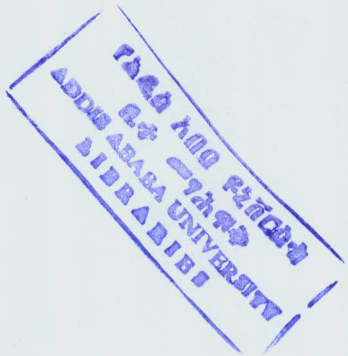
ADDIS ABABA UNIVERSITY INSTITUTE OF LANGUAGE STUDIES DEPARTEMENT OF FORIGN LANGUAGES AND LITRATURE

(GRADUATE PROGRAME)

ASSESSEMENT OF ENGLISH LANGUAGE ACADEMIC AND PROFESSIONAL NEEDS OF LEARNERS: AMBO UNIVERSITY COLLEGE APPLIED CHEMISTRY STUDENTS IN FOCOUS



A THESIS SUBMITTED TO THE DEPARTMENT OF FOREIGN LANGUAGES AND LITERATURE IN PARTIAL FULFILLMENT OF THE REQUERMENTS FOR THE DEGREE OF MASTER OF ARTS IN TEACHING ENGLISH AS A FOREIGN LANGUAGE (TEFL)

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ADDIS ABABA UNIVERSITY INSTITUTE OF LANGUAGE STUDIES

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Abstract

The purpose of this study was to assess English language needs of applied chemistry students at Ambo University College, using the research tools of questionnaires and interview.

The questionnaires were designed and distributed to applied chemistry students, major course instructors, applied chemistry graduates and employers while the semi- structured interview was conducted to English language instructors at Ambo University College. The data gathered using these instruments were compared and contrasted.

The finding from the analyzed data revealed that, both the students in applied chemistry programme and graduates at professional settings need the English course as ESP in chemistry. To this end, it has been suggested that the English language course offered at applied chemistry programme should enable chemists practice the four English language macro-skills with a wide range of activities of sub-skills. Furthermore, the contents, issues or terms, which are selected as subjects or topics to practice the language skills, should be chemistry and chemistry-related ones.

Based on the finding of the study, it has been recommended that syllabus designers need to design appropriate English syllabus and language learning materials for applied chemistry students taking in to account the students' needs of English for academic and future professional use. Besides, instructors of English course for applied chemistry students should take the results of the study in to account in their respective jobs.

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CHAPTER ONE

INTRODUCTION

1.1. Background to the problem

The introduction of ESP has shifted the view that language is to be taught as an end in its staff to the notion that emphasis should be put on the learner and his / her communicative purpose in learning. Despite its wide diversity, the practice of ESP internationally has shown some considerations to issues related to learners. Such considerations can be related to genuine concern for learner motivation and participation (Sifakis, 2003), and to the level of subject specifity in language competence (Dudley - Evans and St. John, 1998).

Assessment of needs and practices of chemists in terms of the English language use presumes that different disciplines need and use different types of English or genre. According to Carter (1983) in Gatehouse (2001:4), English language teaching at tertiary level should be concerned with "--- turning learners in to users." The context in which they practice to use the language, therefore, should simulate the actual world and so be very much related to their academic field of study and professional requirements, too.

Although the introduction of ESP dates back to 1960, this trend came to Ethiopia very late. Still some local preliminary attempts have been made in the areas of research. Morris (1982) and Abiy (1989) conducted research on communicative needs analysis of students of Addis Ababa University (AAU) and High School respectively. In addition to this Abreham (1993), Haillemariam (1993) and Abebe (1997) tried to get criteria for ESP course development for Air Craft Technicians of Ethiopian Air Force, Yared Music School and Addis Ababa Technique Schools respectively (see 2.7 for detailed discussion of some local research works on ESP). Their findings indicate that English language courses given to the above institutions fail to meet learners' communicative and learning needs.

As the medium of instruction in Ethiopian higher institutions (colleges and universities) is English language, teaching English in any college is meant to help students to satisfy the need for the language in the field of study. And in light of the above conviction, English language

courses in any college should be designed to address students' professional requirement and assist them to develop their English language skills which intern enables them to accomplish tasks and activities relevant to their field of study effectively.

Ambo University College (AUC), the oldest and a pioneer higher educational institution in Ethiopia currently offers first and second degree programme courses in six faculties and four graduate schools respectively. Except for the post graduate program students, either Sophomore English or communicative English courses are given to all learners of the college.

Though, English is taught for academic purposes, learners' needs should thoroughly be investigated for the fact that the clear relevance of the English course to their needs is important to improve the learners motivation and thereby make learning better and faster (Hutchinson and Waters 1987).

Many educational institutions around the world, have thus developed courses which take into account an analysis of the required areas of language use and the communicative needs of their learners into consideration in order to make the teaching of English relevant and purposeful to their students.

1.2. Statement of the problem

Unlike ESP, general English courses are basically determined by either traditional practice, choice of text book or ministerial decision. ESP courses give quite a central place to students needs, therefore, top priority should come next to none in designing ESP curriculum and syllabus and development of course materials (Hutchinson and Waters: 1987).

In view of this, proponents in the field of ESP (Robinson, 1991; Dudely - Evans and John, 1998; Wright, 2001) stress the importance of giving adequate prominence to language features that students repeatedly encounter in their discipline and less to those language features which are less repeated in their discipline in designing an appropriate course syllabus. Accordingly, for trainees who are studying the same discipline, Jordan (1997) says that the English course book

needs to be designed taking the special language features, vocabulary structure and language skills etc in to account in their field of study.

In Ambo University College, Sophomore English is mainly taught as common course for a range of fields including applied chemistry department students who use the same text book prepared by teachers of English department. Sophomore English course focuses almost exclusively on writing and seems to give little or no attention on the other language skills. In their academic study, applied chemistry students are expected to read and make notes from a variety of complex texts, professional journals, scientific publications etc. The learners are also required to listen to lectures and to take notes that include main ideas along with pertinent supporting details. Even after graduation, learners are expected to master a range of applied chemistry vocabularies to be able to produce formal pieces of writing as well as to be able to make professional presentation in seminars or conferences.

Learners in different professions and those learning English to join different professions haw ever need to be offered courses with varied degree of emphasis on the language skills and content areas. Learners engaged for this study also need a kind of English language courses targeted towards meeting their academic and professional needs.

It is with these understanding and with the aim of addressing English language needs required by applied chemistry students at Ambo University College and contributing to the limited research practice in ESP in Ethiopia in general and applied chemistry study through English in particular that this study is initiated. Moreover, the courses and the literature I came across during my MA studies and my long time experience as an English teacher drew my interest of research in to the area of ESP- providing language courses to the needs and purposes of students.

1.3. Objectives of the study

Therefore, this research is intended to assess whether the English course that students of applied chemistry have been taking satisfy their academic and professional needs. It tries to see if there is a need for English courses which are more specific or related to their field of specialization as English for chemistry. More specifically, this research attempts to:

- Identify the English language academic need of applied chemistry student in the light of their study.
- Investigate if English language course that have been offered to applied chemistry students enabled them accomplish what is professionally required of them.
- Identify the English language problems students of applied chemistry face in their day-today academic activities.

1.4. Significance of the study

This attempt of studying the English language needs in the field of applied chemistry would be useful to help English instructors at Ambo University College and other similar institutions to consider the need of their learners and to relate the English they teach to the field of study that students are expected to be experts in. Besides, the finding of the study is expected to initiate researchers to further investigate in this magnitude, as it has been done for other fields of study. Moreover, it may benefit both syllabus designers and course material developers to design an appropriate English language syllabus and course material for applied chemistry.

1.5. Scope of the study

The study is confined to assessing the English language needs of applied chemistry student at Ambo University College. It is within the scope of this study to determent the English language academic and professional needs of students being trained to be chemists in their future career.

1.6. Limitation of the study

Due to time and financial constraints, this study is specifically restricted to Ambo University College applied chemistry department students. Had it not been for the monitory and temporal limitations, the research would have tried to take larger sample size from Addis Ababa University applied chemistry department students and from other similar institution in the country.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1. Definition of ESP

In order to put this study in its wider place, an attempt is made to review the most relevant literature pertinent to the important topics that are applicable to the study.

To begin with the different definition of English for Specific Purpose given in the literature, Munby (1978) defines ESP as a course where the syllabus and materials are determined in all essentially by the prior analysis of communicative needs of the learners rather by non learner-centered criteria such as the teacher's or institution's predetermined performance. Similarly, kennily (1981: 18) defines ESP "as any English language teaching which is derived from and is directed towards needs, goals and practical use for which the learning is taking place." Likewise, Robinson (1991:3) defines ESP as a "course normally goal-directed and … (and that) develops from a needs analysis, which aims to specify as closely as possible what exactly it is that students have to do through the medium of English." One can deduce from this definition that there is an absolute need to understand the unique needs of a particular group of students and a special characteristics of the specific situation in which the teaching learning process takes place.

The definition that is considered to be the most comprehensive one, for it incorporates most relevant points in ESP, is forwarded by Strevens (1980), quoted in Dudley - Evans and St John (1998:3) who tried to define ESP in terms of some characteristics:

> ESP is a course designed to meet specified needs of the learners related in content … to particular disciplines, occupations and activities and centered on language appropriate to those activities in syntax, lexis, discourse, semantics and so on and analysis of the discourse.

Though the above points indicate the possibility of defining ESP, clear differences in how people interpreted the meaning of ESP could be seen. Strevens (1988:1-2 cited in Gatehouse, 2001) says, English for specific purposes is a particular case of the general category of special-purpose

language teaching. He defined ESP by making a distinction between its four absolute and two variable characteristics as:

i. **Absolute characteristics**

ESP consists of English language teaching which is:

- designed to meet specified needs of the learner;
- related in content (i.e. in its themes and topics) to particular disciplines, occupation and activities;
- centered on the language appropriate to those activities in syntax, lexis, discourse, semantics etc, and analysis of this discourse;
- In contrast with General English.

ii. **Variable characteristics:**

ESP may be, but is not necessarily

- restricted as to the language skills to be learned (e.g. reading only)
- not taught according to any pre-ordained methodology (Strevens,1988:1-2 in Gatehouse,2001).

Robinson (1991) also acknowledges the greatest importance of needs analysis in defining the term ESP. She bears two very important defining principles and a member of characteristics that are usually accepted to be true of the term 'ESP'. And thus, here principles declare that ESP is normally goal-directed and that ESP materials appear from needs analysis. Here characteristics suggest that ESP materials are usually restricted by a limited time period, in which their ultimate goals have to be succeeded, are taught to matured people of similar type in terms of their field of specialization occupation etc.

Dudley-Evans and John, in a more recent study, have modified Srevens definition and put their revised view on the essence of ESP in the following two perspectives:

i. **Absolute characteristics**

- ESP is defined to meet specific needs of the learner;
- ESP makes use of the underlying methodology and activities of the discipline it serves;

- 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 designed for adult learners, either at a tertiary level institution or in a professional work situation. It could, however, be for learners at secondary school level;
- ESP is generally designed for intermediate or advanced students;
- Most ESP courses assume some basic knowledge of the language system, but it can be used with beginners (Dudley-Evans and John 1998:4-5 cited in Gatehouse, 2001).

As noted by Gatehouse (2001), Dudley-Evans and John (1998) have removed the absolute characteristics that 'ESP is in contrast with General English' and added more variable characteristics. They assert that ESP is not necessarily related to a specific discipline. Further more, ESP is likely to be used with adult learners although it could be used with young adults in a secondary school setting.

Besides Hutchinson and Waters (1987) tried to define ESP through what ESP is not. According to them, ESP is not just science words and grammar of scientists neither is it just hotel word and grammar for hotel staff. But rather, it is English language teaching in which performance and competence perceive the great attention. They go on to say that ESP is not a particular kind of language teaching material or methodology, rather it is an "approach to language teaching in which all decisions as to content and method are based on the learners' reasons for learning" (p.19).

The contemporary definition of ESP given by Hutchinson and Waters (1987) is viewing ESP as learning-centered approach to English language teaching. This is a recent progress in its development and one which has emerged in opposition to the earlier rigid target or goal oriented definition. It is a definition of ESP in terms of target and learning needs of the learner.

Generally, the definition and set of characteristics that concentrates on all aspects of ESP addresses the importance of communicative needs of the learners and considered learner's need as a central concern around which other features revolve.

2.2 Origin and Development of ESP

2.2.1 Origin of ESP

The study of language for specific purpose has had a long history going back, as some claim as far as the Roman and Greek empires. But most writers agree that since the 1960_s English for specific purpose has become a vital and innovate activity within the teaching of English as a foreign or second language movement (Dudley- Evans and John, 1998:1). As indicated in the works of Hutchinson and Waters (1987), there were different factors for the inception of ESP. Of these, revolution in linguistics, technological innovations and expansion of trade and focuses on the learner played a vital role.

With regard to the first reason, Hutchinson and Waters (1987:7) say that socio - linguistic study gave rise to the notion that "... the language that we speak and write varies considerably and in a number of different ways, from one context to another." This notion in tern led researcher's to consider analysis of specific language textures needed for different contexts as a basis for language course design. In 1960_s linguistics studies were pressed to make a paradigm shift from longstanding tradition of describing language forms and teaching centered on mastery of grammatical rules to advising communicative needs of the learners (OP: cit, 1987). Traditional linguistics was aimed at describing the features of language that is the grammar. However, modern linguistics began to focus on the ways in which language is used in real communication. Hutchinsion and Waters (1987) indicate that one significant discovery was in the ways that spoken and written English vary. Given the particular context in which English is used, the variant of English will change if language in different situations varies, then the tailoring language instruction to meet the needs of learners in a specific context is also possible. To this end, Hutchinson and Waters (1987:8) say that:

> The view gained ground that the English needed by a particular group of learners could be identified by analyzing the linguistic characteristics of their specialist area of work / study. Tell me what you need English for and I will tell you the English that you need become the guiding principle of ESP.

The emergence of ESP is also attributed to technological innovation and expansion of trade. As to Hutchinson and Waters (1987), because of the United States upper hand in the Second World War and economic growth, the English language got the opportunity to serve as an international language since then, the need to learn English for different purpose has become common. To benefit from the innovations of science and technology and to take part in international commerce, it was a must to have a language that could serve as international language. Likewise, the oil crisis of the 1970's which resulted in massive flow of funds and western intellectuals to oil - rich countries, aggravated the need to learn English, which was geared to serve various purposes. Thus, "Time and money constraints created a need for cost- effective courses having clearly defined goals" (OP: cit 1987). It seems clear from the above points that, what necessitated the need to learn English was, the need to get things done or accomplish the different tasks.

The last reason cited as having influence on the rise of ESP was the development in educational psychology. Here, a considerable attention is drawn to the differences in the ways language is acquired by a particular learner or group of learners. As to Rodgers (1960), cited in the works of Hutchinson and Waters (1987:8) new developments in educational psychology causes the emergence of ESP and revealed that focusing on the learner, i.e. considering a learner as prime focus in the teaching learning process addressing his / her needs had a paramount importance in motivating students. This motivation, in turn had considerable impact on making the teaching - learning process effective and fruitful.

In general, the expansion of demand for English to suit particular needs of the learner and developments in the field of linguistics and educational psychology pave the way for the emergence and growth of ESP and these factors seemed to point towards the need for increased specialization in language teaching - learning process.

2.2.2 Developments in ESP

Regarding the development of ESP Williams et.al (1984) state ESP as a concept that has been developed in response to an awareness that certain types of learners have specialized needs that are not being sufficiently and effectively met by EFL (English as a Foreign Language) courses. Basically, from its beginning, ESP is not monolithic phenomena, its development did not occur at the same time in all parts of the world. The development of ESP occurred in different parts of the world in different times at different speeds (Hutchinson and Waters, 1987). To attain the current stages of development, ESP has gone through different phases of developments. Among the different ESP phase of developments target situation analysis, learning needs analysis and genre needs analysis are explained in detail under 2.5.

2.3 Types of ESP

ESP represents a number of sub branches. Each branch demands a different language skill and a different range of communication ability. However, some writers such as Hutchinson and Waters (1987), Johns (1991), Robinson (1991) tend to suggest the practical limitation of ESP categories. From their point of view, the two major categories of ESP are EAP (English for Academic Purposes) and EOP (English for Occupational Purposes). Both EAP and EOP can further be divided into various acronyms (Robinson, 1991:2). EAP refers to English needed for study in specific discipline such as pre - study, in - study and post - study or as independent or integrated school subject. EOP refers to the needs of English in pre - experience, simultaneous / in service or post experience situations. Pre experience learners are those who need to gain access to knowledge. Simultaneous / in-service EOP learners are learners who learn English together with learning the job itself. Post experience learners are those who need English to express their knowledge of different disciplines that they acquired or learned in other languages.

Elaborating at length on the important points mentioned above, this section looks at the different features of EAP and EOP exploring the analyses associated to them.

2.3.1 English for Academic purposes (EAP)

English for academic purpose (EAP) is seen as subordinate to ESP because it is concerned with the English required for the specific purpose of studying at universities and colleges (Jordan, 1997: Robinson 1991). EAP courses can be divided into those English for General Academic Purposes (EGAP) and those for English for Specific Academic Purposes (ESAP) (Dudley – Evans and St John 1998).

The rationale behind EAP is that academic English courses will enable learners to cope better both socially and with their specialist texts. Jordan (1997) argues that students learning EAP courses are expected to acquire receptive and perceptive academic skills parallel to learning strategies and study skills. Therefore, one of the criteria for an English course design in this context (EAP) is derivation of content / topic areas from students' academic courses and related specialist texts provided that the texts are worth using for language learning purpose in classrooms. Likewise, EAP which was the document version of ESP in the beginning (Dudley – Evans and St John 1998: Jordan, 1997) is used where students learn English for their academic studies. That is, in an EAP course students are to acquire those learning strategies and study skills necessary to accomplish their academic subjects rather than for general purposes.

2.3.2 English for Occupational Purposes (EOP)

English for occupational purpose (EOP) is concerned with determining how language teaching could best provide students with the skills required in professional life. Dudley - Evans and St John (1998:85) assert that the teaching process of any kind of language for occupational purposes should take as a starting point for the analysis of the four language skills within appropriate contexts- in terms of their relevance and priority in the work places.
In EOP, emphasis may be given to one or more language skills to carry out their duties depending on the nature of their jobs. In line with this, Kennedy and Bolitho (1984:4) note that.

> EOP is taught in situation in which learners need to use English as part of their work or profession. Instances of EOP students would be medical doctors in causality or technicians serving equipment. They need English, in the first case, to patients and other staffs, and in the second, technical manuals.

According to Strevens (1980), as cited in Robinson (1991), somewhere between EAP and EOP falls English for Science and Technology (EST) which has very much to do with academic as well as work – related needs of learners. Within EOP lies a fairly dominant sub- division, English for Business Purpose (EBP). As pointed out by Dudley – Evans and St John (1998), these days, owing to the big movement in the world of business, EBP appear to have taken over the supremacy from EAP, which is proved by the presence of quite a lot of published materials and the growing degree of interest on the part of teachers and learners in the area (Ibid).

2.4 ESP versus EGP

English for Specific Purpose (ESP) is mainly different from English for General Purpose (EGP) language courses in a number of respects. Significant points which reveals the difference of ESP and EGP forwarded by different scholars is presented hereunder.

As indicated by Hutchinson and Waters (1987), ESP differs from EGP with respect to the extent of emphasis placed on needs analysis. That is to mean, in the case of ESP, students' needs are largely considered in every step of the curriculum development and particularly in the selection of content (topics) and skills to be taught. On the contrary, in EGP, more of tradition and common sense seem to dictate the choices of what is to be taught and how it is to be taught. What differentiates ESP from GPE is its great reliance on catering to learner needs as opposed to GPE courses which are given depending on the decision of the course designers. ESP courses are context specific in which they are designed to serve clearly specified purposes of specific people (Robinson 1991:5).

Likewise, Hutchinson and Waters (1987: 18) add one distinguishing characteristics of ESP as opposed to English for general purpose is that decisions about course objectives and course content in the case of ESP are based on the analysis of learner needs. The reasoning behind this is that learners whose primary concern is not to study English have a different purpose for which they need the language. For such learners English is a means through which they study other subjects and hence instruction should be suited to their purpose.

As to Hutchinson and Waters (1987) ESP course writers advised to take due care in selecting contents with direct relevance to the students needs. Many ESP specialists contend that it is hardly possible for EGP to serve the diversified needs of students. Strengthening the point Johns (1991: 2) argues, "a general English course book will not, cannot and should not take the place of a specific situation." In line with the methodology ESP employs, Dudley- Evans and John (1998:4) say ESP teaching make sure of a methodology that differs from that is used in general purpose English teaching. Here, the methodology refers to the nature of the interaction between the ESP teacher and the learners. They (Ibid) underline that the teaching methodology that the teacher employs in ESP is not necessarily what is indicated in the syllabus, rather it is based on the interest of the learners.

A theoretical concept of ESP versus GPE in relation to their purpose has been also discussed by Widdowson (1983). For him ESP is not really more specific in its purpose than one designed for GPE teaching. But the difference according to him lies in the way 'purpose' is defined and the manner of its implementation. For him 'purpose' is a descriptive term in ESP and theoretical term in GPE. He understands ESP mainly as instructional means for practice that is used for training operation because as he believes, ESP is essentially a training operation which seeks to provide learners with restricted competence to enable them to cope with certain clearly defined task. GPE on the other hand, is mainly an educational operation which seeks to provide learners with a general capacity to enable them to cope with undefined end in the future.

However it is important to note that ESP should not be considered as an area of development out of ELT (English Language Teaching), rather it is part and parcel of ELT move to a more communicative language teaching "it is important not to regard ESP as an era of development separate from the rest of English language teaching (ELT). It is part of recent move within ELT sphere towards a more communicative basis for teaching and learning." (Kennedy and Bolitho, 1984:7)

needs assessments enables teachers to justify their assumptions whether or not potential educational needs are sound to design a programme in terms of topics materials so as to be responsive to the needs of participants, this can maximize the likelihood of students' participation (Knox 1997).

For different reasons some writers do not accept the needs analysis in the concept of ESP. They see needs analysis as defective because it ignores the 'wants' as felt by the learners, in line with this Richterich (1984:29) comments that "a need does not exist independent of a person. It is people who build their image of their needs on the basis of data relating to themselves and the environment."

Generally, Hutchinsion and Waters (1987: 54) underline needs analysis and ESP as inseparable and in ESP, analyzing learners' needs is crucial to the course design process, Needs analysis is considered as the irreducible minimum of an ESP approach to course design.

Need analysis is fundamental to ESP course design and teaching. Among the various needs analyses employed, target situation analysis, learning needs analyses and genre needs analysis seem to be widely used.

2.5.1. Target Situation Analysis

Target situation analysis, according to Chambers (1980), is concerned with what learners need to know or be able to do at the end of or as a result of following language course. In other words, it focuses on establishing the requirements that students will have to meet in their academic studies. The best known model of target situation analysis is Munby's model is what is known as 'the communicative needs processor' which consists of a number of parameters of variables that are believed to affect communication needs these parameters are organized in a dynamic relationship to each other to produce the learner's profile of needs (Munby,1978:33) similarly, Dudley-Evans and John (1998) Hutchinsion and Waters (1987) and Robinson (1991) see target situation needs in terms of 'necessities' 'lacks' and 'wants' .Necessities, according to these scholars refer to the type of need determined by the demands of the target situation. Necessities

of learners may include language forms, communicative skills or the set of the linguistic features such as a discourse, functional, structural, and lexical which are used in the situations that are identified depending on the nature of the courses. Likewise, the term 'lack' is the difference between what the learner already knows and the necessities identified. In other words, lack is the gap between current proficiency of learners and the tasks and activates learners view as to what his / her estimation of priorities need. Shortly lacks are simply those aspects of target necessities which the learner cannot cope at the present, where as wants is the learner's view of his/her needs as opposed to views perceived by teachers, course designers or sponsors.

The ESP syllabus design in this analysis was focused, first by identification of the target situation or the purpose for which students learn language followed by rigorous analysis of the linguistic features of that situation. Munby's work of 'communicative syllabus design' (1978) is a typical example of this syllabus.

2.5.2. Learning Needs Analysis

According to Hutchinson and Waters (1987), learning needs analysis tell us how the learner could learn the language items, skills and strategies he/she is expected to use. The needs potential and constraints of the learning situation must also be taken into account, if we are going to have any useful analysis of learner needs (Ibid). Similarly, learning need is used for identifying what the students bring to the teaching and learning situation and the potential of the teaching situation itself. According to McDonough (1984:36), what the learner brings, as an individual, to the situation can be seen as being of two kinds; firstly she/he may bring further goals and add to what is being taught and learnt. Secondly, she/he will bring an experience of and an attitude to the learning process itself which will of course affect how the material is learnt. Likewise, Brindley (1989:63) states... in terms of the needs of the learner, as an individual, in the learning situation... which means trying to identify and take in to account a multiplicity of affective and cognitive variables which affect learning styles. Strengthening this, Hutchinson and Waters (1987) underline learning needs analysis seeks to answer the question, "how is learner to get from his starting point to required destination?"

2.5.3. Genre Needs Analyses

According to Johns (1991:21), traditionally, the term was used to refer to literary texts such as novels, poems, or epics. However, nowadays, it does mean more than this. As it deals with both spoken and written texts, still it is not an easy task to define the term precisely. For Flowerdew and Peacock (2001:15) a genre is a particular type of communicative event which has a particular communicative purpose recognized by its users, or discourse community. By targeting specific genres as the subject of linguistic analysis, one ensures that the description is valid for the specific situation and participation especially where members of the discourse community are consulted as part of the typical features of language use in certain domains abstracted out of actual occurrences by the expertise of discourse analysts.

The current approach to ESP course design gives valuable place for learners' needs this can provide course designers complete information and add the roles learners' need analysis play in language teaching .This study has been designed in this spirit so as to use some literature appropriate to find out the needs determined by the target situation and needs felt by the learners. This has been important in searching for appropriate lexical item, grammatical forms and discourse patterns in target area. This in turn would help in the future to develop materials and select suitable teaching methods.

2.6 ESP Material Evaluation

As the definition given by Hutchinson and Waters (1987:96) "Evaluation is a matter of judging the fitness of something for a particular purpose" In line with course evaluation in ESP, Robinson (1991) states ... the objectives of evaluation is to establish the effectiveness and efficiency of teaching programs through describing what is there and placing some value judgment on what is found.

Course evaluation in ESP could be done through addressing the following functions: why evaluation? What should be evaluated? What mechanisms should be used? Who should be involved in the evaluation? When should evaluation take place? (Robinson, 1991; Alderson and Waters, 1983) Hereunder, answer to the above questions will be given.

Why evaluation?

According to Hutchinson and Waters (1987:157), the kind of evolution done should help "to assess whether the course objectives are being met and whether the course in other words is doing what it was designed to do" Similarly, as it is indicated by Flowerdew and Peacock (2001:113), course or programme evaluation for ESP " means evaluating or re evaluating the course design, the syllabus, materials tasks and methods as they were originally planned to see if the course is meeting its stated objective." It seems clear from these scholars point that the aim of evaluation is to measure the effectiveness of ESP course and to make suggestions for change. Likewise, Allen (1984:43) underlines the importance of evaluation by saying "... any research in the field of syllabus planning and materials design must include an evaluation component if it is to achieve any credibility."

What should be evaluated?

Such an enquiry should ask questions such as does the course fulfill the learners' language needs? If the response is not in the affirmative, the next question to ask is: 'what areas of need are not being fulfilled?' After identifying the areas, we can turn to looking at the source (s) of the problems (Hutchinson and Waters: 1987).

What mechanisms should be used?

According to Brindley and Ross (2001), both proficiency measurement and achievement assessment can be brought together for purposes of course evaluation. Besides, the triangulation view may be comprehensive enough to use as an appropriate basis for recommendation for course improvement. These may include learner and teacher questionnaires and interviews discussions, learner diaries and teacher notes, materials evaluation, test and other assessment results and classroom observation (Hutchinson and Waters, 1987).

Who should be involved?

It should involve as many participants as possible such as students, teachers, subject teachers, and the institution (Hutchinson and Waters 1987).

When evaluation should takes place

According to Robinson (1991), evaluation may be formative that is ongoing as the course progresses; or summative, that is at the end of the course. Likewise, Hutchinson and Waters (1987:155) suggest the following times for ESP course evaluation.

- In the first week since initial impressions is very often more enduring than later ones.
- At regular intervals, for example, every half term
- At the end of the course or after the course

2.7 Review of Local Works in ESP

As the literature at an international status reveals a lot has been written and researched on ESP worldwide. However, when it comes to the Ethiopian context, so far, there are only few studies conducted on ESP at university or college level.

To begin with the work of Hailemichael Abbera (1993), carried out an EAP needs assessment study to develop service English syllabus for university freshman students, in his finding, Hailmeichael indicates that unlike their English teachers who had more emphasis on the reading and listening skills, students had the need for all the four language skills with more priority to reading and writing skills. Besides, his finding reveals that lack of materials and facilities are the major problems in the learning settings. He concluded that a syllabus or curriculum for English language service courses at a university should be developed in the way that it integrates the four language skills.

Likewise, Abreham Menna (1993) carried out a study on criteria for course design in English for Aircraft Technicians of the Ethiopian Air Force. After assessing the existing materials in use he found out that the materials in use fail to meet the specific English language needs of Air Craft Technicians. Finally, he recommended that a syllabus for such purpose should be topic based while including sub syllabus of functions and notions, skills, vocabulary and structure.

Another study by Solomon Moges (2001) aimed at assessing whether the English course at Commercial College of Addis Ababa was relevant to the needs of employers of the graduates of the college. His finding indicates that there is a gap between required language skills and actual

skill level of graduates. At last, he underlined that the business English course (LBC 201) largely fails to meet the employers' needs.

Of these the study made by Amlaku (2005) is worth mentioning. Amlaku, in his MA thesis, explored what the practice of forester's regarding the use of English language in forestry is like and whether forestry needs an ESP English course/s or not, using the research tools of questionnaire and interview. Amlaku's finding indicates foresters use English language for academic and occupational purpose in their respective careers. For this purpose, the foresters suggested that the English language courses offered at forestry colleges should enable the would-be foresters practice the four language skills. Besides, he recommended the selection of contents to practice the language skills should be forestry and forestry-related once. Furthermore, in his recommendation he stresses that syllables designers and instructors of English courses for forestry should take the result of his findings into their respective jobs. Finally, he underlines the importance of further studies on the development of ESP courses in general and for forestry-related programs in particular.

To sum up, all the works reviewed, except Amlaku's focused more on syllabus design or course development in ESP. The researcher attempted to focuses on a more specific area of ESP, i.e. English for applied chemistry. In addition to their importance for my study, these local works, to some extent, indicate the status of ESP in Ethiopia. So also will be this attempt of looking at the English language academic and professional needs of applied chemistry students at Ambo University College.

CHAPTER THREE

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RESEARCH METHODS AND PROCEDURES

This chapter dealt with the research methods that were used to collect the desired data to attain the objectives of the study. It discusses sources of data gathering and sampling methods, data gathering tools, data collection procedures, developments of data gathering instruments and methods of data analysis.

3.1. Sources of Data Gathering and Sampling Methods

According to Hutchinson and Waters (1987) there are three basic sources of information. The students themselves, the language teaching establishment and the user institution. Likewise, Robinson (1991:11) indicates for needs analysis, the primary question to be answered is the question asking "who provides the information for needs analysis?"

She (Ibid: 11) responds to the question by saying that the source of information are the potential students, specialist academic department, the language teaching institution (teachers and administrators) and those who are or will be concerned with the students' specific job or study situation.

To select the sample college, purposive selection was used. The researcher chose Ambo University College, because the nature of the research is a case study.

For this study, two different data collection instruments such as questionnaires and interview are designed for five different groups of population (sources) the first group of respondents is applied chemistry department students at Ambo University College comprising the second and third year trainees. The second group is the English language instructors who are currently working at the college. The third group of respondents includes applied chemistry instructors and technical assistants on the area. The fourth group of respondents includes potential employers who are hiring the graduates of the field for work purpose and the last group includes graduates

who are working on the prospective organizations as professionals. Both the graduates and potential employers are selected by using purposive sampling method.

From a total of 162 students attending their second and third year programmes, 80 students (41 students from second year and 39 students from third year) were selected using a systematic random sampling method. The selection was made from each year considering the seat positions of the students.

Concerning the teachers' selection, all applied chemistry instructors were selected as samples for the questionnaire. Likewise, out of eleven English language instructors, six instructors (50 %) participated as the subjects of the study. Besides, six potential employers (1 from each organization) and eighteen graduate respondents (3 from each organization) were made to fill the questionnaire.

Similarly, to gather data on the importance of English language for occupational purpose, assessing government and non – governmental organizational is essential (Harding, 2007). From governmental and non – governmental employer organizations in Addis Ababa, the researcher selected six organizations using purposive sampling as it was believed to get relevant information from the potential employers in those organizations.

The selected governmental and non – governmental potential employers were Nefas silk paints factory, Kality food Share Company, Kality thermo plastic industry, Akaki soap and detergent factory, Zenit cosmetics industry and Kadisco paints factory.

3.2 Data Gathering Tools

The important techniques for investigating needs analysis include questionnaire, interview, participating observation, analysis of authentic spoken and written texts and discussions with target groups (Dudley - Evans and John, 1998 and Robinson, 1991). However, only for the consumption of the present research, here I consider few methods; questionnaire and interview. These instruments are used to triangulate the information and increase the credibility of the study.

3.2.1 Questionnaires

As Robinson (1991) indicates, by using the questionnaire one may seek information on a large number of points and from a wider sample size. Questionnaires are generally wide ranging because they are used for quantitative information. Questionnaires for the students, applied chemistry instructors, employers and graduate respondents were adapted from the questionnaires employed by Dudley - Evans and John (1998), Basturkmen (1998), Hutchinson and Waters (1987) Hailemeichale (1993) and Amlaku (2005). These questionnaires were intentionally adapted because they were believed to help in achieving the intended objectives as they were tested earlier.

Some of the items in the questionnaires in this study were designed using a five point and a four point Likert scale with numerical values of 5, 4,3,2,1, and 4,3,2,1 respectively. Some of the data were then analyzed using frequency and percentage values while some others were analyzed using mean scores and ranks.

3.2.1.1 Students Questionnaire

The questionnaire prepared for this group of respondents included both objective and subjective i.e. closed and open ended types of questions. The main objective of this questionnaire being to elicit data on applied chemistry students English language needs, it has two parts. Part one contained questions about background information. Part two dealt with questions related to students' language skills need and frequency of use in language skills, preferred language contents and on learners' language skills problems and others.

3.2.1.2 Questionnaires for applied chemistry instructors

Applied chemistry course instructors questionnaire aimed at obtaining information on learners language need for academic purpose. The items in the questionnaire emphasized on the assessment of the students English language abilities, the importance of the English language skills/sub skills and language knowledge in applied chemistry study. The questionnaire was properly filled by the instructors by ranking the language skills/sub skills, language contents and activities that are carried out in English by the students to cope up with their studies effectively and to prepare them for future job and further training.

3.2.1.3 Questionnaire for employers

The items in the questionnaire focused on obtaining information with regard to the requirements and importance of the English language skills and language knowledge areas for applied chemistry gradates to carry out their duties effectively. These were properly filled by the employers by ranking the language skills, knowledge areas and tasks / activities that are carried out in English by the graduates.

3.2.1.4 Questionnaire for Graduates.

The questions focused on obtaining information from the subjects about importance of macro skills, sub skills and language contents needs and language skills problems to discharge their duties effectively. This was filled by ranking the language skills, knowledge areas and tasks that are carried out in English.

3.2.2 Structured Interview

Structured interview is extremely useful in needs analysis, structured interview consist of questions that have been carefully thought out and selected in advance. The method is time consuming but it provides valuable information that we may not otherwise obtain (Dudley Evans and John 1998). Structured interview questions are papered for English language instructors with the aim of supplementing questions asked in the questionnaires as a technique to crosscheck answers.

3.3 Data Collection Procedures

Four types of questionnaires were developed and distributed for each group of respondents. For the first group of respondents 80 copies of the questionnaire were distributed to 80 students from second and third year students and a 95 percent (76 out of 80) return was obtained.

Regarding the college's staff, all applied chemistry instructors and technical assistants were given copies of the questionnaire designed to be filled in by and the return was 100 %. Likewise, questionnaires were prepared and distributed to 6 potential employers and 18 graduates. The return from this group of respondents was also 100% (6 out of 6 and 18 out of 18 respectively). The return was quite satisfying as result of the researcher being a staff member at Ambo University College and the efforts made by him and his friends in following up closely for the where about of each copy of the questionnaire.

The interview was prepared for six English language instructors. These instructors randomly selected for the reason of manageability (convenience sampling). The interview questions were semi-structured. However, based on the guideline questions some related issues were raised and discussed.

3.4. Development of Data Gathering Instruments

The questionnaires and structured interview were designed based on what scholars in ELT such as Cunningsworth, 1995;Hutchinson and Waters 1987; Dudeley - Evans and John, 1998 and some others advocate in teaching English for specific purpose (ESP). Each tool was commented by the researcher's friend who is teaching English at Ambo University College, students who were attending their second Degree in teaching English as a foreign language (TEFL) and the researcher's advisor. These comments helped the researcher to make the necessary changes.

3.5 Methods of Data Analysis

After the data for the questionnaires were gathered they were first tallied and analyzed using quantitative and qualitative methods. Questionnaires were taken as major data gathering tools while the results gained from interview was used to crosscheck and supplement the information gathered from the questionnaires.

CHAPTER FOUR

ANALYSIS AND DISCUSSIONS

As indicated in the preceding chapter, questionnaires and interview were used to collect data. In this chapter, the researcher attempts to present the findings of the study.

4.1 Applied Chemistry Students Questionnaire Response

4.1.1. General Information about the Respondents

When we analyze the sex of the respondents, over 71%, on average from both the groups (second and third year students) were male and only 28.9 % of them were female. As to the age composition of applied chemistry students, trainees above 20 years constitute 10 .53 % and the majority of them (89.47%) were between 16-20 years of age

Regarding their Sophomore English grade, most of the students (64.47 %) scored a fair grade "C" , 19 .74 % of them scored "B", 9.21 % of them scored "A", 6.58 % of them scored "D" and no one scored a poor grade " F" .

In line with the CGPA of the respondents, majority (57.89 %) of them were in the range between 2.00 - 2.50. A little more than 27 % of the respondents scored average grade points ranging from 2.51 - 3.00 and 3.95 % of them scored above 3.51.

Concerning the respondents' background information table 1 and table 2 below show the details

Table 1. Frequency and percentage of respondents by gender

Sex	Frequency	Percentage	Age	Frequency	Percentage
Male	54	71.1	16-20	68	89.47
Female	22	28.9	> 20	8	10.53
Total	76	100	Total	76	100

Table 2. Performance of respondents by gender

Sophomore English grade	Frequency	percentage	CGPA	Frequency	Percentage
A	7	9.21	< 2.00	0	0
B	15	19.74	2.00-2.50	44	57.89
C	49	64.47	2.51-3.00	21	27.63
D	5	6.58	3.01-3.50	8	10.53
F	0	0	> 3.51	3	3.59
Total	76	100	Total	76	100

4.1.2. Students Need for the Four Macro-Skills

Students were asked to indicate the relative needs that they have in the four language skills to study the major courses. Hereunder table 3 shows the details of the responses with mean score and ranks given for the need for each macro skills

Table 3. Students' response on the need for macro skills for studying the major courses

Macro skills	VFN		FN		SN		RN		NN					
	f	fx	f	fx	f	fx	f	fx	f	fx	Σf	Σfx	Mean	Rank
Listening	55	257	19	76	2	6	0	0	0	0	76	357	4.69	2
Speaking	30	150	12	48	28	84	6	12	0	0	76	294	3.86	4
Reading	60	300	15	60	1	3	0	0	0	0	76	363	4.78	1
Writing	43	215	16	64	13	39	4	8	0	0	76	326	4.23	3

KEY

VFN = Very Frequently Needed

FN = Frequently Needed

SN = Sometimes Needed

RN = Rarely Needed

NN = Never Needed

As the table 3 shows, the students indicated that reading was highly needed followed by the listening skill with mean scores of 4.78 and 4.69 respectively. They also ranked writing and speaking as third and forth needed skills next to reading and listening with mean scores of 4.23 and 3.86 respectively. It can be seen that the mean scores of these two skills fall between the scales assigned 'frequently needed' and 'sometimes needed'.

The data gained from major courses instructors' questionnaire response, supports the views of the students in the ranking order of the macro skills needed for academic study.

As a result it can be deduced that, all the macro skills have been very much needed for students' major course study. However, the speaking skill in comparison with the other is the one in which students and other respondents feel the least of confidence to rate it as the most needed macro skill for applied chemistry courses study. The result may be attributed to various factors such as curriculum /syllabus design, teaching facilities, teaching methods etc, which might need further investigation.

4.1.3 Students Response on the Need for Sub-Skills

The students were given activities / tasks of sub-skills which are categorized under the four macro skills, so that they would rate them according to the relative need for academic studies. Table 4 indicates the details of each response with mean scores and ranks given for each sub-skill.

Table 4. Students rating of sub skills needed for major courses study.

	Activities carried out in English	VFN		FN		SN		SEL.N		NN					
		f	fx	f	fx	f	fx	f	fx	f	fx	Σf	Σfx	N	ranks
I	**Reading activities**														
a	Reading students references and note books (of organic inorganic and analytic chemistry etc)	35	175	40	160	1	3	0	0	0	0	76	338	4.45	1
b	Reading techniques of experimental chemistry (e.g. safety precaution at lab, data treatment, Bunsen burner glass working etc)	20	100	45	180	9	27	2	4	0	0	76	311	4.09	2
c	Reading test and exam questions	14	70	50	200	8	24	4	8	0	0	76	302	3.97	3
d	Reading special features of chemistry i.e. - chemistry in environmental science (e.g. the acid rain problem) - chemistry in sanitary engineering (e.g. solution in water purification) - chemistry in pharmacology (e.g. the mode of action of soaps and antibiotics) - chemistry in atmospheric sciences (e.g. depilation of earths' a zone layer)	8	40	45	180	10	30	7	14	6	6	76	270	3.56	4
e	Reading news papers or magazines of chemistry societies of Ethiopia	2	10	30	120	36	108	2	4	6	6	76	248	3.26	5
II	**Writing activities**														
a	Writing notes from lectures or books	32	160	38	152	6	18	0	0	0	0	76	330	4.34	1
b	Writing project and lab. reports	25	125	37	148	10	30	4	8	0	0	76	311	4.09	3
c	Writing term papers and proposals for chemistry courses	30	150	40	160	4	12	2	4	0	0	76	326	4.28	2
d	Writing summaries of applied chemistry courses	19	95	35	140	16	48	3	6	3	3	76	292	3.84	4
e	Writhing essays in chemistry special features (e.g. chemistry in industry, chemistry in environment etc)	13	65	27	108	25	75	4	8	7	7	76	263	3.46	5
III	**Listening activities**														
a	Listening to lectures to take notes (in class room ,at lab. or visits at industry etc)	37	185	38	152	1	3	0	0	0	0	76	340	4.47	1
b	Listening to instructors questions at class or lab. Room	32	160	30	120	6	18	8	16	0	0	76	314	4.13	3

c	Listening to class discussions and instructors' instruction	35	175	34	136	3	9	4	8	0	0	76	328	4.31	2
d	Listening to radio, TV. programs and films etc about chemistry and related sciences	27	135	33	132	5	15	7	14	4	4	76	300	3.94	4
iv	**Speaking activities**														
a	Asking and answering questions (in class, lab. or at visit)	31	155	35	140	10	30	0	0	0	0	76	325	4.27	1
b	Giving oral reports of lab. results or findings	28	140	33	132	7	21	6	12	2	2	76	307	4.03	3
c	Participating in whole class discussions (in lecture or lab. rooms)	30	150	34	136	8	24	4	8	0	0	76	318	4.18	2
d	Giving instructions to friends as a chemist or a professional on the area	22	110	28	112	11	33	5	10	1	1	76	273	3.61	5
e	Conversations with foreigners at a class room level or out side the class room in conferences or meeting about chemistry and related sciences	25	125	30	120	12	36	3	6	6	6	76	293	3.85	4

KEY

VFN = Very frequently needed

FN = Frequently needed

SN = Sometimes needed

SEL.N = Seldom needed

NN = Never needed

Concerning the need for English language sub-skills for chemistry study, students rated reading students' reference or note book as the most frequently needed reading activity in major courses study with mean score of 4.45 .This is following by reading techniques of experimental chemistry, reading test exam questions and reading special features of chemistry with corresponding mean scores of 4.09, 3.97 and 3.56 respectively. However, the students rated reading news papers or magazines of chemistry societies of Ethiopia as the least frequently

needed reading activity for students academic study with mean score of 3.26,which is a bit above the level ' sometimes needed '.

In line with writing activities, the most frequently needed writing activities are writing notes from books or lectures, writing term papers and proposals for chemistry courses and writing project and lab. Reports with their respective mean scores of 4.34, 4.28 and 4.09 which is a level above 'frequently' needed. Besides, the students rated writing summary of applied chemistry courses fourth and writing essays in chemistry special features fifth with their corresponding mean scores of 3.84 and 3.46 which is the level above 'sometimes needed '.

With regard to listening activities, the students indicated that listening to lectures to take notes (in class, at lab or visits at industry etc) is the most frequently needed of all listening activity following by listening to class discussions or instructors' instruction and listening to instructors' questions at class or lab. Room with respective mean scores of 4.47, 4.31 and 4.13 which is a scale indicated a bit above 'frequently needed'. However listening to radio, TV programs and films about chemistry and related sciences ranked fourth and were considered as the least needed listening activities for students' academic study.

Likewise from the given speaking activities, asking and answering questions, participating in whole class discussions and giving oral reports of lab. results or findings have taken the first three ranks with mean scores of 4.27, 4.18 and 4.03 respectively. The students on the other hand, place conversations with foreigners at class room or outside the class room as the fourth and giving instructions to friends as the fifth frequently needed speaking activities at academic settings.

Though there is a variation in tanking order, the students in learning and research employ most of these sub skills most often and they need to be skillful in all the skills of the language to use them efficiently in their academic setting as well as for future profession of chemistry.

4.1.4 Students Response on Language Contents Need

The students were asked to rate how much they agree on the importance of having a good knowledge of grammar, technical vocabularies and English language pronunciation to study applied chemistry courses. In answering the question that asked, table 5 shows the detail.

Table .5 students' response on language contents need for applied chemistry courses study.

Statements	SA		A		MA		D		SD					
	f	fx	f	fx	f	fx	f	fx	f	fx	Σf	Σfx	μ scores	Ranks
Having good knowledge in grammar is important for my academic study	42	210	17	68	9	27	8	16	0	0	76	321	4.22	2
Having good knowledge of technical vocabularies (vocabularies taken from applied chemistry) is important for my academic study	50	250	20	80	6	18	0	0	0	0	76	348	4.57	1
Having good knowledge of pronunciation is important for my academic study	35	175	15	60	11	33	13	26	2	2	76	296	3. 89	3

KEY

SA = Strongly Agree

MA = Moderately Agree

DA = Disagree

A = Agree

SD = Strongly Disagree

As shown in table 5, from the given language contents, the students gave prominent place for importance of having good knowledge of technical vocabularies for their academic study with mean score of 4.57 which is above the level 'agree'. For having good language knowledge in grammar they gave the second important place for their major courses study .Besides the need for having good knowledge of pronunciation ranked third by respondents, with mean score of 3.89 which is above 'moderately agree'.

The ranking order for the need of having good knowledge of technical vocabularies coincides with the results of applied chemistry instructors' response and English language instructors responses. The result from English language instructors' interview response, for example, reveals most of the vocabularies (technical terms) instructors used in teaching applied chemistry courses could not be easily found in any of the ordinary dictionaries.

This implies that the professional vocabularies and scientific terms in chemistry and related sciences should be given considerable emphasis in the English courses so that students will be competent in using the language in their academic settings and in any other English language demanding context in their future career.

4.1.5 Students Difficulties in Micro-Skills

Accordingly, students were asked to rate their micro skills difficulties to follow major courses taught in English as ' very great difficulties ', ' great difficulties ', ' some difficulties ' , ' little difficulties' and ' no difficulties'. The analysis of the responses given by the students have been presented and compared in the following table.

Table 6 students' response on difficulties of micro skills

	Activities in English	VGD		GD		SD		LD		ND					
		f	fx	f	fx	f	fx	f	fx	f	Fx	Σf	Σfx	μ scores	Ranks
A	Understanding lectures on chemistry	13	65	11	44	9	27	24	48	21	21	76	205	2.69	12
B	Taking lecture notes on components of matter, chemical reactions, quantum theory, atomic structure and modes of chemical bonding etc	11	55	9	36	10	30	21	42	25	25	76	188	2.47	13
C	Asking questions in class	9	45	7	28	9	27	24	48	27	27	76	175	2.30	14
D	Presenting project reports or term papers on major courses written in English	35	175	35	140	5	15	1	2	0	0	76	332	4.36	2
E	Answering questions in class	7	35	6	24	10	30	23	46	30	30	76	165	2.17	15
F	Understanding diagrams, charts, tables etc of major courses written in English	15	75	12	48	12	36	17	34	20	20	76	213	2.80	11
G	Participating in chemistry class discussions	15	75	15	60	11	33	13	26	22	22	76	216	2.84	10
H	Understanding text books, reference books of applied chemistry	20	100	18	72	12	36	14	28	12	12	76	248	3.26	8
I	Summarizing something read	30	150	30	120	10	30	6	12	0	0	76	312	4.10	4
J	Making notes from books	18	90	17	68	13	39	15	30	13	13	76	240	3.15	9
K	Understanding major courses exam. questions	23	115	20	80	19	57	8	16	6	6	76	274	3.60	7
L	Writing answer to essay type exams	25	125	22	88	18	54	7	14	4	4	76	285	3.75	6
M	Writing essays on special features of chemistry (e.g. chemistry in sanitary, chemistry in environmental sciences etc.)	40	200	30	120	6	18	0	0	0	0	76	338	4.44	1
N	Writing lab reports or term paper etc	32	160	33	132	7	21	4	8	0	0	76	321	4.22	3
O	Writing field reports	27	135	23	92	15	45	10	20	1	1	76	293	3.85	5

KEY

VGD = Very great difficulty

GD = Great difficulty

SD = Some difficulty

LD = Little difficulty

ND = No difficulty

According to the information presented in table 6, applied chemistry students indicate that writing essays on special features of chemistry, presenting project reports and term papers on major courses of study and writing lab. reports have taken the first three ranks by their level of difficulty in learners' major course study with mean scores of 4.44, 4.36 and 4.22 respectively.

This implies that the students accomplish these major course tasks with the level ranges between 'very great difficulty' and 'difficulty'.

On the other hand, according to the students response activities like answering questions in class, asking question in class and taking lecture notes on components of matter, chemical reactions, quantum theory, atomic structure and modes of chemical bonding etc are considered as the least difficult tasks of major courses with mean scores of 2.10,2.30 and 2.47 respectively.

In line with this, English language instructors interview and applied chemistry instructors questionnaire results supports the views of the students that most of the trainees have problems of writing essays, presenting project reports and writing lab reports using English as a means of instruction in their academic study. However, this doesn't mean that they are the only difficult activities which students encounter while doing tasks in English. Students also have difficulties in activities like summarizing texts, writing answers to essay type exams and others while learning their major courses in English.

4.1.6 Students Response on the Importance of English Language Course (Sophomore English) at Academic Settings

In the students' questionnaire, the last section was used to elicit information if the English course has been of help in chemistry study.

They were asked to give their responses by using the choices `very much`, `much`, 'little`, 'very little' and ' not at all '. The analysis of the responses given by the students have been shown and compared in table 7 below.

Table 7 Students response if the English course has been of help in chemistry study

No	Statements	Very much		Much		Little		Very little		Not at all					
		f	fx	f	fx	f	fx	f	fx	f	fx	Σf	Σfx	μ scores	Ranks
A	To know the contents topics of your major courses	7	35	6	24	10	30	23	46	30	30	76	165	2.17	3
B	To master the kind of vocabulary (specialists) of your fields of study	9	45	7	28	9	27	24	48	27	27	76	175	2.30	2
C	To improve language skills that help you to do tasks / activities of your major area	18	90	17	68	13	39	15	30	13	13	76	240	3.15	1

As depicted from table7, the students respond that the English course they have at the college has little help with respect to improving language skills that make them to do task of their major courses. In terms of mastering the kind of vocabulary (specialists) of their major courses of study and knowing the contents / topics of their major courses, they said that Sophomore English course has 'very little' help with mean scores 2.30 and 2.17 respectively.

This appears quite the same as the result of the analyses from English instructors' interview response that, the Sophomore English course that has been offered at college in chemistry programme has little help in improving their language skills. The course has not paying enough emphasis in terms of mastering technical vocabulary and field specific contents of their profession.

This, in general, leads to the conclusion that the majority of the respondents who have been using English as an academic and future occupational language have the need for a course/curriculum that fills the gap better- that is, English for chemistry / chemists.

4.2 Applied Chemistry Instructors Questionnaire Response

4.2.1 General Information about the Respondents

The qualification of applied chemistry instructors and technical assistances range from diploma to PhD, i.e. the department of applied chemistry has the mix of 22.2% diploma holders, 22% BSc degree holders, 44.44% MSc degree holders and 11.1% PhD degree holder. Except two respondents, most of them have an experience of teaching chemistry courses for many years. By analyzing the respondents year of experience, it has been possible to see that the range goes from 1 year to 24 years. Therefore, this shows that the study samples enable the researcher to get the relevant information needed for the study. Besides, the amount of experience the respondents have had in the profession could enable them to critically evaluate the practices and needs of chemists have in English language. Except the two technical assistants, who are working on laboratory section, most of the respondents are teaching chemistry courses such as organic chemistry, inorganic chemistry, analytical chemistry and others based on their field of specialization.

Concerning the respondents' qualification and year of experience, table 8 and table 9 show the details.

Table 8. Respondents' academic qualification

Academic Qualification		
Items	**Frequency**	**Percentage**
Diploma	2	22.22
BSc Degree	2	22.22
MSc Degree	4	44.44
PhD Degree	1	11.11
Total	9	100

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Table 9. Respondents' year of experience

Year of Experience		
Items	**Frequency**	**Percentage**
0 - 1 year	2	22.22
2 - 5 years	3	33.33
6 - 10 years	2	22.22
11 - 15 years	1	11.11
Above 15 years	1	11.11
Total	9	100

4.2.2 Instructors Response on Students' Ability in the Four Macro Skills

Accordingly, applied chemistry course instructors were asked to rate their students English language abilities in the four macro skills as 'very good' , 'good' , 'average' , 'weak' and as 'very weak '. The analysis of the responses given by the instructors has been indicated in table 10.

Table 10. Applied chemistry instructors rating of students ability in macro skills

Macro Skills	Very Good		Good		Average		Weak		Very Weak					
	f	fx	f	fx	f	fx	f	fx	f	fx	∑ of f	∑ of fx	μ scores	ranks
Speaking	1	5	2	8	2	6	2	4	2	2	9	25	2.77	3
Reading	2	10	3	12	4	12	0	0	0	0	9	34	3.77	1
Writing	0	0	2	8	3	9	3	6	1	1	9	24	2.66	4
Listening	1	5	3	12	4	12	1	2	0	0	9	31	3.44	2

According to table 10, the instructors response depict that the students' ability in reading and listening skills close to good and a above the average with corresponding mean scores of 3.77 and 3.44.However, the instructors ranked students' ability in speaking and writing at third and fourth place thinking that students are below the average in both speaking and writing skills with mean scores of 2.77 and 2.66 respectively.

Evident to the preceding discussion about the students' ability in the macro skills, the students are relatively better in their receptive skills (reading and listening) than productive skills (speaking and writing).

4.2.3 Instructors Response on Students' Difficulties in Sub Skills

Under part two, question number three for applied chemistry instructors' questionnaire was mainly designed to find out the difficulties students encounter on the sub skills. Table 11 shows the details of the responses given by applied chemistry instructors.

Table 11 . Students' difficulties in some micro skills as indicated by their instructors

Activities in English	VGD		GD		SD		LD		ND					
	f	fx	f	fx	f	fx	f	fx	f	fx	$\sum$ f	$\sum$ fx	μ scores	rank
Understanding lectures on chemistry	0	0	0	0	4	12	4	8	1	1	9	21	2.33	12
Taking lecture notes on components of matter, chemical reactions, quantum theory, atomic structure and modes of chemical bonding etc	0	0	0	0	4	12	3	6	2	2	9	20	2.22	13
Asking questions in class	0	0	0	0	3	9	4	8	2	2	9	19	2.11	14
Presenting project reports and term papers on major courses of study.	4	20	3	12	1	3	1	2	0	0	9	37	4.11	2
Answering questions in class	0	0	0	0	3	9	3	6	3	3	9	18	2.0	15
Understanding diagrams, charts tables etc of major courses written in English	0	0	1	4	5	15	2	4	1	1	9	24	2.67	11
Participating in chemistry class discussions.	1	5	1	4	4	12	1	2	2	2	9	25	2.78	10
Understanding text books and reference books of applied chemistry	3	`15	2	8	1	3	1	2	2	2	9	30	3.33	6
Summarizing something read	3	15	3	12	1	3	1	2	1	1	9	33	3.67	4
Making notes from books	1	5	2	8	4	12	1	2	1	1	9	28	3.11	9
Understanding major courses exam questions	2	10	2	8	3	9	1	2	1	1	9	30	3.33	6
Writing answers to essay type exams	3	15	2	8	1	3	1	2	2	2	9	30	3.33	6
Writing essays on special features of chemistry (e.g. chemistry in environmental science etc)	6	30	2	8	1	3	0	0	0	0	9	41	4.56	1
Writing lab reports	4	20	2	8	2	6	1	2	0	0	9	36	4.0	3
Writing field reports	3	15	2	8	1	3	2	4	1	1	9	31	3.44	5

KEY:

VGD = very great difficulty,

GD = great difficulty,

SD = some difficulty

LD = little difficulty,

ND = no difficulty

As table 11 reveals, applied chemistry instructors indicated that writing essays on special features of chemistry, presenting project reports and term papers on major courses of study and writing lab reports took the first three ranks by their level of 'difficulty' with mean scores of 4.56, 4.11 and 4.0 respectively. Instructors' response confirmed that the students accomplish these tasks with the ranges between very great difficulty and difficulty. Besides, the same result is observed on the instructors' perceptions ranking order of difficulty in activities like understanding text books and reference books of applied chemistry, understanding major courses exam questions and writing answer to essay type exams.

As to instructors' insight, these activities fall with the scale given to a bit above 'some difficulty' with a mean score of 3.33. On the other hand, answering questions in class, asking questions in class and taking lecture notes on components of matter, chemical reactions, quantum theory, atomic structure and modes of chemical bonding etc are the easiest of all with mean scores of 2.0, 2.11 and 2.22 respectively. Based on the above questionnaire analysis, it is possible to say that instructors perceive that the students accomplish the given activities in English with different levels of difficulty. In this case, we can say that the students lack ability in most of the micro skills.

4.2.4 Instructors Response on the Learners Need for Macro Skills

Applied chemistry instructors were asked to indicate the relative needs that the students should have in the four macro skills to study applied chemistry courses. They were asked to give their responses by using the choices 'very frequently needed', 'frequently needed', 'sometimes needed', 'rarely needed' and 'never needed'. Table 12 indicates the details of the instructors' response with mean scores and ranks.

Table 12. Instructors' response on the learners' need of macro skills

Macro Skills	VFN		FN		SN		RN		NN					
	f	fx	f	fx	f	fx	f	fx	f	fx	∑f	∑fx	μ scores	rank
Reading	4	20	3	12	2	6	0	0	0	0	9	38	4.22	1
Speaking	1	5	3	12	4	12	1	2	0	0	9	31	3.44	4
Listening	3	15	4	16	2	6	0	0	0	0	9	37	4.11	2
Writing	2	10	4	16	2	6	1	2	0	0	9	34	3.77	3

KEY

VFN = very frequently needed,

FN = frequently needed,

SN = sometimes needed,

RN = rarely needed,

NN = never needed.

According to table 12, applied chemistry course instructors indicate that, reading skill was highly needed followed by listening skill in academic settings. The mean scores of reading and listening skills are 4.22 and 4.11 respectively and these show that they are frequently needed skills for learners' major courses study. Besides, the instructors ranked writing and speaking skills as third and forth next to reading and listening skills with mean scores of 3.77 and 3.44 respectively.

The data obtained from English language instructors interview supports the data obtained from what applied chemistry instructors responded to the questionnaire that is , in most lecture class and laboratory practices taking lecture notes, reading course notes and reference books and listening instructors lecture etc are frequently used activities in major courses study. According to the relative need for applied chemistry study, therefore, the instructors' choice for reading and listening as frequently needed macro skills seems correct.

4.2.5 Instructors Response on the Language Contents Need of Students in Their Academic Study

Concerning the language contents need of students, applied chemistry instructors were asked to rate how much they agree on the importance of having a good knowledge of grammar, technical vocabularies and English language pronunciation to follow the major courses. In answering the question that was asked, table 13 indicates the detail.

Table 13. Instructors' response on students' language contents need

Statements	SA		A		MA		D		SD					
	f	fx	f	fx	f	fx	f	fx	f	fx	∑f	∑ fx	μ scores	rank
Having good knowledge in grammar is important for students academic study	0	0	3	12	5	15	1	2	0	0	9	29	3.22	2
Having good knowledge of technical vocabularies (vocabularies taken form applied chemistry courses) is important for students academic study	4	20	3	12	2	6	0	0	0	0	9	38	4.22	1
Having good knowledge of pronunciation is important for students academic study	0	0	2	8	5	15	2	4	0	0	9	27	3.0	3

KEY:

SA = strongly agree,

A = agree,

MA = moderately agree,

D = disagree,

SD = strongly disagree

According to the information presented in table 13, applied chemistry instructors agreed on the importance of having good knowledge of technical vocabularies (vocabularies taken from applied chemistry) for students academic study with mean score of 4.22 i.e., a bit above 'agree'. Having good knowledge of grammar for students' academic study is also ranked second with mean score of 3.22 i.e. a bit above 'moderately agree'. likewise , the need for having a good knowledge of pronunciation for students academic study has taken the least mean score of level of importance in comparable to the need for technical vocabularies and grammar respectively .

This in general leads to the conclusion that, applied chemistry instructors agreed on the need for ESP in chemistry, i.e. English course which deals with mainly the professional vocabulary and scientific language of the field in both learners' academic study and future profession

4.3 Graduates and Employers Questionnaires Response

4.3.1. Importance of Macro Skills for Occupational Purposes

As the questionnaire was administered to applied chemistry instructors and students, questionnaires were designed and administered for both graduates and employers to find out the English language needs for occupational purposes.

The questions were mainly focused on the importance of macro skills on specific activities graduates have taken part in and language contents graduates employ for work purposes. Hereunder, the responses of the graduates were crosschecked with employers in corresponding tables that show the details of every response.

Table 14. Graduates and employers response on the importance of macro-skills for occupational purpose.

Macro Skills	Respondents	VI		I		INS		ANI		NAI					
		f	fx	f	fx	f	fx	f	fx	f	fx	∑f	∑ fx	μ scores	ranks
Listening	GR	6	30	9	36	2	6	1	2	0	0	18	74	4.11	4
	EMPR	4	20	0	0	2	6	0	0	0	0	6	25	4.33	3
Reading	GR	10	50	8	32	0	0	0	0	0	0	18	82	4.56	1
	EMPR	4	20	2	8	0	0	0	0	0	0	6	28	4.67	1
Writing	GR	8	40	10	40	0	0	0	0	0	0	18	80	4.44	2
	EMPR	3	15	3	12	0	0	0	0	0	0	6	27	4.50	2
Speaking	GR	7	35	10	40	1	3	0	0	0	0	18	78	4.33	3
	EMPR	2	10	2	8	2	6	0	0	0	0	6	24	4.00	4

KEY:

VI= very important,

I = important,

INS = I am not sure,

ANI = at all not important,

NAI = not at all important,

GR = graduates response,

EMPR = employers response

According to the information presented in table 14, both graduates and employers gave prominent place for reading skills with mean scores of 4.56 and 4.67 respectively. Writing, too, ranked second by both respondents with mean scores of 4.44 and 4.50 respectively. However, speaking and listening skills ranked third and fourth by graduates with mean scores of 4.33 and 4.11 respectively, whereas these skills ranked fourth and third by employers with their corresponding mean scores of 4.00 and 4.33.

However, as we can observe from the mean score results in table 14, no language skill is considered to be not important for occupational purposes. Based on this analysis one can say all macro skills are important in occupational settings. But, the level of their importance differs from graduates ranking order to that of employers. The ranking is just a matter of showing how graduates and employers in work place critically need the language skills. In fact, it should be clear that all of the language skills are logically interconnected and complementary to one another.

4.3.2. Specific Activities Graduates carried out in Professional Settings

Graduates and employers were also asked to respond on the importance of English language activities to accomplish graduates job effectively in their profession. The tasks were categorized under sub skills of reading, listening, speaking and writing. Their responses were summarized in table 15 to vividly depict the importance of these activities

Table 15. Graduates and employers response on the importance of English language activities in professional settings

Activities of sub-skills	Respondents	VI		I		INS		ANI		NI					
		f	fx	f	fx	f	fx	f	fx	f	fx	∑f	∑ fx	μ scores	rank
I. Reading Activities in English															
• Reading professional books in chemistry and related sciences	GR	10	50	6	24	2	6	0	0	0	0	18	80	4.44	1
	EMPR	4	20	2	8	0	0	0	0	0	0	6	28	4.67	1
• Reading laboratory manuals to accompany chemistry books and chemistry principles	GR	8	40	8	32	2	6	0	0	0	0	18	78	4.33	2
	EMPR	3	15	2	8	1	3	0	0	0	0	6	26	4.33	2
• Reading professional journals or news papers of the chemistry society of Ethiopia and other	GR	4	20	8	32	6	18	0	0	0	0	18	70	3.89	5
	EMPR	0	0	3	12	3	9	0	0	0	0	6	21	3.5	5
• Reading business or personal letters	GR	7	35	7	28	4	12	0	0	0	0	18	75	4.17	3
	EMPR	1	5	3	12	2	6	0	0	0	0	6	23	3.83	4
• Reading summary charts , diagrams , tables and working programme etc.	GR	5	25	13	40	3	9	0	0	0	0	18	74	4.11	4
	EMPR	2	10	3	12	1	3	0	0	0	0	6	25	4.17	3
II. Speaking Activates in English															
• Delivering speech at meeting conferences and seminars about chemistry and related issues	GR	6	30	1	40	3	9	0	0	0	0	18	76	4.22	3
	EMPR	2	10	2	12	1	3	0	0	0	0	6	24	4.0	3
• Giving presentations workshop instruction etc of professional matters to Ethiopian's or foreigners	GR	8	40	8	32	2	6	0	0	0	0	18	78	4.33	2
	EMPR	3	15	2	8	1	3	0	0	0	0	6	26	4.33	2
• Speaking to colleagues (Ethiopian's or foreigners) at work place	GR	9	45	7	28	2	6	0	0	0	0	18	79	4.39	1
	EMPR	4	20	1	4	1	3	0	0	0	0	6	27	4.5	1
III. listening Activities in English															
• Listening at professional meetings seminars and conferences	GR	8	40	8	32	2	6	0	0	0	0	18	78	4.33	1
	EMPR	4	20	2	8	0	0	0	0	0	0	6	28	4.67	1
• Listening to presentations	GR	7	35	7	28	4	12	0	0	0	0	18	75	4.17	3
	EMPR	4	20	1	4	1	3	0	0	0	0	6	27	4.55	2
Listening to foreigners talk at work place	GR	7	35	8	32	3	9	0	0	0	0	18	76	4.22	2
	EMPR	3	15	2	8	1	3	0	0	0	0	6	26	4.13	3
V. Writing Activities in English															
• Writing specific work programs and schedules of his /her organization	GR	10	50	6	24	2	6	0	0	0	0	18	80	4.44	1
	EMPR	4	20	1	4	1	3	0	0	0	0	6	27	4.5	1
• Writing reports	GR	8	40	7	28	3	9	0	0	0	0	18	77	4.28	2
	EMPR	3	15	2	8	1	3	0	0	0	0	6	26	4.33	2
• Writing on special features of chemistry (e.g. the science of chemistry and its use in real world)	GR	6	30	8	32	4	12	0	0	0	0	18	74	4.11	4
	EMPR	2	10	2	8	2	6	0	0	0	0	6	24	4.0	3
• Writing curriculum vitea job application letters or personal letter	GR	6	30	9	36	3	9	0	0	0	0	18	75	4.17	3
	EMPR	2	10	1	4	3	9	0	0	0	0	6	23	3.83	4

According to the information presented in table 15, reading professional books in chemistry and related sciences was considered to be the most important reading activity followed by reading laboratory manuals in professional settings by both the graduates and employers with mean scores of 4.44 and 4.67 and 4.33 and 4.33 respectively. As the responses of the employers, the third and the fourth place of importance was given for reading business or personal letters and reading summary charts, diagrams, tables and working program. Employers on the other hand, ranked reading summary charts, diagrams, tables and working program third and reading business or personal letters fourth with mean scores of 4.17 and 3.83 respectively. Reading professional journals or news papers of the chemistry societies of Ethiopia is considered as the least important reading activity by both respondents in professional settings.

In line with speaking activities, both the graduates and employers ranked speaking to colleagues at work place first and giving presentations, workshop and instruction etc of professional matters to Ethiopians or foreigners at second place with corresponding mean scores of 4.39 and 4.50 and 4.33 and 4.33 respectively. Besides, both the respondents ranked delivering speech at meeting, conferences and seminars about chemistry and related issues as the third important speaking activity with corresponding mean scores of 4.22 and 4.0 respectively.

Regarding listening activities, listening at professional meetings, seminars and conferences is considered as the most important listening activity by both the graduates and employers with corresponding mean scores of 4.33 and 4.67 respectively. This is followed by listening to foreigners talk at work places and listening to presentations with respective mean scores of 4.22 and 4.17. However, according to the employers' response listening to presentations and listening to foreigners talk at work place are considered as the second and the third important activities of listening skill with mean scores of 4.5 and 4.33 respectively.

Likewise, from the given writing activities writing specific work programs and schedules and writing reports have taken the first ranks both by the graduates and employers with corresponding figures of mean scores 4.44 and 4.5 and 4.28 and 4.33 respectively. As the graduate respondents, these are followed by writing curriculum vitea, job application letters or writing personal letters and writing on special features of chemistry. Employers on the other

hand, place writing on special features of chemistry as the third important and writing curriculum vitea, job application letters or personal letters as the fourth important sub skills of writing with corresponding mean scores of 4.0 and 3.83 respectively.

In conclusion, evident to the above analysis, one can say that most English language sub skills labeled under each macro skills are important in terms of the relevance and help they have to chemistry profession. However, the level of their importance differs from what graduates need these sub skills to that of employers with respective working situations.

4.3.3. Language Contents Need for Professional Purposes

Similar to the information about language content need for academic purposes, both the graduates and employers were asked to rate how much they agree on the importance of having a good knowledge of grammar, technical vocabularies and English language pronunciation for work purpose. In answering the question asked, table 16 shows the detail.

Table 16. Graduates and employers response on language contents need for work purpose.

Statements	Respondents	SA		A		MA		D		SD					
		f	fx	f	fx	f	fx	f	fx	f	fx	Σf	Σ fx	μ scores	ranks
Having good knowledge in grammar is important for professional purpose	GR	4	20	8	32	6	18	0	0	0	0	18	70	3.89	2
	EMPR	1	5	3	12	2	6	0	0	0	0	6	23	3.83	2
Having good knowledge of technical vocabularies (vocabularies taken form applied chemistry) is important for work purpose	GR	12	60	6	24	0	0	0	0	0	0	18	84	4.67	1
	EMPR	3	15	3	12	0	0	0	0	0	0	6	27	4.50	1
Having good knowledge of pronunciation is important for professional purpose	GR	0	0	4	16	12	36	2	4	0	0	18	56	3.11	3
	EMPR	0	0	3	12	2	6	1	1	0	0	6	19	3.17	3

As depicted in table 16, both the graduates and employers placed in the level between strongly agree and agree for importance of having good knowledge of technical vocabularies related to their profession with mean scores of 4.67 and 4.50 respectively. Regarding having good language knowledge in grammar for work purpose, both the respondents gave the second rank with mean scores of 3.89 and 3.83 respectively. Besides, the need for having good knowledge of pronunciation ranked third by both respondents compared to the other language contents for work purpose with mean scores of 3.11 and 3.17 respectively.

The finding of language contents needed for work purpose coincides with the result of applied chemistry instructors' response on learners' language contents needed in academic settings. Both findings underline the need for having good knowledge of technical vocabularies for learners'

academic study and for future professional carrier. This entails that the English language courses offered in applied chemistry study should include technical and professional terms of chemistry as well as use chemistry contents for students to practice the language skills through practical and relevant issues at academic settings for future professional use.

4.3.4. Graduates Difficulties in Sub-Skills

Accordingly, graduates were asked to rate their difficulties while accomplishing different tasks / activities in English at workplace. The analysis of the response given by the graduates has been compared and indicated in table 17.

Table 17 graduates difficulties while accomplishing tasks in English

No	Activities in English	VGD		GD		SD		LD		ND					
		f	fx	f	fx	f	fx	f	fx	f	fx	∑f	∑fx	μ scores	Ranks
A	Reading summary charts, diagrams, tables and working programme etc	6	30	4	16	2	6	4	8	2	2	18	62	3.44	5
B	Listening to foreigners or Ethiopian's talk at work place	4	20	4	16	6	18	2	4	2	2	18	60	3.33	6
C	Delivering speech at meeting, conferences and seminars about chemistry and related issues	9	45	3	12	4	12	2	4	0	0	18	73	4.05	3
D	Speaking to colleagues(Ethiopian's or foreigners) at work place	6	30	6	24	2	6	2	4	2	2	18	66	3.67	4
E	Writing specific work programs and schedules of his / her organizations	9	45	5	20	2	6	2	4	0	0	18	75	4.16	2
F	Writing reports	13	65	3	12	2	6	0	0	0	0	18	83	4.61	1

As depicted in table 17. graduate respondents indicated that writing reports, writing specific work programs and schedules of his / her organizations and delivering speech at meetings conferences and seminars about chemistry and related issues took the first three ranks by their level of difficulties with mean scores of 4.61, 4.16 and 4.05 respectively. Their response confirmed that graduates accomplish these tasks with the ranges between 'very great difficulty' and 'difficulty'. On the other hand, listening to foreigners talk at work place, reading summary charts, diagrams, tables and working programs and speaking to colleagues (Ethiopian's or foreigners) at workplace in English were considered as the least difficult tasks with means scores of 3.33 , 3.44 and 3.67 respectively.

In general from the respondents answer on the need for the English language course to chemistry study and career, in terms of contents , language skills focused and problems experienced by chemists, the following stand out at a major point of the discussion. As English is the medium of instruction and every chemistry courses is studied in English, all most all the respondents suggested that the English courses have to meet the needs of the learners. In other words the course contents should have been based on chemistry issues and skills development practices. The majority of the respondents choose English for chemists with more practice in the reading and listening skills at academic settings and reading and writing skills at professional settings. Besides, most of he respondents mentioned that they face problems or difficulties of essay writing, presenting project reports, summarizing details of applied chemistry contents and addressing speech at meeting, conferences and seminars about chemistry and related issues.

4.4 Analysis of Answers to Interview Questions

Information gathered from English language instructors through interview were aimed at crosschecking answers given by questionnaires. In the interview, five questions were presented and discussed with interviewees of English language instructors. I have used a code to refer to the participants in the interview. I_1 for example, refers to 'interview number one' Hereunder, important points of the discussion have been presented.

Concerning the macro skills and knowledge areas that are most needed for students to pursue their academic study, I_1 and I_3 said that "all English skills are important for students to carry out major duties of applied chemistry studies". They further said that, all English language skills

functions complement one another and it is not possible to single out one English language skill as the most needed one. On the other hand, as interviewees I_2, I_3 and I_4 responded, emphasis should be given to the frequency of tasks performed with in the skill type. As a result of this fact, they considered reading and listening skills as the most needed macro skills in applied chemistry study. In line with this, as it has been revealed in the discussion from the data of applied chemistry instructors' questionnaire the most frequently needed language skills in applied chemistry study are reading and listening. This however, does not mean that other skills are not important for learners to pursue their academic courses. They are important, but the prioritization is according to the frequency of tasks performed with them.

Regarding the importance of English language course for learners' academic studies, the answer given by interviewees is almost similar. All of them responded that the English course that has been given for applied chemistry students has some importance in preparing learners to take lecture notes, ask and answer questions, write lab reports, read course notes, refer to books or manuals etc. However, as these interviewees explain, the course has its own limitation in content selection, skills focus and relevant tasks and activities that fit in to the academic needs of learners.

In line with the knowledge of technical vocabularies or teaching professional terms of chemistry in English class, I_1, I_2, I_3 and I_5 prefer the presence of ESP (English for specific purpose) in chemistry. In clear terms, these respondents suggest the English course offered in applied chemistry department should include technical and professional terms of chemistry as well as use chemistry contents for students to practice the language skills through practical and relevant issues. This agrees with applied chemistry instructors' response to their respective questionnaire. However, on this point I_4 Indicated that "teaching professional terms or technical words specific to chemistry only is too ambitious and unwise in our context. Instead, there could be possibilities of designing specific English course to similar fields of studies for example physics , biology and chemistry etc"

Concerning students' difficulties to accomplish English language activities, all the interviewees (I_1, I_2. I_3, I_4, and I_5) said that students have great difficulties on writing essays / term papers, writing answers to essay type exams, presenting papers and reports to an audience and debating or conversing with people, especial foreigners, in English. However the interviewees agreed that,

students have less difficulty in answering question, asking question in class and taking lectures notes etc. Besides, the same result is observed in applied chemistry instructors' questionnaire response of students' difficulties in sub skills. Based on this interview and applied chemistry instructors questionnaire response, it is possible to say that the English language course should place more emphasis on the sub skills of writing and speaking skills respectively.

At last, all of them suggest that the English language course for applied chemistry students should be designed and offered in the way that meet students' academic needs. In more specific terms, these interviewees indicated that the English course for applied chemistry students should be specific to applied chemistry and related issues in contents and on practicing the skills.

The researcher on his part believes that, ESP should get special emphasis so as to bring applied chemistry students to the level required of them in studying their major courses and future professional use.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In this chapter the summary, conclusions and recommendations of the study are presented.

5.1. Summary

ESP as a recent development in TEFL (teaching English as foreign language) or TESL (teaching English as a second language) has not yet been applied to many fields of studies and professions, except to the few as English for business, English for medicine or English for law etc. However, ESP is a potential, viable and vigorous movement to cater English language courses for foreign/ second language learners based on their academic and later professional needs. ESP is potential to cater English language courses for any field of study or profession, because it begins with assessing and analyzing the learning interest, preferences and needs of a group of learners in a particular programme. Then, course designers, teachers and learners themselves would not find designing, teaching and learning the language course for a specified purpose difficult (Dudley-Evans, and Johns 1998).

Being convinced and attracted by this point of view, this study has tried to assess the English language needs of chemists and indicated the needs about whether to design ESP course for chemistry. To do so, various sources of related literature were consulted, certain research instruments as questionnaires and interview were used. After carefully gathering the relevant data using these instruments the data was analyzed in an integrated manner using descriptive analysis. Therefore, frequency counting, percentage, mean scores and ranking of data were applied to analyze and describe the data. Lastly, based on the findings obtained, conclusions and recommendations were forwarded.

5. 2 Conclusions

The following were the conclusions made based on the analysis and interpretations of data.

- The students in applied chemistry programme need the English course as ESP in chemistry. In other words, they need English language course which help them develop knowledge of technical vocabularies as well as language contents related to their fields of study to practice the language skills for academic purpose.

- The need for knowledge of technical vocabularies (genre needs) was found to be as the most important language content for professional purpose

- In the academic settings (students' learning needs) reading skill was found to be the most important macro – skill followed by listening, writing and speaking.

- At professional settings (target situation needs), reading skill was found to be the most important macro – skill followed by writing, speaking and listening.

- A wide range of activities of sub – skills was identified and prioritized in both academic (students' learning needs) and professional (target situation needs) settings.

- Applied chemistry programme students are relatively better in their receptive skills

  (Reading and listening) than productive skills (speaking and writing)

- Most of the students have problems of essay writing, presenting project reports and term papers, writing lab. reports and summarizing details of applied chemistry contents

- Graduates have great difficulties (lacks) while writing reports, writing specific work programme and schedules of their organization and addressing speech at meeting, conferences and seminars about chemistry and related issues at professional settings.

- The English language course (Sophomore English) students have taken at the programme has some help with respect to improving their language skills. However, the course has its own limitations in terms of improving the kinds of vocabulary (genres) of their major courses of study and helping them know contents or topics of applied chemistry courses.

5.3 Recommendations

Based on the conclusions made, the following recommendations are forwarded.

- English language is important in applied chemistry study, and hence the new English course should train students in the macro-skills and sub-skills. Yet, skills such as reading and listening are more visible in use in applied chemistry academic settings. Therefore, the English language course in applied chemistry study should pay attention to enabling learners practice these skills.

- As the discussions revealed, applied chemistry needs English course contents compatible with needs of students' major courses study. Therefore, topics, technical terms or jargons in the area need to be addressed in such manner.

- In designing the English language syllabus and subsequently developing a course book, the students' difficulties in using English to perform different activities in both academic and occupational settings should be taken in to account and addressed.

- The existing English course (Sophomore English) should be revised and should consider the needs of students both for their academic and future professional purpose.

- Finally, the researcher believes that no claim of comprehensiveness is made here. As a result, further research should be carried out to replicate the findings of the study.

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Appendix I

Addis Ababa University

Institute of language studies

Department of Foreign languages and literature

(Graduate Program)

Students' Questionnaire

Dear Students

The purpose of this questionnaire is to gather data on English language needs of applied chemistry students. The information you give will be of vital importance for the research carried out as a requirement for master's degree in Teaching English as a foreign Language (TEFL). The researcher also hopes that the result of the research may help to improve the quality of the English courses given to applied chemistry students. Therefore, your genuine responses to the items in the questionnaire are highly valuable.

All the information that you provide will be treated as confidential and will only be used for the purpose of this study. You do not need to write your name, but your frank, honest and true responses are appreciated.

Please attempt all the questions in the questionnaire and read the suggested alternatives before you give your responses to the items.

Thank you

Part one: - Background information

1. Please provide some information in the space provided

a. Sex ----------

b. Age ----------

c. Stream Department (field of study) ----------

d. Year of study in the college 1st ☐ 2nd ☐ 3rd ☐ Use a tick (✓)

e. Sophomore English grade ----------

f. CGPA----------

Part two: - Information about your English Language needs

2. Which of the following language skills do you need more for major courses in your fields of study? Please use the given key and rank the language skills according to their frequency of need. Please circle the number of your choice against the skills.

5= Very frequently needed 4= Frequently needed 3= Sometimes needed 2= Seldom needed

1= Never needed

a/ Listening	1	2	3	4	5
b/ speaking	1	2	3	4	5
c/ Reading	1	2	3	4	5
d/ Writing	1	2	3	4	5

3. How often do you need to do any of the following activities in English when you learn your major courses that are taught in English in your fields of study? Please rank each activity according to its frequency of need. Put a tick (✓) in column of the numbers (1-5) of your choice against each activity. Use the following key:

5= Very frequently needed 4= Frequently needed 3= Sometimes needed 2= Seldom needed

1= Never need

No	I Reading activities in English	Choices				
		1	2	3	4	5
A	Reading trainees reference books (e.g. organic chemistry, inorganic chemistry, analytic chemistry etc)					
B	Reading techniques of experimental chemistry (e.g. safety precaution at lab., data treatment, Bunsen burner, glass working etc)					
C	Reading test and exam questions					
D	Reading special features of chemistry i.e. - Chemistry in environmental science (e.g. the acid rain problem) - Chemistry in sanitary engineering (e.g. solution in water purification.) - Chemistry in pharmacology (e.g. the mode of action of soaps and antibiotics.) - Chemistry in atmospheric science (e.g. depilation of the earth's ozone layer.)					
E	Reading news papers or magazines of chemistry societies of Ethiopia					
F	Other (Please specify and tick)					

No	II Writing activities in English	Choices				
		1	2	3	4	5
A	Writing notes from lecture or books					
b	Writing project and lab. reports					
C	Writing term papers , proposal for chemistry courses in the college					
d	Writing summaries of applied chemistry courses					
E	Writing essays in chemistry special features (e.g. Chemistry in industry Chemistry in environment etc.)					
F	Others (Please specify and tick)					

No	III Listening activities in English	Choices				
		1	2	3	4	5
A	Listening to lecture to take notes (in classroom , lab , visits at industry)					
b	Listening to instructors questions at class or lab. room					
C	Listening to class discussions , instructors' instructions					
d	Listening to radio , TV programs , films etc about chemistry and related sciences					
E	Others (Please specify and tick)					

No	IV speaking activities in English	Choices				
		1	2	3	4	5
A	Asking and answering questions (in classroom , lab or at visit)					
B	Giving oral reports of lab results or findings					
C	Participating in whole class discussions (in lecture or lab rooms)					
D	Giving instructions to friends as a chemist or professional on the area					
E	Conversations with foreigners at a class room level or out side the class room in conferences or meeting about chemistry and related sciences					
F	Others (Please specify and tick)					

4. How much do you agree with the following statements? Please put a tick (✓) in the column of the numbers against each statement. Use the following Key:
   5= Strongly agree 4= Agree 3= Moderately agree 2= Disagree 1= Strongly disagree

No	Statement	Choices				
		1	2	3	4	5
A	Having good Knowledge in grammar is important for my academic study					
B	Having good knowledge of technical vocabularies (Vocabularies taken from applied chemistry) is important for my academic study.					
C	Having good knowledge of pronunciation is important for my academic study					

5. To what extent do you face difficulty in using English to accomplish each of the activities listed below? Please use the given key and put a tick ( ) in the column of the number of your choice against each activity.

5= Very great difficulty 4= Great difficulty 3= Some difficulty 2= Little difficulty 1= No difficulty

		Choices				
No	**Activities in English**	**1**	**2**	**3**	**4**	**5**
A	Understanding lectures on chemistry					
B	Taking lecture notes on components of matter, chemical reactions quantum theory, atomic structure and modes of chemical bonding etc.					
C	Asking question in class					
D	Presenting project reports/term papers on major courses of study					
E	Answering questions in class					
F	Understanding diagrams , charts, tables etc of major course written in English					
G	Participating in chemistry class discussions					
H	understanding text books, reference books of applied chemistry					
I	Summarizing something read					
J	Making notes from books					
K	Understanding major courses exam questions					
L	Writing answers to essay type exams					
M	Writing essays on special features of chemistry (e.g. chemistry in sanitary , chemistry in environmental sciences etc)					
N	Writing lab reports / term papers etc					
O	Writing field reports					

6. How much do you think, the English course you have taken (Sophomore English) helped you in your academic study? Please put a tick ( ) in the column of the number against each statement. Use the following key:

5= Very much 4= Much 3= Little 2= Very little 1= Not at all

		Choices				
No	**Statements**	**1**	**2**	**3**	**4**	**5**
A	To know the contents / topics of your major courses					
B	To master the kind of vocabulary (specialists) of your fields of study.					
C	To improve language skills that helps you to do tasks / activities of your major area					

7. Please add any comment regarding your English language needs to follow your academic study or using English in your future careers

Appendix II

Addis Ababa University

Institute of language studies

Department of foreign languages and literature

(Graduate program)

Applied Chemistry Instructors Questionnaire

The purpose of this questionnaire is to assess the English language needs of applied chemistry students. The research is primary carried out as part of a course of study leading to an MA degree. It is also belied that the findings of the research would be of importance for designing more appropriate English language courses of applied chemistry students.

All the information that you provide will be treated as confidential and will only be used for the purposes of this study. Your sincere replies are earnestly required since they will have a great impact on the outcome of this study.

Please attempt all the items and read the suggested options before you respond to the items. You are also kindly requested to assume from the students' exam results, written work, class activity etc at any time you find it difficult to respond to the items based on the genuine knowledge of your students

Thank you!

Part one: information about the respondent

1. Please provide some information about yourself in the space provided.

   Qualification _____

   Course(s) you are giving _____

   Service years as instructor:

   A. in the field _____

   B. in another (if any)_____

Part two information in the students English language abilities

The following items are related to your students English language abilities. Please give answers to the following questions based on the instructions given.

2. How do you rate your students English language ability regarding the following language skills. Please circle the number of your choice that you think corresponds to the degree of the students' ability in each skill. Use the following key.

5= very good	4= good	3=average	2= weak	1=very weak
A/ listening	1	2	3	4	5
B/ speaking	1	2	3	4	5
C/ reading	1	2	3	4	5
D/ writing	1	2	3	4	5

3. How much difficult is it for your students to accomplish any of the activities listed below in English? Please tick (✓) the number of your choice in the column against each activity. Use the following key. 5= very great difficulty, 4= great difficulty, 3=some difficulty, 2=little difficulty, 1=no difficulty

No	Activities in English	Choices				
		1	2	3	4	5
A	Understanding lectures on chemistry					
B	Taking lecture notes on components of matter, chemical reactions, quantum theory, atomic structure and modes of chemical bounding etc.					
C	Asking question in class					
D	Presenting project report/term papers on major courses of study					
E	Answering question in class					
F	Understanding diagrams, charts, tables etc of major course written in English					
G	Participating in chemistry class discussions.					
H	Understanding text books, reference books of applied chemistry					
I	Summarizing something read					
J	Making notes					
K	Understanding major course exam questions					
L	Writing answer to essay type exams					
M	Writing essays on special features of chemistry (e.g. chemistry in sanitary, chemistry in environmental science etc.)					
N	Writing lab reports / term papers etc					
O	Writing field reports					

Part three: information on English language needs

The items that follow are related to your students English language needs. Please respond to them according to the instructions given

4. Which of the four language skills do your students need for studying the major courses taught in English? please circle the number of your choice according to the following key :

   5= very frequently needed 4= frequently needed 3= sometimes needed 2= seldom needed 1= never needed

   A/ listening 1 2 3 4 5

   B/ speaking 1 2 3 4 5

   C/ reading 1 2 3 4 5

   D/ writing 1 2 3 4 5

5. To what extent do you agree about the following statements?

   5 = strongly agree 4= agree 3= moderately agree 2 = disagree 1= strongly disagree

		choices				
No	**Statement**	**1**	**2**	**3**	**4**	**5**
A	Having good knowledge in grammar is important for students academic study					
B	Having good knowledge of technical vocabularies(vocabularies taken form applied chemistry) is important for students academic study					
C	Having good knowledge of pronunciation is important for students academic study					

6. Please add any other comments on the English language skills and abilities your student accomplish your course better and for their later success in jobs and further education_____

_____

Appendix III

Addis Ababa University

Institute of language studies

Department of Foreign languages and literature

(Graduate programme)

Applied chemistry graduates questionnaire

The main purpose of this questionnaire is together the necessary data and to use it for research work, which aims at assessing the English language needs of applied chemistry students. The research is primarily under taken as part of a course of study in teaching English as Foreign Language (TEFL) that leads to an MA degree. It is also believed that the findings of the research would be vital for designing more appropriate English language courses for applied chemistry students.

You need not write your name to make sure that the responses you provide will be confidential.

Please attempt all the questions in the questionnaire and read the suggested key before you give your responses to the items.

Thank you!

1. How do you rate the importance of the following English skills to accomplish your job effectively? Please put a tick (✓) in the corresponding column provided.

English Language Skills	To what extent is it important?				
	Very important	**Important**	**I am not sure**	**Almost not important**	**Not at all important**
Speaking					
Writing					
Listening					
Reading					

2. How do you rate the importance of the following English language activities to accomplish your job effectively? Please put a tick (✓) in the corresponding columns provided.

	Reading Activities in English	To what extent is it important?				
		Very important	Important	I am not sure	Almost not important	Not at all important
A	Reading professional books in chemistry and related sciences					
B	Reading laboratory manuals to accompany chemistry books and chemistry principles and application					
C	Reading professional journals or news papers of the chemistry society of Ethiopia and others					
D	Reading business or personal letters					
E	Reading summary charts ,diagrams, tables and working programmers etc					
F	Others (Please specify and tick (✓))					

	Listening activities in English					
A	Listing at professional meetings, seminars and conferences					
B	Listening to presentation					
C	Listening to foreigners talk at work place					
D	Others (Please specify and tick (✓))					
Speaking activities in English						
A	Delivering speech at meetings, conferences and seminars about chemistry and related issues					
B	Giving presentations, workshops, instruction etc of professional matters to Ethiopian's or foreigners					

C	Speaking to colleagues (Ethiopian's or foreigners) at work place					
D	Others (Please specify and tick (✓))					
Writing activities in English						
A	Writing specific work programs and schedule of your organization					
B	Writing reports					
C	Writing on special features of chemistry (e.g. the science of chemistry and its use in real word)					
D	Writing curriculum vitae, job application letters or personal letter					
E	Others (Please specify and tick (✓))					

3. To what extent do you agree about the following statements?

5 = strongly agree, 4 = agree, 3 = moderately agree, 2 = disagree, 1= strongly disagree

No	Statements	Choices				
		1	2	3	4	5
A	Having good knowledge in grammar is important for professional purpose					
B	Having good knowledge of the technical vocabularies (Vocabularies taken from applied chemistry) is important for professional purpose.					
C	Having good knowledge of pronunciations is important for work purpose					

4. Feel free to give other comments on the English language abilities from applied chemistry graduates to fulfill their duties effectively in your or other similar organization.

_____

_____

_____

Appendix IV

Addis Ababa University

Institute of language studies

Department of foreign languages and literature

(Graduate Program)

Employers ' questionnaire

The purpose of this questionnaire is to gather information for a study designed to assess the English language needs of applied chemistry students. The research is primarily undertaken as part of a course of study in teaching English as a foreign language (TEFL) that leads to an MA degree. It is also believed that the findings of the research would be vital for designing more appropriate English language courses for applied chemistry students.

The researcher , therefore , wants to know your view on what English language abilities you expect form applied chemistry graduates to be employed and then to fulfill their duties effectively in your organization. Please attempt all the questions in the questionnaire and red the suggested keys before you give your responses to the items.

Thank you !

1. Which of the following language skills is (are) more important for applied chemistry graduates to carry out duties effectively in your organization? Please put a tick (✓) against the column of the number of your choice in front of each language skills. Use the following key.

5= very important 4= important 3= I am not sure 2= almost not important

1= not at all important

English language skills	Choices				
	1	2	3	4	5
Speaking					
Writing					
Reading					
Listening					

2. How do you rate the importance of the following English language activities for applied chemistry graduates to accomplish his/her job effectively in your organization? Please put a tick (✓) in the column of your choice. Use the following key.

5 = very important, 4 = important, 3=I am not sure, 2 = almost not important,

1 = not at all important

		Choices				
	Reading activities in English	1	2	3	4	5
A	Reading professional books in chemistry and related sciences					
B	Reading laboratory manuals to accompany chemistry books and chemistry principles and application					
C	Reading professional journals or news papers of the chemistry society's of Ethiopia and others					
D	Reading business or personal letters					
E	Reading summary charts ,diagrams, tables and working programmes etc					
F	Others (Please specify and tick(✓))					
	Listening activities in English					
A	Listening at professional meetings, seminars and conferences					
B	Listening to presentations					
C	Listening to foreigners talk at work place					
D	Others (Please specify and tick(✓))					
	Speaking activities in English					
A	Delivering speech at meeting, conferences and seminars about chemistry and related issues					
B	Giving presentations, workshops, instructions etc of professional matters to Ethiopian or foreigners					
C	Speaking to colleagues (Ethiopian's or foreigners) at work place.					
D	Others (Please specify and tick (✓))					
	Writing activities in English					
A	Writing specific work programs and schedules of his/her organization					
B	Writing reports					
C	Writing on special features of chemistry (e.g. the science of chemistry and its use in real world					
D	Writing curriculum vitae, job application letters or personal letter					
E	Others (Please specify and tick(✓))					

3. To what extent do you agree about the following statements?

5 = strongly agree, 4 = agree, 3 = moderately agree, 2 = disagree, 1= strongly disagree

NO	Statements	Choices				
		1	2	3	4	5
A	Having good knowledge in grammar is important for professional purpose					
B	Having good knowledge of technical vocabularies (vocabularies taken from applied chemistry) is important for professional purpose					
C	Having good knowledge of pronunciation is important for work purpose					

4. Feel free to give other comments on the English language abilities from applied chemistry graduates to fulfill their duties effectively in your or other similar organization._____

_____

Appendix V

Addis Ababa University

Department of foreign languages and literature

(Graduate programme)

Semi structured interview for English language instructors

1. Among the following language skills and knowledge areas which do you think your students need most and which once least to pursue their academic study in the college?
2. How do you see the relevance of the English language course you teach in preparing the students for applied chemistry study? Does it help them to :-
    - Read text books , lecture notes and articles of technical or professional journals in the area
    - Write course assessments , lab reports and project proposal etc
    - Listen course lectures , presentations , seminars or lab reports
    - Speak on an issue at a meeting seminar or debate etc.
3. How do you see the importance of teaching technical terms or professional words of applied chemistry in English class?
4. To what extent students face difficulties to accomplish the following English language activities. Use the following key to rate the extent of difficulty.
    - Very great difficulty
    - Little difficulty
    - Some difficulty
    - No difficulty

    A. Asking questions in class

    B. Presenting project reports / term papers

    C. Answering questions in class

    D. Understanding diagrams , charts , tables etc

    E. Participating in class discussions

    F. Understanding textbooks and reference books

    G. Making notes form books

    H. Writing answers to essay type exams

    I. Summarizing chemistry texts

J. Writing essays / term papers

K. Understanding lectures

5. You many give any comment you have about applied chemistry students English language needs? _____

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 material used for the thesis have been duly acknowledged.

Name Bekele Daba

Signature 

Date: January, 2009