports. And also you go to the company shades and to the manufacturing areas to fix something for them. You need to convince them that you have the potential to do what it takes. They just need to communicate with you from the very basis. So they understand that you have the required skills.

Q3: How important is listening for engineers like you working at such companies?

R: It is very important as speaking. Even it is more important than speaking because you need to understand what they are saying. So, most of the time what is giving us a hard time is many people are from different parts of the world they have hard accents of English. They want to say something, but they cannot easily express it in clear and understandable English.

Q4. From the different tasks you mentioned above which ones do engineers generally find easy to carry out and which ones do you find hard or difficult to carry out?

R: Personally, I think writing is more difficult because we are writing letters for maintenance to international companies. You need to meet the standards to be very formal. So due to our teaching process we are not get used to this formal writing and the writing part is a little bit difficult. But the speaking and listening skills you are expected to understand each other. So they will also understand because English is not our first language. But the letter you are writing and which is sent to a company will reach everybody. It needs to be as formal as it can be because once it is written and sent there is no chance to explain what you want to say.

Q5. How far did the courses you took at university help you to carry out the tasks you are required at work place?

R: From what I saw the courses given in the universities are most of the time, I can say, focused on vocabularies and grammatical structures. The experience I have now is not depended on vocabulary and grammatical structures. My experience in English language comes from different entertainment sources. That is most of my communication skills that I have right now is based on this. The university courses I took before share language skills to a specific language point. For example, when I learned about technical report writing I have gained some knowledge about report writing. So, when I came here it wasn't difficult for me write a report. There was also a sophomore writing. In that course there is writing essays which is very important. When you are writing an essay, you need to have a broad perspective. It needs a broad set of understanding.

P: Can you tell me about your background or experience of learning English? What was your most effective part of your learning of English language? How did you improve your English language?

R: When it comes to the improvement of my English language skills I used to have a teacher. His name is Shimelis at Addis Ababa in a public school. I was there in grades 9 and 10. The teacher called Shimelis contributed a lot to my English language skills. He used to recommend us books. He used to give extra-curricular activities. He used to take the teaching to the next level. So I can trace my improvement of English back to Ato Shimelis. He is a very talented person and apart from that I used to watch movies and entertainments that have also a big contribution.

Q6. Which language skills and sub-skills do you think engineers need most for the work place communication?

R: I think most of the language skills and sub-skills like report writing, letter writing, presentations etc. are all very important because I have used them throughout my experience here in Hawassa Industrial Parks. And also my friends who are working in other areas have been in the same process. It's really necessary I think.

P: Can you put the language skills in order of importance for engineers?

R: I think it depends on the work area. Here in my work area from my experience in Hawassa IPDC I meet different foreigners most of the time. So I am very much required to listen and speak with them than write and report. Most of the time, I am engaged with them to communicate verbally (orally). I am also required to write and report, but that does not happen many times. For example, this morning I was with some investors in some shades talking about their problems, what service we should provide them. So from my point of view, here In Hawasa Industrial Parks the first skill should be the listening part. First, you need to understand what they want to say. Second, the speaking part comes after you understand what want to say. So even if you don't speak to him, if you listen what he said you can give him what he wants. The first thing is the listening part, and then comes the speaking part. After that reading and writing skills follow.

Q7. How far did the technical report writing course help you to write the technical reports in the work place?

R: It helped me somehow. It has its own contribution, but it is not as intensive as it should be. But it has its own contribution. I can say that.

P: What was lacking?

R: I'm not sure what was lacking.

P: Did it familiarize or involve you with the practical writing tasks required in the work place?

R: Not that much. It's only two credit hours course. This means we were not exposed to it. I don't think I have given much attention to it because I only focused on my major subjects. I think that is the problem.

Q8. What English language skills and sub-skills do you suggest to be given emphasis or included in English courses for engineering students to effectively prepare them for the demands of work place communication?

R: Ok. The basic thing that should be included… The main problem I think is in the university the departments are so different and students there do not give much emphasis to English course because they are focusing on the major subjects. So they need to be integrated with the subject areas. They should be asked to write a report. For example, most of the time, the students should be encouraged to present their work in the classroom, to report their writing about their major academic subjects. Apart from that as long as the technical report writing course has only two credit hours, it is separated from the other major area courses. Students consider that even if they take that course they don't give much attention because of the small credit it has. It should be given due value.

P: Not only the technical report writing, what about the other English courses?

R: Most of the time the English that we use in the work area is technical English. So the English courses need to be integrated with the subject area courses. It will be effective in that way.

Thank you very much for sharing such invaluable information. I'm very much grateful.

Interview with Engineer employee 3 (EE3), an electrical engineer

Interviewer: Thank you very much for your willingness for this interview. I am going to ask you a few questions about the English language needs of engineers in the work place. Can we start our interview by introducing yourself?

R: Thank you. My name is EE3. I am a graduate of Hawassa University from the department of Electrical and Computer engineering, Control stream. I have 4 and half years of work experience. Here I work as an electrical engineer at Hawassa Industrial Park.

Q1. How important do you think English is for engineers working at different companies like this?

R: That is a good question. When we say international customers in our case almost all of our customers are international investors. So we should know English well, that is an international language. It is the working language here. So it is very important, especially for engineers. There are a lot of engineering aspects and concepts. We should indentify all these terms and we should be able to communicate with them and assist them in their cases. So it is very important.

Q2. So, in your current job what do use English for? In other words, what kinds of tasks are you required to carry out in English in your work place?

R: Yeah, for example, the investors need a lot of services from us. In my department, it is engineering and maintenance department. In this department they do have a lot of maintenance and modification requests that we should approve and maintain for them. So in that case they will send us a letter or they will communicate orally with us. So we should go there and communicate. We should identify the problem there and most of the communications are in English. So in engineering aspects, for maintenance we go there and communicate in English.

Q3: Let me break down to the specific skills and what kinds of reading tasks (materials or documents) are you required to carry out as an engineer?

R: Mainly we will have read guidelines, maintenance guidelines and modification guidelines, maintenance manuals and installation manuals. So, all of these documents are in English. So we should read these kinds of documents.

P: And what other reading tasks are there that you required to read?

R: For example, whenever an investor asks us for a modification, we should know each and every guideline. For example, there are structural guidelines, safety guidelines and manual alarm controls, security guidelines. There are also electrical and mechanical parts of manuals that we have to read. These are manuals. We have to these materials and update ourselves.

Q4. What kinds of writing tasks are you required to carry out in English as an engineer in this company?

R: After each work we have to write a report for each completed task. So we should know how to write a report, formal report writing. And sometimes we have to write a formal letter for an international customer. So it should be very formal. We should know how to write those kinds of letters.

P: And what other writing tasks are you required to produce or carry out?

R: The other writing task is like we are asked to produce sometimes proposals, to propose something like projects and purchasing proposals. There are some materials that we have to purchase. In that case we have to know how to write such kinds of proposals.

P: What kinds of reports are you required to write?

R: There are weekly and monthly reports, and annual reports. So with an introduction and an objective we have to write such kinds of reports.

Q5. What kinds of speaking tasks are you required to carry out or perform?

R: There is a daily communication with our customers; they are international investors. In our case we are the ones who are managing the whole industry parks. We are working in the industrial parks development corporations, Hawassa Branch. So that means our office is managing the whole Hawassa Industrial Park. All of the investors have rented the shades and we give them the necessary facilities. We have to make sure that they are getting every facility in a proper way. And also we give some kinds of training. So as engineering staff, as you know engineering is a very broad term, and we have to be engaged in every aspect of it. For example, sometimes we prepare a training, so it should be delivered in English, so English speaking skill is very important. We give the training to the safety compliance of the investors for each company. So, each safety compliance should attend those kinds of trainings.

P: What about others? Are you also required to make oral reports? Or are you required to take part in meetings or conferences and probably writing minutes?

R: Yeah. For example, in the last two years we participated in two seminars abroad. That means, in China. Actually, the entire seminar was given in English. It is about industrial parks management

and from the engineering perspective we take some examples from China. In their case they do have their own management system. They do have engineering management system and at that time we tried to learn something about how they are managing their industrial parks and how the engineering department works. So, all the training was given in English on how they developed their industrial parks. There was also a discussion. It was both seminar and training.

Q6. How important is listening skill for engineers in the work place?

R: That is I think the best thing from a communication part. If you don't listen well, how can you respond to them? How can you communicate? Not only as an engineer, but also as staff you have to listen to them well. They are our honorable guests and customers. So, you have to listen to them very carefully and you should be very polite while you respond. So you have to listen when we take their orders and requests.

Q7. From the different tasks you mentioned above (i.e. from reading, writing, speaking and listening tasks) which ones do you or engineers in general find generally easy to carry out and which ones do you find generally difficult or hard to carry out or perform?

R: In my perspective, I would say writing because while you write it becomes testimony for everybody. They are living documents. So you have to be very careful while you write. Writing is very sensitive. In speaking for example you can readjust and correct yourself. But in writing once you write and send or give it to others it is no longer in your control.

P: Writing which documents is especially difficult?

R: You have to be very careful while you write business letters and also reports. So your report and everything you write should be to the standard and should be very formal.

Q8. How far did the English courses you took in the university help you to carry out the tasks required in the work place?

R: I would say they are very helpful, but it needs a lot of courage and your own effort to develop them because I could not say it is enough. What I took in the university is not enough because at university you always try to have an A grade in that course. Once you get that grade, you may forget it put it aside, but it's not like that. So, you should always remember and it needs your own effort. So it needs to be revised and improved.

P: What needs to be revised or improved especially in the courses?

R: As an example, each and every student should learn how to write a formal letter to his own teacher. If he needs to ask, it should not be orally. He shouldn't go there and ask the teacher for permission. So, he should ask him with a formal letter. This is a very good example and also for

reports after each visit, there are industrial visits, each student should write a report for his/her teacher what he has seen or observed.

P: I think you also took technical report writing. How helpful was that and who taught you, an English teacher or major subject teacher?

R: It was given by a teacher from English department. And I am very lucky that my teacher a doctor (Ph.D). He has had a lot of experience in teaching that course. It is very helpful as said earlier. But it needs your effort to advance or improve it.

Q9. Which language skills do you think are most important for engineers' work place communication?

R: I'd say all the language skills are important as an engineer for the work place communication. In order of importance, the first thing is listening. If you listen well, you will also respond or speak. I'd say first listening, then speaking, then writing and reading. If you can't read, how can you write? From my point of view, for example in my case at this time I am preparing myself for IELTS test, so for me to complete the reading is very difficult because there is a very limited time. So you can't say this one best and that one is not.

P: But how about for the work place communication?

R: Ok. For the work place communication, let me put in order. The first thing is listening, then speaking, then writing and finally reading.

Q10. Finally what English language skills and sub-skills do you suggest to be given emphasis in English courses for engineering students in the university so as to prepare them for effectively carry out the tasks required of them in the work place?

R: The best thing is communication skills (oral skills) and writing skills should be given emphasis in the university. It is very important. Every engineering student should be capable of those skills.

Thank you very much for your time and cooperation. I am very much grateful.

Appendix S: Engineer Employers' Interview

Interview with Employer 1 (EEmp1) EPIC Apparel

I**nterviewer**: Thank you very much EEmp1 for being voluntary for this interview. I'm going to ask you a few questions regarding the English language needs of engineers working at foreign companies like this. I'm very happy to have you as one of my informants. Would you introduce yourself and your roles in this company please?

Response: My name is EEmp1. I'm employed as a chief engineer for EPIC. My job is basically to look at all the manufacturing systems, processes and we do decide to improve the proficiency, productivity, also in terms of quality and just internally improve the productivity and profitability of the company.

Q1. So how important do you think English language is for engineers working at foreign companies like this?

R: I think it would not be a situation where it would be a problem for an engineer to function without the English capability. But it would certainly be in my opinion it would serve to enable the engineer to grasp and learn the various aspects related to the job much quicker. So, for example, if you have a candidate who has no English experience and a candidate with very good in English, I would say their actual learning, the progression would probably be twice as fast. Because it would give that personal advantage to look at instructional manuals, to look at manufacturer details which many are in English. So I would say it makes a big difference. It doesn't mean an engineer could not be successful if they don't have the language.

Q2. What kinds of reading materials, documents, manuals or guidelines are they required to carry out to do their jobs effectively?

R: I think most of the manuals for the engineer are related to the sewing and production equipment. They will be the ones where they have the capability. There is the provision of a lot of manuals. Each manufacturing machine provides instruction manuals, apart catalogues and etcetera. So, there they can get familiar if they are good in English. Of course, most of those manuals are in English. In terms of the engineering with the actual site, utility engineers are probably less in terms of the manuals and documentation to support that. So certainly for the machine engineers it's easier. But having said that, that's where I thought the more specialized technical skills are necessary. With the others it's more hands on like when somebody is shown more to do in terms of you know the switch-gear, the compressors or the boilers. You don't need to read the manuals for them because they generally the equipment to give the service correctly they will operate. But certainly it would be good if the general engineers have the basic and the machine engineers they really do need quite a high level in English language. Because they are also working with the production people also we

have expatriates like myself and also expatriates from India, Bangladesh. They also have to communicate in English, so you got the difficulty from the foreign Indian person who is going through English to speak to a local person. So I also have some challenges to communicate sometimes with the Indian people speaking English. So, there is a challenge. We all try to communicate and English skills will definitely have any way that we can enhance English is going to be beneficial.

Q3. What kinds of writing tasks or assignments are the engineering required to carry out in their job? What kinds of documents, reports, do they have to write or produce?

R: Okay, for the engineers here we've got two main areas. For the engineers on the machinery side they don't have the necessity to produce a lot of documents at this time. I think we have a very few basic reports that they may have to produce to sign off for the machinery was already prepared is actually at work focused on instructional manuals. The general engineers we do have all the documentation to be some reports. But it generally relates to department heads. I think you met my colleague Memnon this morning, so he would basically coordinate with the team on him to get the facts and to report back to management. He has an email account where most of the other engineers don't. So he would collect all the information and send the management: "Ok, this is the gas consumption, water consumption whatever, whatever that we can sure the fact is ok." So, not a great deal of report needs to be produced. There are some key reports.

Prompt: Are they also required to write business and permission letters?

R: I would say no to my knowledge because maybe check with Memnon if he wants to. As far as I know to the best of my experience I don't think so. I think they keep internal documentation only.

Q4. What kinds of oral communications do they have to carry out or perform?

R: Okay. I think as I said we separate between the mechanics and the machinery and so on equipment. The general engineers I think the key requirement for the machine engineers and that is why I'd say it's much more critical for them, not essential but much better if they can have a good standard of English to link him with the instruction manuals, parts, books. Equally it means they can talk to department head who is currently an expatriate. And we see that will change in the future and that will be a local person. So then the language part will be critical. The verbal communications are still essential for things like instructional manuals and technical data. The general engineers again it's not so critical because they can speak English. With Memnon, for example, we have a local person. So he can speak English to the management. He's capable to speak locally to the team, so some of his team I am sure they can speak basic English. But it would be so essential for those because the nature is not so technical. They don't produce so many reports. So the language is less critical for them. So, it is very important or it would be nice if they have a basic grasp of that but not essential.

Q5. How important is the listening skill for the engineers working at foreign companies?

R: Well again it would be the same situation almost daily. It would probably be on a daily basis. The hard mechanic would be fallen up with this team to guide them and focus on the important machinery. So that conversation would be happening almost continuously with the different mechanics because you appreciate that. If the machinery is broken, production cannot continue. So there is a pressure. If the mechanic cannot fix it quickly, he is so escalated. So the discussion is very very constant in that respect. With Memnon's team it's a little bit different. They are probably communicating regularly. But those are a kind of more preventative. So in other words, we know the boiler needing servicing. The team will communicate to the next: "we need the service, we need to do this." So they have a little bit more time and a little bit less urgent. But equally the communication is happening maybe not to the extent to the continual amount with the mechanics. So, it's really two different departments hopefully you can see that from my explanation. Communication is so critically overwhelming. It happens in one another not in the same stand.

Q6. From your observation and experience what are the English language problems and difficulties of the engineers working at foreign companies like this?

R: Honestly speaking I have not really observed any difficulty. I think the way we cementer is that some of the team will be better than the others, yes in terms of their English. So if one colleague maybe is not quite the same level, then they can communicate in local language. And the person who is the more positive or more competent communicator will be the one to communicate what he asks is to mean can quite explain it. We have a very kind of proactive way to communicate. So the team can communicate locally. We encourage them to obviously communicate in the local language because it is the more direct and they can understand. Ultimately it is the factory in Ethiopia, so the local team to eventually be in charge. And at some point in the future the public will see a very few expatriates. So as I said, two months I have been here, I don't see a massive communication problem where somebody misunderstands even the expatriates they find a way to have a positive result with the communication although it probably takes a little bit longer. So this is where if they have more ability than it can be much quicker.

Prompt: But if they tell the problems through somebody else, doesn't that show there is a communication problem?

R: Yeah, I gave you a scenario. I didn't say that was happening here. But I'm saying if there is a misunderstanding with myself and not the local people but the expatriates also speak English because everybody's capability in English is different. If we can improve it a little bit, then it will reduce the misunderstandings and reduces the miscommunication. We have the facility all here. We have people who are very good and people who are still learning. Of course, in a year's time people that may be having some difficulty now, they will be better because they want to get some

knowledge providing that using all the time, then you get better. If you practice you know riding the bike, then eventually you learn to ride a bike. So I think language is the same thing. We can benefit if we can all communicate better.

Q7. What language skills do you suggest for the future for the engineers working at foreign companies should improve for better communication?

R: Honestly speaking I think that is difficult to ask at this stage. It is difficult to answer. I think some departments are better than others. But I couldn't say it's a big skill gap in this area. For this you should talk to Memnon. I think that is the answer for that because I don't know the engineers personally. We've got 17 engineers in one department. I think they've all got different competences. All I'd say is the better the language capability we can give them, then the quicker this country will develop not just for EPIC. I worked in Asia, in China, in Vietnam, in Cambodia. All those countries had the same challenge to learn English and they did it at different stages. China was very quick and Vietnam was a bit slower and Cambodia was slower still. So they all progressed at different rates but that is the reason why China is very successful country. Vietnam is also the next successful country and Cambodia is still lagging behind, so not as successful. So I think English is one of the key skills that all candidates should need to improve. That will help the country and it will also help every single employer on this state. Even the Chinese companies they communicate with the local people in English I guess. There may be a few Chinese translators. So English is a business language. You know I am a lucky person. I don't need to learn other languages because everybody learns my language. So it makes me a little bit lazy but that is the situation, okay.

Thank you very much. I am very grateful for your insightful information.

Interview with Employer (EEmp2) − Chinese Construction-PLC

Interviewer: Thank you very much for being voluntary for this interview. I am going to ask you a few questions about the English language needs of the engineers for the work place communication. So, would you introduce yourself first, please?

R: Thank you. My name is EEmp2. I'm from CC-PLC; it is a Chinese construction PLC. Based on the question from you, I have been working with our staff for around three years.

Q1. How important is English for engineers working in foreign companies like this?

R: So, normally for the routine work we have some communication. Sometimes I would like our staff to write English letters to our clients to build our image to our consultants and about English skills to be provided it seems for the importance of the English is mandatory, especially working in foreign company because for the local staffs and the foreign company I think the first language is English. Because we are from a construction company, actually English does not need to be

hundred percent perfect. We are using English for easy communication with our staff because our company is not like the media. Sometimes we write the English letter. We just try to explain the issues and try to write the fluent English. That is enough.

Q2. What kinds of tasks are the engineers here required to carry out or perform?

R: For the routine work normally we just do communications because we sometimes give instructions to our local employees and also communication is the most important. And also for the writing we communicate with our clients and our consultants, so we use it the official way which is we have to write letters. So the letter is very important. Also the English writing is the criteria how to separate the person from the others how his English skills are.

P: To break it into specific skills, what kinds of materials or documents are the engineers required to read?

R: So reading some official letters from our clients and also some main contracts between our company and our clients. It is normally like that. We also need to read emails.

Q3. What kinds of writing tasks are the engineers required to produce or document?

R: Normally, (it is) writing the official letters to clients and consultants.

P: How about writing reports, manuals, proposals, etc.?

R: Report is not that much and no need to write manuals and proposals. We have already a Chinese construction manuals and its English version. Some of the manuals are available and we get from the Chinese suppliers.

Q4. What kinds of speaking tasks are the engineers required to carry out?

R: So, speaking is also important which means people try to communicate each other. We express our ideas, share with other people which is using the speaking. And sometimes we just have presentations for example for higher government officials. We just report how the construction project is progressing to the government or to the clients.

P: Is it you or the engineers that make the presentations?

R: Both. Sometimes the local staffs need to communicate with the government offices.

Q5. How important is listening skill to the engineers? What kinds of listening tasks are they required to carry out?

R: Listening is also important. Once we give instructions to our local staff, they have to listen it. They have to fully understand it. So, if their listening is not good, maybe it is difficult to understand what our foreign company gives them to do. So listening is important.

Q6. How do you evaluate the English language problems of the engineers working here? What problems do they experience when they communicate with the foreign investors or employers?

R: So to be frank, I think they have to improve their English writing. That is very important, particularly writing the letters. They like reading the English books and also for the speaking for easy communication we have no obstacle between us. And listening there is no problem. So they have to improve their English writing. For the official writing needs to be accurate, they need to improve it.

P: Do they face any problems while listening to seniors or employers with different accents or pronunciations?

R: I think they face some problems with Chinese or Indian accents because some of the Chinese accents are not very correct. Maybe we give some difficulty for the local staff. And also the way some Indians say, their accent is not clear. But there is no problem with native English speakers or Europeans. The Americans and other Europeans speak more clearly and it is easier for them to understand.

Q7. What English skills should be given emphasis for the engineers for better communication in the future?

R: Yes, like I said before the English writing skills should be given special attention. I think if they read more books, they can improve their English writing.

Thank you so much for your cooperation. I'm very much grateful.

Interview with Employer 3 (EEmp3) –ZLD Plant Senior Engineer

Interviewer: Thank you very much for being voluntary for this short interview. I am going to ask you a few questions regarding the English language needs of engineers working at foreign companies like this. First would you please introduce yourself sir?

Response: Thank you so much for giving me this opportunity. My name is Mr EEmp3. I am working as a senior mechanical engineer in ZLD (Zero Liquid Discharge) plant. We have established here 4 projects for the development of Ethiopia like Hawassa Industrial Park, Adama Industrial park, Dimtu Industrial Park and Dire Dawa Industrial Park. Basically our purpose is to teach the common effluence treatment plant for industrial water. So we are providing water solution to the Ethiopian government to treat and recycle the waste water. Whatever water we are getting,

we can again treat it and send back to the investors for use. We are here 14 members including our plant manager, deputy manager, mechanical engineering in charge, electrical in charge and instrumentation and supply chain management.

Q1. Thank you very much for detailed introduction. So what kinds of materials, documents, reports or manuals are the engineers required to read to effectively carry out their jobs here?

R: Yeah. In my point of view, we have established everything from the starting to an end successfully. So each and every equipment manual we have given them as well as the process also. If we start about reading we have given so many documents like equipment manuals and how those equipment works and how to conduct the maintenance. When we are going to the fields how we have to implement the procedures and how to write the arrangement of the process. First they have to identify what the problem is and in which part of the system the problems occurred before conducting the maintenance. So we have given everything−operation manuals, maintenance manuals, formats of report writing (daily basis, monthly and so on), complaint writing. When they commit mistakes we are correcting them also. So practice makes them perfect and from practice they avoid making mistakes.

Q2. What kinds documents, reports are the engineers required to produce or write for their workplace communication?

R: They have to write reports. They need basic English to write reports. If you talk about our basic activities, they have to writing daily, monthly maintenance reports using the given formats for the equipment, plant operation as well as the maintenance activities.

Prompt: Are they also required to write letters?

R: Suppose they are going to apply for annual leave requests, we have a format and they have to follow that one. So they have to request the annual leave permission.

Q3. What kinds of oral communications are the engineers required to carry out here?

R: In point of my view, basically we have conducted the examinations for them when they were employed. We have conducted interviews for selection criteria. We have also given written examination. For the trainees who come from universities like Hawassa University, Dilla University I would like to mention we have defined the criteria. They have to learn day by day and they have to speak what they have learned. At that time we are correcting them and requesting them to make their report in the formal way. We have guidelines also and we have provided them. It has font size, sentence formats and so on. For our engineers and supervisors we orally talk with little Amharic sometimes. If they are committing mistakes we convince them: no, this is wrong. We correct them. For this plant we are insisting them to speak only in English. Whatever activities they have to do,

they have to communicate in English. If you are at a senior or supervisory level, you have to make the report in English. They have to follow how we are making the report.

Prompt: Are they required to make telephone conversations with you?

R: Yes, every time. This is a big plant so the maintenance and the equipment are very tough. So we are communicating and explaining the problems every time when we are in the office or outside. They call and report every problem to us. If it is possible, we try to solve from here. If it is not and if they don't understand, we go to the plant and solve the problem or guide them. And we give trainings to the engineers and supervisors level and the technicians and the operators work with the engineers and they mostly talk in local languages.

Q4. How important is the listening skill for engineers working at this plant?

R: I think their listening should be very good. Sometimes we are expecting more than their expectation. Always we are suggesting them something and they are listening and doing.

Q5. In general from your observation and experience, what are the English language problems or difficulties of the engineers working here?

R: If you are speaking about the engineers' level, the person who is working here, some of them are very well in English: in speaking, in writing, in reading, in communicating. In regard to the improvements, they have to improve their basic English like the pronunciation, the punctuation, the vocabulary, the spelling. Some of them have social anxiety. So they are not able to speak very well. They are afraid; their bodies and hands are vibrating and shaking. They have to remove their social anxiety. They have to have full confidence over what they are speaking. I think they did not have experience of speaking before. Whatever they are speaking, they should have confidence. That is the most important in the communications. Whenever they are making presentations, they should improve their confidence and body language, how to interact. They should have formal dressing, well dressed. That should be considered when you are working in private companies. They should have a good attitude. Attitude is very important to learn from others. Only taking engineering degrees is not enough. Engineers serve the society, so they have to be very sociable. They have to give respect to who they are working with. They have to listen to what other people are saying. They should have patience, confidence in speaking.

Thank you very much for your time and cooperation.

Appendix T: English Instructors' interview

Interview with English instructor 1 (EngI1)

Interviewer: Thank you very much **EngI1** for being voluntary for this interview. I am going to ask you a few questions regarding the English language needs of engineering students. Would you first introduce yourself please?

R: Thank you so much for inviting me to be included in this study. My name is **EngI1**. I have been working for the last 9 years at three different universities. Currently I am working at Hawassa University since 2015.

Q1. How important do you think English is for engineering students for their academic and future workplace communication from your experience and observation?

R: Ok, as far as English is a medium of instruction in Ethiopia, students of engineering as well as higher institution students need to have good English language proficiency because they study their academic subjects in English. If a student doesn't have good English language competence and performance, we can guess that he or she cannot get good grades in other subjects. So to read or write or listen or to understand the overall contents in their major subjects, engineering students need to have good English language proficiency. So English is very important for engineering students.

Similarly for future occupational purposes we know that we do have lots of engineers in Ethiopia and we do have lots of companies. And most of these companies are foreign which require English as a working language. So these engineers we are producing once they graduated, they need to have a good English competence to join different organizations to indifferent companies. So I am sure English is very important both for engineering students both for their academic purpose and as well as future career.

Q2. So from your observation, how do evaluate the English language proficiency of engineering students?

R: Ok. As I told you earlier for the last 10 years in higher institutions, I have taught particularly common courses like Communicative English Skills and Basic Writing Skills and one Research and Report Writing Skills for engineering as well as other department students. When I compare engineering with other students like social sciences, engineering students I think have better proficiency than social sciences. If you ask me engineering students particularly, especially the pre-engineering students and third year engineering students whom I taught Technical and Report Writing, I don't think they are proficient, but the majority of them have an average level of proficiency. There are a few students who cannot write even a single correct sentence. So I can

judge that the majority are at average level, but some are below the expected proficiency level. This is what I feel about their English language proficiency level.

Q3. So what do you think are the main English language problems and difficulties of engineering students? Where do they have the most kind of problem and what are their major English problems from your observation?

R: Yes, these engineering students have difficulties and challenges. One of the challenges is their background because most of them come from government schools. Students from government schools do not have the required level of proficiency. The other could be those from private schools also have difficulties. They usually use more informal English, not the required academic English. The academic English and informal English are different. So they use very informal texts when they write paragraphs, when they write notes. So regarding the difficulties I feel writing is the most difficult skill for them during my teaching experience. For example I have taught civil engineering students some two to three years back Basic Writing at this university. Their oral proficiency is better and reading they are not bad. They can read and comprehend, but to write a paragraph and essay or a kind of report, they have lots of difficulties. They have lack of producing ideas, organizing a paragraph or an essay and stating their ideas clearly. And they write lots of sentences which are not related. They have a problem to write in concise and clear English. So, one of the major difficulties for them is writing. In their writing they have challenges of using appropriate vocabulary and similarly grammar. They use mixed tenses, for example, they used the past and present tenses in one sentence where they don't need to. So these are some of the difficulties that I have observed. Regarding speaking, they are a bit better as compared to writing. But still some of those who have come from government school are shy. They have anxiety and worry to speak in front of other individuals. Those from private schools and cities have better confidence than students from government schools. So these are the key areas students have difficulties which I observed.

Prompt: What do you think are the reasons for their difficulties of writing and speaking?

R: One is I think lack of practice. I don't think if students have well practiced writing when they were at high schools. Another is there is a mismatch between teaching and testing because at secondary level most teachers focus mostly on grammar than other skills. Similarly, for example, writing is not included, especially those productive skills. I think these are the major factors that make students to experience difficulties in these areas. Another could be maybe English teachers who are teaching at primary and secondary schools may not be competent. I believe that other subject teachers are also English teachers. If they don't deliver their lessons in English medium instruction institutions very well in English, directly or indirectly students may not get exposure to learn English because the only environment students have opportunities is the classrooms. So, those engineering instructors are teaching in Amharic or other languages that could be one major factor. I

have conducted one research when I was at Dilla University on using English as a medium of English in content classes. I observed some instructors; half of the teachers use Amharic in their classes. So this could be one factor. An English teacher has three or four hours per week, but the major subject teachers have more than 30 hours per week. So if those subject teachers are competent and deliver their lessons only in English with good English, the students can get English experience implicitly. So that could be one factor. Subject area teachers' English language background, English teachers at secondary level, and students' lack of exposure could be some of the factors.

Q4. How do you see the Engineering students' interests and motivations towards English courses? How motivated or interested are they?

R: Regarding engineering students' interests towards learning English courses, as far as my observation is concerned, they are not that much interested to learn English courses. And one of the main reasons for this could be the English courses are not designed based on the interests of the students. If you consider the topics in reading, listening and speaking, I can say none of the contents are related to their field of study, for example, some of the topics talks about HIV AIDS and the others talk about Culture and the like. So what relations do these contents have towards engineering? I think that is one of the main reasons for their low interest towards English courses. For me they are not that much interested. It's not because they hate the subject, but because of the material I think. We are using the same material for all students like one size fits for all. So we are using the same material for engineering, the same material for agriculture and social sciences. The other could be the English teachers who are teaching the courses. We English teachers should make English classes motivating and interactive and the activities should be hands-on. There are individual differences among teachers, so a teacher with the same material if he/she is using varieties of materials and enhances students' motivation, it may achieve the objectives set. But one reason could be the teachers' way of teaching, methodology, using various kinds of techniques. The other reason may be students after they graduate a few of them are working in government offices where English may not be required. For example they may work in city municipality offices. They may say, "Why do I need English?" When I graduate, I may be employed in local government or NGO offices. That may be one reason. Those who know they are going to work in different companies, they may be highly motivated. Another is maybe the universities, the government, politicians and the community as a whole may give less emphasis to English language itself.

Prompt: How about the English language policy itself?

R: I think yes. The English language policy itself is one reason. The policy by itself is one reason because if you look at the local offices, particularly government offices most of them may not use English. They use Amharic as a working language. Like I said the municipality, they don't use English; they use other local languages. So the policy could be one reason. Because if you teach

students for the last 12 years and for four or five years in the universities and if you have considered it as a medium of instruction beginning from secondary level; if you invest this much the policy should also predict the way English language is used in the working environment. So except those foreign companies, the majority of local companies do not use English. When we say this I don't mean that, for example, if you go to municipality, they may produce various things in English. But they communicate (orally) in local languages. So in the policy less attention is given to English indirectly. The ministry itself needs to give value to English. We need to understand the role of English in Ethiopia because has been used for more than 100 years in Ethiopia. So if you have been using English for the last 100 plus years and still there is a problem, it is the problem of the policy. The policy says as far as my knowledge is concerned, English is taught as a subject beginning from 1 and as a medium instruction starting from a secondary level. But it didn't clearly state particularly the working environment or the workplace language because it's determined by the region itself or the federal government. For example, if you take Hawassa city or Sidama region, I think they themselves decide the working language. But at a country level or the ministry level it should be identified. If that is not the case why do we use English as a medium? What is the purpose? If you are teaching in English and working in local languages, what's the purpose to use English as a medium? So, the policy makers should rethink about it.

Prompt: I think the policy is not also consistent as in some regions like SNNPR and Gambella regions, the English medium instruction begins in grade 5 while in Amhara region, it begins in grade 7 and on the other hand in Oromiya region it begins in grade 9 or high school. Don't you think these things bring about a big difference in their English language capacity when they join university?

R: The inconsistency of the policy is there. Because if you state English as a medium of instruction, which grade level it begins should be the same for all regions as far as we are living in the same country. Addis Ababa has a different policy; Southern nations region and Gambella begin from grade 5; Amhara I think from seven and Oromiya begins from grade 9. So if you consider for example the students from Oromiya, they mix up Latin script with English. That is the problem of the policy. You need to have a consistent policy for all students. Again if you look at private schools, they begin English as a medium of instruction from grade one. Some private international schools, they begin from even Kindergarten and grade one. Imagine the same students from the same country have different backgrounds and policy and join the same university. Those who are from different backgrounds some begin from KG, most from grade one as far as I know. If you consider Hawassa town, the schools of SOS and Komboni, grade one students learns their Maths in English, for example and general science in English. But the government students learn in the local languages. For example my son is in grade 3 and he learns his maths and science in English at SOS school. He learns environmental in English. Last year it was in Amharic. The ministry has disseminated an official letters to follow the government policy, but private schools shift. It's I

think because of influence from the families. They do have their own curriculum. The point here is different schools in different regions follow different curriculums. For instance, different private schools call themselves international schools, but the students are not international; they are Ethiopians. So the same students from private or boarding school use English like the Nazareth school, SOS school, Gibson school. They are also international schools. So students from these backgrounds join the same government university at the end of the day and they follow the same curriculum designed for universities. They take the same national examinations; they attend the same curriculum at higher institutions for example. So I think the policy has certain gaps, of course.

Q5. How far do you think the current English language courses address the English language needs of engineering students from your observation?

R: I don't think those two courses: *Communicative English Skills* and *Basic Writing Skills* fully address the academic as well as the future work-related needs of engineering students. As I said earlier the first thing is to check whether that particular material addresses the needs of the students or not. It should be designed based on the needs of those students. So as far as my experience is concerned those materials are designed without consulting students' needs. They are designed at the national level by few university teachers. So a material designed for a general purpose, designed for 100 plus departments, how can we expect it to address the academic as well as the future work-related needs of engineering students? I don't think it addresses their needs. One of the implications is they don't have interest to the course they have been learning. So if it was designed based on their needs, then they would have been motivated. The other thing is the activities, the contents, the situations and the tasks included in the material as I have said so far the contexts are far from engineering contexts. I have taught these courses to engineering students for many years. So I myself sometimes take examples from their contents. Otherwise, you don't have the opportunity to relate to their field of study because the vocabularies, the reading texts and the other grammar contexts are not related to their field of study. If these are not related, then the material is not addressing their needs, their academic as well as future career needs. For example, if you consider their future career these engineers are expected to write a report. They are expected to prepare a kind of form. They are expected to write a lab report. So these things are not included in the course. So, if not I don't think it addresses their needs.

Q6. How do you see the importance of the Technical and Report Writing Course for engineering students for their academic and future work-related communication needs? And who should teach the course, English instructors or engineering instructors? Why?

R: I think this Technical and Report Writing, the name shouldn't be Technical and Research Methodology, but it is Technical and Report Writing. The research aspect is not included in the course. So I think it is very important course and relevant to their field. In the previous university I have taught English teachers were the ones who were teaching that particular course in some

departments, not in all departments. The remaining departments I am not sure whether they have cancelled the course or offering the course. But in those departments who had been requesting the English department to offer the course. I found the course relevant for engineering students because it's technical and related to their field of study. They produce different kinds of reports related to their fields of study. But the contents and the credit hours given to the course was very limited. It was a 2 credit hours course. So the semester ends before you cover 60 or 70 percent of the course. The contents were very interesting I felt and the students were very motivated. The course has English aspect, so I don't know how those engineering instructors teach this course. So the course is relevant and essential, but the way it has been implemented or offered is wrong because there is a lack of consistency. So the students are all engineering students whether they are Mechanical or Electrical or CoTM engineering, they should take that particular course.

Prompt: Currently the harmonized Modular Curriculum this course has been either merged with Research Methodology or altogether cancelled from the curriculum for engineering students. But the graduate engineers who I met working at foreign companies at Hawassa Industrial Parks corporation stress the utter importance of this course for workplace communication needs? So how do you see this?

R: I didn't have that information. If that is the case it is very wrong because the two courses have different objectives and goals. Research methodology is mainly for academic research purpose. Research and Technical and Report Writing courses are completely different courses. So merging the two is one big problem. Secondly, deleting or excluding this course from the curriculum I think it is wrong. I don't know they did it so, but it shouldn't be excluded. And thirdly, it has to be included and be given by English instructors than major area instructors. If it is merged with research methodology, the research methodology is obviously given by major area instructors. But this technical and report Writing as the name implies is Technical and Report writing. So I think we teach the skills, the way how they write reports. It's not the report itself, but how they write the report: the kind of English they use, the kind of tense they use, the procedures they follow. So in all these aspects, the key issue is English. So I think higher institutions that design the curriculum for engineering have include that. So, excluding is not fair because the challenge comes when the students graduate and get employed. In the companies as you said, they are expected to write reports of daily, monthly, and so on. If they don't have that skill, how can they meet the demands? And it should be in good English because in most companies, for example, in industrial companies the communication is in English. These engineers whether they have a good GPA or not, if they don't have the skill of writing a report, how do they communicate or how do they deliver the message that they want to deliver to the company? So I feel that may decrease the employability rate of engineers or graduates.

Q7. Do you think it is important to develop an independent English course(s) for engineering students to better address their English language needs for academic and workplace communication?

R: Yes, definitely. There has to be a course or a syllabus designed for engineering students because the first thing is assessing their needs. What kinds of contents, what kinds of reading, listening, writing or speaking, vocabulary or grammar do the students want to learn in their academic context? This has to be done first but based on the needs analysis; we prepare a different module or course material which is different from the previous course designed because we design appropriate material for engineering students. I am sure it enhances their motivation because it is designed based on the needs of the students. It helps them to engage in the activities or tasks that will be designed because they know the contents and the vocabulary are related to their fields of study. Similarly, the needs analysis results also predict the future workplace language or kinds of activities or tasks that the graduates will use. So those should be included in the material. If so, the issue that we raised earlier regarding the students' attitude or motivation towards the courses could be changed. And they aspire to be a good engineer in their fields of study. Yes, a hundred percent there has to be a separate syllabus for engineering students, like for example, English for Lawyers. It is designed only for English for Law students, which is different from others. So it has to be designed. That is my stand.

Thank you so much for your insightful and critical analysis of the issues raised. I am very much grateful

Interview with English instructor 2 (EngI 2)

Interviewer: Thank you very much EngI2 for your willingness for this interview. I am going to ask you a few questions concerning the English language needs of engineering students.

Q1. How important do you think is English for engineering students' academic study and their future career?

R: Thank you very much for involving me in your study. The role of English for technology students in our context is unquestionable. English plays a significant role in all aspects of academic as well as their personal lives of students. For example, for their day to day communication, to get opportunities in their work environments, to be successful in their academic study, and to find themselves competent in the international job market, the role of English is very high for technology students. The knowledge of English is very important to make use of technology. It helps them to be effective in their areas of study.

Q2. From your observations, what are the English language problems of engineering students?

R: Yeah, I have the experience of teaching English courses for Hydraulics and Water Resources department students, for Electrical and Computer engineering students. Just from my experience, their problem is when it comes to writing. Many of them are good at speaking. Students joining those departments are academically good. Many of them are from urban areas as I think. They don't have serious challenges in speaking. But they have serious challenges in writing. They try to write what they speak. Spoken and written English are different. They don't give emphasis to mechanical aspects of writing. For example, they write the first person 'I' in small letter. They don't worry about the punctuations, grammar elements, and they have such kinds of writing problems.

Q3. How motivated or interested are engineering students in English courses from your observation?

R: As I have told you many of them are from urban areas. I can say many of them like English courses. But some of them dislike it and don't give emphasis for English courses because they consider it as a common course and they give more attention to major areas. In addition to that English is a demanding course. They have to work hard; they have to study the different language elements: the grammar parts and the writing parts. And many of them do not want to work hard. Because of this they are sometimes reluctant to work hard and to score good results in English. Generally they show some interest, but since it is a common course they are not as such worried and they don't give high attention or emphasis for learning this course.

Q4. How do you evaluate the overall English language proficiency of engineering students?

R: Just from my experience in comparison with other fields of study engineering students have better proficiency of English. Except the problems I mentioned concerning their emphasis they give to English courses, their proficiency is relatively good.

Q4. How important or relevant is technical report writing for engineering students? How relevant are the contents?

R: Yeah I have taught technical report writing course before the introduction of this modular approach. The departments included this course and I had been teaching them and it is very important for engineering students. As I have mentioned English is playing a major role especially in the field of technology and those technological devices like the computer can be very easily used if the knowledge of English is good. So technical report writing can help them in their field of study. As they are technology students, they are going to be experts, and they are going to produce different kinds of products, or they may give services that are related with technology. So this course will help them to achieve those objectives easily and effectively if they have the knowledge of technical writing. For example, they can easily produce reports, they can effective write proposals in relation to their specialization, and communication can be easier and effective for them. They can also produce effective technical letters; they can produce users' manuals if they

have adequate knowledge of technical writing. I think it is very important to be effective communicators in their field of specialization in particular.

Q5. How far do you think do the currently offered English courses address the English language needs of engineering students for their academic study and their future career?

R: Currently I don't think technical report writing is being offered to technology students. The departments I mentioned earlier have removed technical writing courses and included their own content courses because in the modular approach the emphasis was given for the major courses. Due to this many of the technology departments have removed technical writing courses. And now I think it is Communicative English and Basic writing skills courses that are being offered. Those English courses are important for the students. They can help them develop their language skills, but the contents or elements of technical writing are not included. Therefore, technical report writing is very important for the students. I don't think Communicative English and Basic writing skills will help them to get the knowledge they would get from technical writing course. Technical writing should be separately offered for technology students.

Q6. Do you think it is important to develop a separate English course for engineering students to better address their English language needs?

R: Yes I think so. Just I mentioned earlier from my experience in the previous times when I was teaching them technical writing, maybe one reason they are not interested is because the technical writing course a generic, it was a general course offered for other students on other departments. And it did not particularly address issues in technology. So if needs assessment is there, if the students' needs is included, new course or technical report writing is developed, I think it will help the students develop their knowledge and skills in the areas of technical writing. I think their interests must be considered and needs should be addressed and the courses should be developed according to their needs.

Prompt: Is it only for technical writing or also for other English courses that students' needs should be addressed by developing a separate course?

R: For me texts relevant or related with their fields are important when it comes to Communicative English and Basic writing skills. But these courses are important and are general English courses for our students. They help them to activate the knowledge of the English they have from their previous levels. But still what I want to say is that course specific to technology or engineering students should be developed to help them develop, to get good knowledge, to write technical writing, proposals, and technical letters. They need to have acquaintance of the technical vocabulary in their field of study such as in electrical engineering, water resources engineering because they don't need the support of other experts when they completed their field of study. They must be effective; they must be able to produce documents and materials and a separate technical

writing course should be developed to help those students more effective in their fields of study and concerning the Communicative English and Basic writing courses, still there should be a difference between students of other fields and students of engineering and technology students. And field related texts should be included in Communicative English and Basic writing skills courses.

Thank you very much for sharing your insightful ideas on the issues raised.

Interview with English Instructor 3 (EngI3)

Interviewer: Thank you very much EngI 3 for your willingness for this interview. I am going to ask you a few questions concerning the English language needs of engineering students.

Q1. How important do you think English is for engineering students' academic study and their future career?

R: Ok, as it is a medium of instruction like any other students of the higher institution, they need to read materials, they need to listen to lectures from their instructors, they have to also present assignments, projects using English language. They have also to write different projects. They need oral and written language proficiency. There should be a material or a course designed for that field of specialization. There is no doubt it is important. First of all it is a medium of instruction. All the courses, the activities, their overall engagement is in academic English. That is for their academic purpose. In addition to that for their occupational purpose they have to develop their knowledge, their skills through reading, attending workshops, different conferences and seminars, listening to presentations from different sources. It is very important especially for academic purpose, for their field of specialization.

Prompt: How important is English for engineers' future workplace communication?

R: They need English. They can do research, they may prepare projects, they may need to write reports, they may engage in the teaching-learning profession. They have to enrich their knowledge through reading, writing. They have to demonstrate that through writing, through presentation. For example, they may present some research work, project work. That can be at international or just national level. So it is very important.

Q2. What are the English language problems of engineering students from your observation?

R: From my observation it is particularly in the writing skills. Some of the students do not have the basic skills, and knowledge of how to compose ideas, how to express their ideas in English. They fail to ask questions in English. Some of them ask in Amharic. They have also a problem of oral communication. They don't even understand what you say in the classroom. They don't ask you questions; they don't answer questions most of them. There are a few students who are outstanding and performing well. Otherwise I think it is a background problem. Even they don't know how the

language works, the grammar. They do not have the exposure to the language. For example, when you ask them to write a paragraph or a sentence, they don't know even the mechanical issues, content problems, organizational problems. When they speak, they don't express themselves properly. So they have all-rounded problems, I can say.

Q3. How motivated or interested are engineering students in English courses?

R: Since they don't have a good background, they don' even know why they are taking the English courses. They don't know the purpose. If you have a background in English or exposure, you will be interested or motivated. Because they think English is difficult to learn or to develop the language skills, the grammar knowledge, most of them have negative attitude towards it. So it is difficult to say they are interested in learning English. They are not well motivated. They have poor background and lack of interest. The other thing is that they don't make their outmost effort. These all things are related actually. If you don't have inner motivation, you cannot do something properly.

Q4. How do you evaluate the overall proficiency of English of engineering students from your observation?

R: Yes, actually there are few students that can do orally better than others and their oral communication to express their ideas freely. And some of them can develop good paragraphs, write accurate sentences. But most of them are poor. They need even extra support. Most of them do not make changes even after you have made extra support.

Q5. How far do you think do the English courses currently offered at HU address the English language needs of engineering students?

R: It is very important to design English courses that may support them pursue their academic subjects. Now they are taking almost general English courses that are given for all students. So I don't think they address their needs. To address their demands at least a common core English course must be designed. Sometimes we may try to relate it during presentation and when we give them topics. But the materials we prepared are general academic English courses. So it is difficult to say the courses help them pursue their academic courses. That is what I observe.

Prompt: So do you think it is important to develop a separate English course(s) for engineering students to address their English language needs?

R: Exactly, that is what I have been saying. There are several constraints such as lack of resources and teacher training, but if we overcome these constraints it is very advisable to design a separate course to help the students. This is what many authors in the area recommend.

Q6. How important is technical writing course for engineering students?

R: Actually, there is course called technical report and other writing course. Previously, it was given separately; I don't think it is included in the modular curriculum. But these days I don't know whether it is given or not. I am not sure about it. But I taught that course for Water Resources and some other engineering students. It is very important actually because they have to write field reports; they have to also write other reports like feasibility reports. They have to design a project if they working on construction site and write a report. It prepares them to be good engineers in the future.

Prompt: How relevant are the contents of technical writing for engineering students for their academic purpose and future career?

R: It is specific for engineering students. It is just a technical report course. It should be designed with all engineering students in mind. But the course was for all students like for science and engineering students. We have to include activities, tasks, projects that are relevant for engineering profession and field of specialization. So the previous course was not as relevant as it should be. It was too broad and shallow, and includes all the classifications of reports. They may not need to waste their time studying all these things. It was also only a 2 credit course. Appropriate credit allocation should be assigned. It should be given due emphasis. Appropriate materials should be prepared for it.

Thank you very much for sharing your insightful ideas on the issues raised.