LANGUAGE IN INDIA

Strength for Today and Bright Hope for Tomorrow

Volume 11 : 12 November 2011

ISSN 1930-2940

ENGINEERING ENGLISH: A CRITICAL EVALUATION

Ph.D. Dissertation

By

ALBERT P'RAYAN
rayanal@yahoo.co.uk

ENGINEERING ENGLISH: A CRITICAL EVALUATION

SUBMITTED IN PARTIAL FULFILLMENT FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN LINGUISTICS

By

ALBERT P'RAYAN

CENTRE OF ADVANCED STUDY IN LINGUISTICS

ANNAMALAI UNIVERSITY

ANNAMALAI NAGAR

2008

Dr. Ramakrishna T.Shetty
Professor (Retd)
Deparment of Linguistics
Annamalai University
Chidambaram – 608 002

CERTIFICATE BY THE GUIDE

This is to certify that the PhD thesis entitled "**Engineering English: A Critical Evaluation**" is a bona fide record of independent research work done by **Albert P'Rayan** under my supervision.

It is also certified that the above work has not previously formed the basis for the award of any degree / diploma / associateship / fellowship or any other similar title of any candidate or any university.

Dr. Ramakrishna T. Shetty

Albert P'Rayan

Roll No. 050606004

DECLARATION

I, **Albert P'Rayan**, do hereby declare that the thesis work entitled "**Engineering English: A Critical Evaluation**" for the award of PhD in Linguistics is my original work and that it has not previously formed the basis for the award of any degree / diploma / asssociateship / fellowship or any other similar title of any candidate or any university.

Albert P'Rayan

Acknowledgements

I would like to thank my supervisor Professor Dr Ramakrishna T. Shetty for his valuable guidance, constant encouragement and support for a period of three years. But for his support I wouldn't have completed my research in time.

I acknowledge with gratitude the co-guide, Dr S. Iyyappan, for his support, encouragement and willingness to help me at any time.

I owe much to a number of students at Jeppiaar Engineering College and Aarupadai Veedu Institute of Technology (AVIT) and a few other institutes of technology who readily accepted to complete the questionnaires distributed to them.

My thanks go o many ESP practitioners who voluntarily helped me with my research. My special thanks go to Ms Pushpa of S.R.R. Engineering college for her timely help.

Thanks are due to numerous professional engineers working in different IT companies for their help in the form of completing questionnaires.

I acknowledge the help given by my friend Subramanian for his assistance in collecting job advertisements which gave an insight into the needs of professional engineers' language and communication needs.

I express my gratitude to Mr Rajan (C-Cat) and his team of placement trainers for spending a bit of their time with me to answer my questions and also complete the questionnaire distributed to them.

I want to acknowledge and thank Mr Tharcius Fdo and Major Pores for introducing me to corporate recruiters and HR people.

I am grateful to the corporate recruiters and HR people who spent a bit of their time with me and answered my questions patiently.

My thanks are owed to those who exchanged their views with me on topics related to my research on the Aberdeen and Exeter IATEFL discussion forums and the IATET yahoo group.

My deep appreciation goes to my wife, Deepa, and my son, Aldeesh, for their patience and all the sacrifices they made during the period of my PhD research.

I would like to say a big thank you to the readers of my column 'English Matters' in Education Express, a weekly supplement with The New Indian Express, who frankly shared with me their language and communication problems and contributed to my professional growth.

Albert P'Rayan

LIST OF ABBREVIATIONS

BEC - Business English Certificate

EE – English for Engineering

ELT – English Language Teaching

ESP – English for Specific Purposes

EST – English for Science and Technology

IELTS – International English Language Testing System

TOEFL – Test of English as a Foreign Language

Abstract

In the age of globalization, engineering students and practitioners need to enhance their English communication skills and other soft skills in order to cope with increasingly tough competition in the job market. Mere subject knowledge in the chosen field of engineering is not going to be a guarantee for an engineering graduate to get a good job or excel at the workplace.

Multinational corporations (MNCs) and major information technology (IT) companies in India recruit engineering candidates who have good English communication skills. In this highly competitive society, proficiency in English is considered one of the employability skills. In other words, English language skills are considere 'life skills' or 'survival skills' in the twenty-first century.

Engineering students need to be able to think critically, solve problems, communicate clearly, be creative and work in a team in order to get placed in a reputed company. As the need for the students of engineering to be trained in a multitude of transferable skills is high (Hatakka, 2005), most private engineering colleges in India hire trainers to train their wards in soft skills including English communication skills and prepare them for on and off campus placement. In many institutes of technology, English language teachers are involved in placement training. As there is an increasing focus on and demand for soft skills, the English for Science and Technology (EST) practitioners in engineering colleges are expected to play the role of communication skills consultants and soft skills trainers. There is a shift from imparting mere linguistic skills to multi-skills in an integrated manner.

In this context, the *Engineering English* course taught during the first year of the four-year engineering programmes in around 300 engineering colleges affiliated to the Anna University in Tamil Nadu, India, is expected to play a vital role in improving students' communication skills and preparing them to the workplace or making them 'industry ready'.

Though the aim of the course is to enable the students of engineering to learn certain macro- and micro-skills in the English language and use them effectively as students while following other courses and later as engineers/technologists at the work place, most students and professional engineers/technologists who have undergone the course are not proficient enough to communicate effectively in the language. This perceived problem of lack of specific language/communication skills among engineering students and professional engineers and technologists makes the researcher raise a key question whether the *English for Engineering* course reflects the needs and wants of the learner and whether there are any other factors that affect the successful imparting / learning of the skills required by the target group. It is presumed that there are problems in the teaching of the course at colleges, resulting from inappropriate teaching materials and instructional techniques, lack of English Language Teaching (ELT) – trained professionals and poor teaching methodology.

The hypothesis of the study is that if the *Engineering English* course offered during the first year of the four-year engineering programme at engineering colleges affiliated to the Anna University is redesigned or modified based on the corporate expectations /needs / requirements, delivered (taught) properly by competent English for Science and Technology (EST) practitioners and students' language skills are assessed effectively during and at the end of the course, then the course will achieve its goal by instilling confidence in the students and preparing them to higher education, campus recruitments and thus to the workplace.

In the light of the data for needs assessment collected from different sources, the study identifies the situations that are encountered and the skills which are required by the engineer, as a student and in professional life, evaluates the English course critically and suggests changes to make it effective.

CHAPTER ONE

INTRODUCTION

CHAPTER TWO

RESEARCH METHODOLOGY

2.1 Introduction

2.2 Research Tools

2.3 Sample

2.4 Methods of Data Collection

2.4.1 Researcher's Observation

2.4.1.1 Researcher as an EST practitioner

2.4.1.2 Researcher as a columnist

2.4.2 Needs Analysis-cum-Evaluation Questionnaire

2.4.2.1 Questionnaire for Senior Students

2.4.2.2 Questionnaire for Professional Engineers

2.4.2.3 Questionnaire for Placement Trainers

2.4.2.4 Questionnaire for EST Practitioners

2.4.2.5 Questionnaire for Core Subject Teachers

2.4.3 Interviews with Recruiters / HR People

2.4.4 Analysis of Job Advertisements

2.4.5 Interviews

2.4.6 News reports

2.4.7 Evaluation of the *Engineering English* Curriculum

2.4.7.1 Evaluation by Senior Students

2.4.7.2 Evaluation by Ex-Students

2.4.7.3 Evaluation of Course Books

2.4.8 Case Studies on Integration of Technology into Engineering English

2.4.9 Students' Communication Apprehension and Communication Skills

2.4.10 Analysis of Examination Results

2.4.11 Diagnostic Test

2.5 Analysis and Interpretation of Data

2.6 Action taken

2.7 Evaluation

2.8 Conclusion

CHAPTER THREE

ANALYSIS AND INTERPRETATION OF DATA

3.2.5.7 Role of Educational Institutions

3.2.6 Analysis of EST Practitioners' Responses

3.2.6.1 Professional Details

3.2.6.2 Learners' Attitude towards English and their Needs

3.2.7 Subject Teachers' Perception

3.2.7.1 Skills Students Need and Lack

3.2.7.2 Suggestions

3.2.8 Analysis of Interviews with Recruiters / HR Personnel

3.2.9 Analysis of Job Advertisements

3.2.10 Summary of the Needs Analysis

3.3 Engineering English: An Evaluation

3.3.1 Technical English Course

3.3.1.1 Aim

3.3.1.2 Objectives

3.3.1.3 The Syllabus

3.3.2 Evaluation of the Engineering English Curriculum

3.3.2.1 Evaluation by Senior Students

3.3.2.2 Evaluation by Ex-Students

3.3.2.2.1 Assessment of Components of EE Curriculum

3.3.2.2.2 Evaluation of Skills

3.3.2.2.3 Effectiveness of the EE Course

3.3.2.2.4 System of Assessment

3.3.2.2.5 Evaluation of Course Books

3.3.2.2.5.1 Role of Course Books / Materials

CHAPTER FOUR

INTEGRATION OF TECHNOLOGY INTO ENGINEERING ENGLISH

4.1 Introduction

4.2 Rationale

4.3 Literature review

4.4 Students' views (see appendices 1&2)

4.5 Case studies

- 4.5.1 Technology-Integrated Language Learning (TILL) at JEC
- 4.5.2 Blogging can Promote Learner Autonomy
- 4.5.3 Web-based English Language Learning (WELL)
  - 4.5.3.1 Objectives of the WELL Project
  - 4.5.3.2 Collaborative Learning
  - 4.5.3.3 Stages of the project
  - 4.5.3.4 Evaluation

4.6. Conclusion

CHAPTER FIVE

BRIDGING THE GAP: THE DESIGN OF ENGINEERING COMMUNICATION - AN INTEGRATED SKILLS APPROACH

5.1 Introduction

5.1.1 Overall Aim

5.1.2 Overall Objectives

5.1.2.1 Listening

5.1.2.2 Speaking

5.1.2.3 Reading

5.1.2.4 Writing

5.1.3 Content

5.2 Engineering Communication – An Integrated Skills Approach

5.2.1 Principles

5.2.2 Components experimented / piloted

5.2.2.1 Designing an English for Biotechnology Course Involving Learners

5.2.2.1.1 Course Objectives

5.2.2.1.2 Selection of Materials

5.2.2.1.3 Learner involvement

5.2.2.1.4 Course Structure

5.2.2.1.5 Skills: Tasks and Activities

5.2.2.1.6 Course Outline

5.2.2.1.7 Teaching Methodology

5.2.2.1.8 Conclusion

5.3.2.2 Developing Engineering Students' Speaking Skills Through Role-Playing Activities

5.3.2.2.1 Introduction

5.3.2.2.2 Background

5.3.2.2.3 Role plays

5.3.2.2.4 Objective of role-plays

5.3.2.2.5 Rationale for using role-plays

5.3.2.2.6 Features of a good role-play

5.3.2.2.7 Sample group

5.3.2.2.8 Three stages of Role-playing

5.3.2.3 Project-Based Learning

5.3.2.3.1 Project Work: Introduction

5.3.2.3.2 Characteristic Features

5.3.2.3.3 Stages of project work.

5.3.2.3.4 Projects

5.3.2.4 Process Approach to Oral Presentation (PAOP)

5.3.2.4.1 What is PAOP?

5.3.2.4.2 Aim and objectives

5.3.2.4.3 Why PAOP?

5.3.2.4.4 Duration

5.3.2.4.5 The Key Stages

5.4 Conclusion

CHAPTER SIX

EVALUATION OF THE REDESIGNED COURSE

CHAPTER SEVEN

CONCLUSIONS

7.1 Introduction

7.2 Findings

7.3 Recommendations

7.4 Implications

7.5 Last word

==========

Glossary

Appendices

Bibliography

CHAPTER ONE

INTRODUCTION

0.1 Introduction

In the Indian context, engineering students' success in the on-campus recruitment is mainly based on their demonstration of communication skills. According to Karnik, former president of NASSCOM (National Association of Software and Services Company), only 25 percent of technical graduates are suitable for employment in the outsourcing industry because of their lack of abilities to speak or write well in English. (Karnik, 2007 as cited in P'Rayan 2008:1). Most students are not 'industry ready' because they lack communication skills. (Infosys, 2008).

There are a number of factors which contribute to engineering students' lack of proficiency in English and deficiency in communication skills. The need for enhancing engineering students' communication skills and prepare them to the workplace has been addressed in a number of forums and questions regarding the effectiveness of the *Engineering English* curriculum too have been raised. What is the role of institutes of engineering and technology in developing the students' employability skills? Should the *Engineering English* course be modified or redesigned? What measures should be taken to make the students 'industry-ready'?

0.2 Background

There are over 350 engineering colleges, affiliated to Anna University, in the southern State of Tamil Nadu in India. In addition to these self-financed (private) and government-funded engineering colleges there are about a dozen private universities (deemed universities) that offer engineering degrees. Students of engineering and technology studying at these institutes are offered the *Technical English (Engineering English)* course for two semesters during their first year programme.

Though the aim of the course is to enable the students of engineering to learn certain macro- and micro-skills in the English language and use them effectively as students while following other courses and later as engineers/technologists at the work place,

most students and practicing engineers/technologists who have undergone the course are not proficient enough to communicate effectively in the language. This perceived problem of lack of specific language/communication skills among engineering students and professional engineers and technologists makes the researcher raise a key question whether the *English for Engineering* course reflects the needs and wants of the learner and whether there are any other factors that affect the successful imparting / learning of the skills required by the target group. It is presumed that there are problems in the teaching of the course at colleges, resulting from inappropriate teaching materials and instructional techniques, lack of English Language Teaching (ELT) – trained professionals and poor teaching methodology.

Around ten engineering colleges out of about three hundred such colleges in the state of Tamil Nadu in India have a good placement record. Most of the final year undergraduate students of these colleges are recruited by reputed IT and core-engineering companies. In some of these colleges more than 90 per cent of the students are placed and recruiters attribute the success of the students to their ability to communicate well and think clearly. The on-campus recruitment process consists of three or four stages: 1) aptitude test, 2) technical interview, 3) group discussion, and 4) HR interview. During the four stages the candidates' technical knowledge, analytical, verbal reasoning, critical thinking, communication and group skills are assessed and at each stage the unsuccessful candidates are filtered out. Those educational institutions which impart employability skills in their students are successful in getting most of their students placed in top companies. In many engineering colleges communication skills trainers have been employed on full-time basis to train their students.

0.3 Statement of Problems

More number of engineering graduates prefer information technology (IT) companies to core engineering companies now than in the past. Those students who possess English communication skills are recruited by reputed IT companies on campus.

While the demand for talented engineers is high in such companies and multi-national corporations (MNCs), there is a huge skills shortage in the country.

Employers complain about fresh recruits from engineering colleges not being 'industry ready'. With the objective of increasing the employability of students and thus to bridge the gap between corporate expectations/needs and institutional offerings, in 2004 the IT company Infosys launched a programme called 'Campus Connect' (www.campusconnect.infosys.com). This clearly points out the corporate world's dissatisfaction with the way engineering students are prepared to the workplace.

According to NASSCOM-McKinsey report of Extending India's leadership of global IT and BPO industries, currently only about 25 per cent of technical graduates are suitable for employment in the offshore IT and BPO industries. The report further states that India will need a 2.3 million-strong IT and BPO workforce by 2010 to maintain its current market share. But their supply projections for 2010 showed that there will be a shortfall of nearly 0.5 million qualified employees. (NASSCOM, 2005). Communicating in English is a major problem for many engineering graduates applying for IT jobs. MeritTrac, a skills assessment company points out that only 20 percent of the candidates evaluated met the overall English criteria required by the industry. (Business Line, 2008).

A number of technically-sound students have not been successful in job interviews just because of their lack of communication skills and there are cases of rank holders in engineering studies who could not go for higher studies to the United States and other English-speaking countries because of their lack of proficiency in English. Just because those students did not get score / band on their Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS), they could not make their dream of going to the countries for studies come true. A number of engineers employed in IT companies have been sacked because of their poor English communication skills.

The urgent need to improve technical students' communication skills has been emphasized by educationists as well as employers. Narayanan, vice chairman of Cognizant Technology Solutions and chairman of the NASSCOM, in an interview (Warrier 2007) answered a question regarding the talent demand and supply gap and the role of the NASSCOM to help the industry bridge the gap: "The current situation is that, in terms of availability of talent, the numbers are good. The problem lies in the suitability of people. The industry has moved forward rapidly and technology also has changed but the educational institutions and the curriculum have not changed that rapidly. So, we have to bridge the gap by providing additional training to the people who are coming out of colleges so that they are industry-ready."

Stating the importance of setting up finishing schools, Narayanan suggested the specific areas where training has to be given to those who are admitted to finishing schools. According to him, communication and soft skills and ability to learn on their own and work in teams are very important for those who join the industry. These are the broad guidelines given to the finishing schools. (Warrier, 2007). His statement implies that the teachers of English at professional colleges should undergo paradigm shift and cease to be mere teachers of grammar and structure; they are expected to play the role of communication and soft skills trainers.

This perceived problem of lack of specific language/communication skills among engineering students and professional engineers and technologists makes the researcher raise a key question whether the *English for Engineering* course reflects the needs and wants of the learner and whether there are any other factors that affect the successful imparting / learning of the skills required by the target group. It is presumed that there are problems in the teaching of the course at colleges, resulting from inappropriate teaching materials and instructional techniques, lack of English Language Teaching (ELT) – trained professionals and poor teaching methodology.

0.4 Rationale

In the light of the problems stated above, it is important to evaluate the course. Evaluation of any curriculum or program is essential for the improvement of the

program. “Evaluation is a very constructive and powerful activity and a very stimulating one. There is the chance to focus on what has been going well and to ask what have been the most significant contributing factors so that less successful can be modified.” (Dudley- Evans, 1998).

As the range of employment for engineers and technologists expand in the twenty-first century, there is a need to teach multiple skills to engineering students. As engineering students are required to communicate effectively in different situations, think creatively and critically, demonstrate good interpersonal and team skills, and have a set of soft skills demanded by recruiters, the *Engineering English* course should be modified based on the needs of students and expectations of recruiters.

0.5 Research Questions

The dissertation attempts to find answers to the following questions:

1. Do the engineering and technology workforce have the necessary skills in the age of globalization? If ‘no’ what could be the reasons for their lack of such skills?

2. What specific expertise and skill sets do IT companies look for in their prospective employees?

3. Do engineering colleges deliver the skills the industry wants? If ‘no’ what should be done to produce ‘industry-ready’ graduates?

4. What are the strengths and limitations of the *Engineering English* course?

5. What changes should be brought about in the English curriculum at technical institutes to improve students’ communication skills and thus prepare them to the workplace?

0.6 Hypothesis

The hypothesis of the study is that if the *Engineering English* course offered during the first year of the four-year engineering programme at engineering colleges affiliated to the Anna University is redesigned or modified based on the corporate expectations /needs / requirements, delivered (taught) properly by competent English for Science and Technology (EST) practitioners and students’ language skills are assessed effectively during and at the end of the course, then the course will achieve

its goal by instilling confidence in the students and preparing them to higher education, campus recruitments and thus to the workplace.

0.7 Aim and Objectives

The research aims at evaluating the *English for Engineering* Course using both 'formative' (ongoing) and 'summative' (at the end of the course) methods of evaluation in the light of the learner's needs and wants by carrying out a detailed needs analysis and suggesting changes to make the course more relevant and effective so that language skills are imparted successfully.

The objectives are:

- to assess the learners' needs taking into account the specific purposes for which learners will use the language in their jobs, the kind of language required in their field, the starting level of proficiency and the target level envisaged.
- to assess what skills set employers (MNCs, IT companies, biotech companies, etc.) look for when they recruit engineering graduates.
- to evaluate the existing course materials: to focus on what has been going well and to ask what have been the most significant contributing factors so that less successful can be modified.
- to explore the possibilities of incorporating some essential skills engineers need at the workplace into the *Engineering English* course.
- to find out what competencies set *Engineering English* teachers need in order to teach the course effectively.
- to assess the role of language laboratories in *Engineering English* in promoting learner autonomy.
- to redesign the course taking into consideration the suggestions given by stakeholders.
- to field-test some components of the modified course and evaluate its effectiveness.

- to suggest ways to bridge the gap between what is delivered to students and what they actually want.

In the light of the problems discussed, research questions listed and objectives stated above, literature related to English for Specific Purposes (ESP) / English for Science and Technology (EST), needs analysis, and theories of syllabus design is reviewed in the next section.

1.1 Review of Literature

English for Engineering is a branch of English for Science & Technology (EST) which is a branch of English for Specific Purposes (ESP) in the field of English Language Teaching (ELT). English for Specific Purposes emerged immediately after the Second World War, when there was a huge expansion of science, technology and business all over the world and these fields required an international language for specialists. Of late, ESP has become so popular that it is an important branch of ELT. One of the hallmarks of any ESP/EST course is that it must be learner-centred and the course is designed based on the needs of learners. In this chapter literature related to ESP, needs analysis, communicative and linguistic needs of engineering students and professional engineers, and theories of syllabus design are reviewed.

1.2 Review of Literature Related to ESP

1.2.1 Difference between General English and English for Specific Purposes

General English (GE) and English for Specific Purposes (ESP) share the same principles of language teaching, having effective and efficient learning as a main objective. The main difference between ESP and GE lies in the *awareness of a need*. ESP learners are those who need English for their specific area and who are aware of their need; they know what exactly they need English for and they know what the ESP course should offer them. (Hutchinson and Waters 1987 as cited in Nitu 2002). English for Science and Technology (EST) is a branch of ESP.

1.2.2 Absolute and Variable Characteristics of ESP

Strevens (1988 as cited in Gatehouse 2001) defines the absolute characteristics of ESP as being:

- designed to meet the needs of the learner;
- related in content (ie, in its themes and topics) to particular disciplines, occupations and activities;

- centered on the language appropriate to those activities in syntax, lexis, discourse, semantics, etc., and analysis of the discourse;
- in contrast with General English.

Later Dudley-Evans and St John (1998 as cited in Gatehouse 2001) modified Strevens' definition and offered a definition of the variable characteristics of ESP.

ESP may be related to or designed for specific disciplines; ESP may use, in specific teaching situations, a different methodology from that of general English; ESP is likely to be designed for adult learners, either at 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;

As for a broader definition of ESP, Hutchinson and Waters (1987) theorize, "ESP is an approach to language teaching in which all decisions as to content and method are based on the learner's reason for learning".

Anthony (1997) notes that, it is not clear where ESP courses end and general English courses begin; numerous non-specialist ESL instructors use an ESP approach in that their syllabi are based on analysis of learner needs and their own personal specialist knowledge of using English for real communication.

1.2.3 Needs Analysis

The term needs analysis (also known as needs assessment), according to Iwai et al. (1999), generally refers to the activities that are involved in collecting information

that will serve as the basis for developing a curriculum that will meet the needs of a particular group of students.

An *English for Engineering* course designed in consultation with professional engineers, EST practitioners and students is likely to be more effective than the one designed without consulting the stakeholders. Many *English for Engineering* (Technical English) courses have been found to be ineffective because they do not seem to reflect the learners' present and target needs. It is probably because the majority of course designers and materials writers seem to analyse the needs of students on the basis of their own experience and intuition. In this context it is very essential to analyse the learners' present and future communication needs first and design the *Engineering English* based on the findings of the needs assessment.

The following sections give a review of literature on English for Specific Purposes (ESP) and needs analysis and analyse the data collected from various sources to assess the students' present and target needs.

The importance of needs analysis has been acknowledged by a number of researchers and authors (Munby, 1978; Richterich and Chancerel, 1987; Hutchinson and Waters, 1987; Berwick, 1989; Brindley, 1989; Tarone and Yule, 1989; Robinson, 1991; Johns, 1991; West, 1994; Allison et al. (1994); Seedhouse, 1995; Jordan, 1997; Dudley-Evans and St. John, 1998; Iwai et al. 1999; Hamp-Lyons, 2001; Finney, 2002).

1.2.4 Target Situation Analysis

In 1970's needs analysis was mainly concerned with linguistic and register analysis, and as Dudley-Evans and St. John (1998) say, needs were seen as discrete language items of grammar and vocabulary. With the publication of Munby's Communicative Syllabus Design (1978) needs analysis moved towards placing the learner's purposes in the central position within the framework of needs analysis. Consequently, the notion of target needs became paramount.

Munby (1978) introduced Communicative Needs Processor (CNP) and in CNP, the target needs and target level performance are established by investigating the target

situation, and his overall model clearly establishes the place of needs analysis as central to ESP, indeed the necessary starting point in materials or course design (cited in West, 1998). Hutchinson and Waters (1987: 54) say: "With the development of the CNP it seemed as if ESP had come of age."

Munby's overall model is made up of these following seven elements:

1. Participants: It is about collecting information about the identity and language of the learners: age, sex, nationality, present command of target language, other languages known and extent of command;

2. Communication Needs Processor (CNP): The CNP investigates the particular communication needs according to sociocultural and stylistic variables which interact to determine a profile of such needs;

3. Profile of Needs: Profile of needs is established through the processing of data in the CNP;

4. Meaning Processor: In the meaning processor "parts of the socioculturally determined profile of communication needs are converted into semantic subcategories of a predominantly pragmatic kind, and marked with attitudinal tone" (Munby, 1978: 42);

5. Language Skills Selector: The language skills selector identifies "the specific language skills that are required to realize the events or activities that have been identified in the CNP" (Munby, 1978: 40);

6. The Linguistic Encoder: It considers "the dimension of contextual appropriacy" (Munby, 1978: 49), one the encoding stage has been reached;

7. The Communicative Competence Specification: The communicative competence specification indicates the target communicative competence of the participant and is the translated profile of needs.

The aim of Munby's CNP is to find in detail the linguistic form a prospective ESP learner is likely to use in various situations in his target working environment. As Hutchinson and Waters (1987) say, the outcome of the processing data by means of Munby's model is what the learner needs to know in order to function effectively in the target situation.

Hutchinson and Waters (1987) point out that it is too time-consuming to write a target profile for each student based on Munby's model, and that it only considers one viewpoint, i.e. that of the analyst, but neglects others (those of the learners, user-institutions, etc.), that it does not take into account of the learning needs nor does it make a distinction between necessities, wants, and lacks.

1.2.5 Present Situation Analysis (PSA)

Present situation analysis may be posited as a complement to target situation analysis (Robinson, 1991; Jordan, 1997). If target situation analysis tries to establish what the learners are expected to be like at the end of the language course, present situation analysis attempts to identify what they are like at the beginning of it. As Dudley-Evans and St. John (1998: 125) state "a PSA estimates strengths and weaknesses in language, skills, learning experiences." If the destination point to which the students need to get is to be established, first the starting point has to be defined, and this is provided by means of PSA.

In the PSA approach the sources of information are the students themselves, the teaching establishment, and the user-institution, e.g. place of work (Jordan, 1997). The PSA can be carried out by means of established placement tests. However, the background information, e.g. years of learning English, level of education, etc. about learners can provide us with enough information about their present abilities which can thus be predicted to some extent.

1.2.6 Needs Analysis as a Combination of TSA and PSA

Needs analysis may be seen as a combination of TSA and PSA. Within the realm of ESP one can not rely either on TSA or PSA as a reliable indicator of what is needed to enhance learning and reaching the desired goals.

A modern and comprehensive concept of needs analysis is proposed by Dudley-Evans and St. John (1998: 125) which encompasses many approaches. Their current concept of needs analysis includes the following:

- Environmental situation - information about the situation in which the course will be run (means analysis);
- Personal information about learners - factors which may affect the way they learn (wants, means, subjective needs);
- Language information about learners - what their current skills and language use are (present situation analysis);
- Learner's lacks (the gap between the present situation and professional information about learners);
- Learner's needs from course - what is wanted from the course (short-term needs);
- Language learning needs - effective ways of learning the skills and language determined by lacks;
- Professional information about learners - the tasks and activities English learners are/will be using English for (Target Situation Analysis and objective needs);
- How to communicate in the target situation – knowledge of how language and skills are used in the target situation (register analysis, discourse analysis, genre analysis).

The review of literature on needs analysis shows that it is vital to gather relevant information about the learner from the learner and get their views on what they should be taught and how they should be taught. That is to say, the whole needs analysis process should be learner-centred.

1.3 Review of Communicative Needs of Engineers

Ever since English for Specific / Special Purposes (ESP) became an important branch of English Language Teaching (ELT), researches in the field of English for Science

and Technology (EST) have been carried out by academicians in different parts of the world. The study looks at some research works conducted in the field in different parts of the world and analyses how they can be used in the Indian context.

Over the past decade the importance of soft skills such as communication, presentation and negotiation for engineering students has been emphasized by engineering departments in developed countries and organizations such as IEEE host special events to equip students with basic professional skills. For example, the IEEE Student Branch at the University of Maribor, Slovenia hosts the annual Extra Skills for Young Engineers Symposium which shows students some of the situations awaiting them in the real world.

Vonderheid (undated) in the article 'Soft Skills Help Engineers Succeed' quotes Sasa Jevtic, the Chair of Maribor University's IEEE Student Branch Chair, as saying that "one can be an excellent scientist, but if that person does not know how to communicate to other scientists, then that person, in our opinion, cannot become very successful in his or her professional life. One has to know how to negotiate, how to demand things and how to be a good leader.

Good communication makes a difference. Any successful scientist or engineer will have multiple communication tasks connected with any project. Paradis, J.G. & Zimmerman, M. (1997), drawing on their considerable experience teaching both college students and science professionals, treat four kinds of literacy – written, oral, graphic, electronic – as crucial and inseparable to science and engineering communication. According to the authors the most effective engineers and scientists are skilled writers.

John Reinert, engineering manager at Aeroflex UTMC Microelectronics in Colorado Springs, Colorado, is quoted in the article *Engineers take a hard look at "soft skills"* (Costlow, 2000) as saying that 'soft skills are just as important as engineering skills'. Kalani Jones, engineering vice president at Tachyon Inc. (San Diego) states that employers look for engineers "who can lead a team" and get a small team of four to six people motivated. He says that "it's hard enough to find a good engineer; finding

one who can lead a team and speak well in front of customers is really hard to find." According to Vern R.Johnson, associate dean at the University of Arizona's College of Engineering (Tucson), "many employers choose to hire skills rather than people" and the growing trend in engineering today is for recruiters to look for skilled/global engineers who possess excellent English communication and presentation skills. (Costlow, 2000).

Highlighting the importance of non-technical skills for engineers, Joseph Lillie, area manager at Bellsouth in Lafayette, Lousianna, says that engineers "have to stay polished these days, because they can become obsolete, not because they lose their technical skills, but because their company does something that eliminates their job, a merger or something". The key non-technical skills he prefers to see people polish are public speaking, written communications and ethics. (Costlow, 2000)

Winsor, Curtis, and Stephens (1997) surveyed 1,000 human resource managers to determine the most valued contemporary job-entry skills. Their findings included communication skills, specifically listening, public speaking, interpersonal communication, written communication, and the trait of enthusiasm.

Quoting a report by AC Nielsen Research Services for the Department of Education, Training and Youth Affairs (DETYA) on "Employer Satisfaction with Graduate Skills", which reported that employers found that engineering graduates in particular were "poor in many skills particularly at problem solving and oral business communications which employers consider important", Beder (2000) states that skills such as problem solving, communications, interpersonal skills and critical and independent thinking should be fostered in engineering education.

Engineers are expected to be good problem solvers. David et al (2006) state that one solution for preparing engineering graduates to become better workplace problem solvers is converting their curricula to problem-based learning (PBL). PBL programs replace traditional courses with integrated, interdisciplinary sets of complex problems that students learn to collaboratively solve.

In this rapidly changing globalized world engineers do not belong to any particular nation. They should have the skills globalzed engineers should have. Globalized engineers are those who possess multi-skills including communication skills, critical thinking skills, group skills and interpersonal skills.

In the Executive Summary of the report In Search of Global Engineering Excellence, globalization is defined implicitly through the following introductory statement:

> "The world is rapidly transitioning from one of nationally differentiated organizations and cultural identities to one increasingly characterized by transnational institutions and multicultural communities. Accelerated by dramatic technological advancements, this transformation is having a profound effect on national and international systems of commerce, education, and governance. This new world will require an even more sophisticated workforce to address a growing list of complex and interdependent global challenges, such as sustainability, security, and economic development. Engineers, whether working abroad or at home, play a critical role in addressing these and other global challenges."

Gobalization has an effect on engineering education. The Global Engineering Excellence report gives insights into the effects of globalization on institutions and students. The Global Engineering Excellence Initiative began in October 2005 resulted in defining global competence of engineers. The short version of the report lists the following as the qualities of a global engineer:

- technically adept
- broadly knowledgeable
- innovative and entrepreneurial
- commercially savvy
- multilingual
- culturally aware

- knowledgeable about world markets
- professionally flexible and mobile

According to David et al (2006), most engineers felt well prepared for core engineering jobs. However, there was general acceptance among most engineers that graduates will "really" learn how to be an engineer during the first year or two on the job. “Rarely did practicing engineers recommend more engineering in the engineering curricula. Rather, most of the engineers emphasized more instruction on client interaction, collaboration, making oral presentations, and writing, as well as the ability to deal with ambiguity and complexity”.

Globally engineers recommend more communication skills in the engineering curricula to prepare to the workplace. For example, Aviv (2007) in her article ‘Don’t be shy’ states “Because speaking well is often crucial to getting a job — and to sounding educated — nearly half of American colleges and universities require a public speaking or communications course, according to the National Communication Association.”

The need for imparting communication skills and soft skills in engineering students has been stressed by industrialists and business people in India. In his welcome address on the occasion of the seminar on “War for Talent” in Chennai, Balaraman (2006), president of Madras Chamber of Commerce and Industry, said that “the educational institutions in Tamil Nadu have not kept pace with the requirements which the present day employment market demands. The Madras Chamber of Commerce and Industry … received numerous representations from its constituents that they are finding it difficult to secure the human resources necessary to conduct their operations”. The reason given was that “the graduates did not possess the required soft skills to articulate their thought effectively”.

Not only oral communication but written communication is also very important for engineers. Hissey (2007) states that “today's engineering executives want engineers who can write clearly, concisely and comprehensively”. Highlighting the importance of presentations skills for engineers, Hissey (2007) says that oral presentations are an

increasingly integral part of engineering profession and calls for added emphasis in engineering curricula, as well. According to him improved presentation and delivery style will enrich an engineer's career.

1.4 Review of Theories of Syllabus Design

There has been a growing number of individuals who require English for occupational and vocational purposes, as well as for general educational purposes. This has led to a corresponding increase in attention on syllabus design.

1.4.1 Distinction between Curriculum and Syllabus

There is clear distinction between ‘curriculum’ and ‘syllabus’. According to Shaw (1975), "... the curriculum includes the goals, objectives, content, processes, resources, and means of evaluation of all the learning experiences planned for pupils both in and out of the school and community, through classroom instruction and related programs..." He then defines "syllabus" as "a statement of the plan for any part of the curriculum, excluding the element of curriculum evaluation itself."

"Curriculum" as defined by Allen (1984) is a very general concept. It involves consideration of philosophical, social and administrative factors which contribute to the planning of an educational programme. "Syllabus" then refers to that subpart of a curriculum which is concerned with the specification of what units will be taught. Noss and Rodgers (1976) defines a ‘language syllabus’ as "a set of justifiable, educational objectives specified in terms of linguistic content". Here the specification of objectives must have something to do with language form or substance, with language-using situations, or with language as a means of communication. In the words of Strevens (1977) the syllabus is "partly an administrative instrument, partly a day-to-day guide to the teacher, partly a statement of what is to be taught and how, sometimes partly a statement of an approach ... The syllabus embodies that part of the language which is to be taught, broken down into items, or otherwise processed for teaching purposes."

In Wilkins' (1981) words, syllabuses are "specifications of the content of language teaching which have been submitted to some degree of structuring or ordering with the aim of making teaching and learning a more effective process." Johnson (1982) explains syllabus as an "organized syllabus inventory" where "syllabus inventory" refers to the items to be taught. Crombie (1985) also defines "syllabus" as a list or inventory of items or units with which learners are to be familiarised. But Corder (1975) points out that it is more than just an inventory of items. In addition to specifying the content of learning, a syllabus provides a rationale of how that content should be selected and ordered (Mackey, 1980). Candlin (1984) takes a different stand when he says that syllabuses are "social constructions, produced interdependently in classrooms by teachers and learners ... They are concerned with the specification and planning of what is to be learned, frequently set down in some written form as prescriptions for action by teachers and learners."

Basically, a syllabus can be seen as "a plan of what is to be achieved through our teaching and our students' learning" (Breen, 1984) while its function is "to specify what is to be taught and in what order" (Prabhu, 1984).

1.4.2 Types of Syllabi

According to Reily (undated), there are basically six types of syllabi and the types are not entirely distinct from each other. For example, the distinction between skill-based and task-based syllabi may be minimal. The six types of syllabi are presented beginning with the one based most on structure, and ending with the one based most on language use. The characteristics of individual syllabi are defined as follows:

1. Structural (formal) syllabus: The content of language teaching is a collection of the forms and structures, usually grammatical, of the language being taught.

2. Notional/functional syllabus: The content of the language teaching is a collection of the functions that are performed when language is used, or of the notions that language is used to express.

3. Situational syllabus: The content of language teaching is a collection of real or imaginary situations in which language occurs or is used. The primary purpose of a situational language teaching syllabus is to teach the language that occurs in the situations.

4. Skill-based syllabus: The content of the language teaching is a collection of specific abilities that may play a part in using language. Skills are things that people must be able to do to be competent in a language, relatively independently of the situation or setting in which the language use can occur.

5. Task-based syllabus: The content of the teaching is a series of complex and purposeful tasks that the students want or need to perform with the language they are learning. The tasks are defined as activities with a purpose other than language learning, but, as in a content-based syllabus, the performance of the tasks is approached in a way that is intended to develop second language ability.

6. Content-based-syllabus: The primary purpose of instruction is to teach some content or information using the language that the students are also learning. The students are simultaneously language students and students of whatever content is being taught. The content teaching is not organized around the language teaching, but vice-versa. Content-based language teaching is concerned with information, while task-based language teaching is concerned with communicative and cognitive processes.

Reily insists that while discussing syllabus choice and design, it should be kept in mind that the issue is not which type to choose but which types, and how to relate them to each other.

1.4.3 Syllabus Design

According to Webb (1976), syllabus design is understood as the organization of the selected contents into an ordered and practical sequence for teaching purposes. His criteria for syllabus design is as follows:

- progress from known to unknown matter
- appropriate size of teaching units
- a proper variety of activity
- teachability
- creating a sense of purpose for the student.

According to Amran Halim (1976), the language course designer has to pay serious consideration to all the relevant variables. He has grouped all the variables into two categories: linguistic variables and non-linguistic variables. Linguistic variables include the linguistic relations between the language to be taught and the language or languages which the student uses in his daily activities. Non-linguistic variables range from policy to social, cultural, technological and administrative variables. In the words of Munby (1984), syllabus design is a matter of specifying the content that needs to be taught and then organizing it into a teaching syllabus of appropriate learning units. According to Maley (1984), syllabus design encompasses the whole process of designing a language programme. He says that "the needs analysis which produces an order unit of items to be taught is organically related to a methodology consistent with the syllabus, a set of techniques consistent with the methodology, and evaluation procedure consistent with the whole.

Taba (1962) advocated a general model by giving the following steps:

- needs analysis
- formulation of objectives
- selection of content
- organization of content
- selection of learning activities
- organization of learning activities
- decisions about what needs evaluating and how to evaluate.

It can be concluded that syllabus design involves a logical sequence of the above mentioned stages.

1.5 Conclusion

In this context it is necessary to gather information and views on the target needs of engineering students from the learners, ex-students, placement trainers, professional engineers and English for Science and Technology (EST) practitioners, evaluate the existing '*Engineering English*' curriculum, analyse the gathered information and take effective measures to redesign the English curriculum which, in turn, will enhance the employability skills of future engineers. The second chapter focuses on the research methodology followed to explain at length the different techniques and methodological approaches used to assess the learner needs and corporate expectations and to evaluate the Engineering English course.

CHAPTER TWO

RESEARCH METHODOLOGY

2.1 Introduction

The objectives of the study were to assess the learners' communicative needs, to assess what skills set employers look for in engineering graduates, to evaluate the Engineering English curriculum, to explore the possibilities of incorporating some essential skills engineers need at the workplace into the *Engineering English* course, to find out what competencies set *Engineering English* teachers need in order to teach the course effectively, to assess the role of technology in promoting learner autonomy, to redesign the course taking into consideration the suggestions given by stakeholders, to field-test some components of the modified course and evaluate its effectiveness, and to suggest ways to bridge the gap between what is delivered to students and what they actually want. In the light of the above objectives various techniques and methodological approaches were used to gather and analyze information on the *Engineering English* curriculum and to gain realistic insights into learner needs and corporate expectations.

2.2 Research Tools:

The research tools used for analyzing learners' needs and evaluating Engineering English curriculum are:

1. Researcher's observation
2. Questionnaires
3. Interviews
4. Job advertisements
5. End-semester results
6. Communication apprehension tests
7. Proficiency tests
8. Literature related to ESP / EST
9. Documents related to engineers' communicative needs

10. Case studies

2.3 Sample:

The questionnaire set had six types of questionnaires (Appendices 1-6) and were distributed to six sample groups. They are:

1. Senior students who had *Engineering English* course in their first year engineering programme and who attended placement training during their third year programme
2. Ex-students of engineering who had *Engineering English* course in their first year engineering programme and who work in IT or any other companies.
3. Professional engineers
4. Placement trainers
5. ESP practitioners
6. Core subject teachers

The total number of stakeholders who returned the completed questionnaires is given below:

i) Second and third year UG students - 90
ii) Ex-students - 65
iii) Professional engineers - 43 (India and abroad)
iv) Placement trainers - 11
v) EST practitioners - 22
vi) Other subject teachers - 12

2.4 Methods of Data Collection

The main data collection methods used for needs analysis and evaluation of Engineering English curriculum are given at length in the following sections.

2.4.1 Researcher's Observation

2.4.1.1 Researcher as an EST Practitioner

The researcher as an EST practitioner at an institute of technology in Chennai, Tamil Nadu, and previously at a few other institutes of technology in India and abroad has come in contact with hundreds of students who have had the experience of undergoing placement training, attending campus recruitment interviews and applying for jobs and attending job interviews off campus.

The case studies of those students who could sell themselves successfully in the job market and those who couldn't do so helped the researcher gain an insight into the target needs of engineering students and the need for modifying the existing Engineering English course in order to make it more effective.

2.4.1.2 Researcher as a Columnist

The researcher as a columnist contributing a weekly column 'English Matters' to *Education Express*, a weekly supplement with *The New Indian Express* received a number of emails from students of engineering and professional engineers who shared the problems they had faced because of their lack of communication skills.

The readers' emails helped the researcher gain an insight into the importance of communication skills for engineering students and think of the need for incorporating the required skills into the English curriculum.

2.4.2 Needs Analysis-cum-Evaluation Questionnaire

Based on a combination of various models proposed by different authors and mainly on the model proposed by Dudley-Evans and St John (1998), the needs analysis-cum-evaluation questionnaires were designed to assess the learners' present and future language and communication needs and also to evaluate the *Engineering English (Technical English)* course the respondents had during their first-year undergraduate engineering programme. The rationale for combining the two parts, namely evaluation and needs analysis, into one was that it was presumed to be easy for the respondents to answer one questionnaire rather than two.

2.4.2.1 Questionnaire for Senior Students

The objectives of this questionnaire (Appendix 2) were to assess the effectiveness of the *Engineering English* course offered during the first year of their four-year undergraduate engineering programme by getting their feedback on the course, to carry out a detailed needs analysis (to assess the students' present and future language and communication needs) and to get their suggestions on how to modify the course content in order to make it more effective and to get their views on how the course should be taught.

The questionnaire containing 50 items had the following eight sections:

A. Level of proficiency in English (items 1-7)
B. Need awareness (8 & 9)
C. Present and Future needs (10, 11, 12)
D. Evaluation of the Engineering English curriculum (13-23)
E. Views on placement training (24-27)
F. Communication skills laboratory course (28-30)
G. System of assessment (31-34)
H. Suggestions (35-50)
- Technology-integrated EE (37, 38)
- Critical thinking (39, 40)
- Involving learners in the course design (41-43)
- Skills-oriented course (44-46)
- Teaching / learning style (47-49)
- Any other comment (50)

The questionnaire was sent as an email attachment to 88 senior students of engineering who had the course 'Communication Skills Lab' (GE1352) during their third year. The sample was selected based on the criteria that the students should be from 10 different engineering colleges in Tamil Nadu, and the students should have attended placement training in their colleges

2.4.2.2 Questionnaire for Professional Engineers

The objectives of the questionnaire (Appendix 6) were to assess corporate expectations and to get professional engineers' suggestions on incorporating multiskills in the 'Engineering English' syllabus.

The questionnaire contained three sections and 24 items. It asked the respondents to answer questions related to the following:

Section A - Professional details (1-5)
Section B - Professional communication needs (6-10)
Section C - Suggestions (11-24)

The questionnaires were sent to 65 engineers working in India and abroad via email. Since a number of Indian engineers migrate to the United States and European countries, questionnaires were sent to Indian engineers / technologists working abroad by email to gather information on the target needs of global engineers.

2.4.2.3 Questionnaire for Placement Trainers

The main objective of the questionnaire (Appendix 5) administered to placement trainers was to get the views of placement trainers on what skills engineering students should have in order to get placed in well-established and reputed IT companies or core engineering companies and on the role of English language teachers in imparting the skills in engineering students.

The questionnaire containing 14 items had the following 5 sections:

Section 1: Professional details of the trainers
Section 2: Job market for engineering graduates
Section 3: Analysis of trainees' competencies
Section 4: Suggestions
Section 5: Any other

The questionnaire was given to 15 placement trainers. The researcher had face-to-face contact with the placement trainers.

2.4.2.4 Questionnaire for EST Practitioners

It was with the assumption that experienced English for Science & Technology (EST) practitioners are good at evaluating the *Engineering English* curriculum and assessing learner needs, experienced teachers were contacted for the purpose.

The questionnaire (see appendix 3) distributed to the English for Science and Technology (EST) practitioners had four sections and twenty-five items.

Section A: Professional details (items 1-7)

Section B: Learners' attitude towards English and their needs (8-11)

Section C: *Engineering English* course (12-21)

Section D: Testing and evaluation (22-25)

The questionnaire was sent to 35 EST practitioners working in 8 different engineering colleges in Tamil Nadu.

2.4.2.5 Questionnaire for Core Subject Teachers

The subject teachers of various departments of engineering at three institutes of technology were asked to give their views on learners' immediate and future language needs. Their views were collected via a questionnaire (see appendix 4). The questionnaire was distributed to 23 core subject teachers.

The teachers were asked to answer the question which language skills their students need and which they have difficulty with. A list of major skills and subskills was given in the questionnaire.

2.4.3 Interviews with Recruiters / HR Personnel

Of late, campus recruitment drive, which involves companies visiting educational institutes to recruit candidates to their respective firms, is very common in professional colleges The members of a recruiting team and HR personnel in IT companies and engineering firms are in a better position to assess the language and

communication needs of engineers. So it was decided that these personnel should be interviewed in order to gather data regarding the target needs of engineering students.

The role of a recruiting team is to give aptitude tests, conduct group discussions and interviews to shortlist and select candidates at different educational institutions selected by the companies the members of the recruiting team represent. Candidates are selected on the basis of their possession of the skill sets employers look for in prospective employees.

The researcher had a series of interviews with members of the recruiting team and HR managers. Though request for interviews were sent to 20 members of recruiting teams and HR personnel employed in various IT companies and core engineering companies were sent, only 9 members responded positively to be interviewed. Out of the nine interviewees 6 were members of recruiting teams and the other three were in charge of HR management in IT companies.

2.4.4 Analysis of Job Advertisements

Job advertisements play an important role in helping job seekers apply for right jobs. A typical job advertisement has these main sections: company details, position advertised, job responsibilities, required skills and remuneration.

A hundred job advertisements (posted on the Internet and appeared in different newspapers in India and abroad) were analysed. The advertisements were selected based on the criteria that the advertisements are addressed to engineering graduates and they should state clearly what they expect of the candidate: qualifications, experience, job responsibilities, skills required, etc.

2.4.5 Interviews

Interviews with recruiters and human resource personnel working in IT companies were also conducted to collect data regarding the skill sets engineering students need to have in order to be successful in the campus recruitment process and later at the work place.

2.4.6 News Reports

Documents and newspaper reports containing the views of experts and educationists on the importance of soft skills including English language skills were also considered to assess the target needs.

2.4.7 Evaluation of the *Engineering English* Curriculum

Evaluation of any curriculum or program is essential for the improvement of the program. "Evaluation is very constructive and powerful activity and a very stimulating one. There is the chance to focus on what has been going well and what have been the most significant contributing factors so that less successful can be modified." (Dudley Evans 1998). The basis for the evaluation of any ESP curriculum is the analysis of learners' needs.

In order to evaluate the effectiveness of the Engineering English curriculum feedback about the course and views on the curriculum were collected from the learners, ex-students, EST practitioners, other subject teachers and professional engineers. Their suggestions were also gathered to make the course more effective. A diagnostic test and a communication apprehension test were also administered to a sample group to assess the effectiveness of the programme on students. The diagnostic test scores of the students were compared to their university exam scores in order to assess the effectiveness of the system of assessment.

2.4.7.1 Evaluation by Senior Students

The questionnaires (see Appendix 1) were distributed to 90 second-year and third-year undergraduate students of engineering who had *Engineering English* during their first-year programme. The students were from different branches of engineering: mechanical engineering, information technology, computer science and engineering, electrical engineering, biotechnology, electrical and electronics engineering.

The questionnaire containing 15 items asked students to evaluate the *Engineering English* course and suggest ways to make the course more effective. The respondents were asked to rate the components such as syllabus, content, skills, teaching methodology and the system of assessment.

2.4.7.2 Evaluation by Ex-Students

The questionnaire was completed by sixty-five ex-students. The evaluation section of the needs analysis questionnaire had 11 items (See questions 13-23 in Appendix 2). The respondents were asked to respond to questions related to the following:

- Components of *Engineering English* curriculum
- Skills given importance and skills neglected
- Effectiveness of the *Engineering English* course
- System of Assessment

2.4.7.3 Evaluation of Course Books

English for Science and Technology (EST) practioners were asked to respond to questions related to quality of course books and factors they considered important while selecting course books and give their feedback on the coursebooks they used in the class.

Based on the criteria for selecting materials and designing activities and based on the principles of ESP courses, a checklist was designed to evaluate the effectiveness of course books prescribed at various engineering colleges. The checklist contained 36 items. Then the books were evaluated.

2.4.8 Case Studies on Integration of Technology into Engineering English

Computer assisted language learning (CALL) has become a central resource in many educational institutions and its potential to promote learner autonomy and develop English language skills in learners has been reported by a number of researchers. The need for integrating information and multimedia technology (IMT) or technology

enhanced language learning (TELL) into the *Engineering English* programme has been emphasized by researchers and ELT professionals.

The stakeholders' views on the technology-integrated language learning were collected via questionnaires and the data were analysed. Two case studies, one concerning developing learners' writing skills with the focus on collaborative learning and the other fostering learners' critical thinking skills, are discussed at length.

2.4.9 Students' Communication Apprehension and Communication Skills

The personal report of communication apprehension (PRCA-24) (see appendix 8) instrument (McCroskey, 1982) was administered to a sample of 120 students at the Jeppiaar Engineering College, Chennai, in order to assess the communication apprehension and communication skills of students who already had one year of *Engineering English*. A speaking test was also given to the sample group to assess their speaking and communication skills.

"The PRCA is the most commonly employed measure of CA in research involving this construct. It has a variety of forms, all of which correlate among themselves about 0.90." (Berger, McCroskey & Baldwin, 1984). This instrument is composed of twenty-four statements concerning feelings about communicating with others. It is used to assess the respondent's communication apprehension in the following four areas: i) group discussion, ii) meetings, iii) interpersonal communication and iv) public speaking. The students were required to indicate the degree to which each statement applied to them by marking whether they: strongly disagreed = 1; disagreed = 2; were neutral = 3; agreed = 4; strongly agreed = 5.

The overall PRCA scores can vary from 24 to 120. Those who have scored less than 50 have low communication apprehension and those who have scored above 70 have high communication apprehension.

2.4.10 Analysis of Examination Results

The university examination results of students of five different batches of an engineering college were analysed. The purpose was to determine whether there is any correlation between the marks students score in the examinations and their proficiency level. A detailed analysis of the results for each department is given in Appendix 9.

2.4.11 Diagnostic Test

In order to measure students' proficiency in English a diagnostic test (see Appendix 10) was given to a sample of 37 students who wanted to register for the *Business English Certificate* (BEC) preparation course conducted at Jeppiaar Engineering college periodically. All the students had scored above 70 in their first-year English examinations. There were 23 second-year and 14 third-year students in the group and they were from different branches of engineering.

The diagnostic test included items from a standardized Business English Certificate (BEC) Test (vantage level) prepared by the University of Cambridge ESOL. It had the following components. Listening, Speaking, Reading and Writing. Each section carried 25 marks.

2.5 Analysis and Interpretation of Data

The data was analysed qualitatively and quantitatively. The data emanated from researcher's experience as an ESP practioner and columnist, and the views of placement trainers, human resource managers, EST practitioners.and professional engineers were analyzed qualitatively. Data collected through the use questionnaires were analyzed quantitatively. A number of charts and tables were prepared to illustrate the statistical analysis of the data.

2.6 Action Taken

Reflecting the learners' present study needs and future professional needs and considering the objectives of ESP courses an attempt was made to design a course entitled "*Engineering Communication – An Integrated Skills Approach*" and pilot it.

The sample course was designed based on the nine principles expressed by the majority of stakeholders.

2.9 Evaluation

Due to time constraint only the following components were piloted:

1. English for Biotechnology
2. Developing learners' speaking skills thru role-plays
3. Developing learners' presentation skills through a process approach
4. Developing learners' language skills through project-based activities

The evaluation was done via questionnaires and discussion.

2.10Conclusion

Finally, it was checked whether the hypotheses of the study have been proved. Then based on the findings of the study, a list of recommendations has been given.

CHAPTER THREE

ANALYSIS AND INTERPRETATION OF DATA

3.1 Introduction

An *English for Engineering* course designed in consultation with professional engineers, EST practitioners and students is likely to be more effective than the one designed without consulting the stakeholders. Many *English for Engineering* (Technical English) courses have been found to be ineffective because they do not reflect the learners' present and target needs. It is probably because the majority of course designers and materials writers seem to analyse the needs of students on the basis of their own experience and intuition. In this context it is very essential to analyse the learners' present and future communication needs first, review the existing Engineering English curriculum and redesign the *Engineering English* course based on the findings of the needs assessment.

3.2 Learners' Needs and Corporate Expectations

The following sections analyse the data collected from various sources to assess the students' present and target needs.

3.2.1 Researcher as an EST Practitioner

The researcher as an EST practitioner at an institute of technology in Chennai and previously at a few other institutes of technology in India and abroad has come in contact with hundreds of students who have had the experience of undergoing placement training, attending campus recruitment interviews and applying for jobs and attending job interviews off campus.

The successful candidates attribute their success to their technical as well as their non-technical skills such as communication skills, presentation skills, group discussion skills, interview handling skills, active listening, fluency, critical thinking and leadership skills.

Those students who lack the above-mentioned soft skills find it difficult to sell themselves in the job market.

The case studies of those students who could sell themselves successfully in the job market and those who couldn't do so helped the researcher gain an insight into the target needs of engineering students and the need for modifying the existing Engineering English course in order to make it more effective. It has been observed by the researcher that those students who performed well in group discussions, mock interviews and oral presentations and who demonstrated communication, critical thinking and group skills during the practice sessions were successful in campus recruitment. Those students who had communication problems and lacked the above mentioned skills were not selected by recruiters.

3.2.2 Researcher as a Columnist

The researcher as a columnist contributing a weekly column 'English Matters' to Education Express, a weekly supplement with *The New Indian Express* received a number of emails from students of engineering and professional engineers who shared the problems they had faced because of their lack of communication skills. Given below are extracts of some emails from the readers of the column:

> *"i am baskar. i am BE in which computer science at 2006. i am trying to get a job.but i din't get a job.bcoz lack of communication for me. so i have joined many courses to improve my communication skills.but i can't improve my communication skills.bcoz i have a problem.i cant read newspaper fulently. pls could you say some tips to improve my vocabulary."(email)*

> "*I am XYZ working as a Software Engineer with ABC, Bangalore. It has been a journey of 2 yrs with ABC which is not that much of interesting due to some problem I am facing badly…… Let me tell you technically I am very good as an S/w engineer but the part I am lacking is "good communication skills". My communication skill is not very bad but not to the expected level which is very much required in a corporate industry. Daily I am facing problem with the client calls, talking with my managers also when having chat with my colleague those having very good command over English. This is the only part I am lacking badly and it has started affecting my personal life also…… Due to this problem my appraisal went bad and also I am not able to create a healthy relationship with my managers and not able to concentrate on my work properly. Even if one serious problem is I am fumbling when getting a*

sudden call from anyone. Really confused what's happening with me. Albert, I explained the whole picture in front of you and heartily want to build an impressive personality which is not possible without good communication skils. Need your advice, suggestions and inputs ...." (P'Rayan, 2008)

" i'm Rosario.i'm a MCA student.i read your article today in ie.i'm the same situation of XYZ.i want to improve my communication skill. Now,i'm in second year. Next year i've placement. i'm good in aptitude & technical.But,i'm lacking in good communication skills. So, i want to improve my english skills. afterwards i'll follow your advices.i need some more.Help me." (e-mail)

"I read some of your articles in Indian express. The latest being the one in which u have mentioned about a guy who is struggling because of lack of effective communication abilities. After reading the article,i felt it resembles my problem. I am working as officer in a PSU and my job requires high standard of english both written and spoken. i am very keen to improve at any cost. please advice me what shall i do?" (email)

The readers' emails helped the researcher gain an insight into the importance of communication skills for engineering students and think of the need for incorporating the required skills into the English curriculum.

3.2.3 Analysis of Ex-students' Responses

The questionnaire (appendix 2) was sent as an email attachment to 88 senior students of engineering who had the course 'Communication Skills Lab' (GE1352) during their third year. Most students had attended a fortnight-long or a week-long placement training programmes in their colleges. Only 65 out of 88 students returned their questionnaires. The students were from 12 different engineering colleges but the majority of the students were from Jeppiaar English College, Chennai.

The questionnaire containing 50 items had the following sections:

A. Level of proficiency in English (items 1-7)

B. Need awareness (8 & 9)

C. Present and Future needs (10, 11, 12)

D. Evaluation of the Engineering English curriculum (13-23)

E. Views on placement training (24-27)

F. Communication skills laboratory course (28-30)

G. System of assessment (31-34)

H. Suggestions (35-50)

- Technology-integrated EE (37, 38)
- Critical thinking (39, 40)
- Involving learners in the course design (41-43)
- Skills-oriented course (44-46)
- Teaching / learning style (47-49)
- Any other comment (50)

In this section, ex-students' responses to some parts of the questionnaire are analysed and discussed. The other parts of the questionnaire are discussed in the subsequent relevant chapters.

3.2.3.1 Level of Proficiency in English

Seven students said that their proficiency in English is very good, twenty-three students stated that their English is good, 28 said that their proficiency in the language is average, and the rest of the respondents did not answer the question.

The sixty-five respondents' answers to the question how they described their skills are given below in the figure 2.1.

Figure 2.1 Proficiency in language skills

Skills	Low	Average	Good	Very good
Listening	15	23	21	6
Speaking	10	31	19	5
Reading	2	20	35	8
Writing	10	39	6	5
Grammar	2	32	18	8

To the question how they would rate their level of proficiency in the given sub-skills of speaking, the respondents gave the answers given in figure 2.2

Figure 2.2 Proficiency in the sub-skills of speaking

Skills	Low	Average	Good	V.good
Expressing yourself clearly	1	34	24	6
Talking on the phone effectively	3	30	27	5
Taking part in group discussions	2	26	24	13
Handling interviews	1	34	24	6
Making oral presentations	5	34	19	7
Being tactful and diplomatic	7	41	17	0

The analysis of the responses shows that that the majority of the respondents are not comfortable in the following sub-skills of speaking: talking on the phone effectively, making oral presentations and interview handling.

Forty-two students (64.6 %) said that they are not satisfied with their language proficiency. Those who are satisfied with their language proficiency attributed their proficiency to the following: reading novels, reading newspapers, conversing in English with friends, online chatting, sending emails, watching TV, and listening to lectures in English. All respondents said that they have positive attitude towards English.

3.2.3.2 Need Awareness

To the question whether they agreed that the most successful engineers and scientists are skilled writers, 53 respondents (81,5 %) replied in the affirmative. To another question whether they agreed that the most effective engineers and scientists have good oral communication skills, 54 respondents said 'Yes' and 11 said 'No'. The responses of students related to their present and future language and communication needs are discussed here.

3.2.3.3 Present and Future Needs

The students were asked to specify the English language skills required in order to succeed during the four years of the undergraduate programme. The following

macro- and micro-skills were mentioned. Two students also mentioned critical thinking and verbal reasoning though they are not language skills.

- social communication
- presentation skills
- debating skills
- basic skills in reading
- reading for information
- reading for information (academic texts)
- writing assignments
- writing lab reports
- writing business letters
- writing essays
- listening
- grammar
- verbal reasoning
- critical thinking

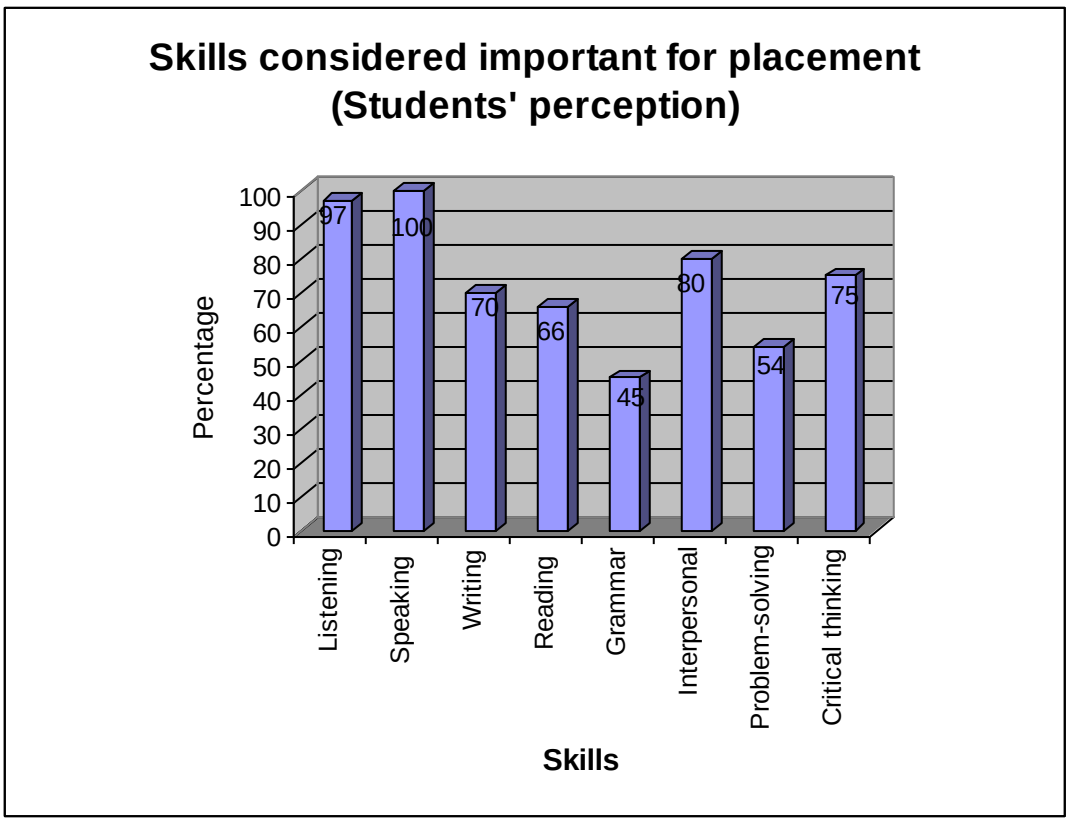
To a question on what language skills are required in order to get placed in a good industry/company/organization, the students had mentioned the following list of skills. Again non-language skills such as critical thinking, problem-solving skills were mentioned.

- interpersonal communication
- presentation skills
- telephone English
- interview handling skills
- basic skills in reading
- critical reading
- writing cv
- writing job application letter
- writing business letters

- active listening
- critical thinking skills
- problem-solving skills

The figure that follows shows the skills that are considered the most important by the respondents. Speaking (100 %) and listening (97%) are considered the most required skills for placement.

Figure 2.3 Skills considered important for placement



Eleven students had mentioned that all the skills covered in the Business English Certificate (BEC) at Beginners and Vantage levels are important.

The third question in the section asked the respondents to list the skills that they thought are important in future (at the workplace) and the participants of the survey listed the same above mentioned skills though not in the same order.

3.2.3.4 Placement Training

Some private engineering colleges give placement training to their student. Over seventy percent of the students found the placement training useful. Given below are the benefits of the training stated by the respondents:

- It was really useful in coming out and expressing our views boldly, without any fear.. both in GD and oral presentation.
- It gave an overall view of what companies expect.
- Enabled to identify positive and negative aspects of our communication skills.
- Mind games enabled to sharpen our concentration and thinking.
- Removed myths and impending fears about interviews
- Mock interviews helped us overcome our communication anxiety.
- It was an opportunity to learn about professional communication.
- It helped us develop our speaking skills
- It was industry-oriented

To the question how the placement programme was different from the 'Technical English' course, the respondents gave the following answers:

Placement training was more practical but our English course was theoretical

During placement training we had opportunity to practice our English but in English class spoken part of communication was neglected

During placement training we had practice in to group discussions and public speaking but in the English course we didn't have the exposure.

The respondents recommend the following aspects of the placement training programme be incorporated into the Technical English course in order to make it more effective: group discussion skills, public speaking, presentation skills, mock interviews, verbal reasoning, group skills, interpersonal skills, problem-solving skills, and critical thinking skills.

3.2.3.5 Suggestions

The suggestions given by the respondents are compiled here:

- All the respondents said that technology-enhanced language teaching and learning is relevant and useful for them. They said technology-integrated language teaching and teaching should be compulsory. Over seventy percent of the students said that Blended Learning (which refers to a language course which combines a F2F (face-to-face) classroom component with an appropriate use of technology).
- Forty out of the sixty-five respondents said that it is important to incorporate critical thinking tasks into the course materials and examinations. The reasons are: it is important for placement, it is very much needed at the workplace and it is very important for engineers.
- Forty-two respondents (65 %) said that learners' views should be considered while designing an Engineering English course. They should be allowed to select reading texts and suggest tasks. The idea of treating students as partners of teaching/learning process is welcomed by the participants of the survey.
- Expressing their views on modifying the course based on a skills-oriented syllabus, sixty-three respondents (97%) said that they would welcome it. The same number of respondents said that job-related language skills should be incorporated into the first-year engineering programme. They also suggested the duration of the course should be longer.
- The respondents suggested that problem-solving games, group discussions, role-plays and interview handling skills should be the regular features of the Engineering English course. They want the English course to reflect the corporate needs and expectations.
- The respondents expressed that the Engineering English course should be taught in an interesting and effective manner and the mode of teaching preferred by them is a combination of modes: face-to-face lecture, group discussion, take-home assignments and pc-based learning.
- The participants of the survey said that the learners could develop their language skills by doing the following:
    - Listening (doing more listening exercises in the English multimedia lab)

- Speaking (taking part in group discussions, mock interviews, roleplays, presentations, more speaking practice)
- Reading (interesting texts from newspapers, magazines)
- Writing (project-based tasks, writing official letters, analytical essays, commenting on issues and current affairs)

The analysis gives an insight into the learners' present and future needs. In the light of these needs and suggestions given by the respondents the existing Engineering English curriculum should be evaluated.

3.2.4 Analysis of Professional Engineers' Responses

The questionnaire (see Appendix 6) distributed to professional engineers had three sections and 24 items. It asked the respondents to answer questions related to the following:

Section A - Professional details (1-5)

Section B - Professional communication needs (6-10)

Section C - Suggestions (11-24)

The questionnaires were sent to 65 engineers and 43 completed questionnaires were received. Since a number of Indian engineers migrate to the United States and European countries, questionnaires were sent to Indian engineers / technologists working abroad by email to gather information on the target needs of global engineers.

In this section the professional engineers' responses on professional communication needs and suggestions are analyzed.

3.2.4.1 Professional Communication Needs (items 6-10 in the questionnaire)

6. Do you agree that highly effective engineers have good writing skills?

Thirty-eight respondents (83 %) agreed that highly effective engineers have good writing skills.

7. Do you agree that highly effective engineers are good communicators?

Forty-two of them (98 %) agreed that highly effectively engineers and technologists possess good communication skills. It implies that oral communication skills are essential for engineers to be effective.

8. What skill sets do students of engineering need in order to be placed in reputed IT companies or core engineering companies?

- Communication skills
- Presentation Skills
- Writing an impressive CV
- Appropriate body language

9. What skill sets do recruiters look for in prospective employees?

- Excellent communication skills
- Presentation Skills
- Articulation
- Writing an impressive CV
- Appropriate body language
- Positive attitude

10. What skills do professional engineers (various positions) need in order to be effective at the workplace?

Over 80 percent of the professional engineers specified the following skills as very important for engineering occupying various job positions at one stage or the other.

- Listening
- Speaking
- Reading
- Writing
- Interpersonal skills
- Group skills
- Problemsolving skills

- Critical thinking skills

3.2.4.2 Suggestions (items 11-23 in the questionnaire)

11. What are your suggestions to improve the following areas of the *Engineering English* curriculum: syllabus, materials, skills, teaching methodology, assessment pattern (tests/exams)?

- the opinion of professional engineers and technologists should be sought and considered.
- an in-depth needs assessment should be carried out.
- more project-oriented assignments should be given to students.
- industry-institution interaction should be encouraged.
- teachers of English should be trained to impart soft skills.
- self-asssessment should be encouraged.

12. List the changes that you would like to bring in in the *Engineering English* course.

- The course should be more practical-oriented
- It should reflect the needs of the students
- Interesting tasks and activities
- It should develop the students' confidence
- Do away with grammar
- Make students think
- Give more practice in speaking

13. Do you think that technology-enhanced language teaching and learning will be relevant and useful for the learners? Give your reasons.

All the respondents said that technology should be integrated into the Engineering English curriculum. The reasons they have given are:

- The students need not depend on teachers.
- Very good pieces of software are available in the market
- Students can very easily develop their pronunciation and grammar skills.

- Computer is an effective tool that facilitates learning.
- The Internet is a very powerful tool that provides everything what the teacher of English and their students want.

14. *Blended Learning* refers to a language course which combines a F2F (face-to-face) classroom component with an appropriate use of technology. Do you like the idea of 'blended learning'? Explain how it will help the learners.

Thirty-six of the participants of the survey said that it is a good idea especially to develop English language skills. They suggested the following that would help the learners.

- Students are comfortable expressing themselves in blogs and downloading audiofiles from the Web.
- Teachers can initiate discussion via yahoo groups and blogs.
- Voice chatting and videoconfering are also good options.

15. Do you think it is important to develop critical thinking competence in learners?

Thirty-one respondents (72 %) replied in the affirmative.

16. Do you think it is important to incorporate critical thinking tasks into course materials and examinations?

Seventy percent of the respondents said that it is important to do so and the reasons give are:

- Engineers need critical thinking skills in order to take good decisions.
- It is essential for everyone to be successful in life.

17. Do you think it is important to involve professional engineers in the design of course materials? Why?

Twenty-eight participants of the survey (65%) welcomed the idea of involving professional engineers in the design of Engineering English course design. Eight of them (12.3 %) said 'Don't know'.

18. How do you want to involve yourself in the course design?

Only five respondents had given their answers to the question:

- By helping the course designer set objectives
- By suggesting useful activities
- By providing interesting reading materials

19. Do you think it is good to have a skills-oriented syllabus?

All the respondents (100%) said it is important to have a skills-based syllabus.

21. Do you think it is good to teach job-related language skills in the first year of your engineering programme?

Eighty-eight percent of the respondents answered that it is good to teach job-related language skills in the first-year of the engineering programme.

22. Give your suggestions on modifying the *Engineering English* course based on the corporate needs (placement). What should be incorporated into the syllabus? What type of tasks (exercises) should be included? Given below are some examples of activities that can be incorporated into the course. Add a few more activities that you think are important to the list.

- Problem-solving games
- Group discussions
- Role-plays
- Interviews

23. How do you want the following skills to be taught?

- Listening: Make people speak and others listen and question
- Speaking: Prepare some experience or situation sharing exercise and make people speak
- Reading: Bring some nice articles related to English and ask them to read with intonation and correct their pronunciation. (if any mistakes)
- Writing: Give good assignments (Task-based, project-oriented)

The analysis of the responses by professional engineers shows that it is important to incorporate job-related skills in the *Engineering English* course and it is essential to involve them in the Engineering English course design.

3.2.5 Analysis of Placement Trainers' Responses

The main objective of the questionnaire (see appendix 5) administered to placement trainers was to get the views of placement trainers on what skills engineering students should have in order to get placed in well-established and reputed IT companies or core engineering companies and on the role of English language teachers in imparting the skills in engineering students.

The questionnaire containing 14 items had the following 5 sections:

Section 1: Professional details of the trainers
Section 2: Job market for engineering graduates
Section 3: Analysis of trainees' competencies
Section 4: Suggestions
Section 5: Any other

The questionnaire was given to 15 placement trainers. Only 11 completed questionnaires were returned to the researcher.

3.2.5.1 Trainers' Profile

The first section dealt with the trainers' experience in the field of training engineering students / graduates and their areas of specialization. All the eleven trainers have had more than 5 years of training experience. Three of them have had more than 10 years of experience in the field. Their areas of specialization are:

- Puzzle solving, logical ability, coding-decoding
- Soft skills
- salesmanship
- communication skills,
- Group discussion,

- Leadership,
- Interpersonal skills
- team building
- HR
- Attitude development

3.2.5.2 Job Market for Engineering Graduates

The second section on "Job Market for Engineering Graduates" containing three items required the trainers to answer questions related to job opportunities for engineers, skills sets recruiters / employers look for in prospective employees and skills they need in order to survive and excel at the work place.

What are the job opportunities for engineering graduates? A summary of their responses to the question are given below:

- IT sector
- Enormous – not necessarily qualification specific, however, other areas such as solution-based marketing specialists.
- Manufacturing
- Services and infrastructure
- In production department of factories
- Entry level position in BPO / IT/ ITELS
- Core engineering companies
- Media

What skills do engineering graduates need to be placed in reputed IT companies or core engineering firms? All the trainers had mentioned communication, soft skills and logical reasoning as important skills for engineers. Here is a summary of their responses:

- strong technical knowledge
- good communication skills
- soft skills

- professionalism
- understanding the need of the market
- practical skills in the area of specialization
- Good emotion quotient (EQ)
- Ground belongingness feeling
- Positive attitude
- Regular programming in C++
- Logical thinking
- Critical thinking

What skills do they need to achieve success at the work place? Along with some key skills, the respondents had specified a few qualities that are important for engineers to excel at the work place. A summary of the skills (and qualities) mentioned by them are given in the order of priority.

- Technical skills (Hard skills)
- Communication skills
- Soft skills
- Thinking skills
- Group skills (team spirit)
- Good interpersonal skills
- Positive attitude
- Professionalism Listening Skills
- Questioning skills
- Time Management skills
- Team Building Skills
- Pursuasive communication skills
- Assertion Skills
- Presentation Skills
- Creativity (Innovation)
- Good EQ
- Respect for the organizational hierarchy

- Punctuality
- Patience
- Ground belongingness feeling
- Develop the ability to build more than one solution

3.2.5.3 Competences of Trainees

The third section dealing with the competences of trainees (engineering students) had two items: i) percentage of students who have employability skills and ii) the skills most students lack.

The respondents were asked to state the percentage of engineering students who have employability skills. The answers were varied. The highest was 65 and the lowest 15. The average was 40.

The following reasons could be attributed to it. The first reason could be that each trainer's area of specialization was different and their focus of training was only on that particular skill. For example, the person who is an expert in group dynamics conducted sessions only on that topic for all the groups. They did not have an opportunity to assess the students' other skills such as communication skills and logical reasoning. The second reason could be that students who are good at verbal reasoning may not be good at group discussion or group dynamics.

3.2.5.4 Skills Engineering Students Lack

What skills do most engineering students lack? Nine out of the eleven respondents had mentioned the term 'communication skills'. Given below is a list of the skills mentioned by the respondents.

- Communication skills
- Puzzle-solving
- Logical ability
- Depth of knowledge in their relevant subjects
- Team playing

- Confidence
- Discipline
- Quants technique (?)
- Getting counseling from experienced elders/seniors
- Emotional Quotient
- Listening Skills
- Questioning skills
- Time Management skills
- Team Building Skills
- Pursuasive communication skills
- Assertion Skills
- Presentation Skills

3.2.5.5 Soft Skills for Engineers

The fourth section asked the respondents to give their views on whether they agree with the statement that soft skills should be incorporated into the '*English for Engineering*' syllabus. Except two respondents all the others agreed that soft skills should be incorporated into the syllabus. Their responses are given below:

- Yes, Most students are very ---- (not clear)
- Yes. To make it useful to practical life
- I do. Even the most genius students need to communicate his/her professionalism and market their talents to prospective employer.
- It may evolve as a separate discipline. Soft skill is more a behavioral skill that language skill.
- Not sure
- Yes.

3.2.5.6 English Language Teachers as Soft Skills Trainers

The question whether they agree with the statement that teachers of English at institutes of technology can play the role of soft skill trainers invited mixed responses

with only 6 out of 11 trainers saying that English language teachers have the ability to train students in soft skills. Their responses are as follows:

- Yes.
- Yes, they are in a better position to teach soft skills.
- They can be good communication skills trainers, but we can't say whether they can teach other soft skills.
- Most teachers of English have been trained in English literature and not in English language teaching.
- I don't think for the reasons explained above (It may evolve as a separate discipline. Soft skill is more a behavioral skill than language skill).
- No. Any person can become trainer by soft skill qualification and experience
- Not necessarily, unless they are trained. It is not just about language awareness, but the stress is on workplace requirement and confidence.
- Not sure, depending upon the capacity of the trainer.
- No, knowledge of psychology is essential.
- English has nothing to do with soft skill. A soft skill trainer must have held some managerial assignment earlier. Soft Skills are required for effective interaction at workplace with superiors, subordinates and to develop the leadership qualities.

To the question on how they see the role of English language teacher evolving over the next 5 years, one respondent said that the teachers of English may become obsolete if they do not change their styles to communicative language and teaching and three of the responded mentioned that the English language teacher will play a major role in improving the communication skills of students. Four of them are of the opinion that the teachers should constantly upgrade their skills in order to face the challenges of the next decade. However, two of them stated that English language teachers would continue to play the same role.

3.2.5.7 Role of Educational Institutions

The last question in the questionnaire was on what steps institutes of technology take to improve the employability skills of engineering students? The following are the trainers' responses. Institutes of technology should:

- offer more practical training
- develop their conversational skills
- outsource to professional organizations specializing in improving employability skills
- send their students to visit industries periodically
- invite experts from industries to interact with students
- take steps to train their teachers to orient them on the skills demanded by the industry
- take measures to enhance students' confidence level
- organize frequent personality development workshops
- encourage institute-industry interaction.

The analysis of the responses by placement trainers shows that only around 40 percent of the engineering students have employability skills. The trainers consider communication, problem-solving skills and a few other soft skills as very essential for engineers and there is an urgent need to enhance the students' employability skills. The need for introducing customer-oriented English language teaching at institutes of technology was also emphasized. It is possible only if the skills are incorporated into the English course and teachers are ready to undergo paradigm shift.

3.2.6 Analysis of EST Practitioners' Responses

The questionnaire (see appendix 3) distributed to the English for Science and Technology (EST) practitioners had four sections and twenty-five items.

Section A: Professional details (items 1-7)

Section B: Learners' attitude towards English and their needs (8-11)

Section C: *Engineering English* course (12-21)

Section D: Testing and evaluation (22-25)

The questionnaire was sent to 35 EST practitioners but only 22 completed questionnaires were received. The respondents were from 8 different engineering colleges in Tamil Nadu.

3.2.6.1 Professional Details

1. How long have you taught the course *English for Engineering / Technical English?*

Two respondents had more than 10 years of experiencing in teaching Technical English course, nine respondents had between 5 and 10 years of experience, eight had 3-5 years of experience and only 3 had less than 3 years of experience.

2. What are your educational qualifications?

Two EST practitioners had PhD in English, nineteen of them had MA and Mphil in English literature and one of them had only an MA.

3. Have you had any special training in ELT?

Out of the twenty-two participants only two of them had training in English language teaching. All the others are from literature background. Their area of specialisation in MA and Mphil was literature.

4. Do you think a teacher without any specific ELT training can teach the course 'English for Engineering'? Please justify your answer.

Seventeen respondents said that they can teach 'Engineering English' without any difficulty. They justified their answer by saying that the course is very basic and does not require much of ELT skills.

5. What competencies does an EST teacher need to have in order to be successful in teaching the course '*English for Engineering*'?

The following answers were given:

- knowledge of grammar
- good at speaking
- perfect pronunciation
- good at writing
- knowledge of business English
- effective teaching skills
- interpreting charts

6. Please give suggestions to improve EST teachers' competencies.

- by attending inservice training
- by taking part in ELT seminars, conferences and workshops
- by presenting papers in conferences
- by attending short courses

3.2.6.2 Learners' Attitude towards English and their Needs

7. Do your students give importance to English?

Fifteen respondents said that their students give importance to English.

8. Describe your students' proficiency in English?

Thirteen respondents said that their students' English proficiency is at the intermediate level while nine of them said that their student's proficiency in the language is average.

9. What are their present language needs?

- making oral presentations
- taking part in group discussions
- basic social communication
- listening to lecture
- writing assignments
- study skills (assignments, preparing for exams)
- reading specialist literature (text books)

- writing letters, reports, etc.

10. What language skills do they lack most?

- speaking
- pronunciation
- presentation skills
- listening comprehension
- writing
- grammar
- study skills

3.2.7 Subject Teachers' Perception

The subject teachers of various departments of engineering at three institutes of technology were asked to give their views on learners' immediate and future language needs. Their views were collected via a questionnaire (see appendix 4). The questionnaire was distributed to 23 core subject teachers but only 12 completed questionnaires were received by the researcher.

The subject teachers gave information about the students' problems with the target language and suggested remedies.

3.2.7.1 Skills Students Need and Lack

The teachers give different types of assignments to students. The types of assignments include summarizing a text, preparing an essay on a topic by referring to books, defining technical terms, explaining a concept, analyzing an issue and writing a report, etc. Most students lack writing skills and so they do not write any assignment on their own. They just reproduce from books available.

Students are required to attempt different types of questions in continuous assessment tests and exams. The following are samples of different types of questions:

- Define -------

- Give the characteristics of ----------
- List the drawbacks of ----------
- State the law of ----------
- Explain ----------
- Compare and contrast----------

The students need to have good writing skills in order to excel in such tests and exams. Most students cannot write on their own because their proficiency level in the target language is very low. They memorize answers and reproduce them in tests and exams because of the aforementioned problems.

Listening and speaking are two important skills for the students in order to follow lectures, to interact with the teachers and fellow students, to take part in group discussions and to give oral presentations. According to the teachers, almost 40 percent of the students lack competence in these skills.

The charts (Figures 2.4 – 2.7) given below show the analysis of twelve subject teachers' responses to the question what language skills their students need and which they have difficulty with.

Figure 2.4 Speaking Skills Needs and Lacks (Subject Teachers' Perception)

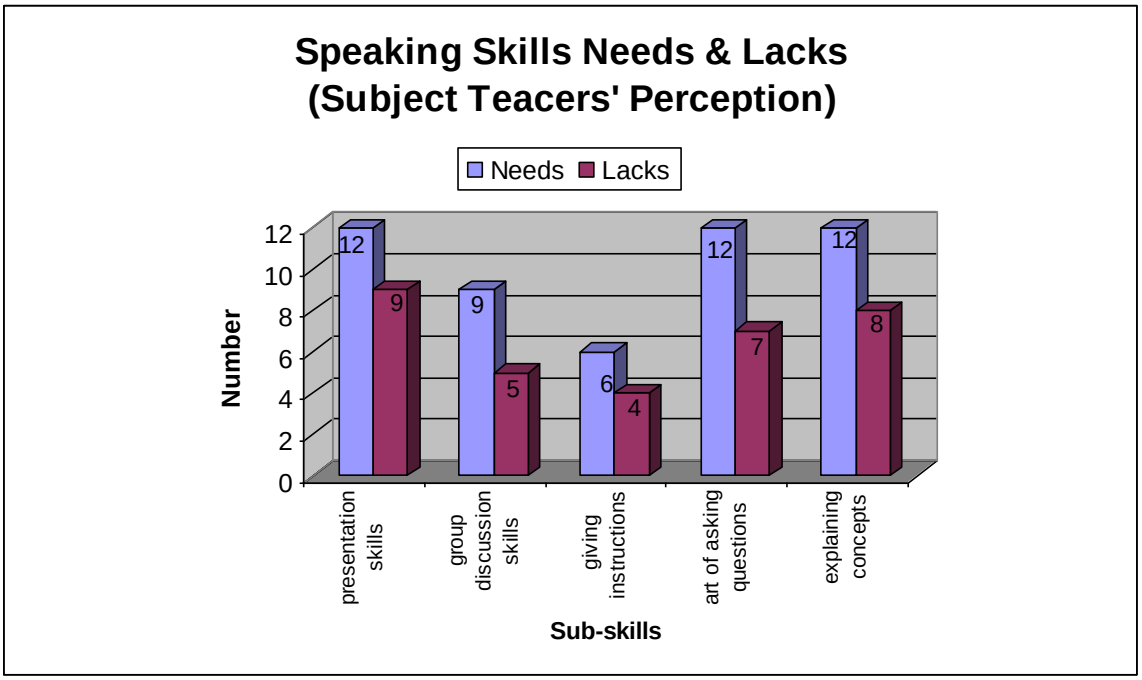


Figure 2.5 Listening Skills Needs and Lacks (Subject Teachers' Perception)

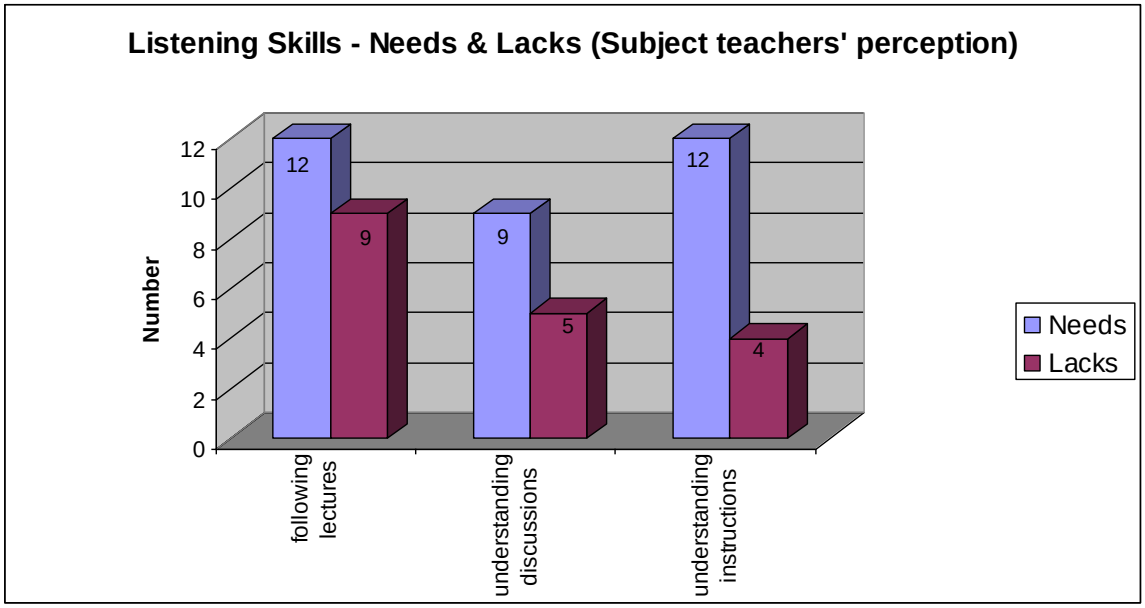


Figure 2.6 Writing Skills Needs and Lacks (Subject Teachers' Perception)

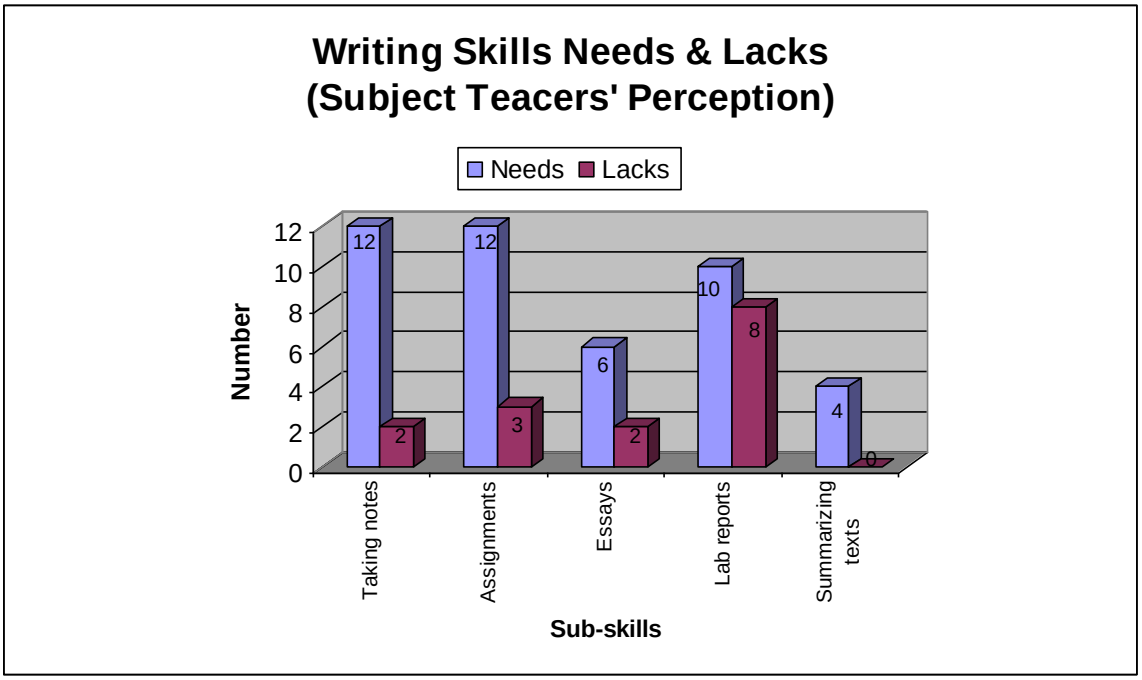
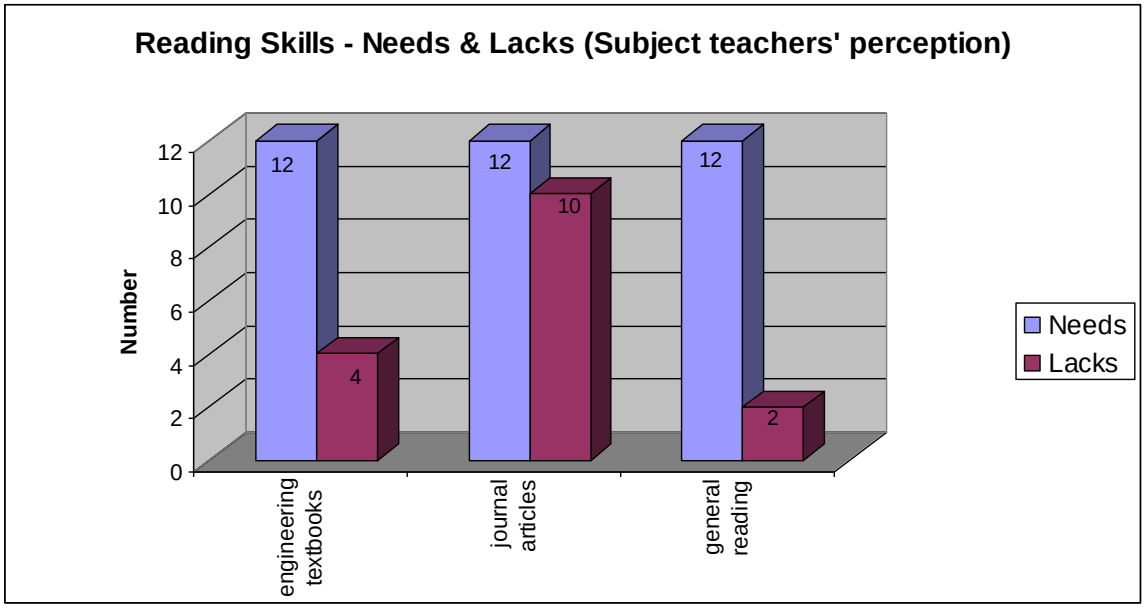


Figure 2.7 Reading Skills Needs and Lacks (Subject Teachers' Perception)



In summary the following were the problems stated by the teachers:

- Some students find it difficult to follow lectures in English.
- They do not know how to take notes.
- About 40 per cent of students have problems with speaking and writing in English.
- Since they do not have good writing skills, they do not write assignments on their own.
- Those students who cannot speak fluently do not take part in activities which require them to speak in the target language.
- Most students lack technical writing skills.

3.2.7.2 Suggestions

The following suggestions were given:

- Remedial coaching in English should be given to the disadvantaged students in order to enhance their level of motivation and participation.
- The students should be exposed to reading texts related to biotechnology and they should be trained to analyze the texts critically though they are scientific in nature.
- Measures should be taken to develop students' writing skills.

- The language teacher should correct students' writing assignments and help the students attain grammatical accuracy.
- More opportunities should be given to the students to speak in English in the class.
- The students should be given practice in making oral presentations.
- The subject teachers should be involved in selecting reading texts for the design of any ESP course.

The suggestions given by the teachers helped the researcher give a focus to his research. Any subject-specific ESP course will be effective and prove to be fruitful for the end user (the learner) if the ESP course designer involves subject teachers in various stages of the course design.

3.2.8 Analysis of Interviews with Recruiters / HR Personnel

Of late, campus recruitment drive, which involves companies visiting educational institutes to recruit candidates to their respective firms, is very common in professional colleges The members of a recruiting team and HR personnel in IT companies and engineering firms are in a better position to assess the language and communication needs of engineers. So it was decided that these personnel should be interviewed in order to gather data regarding the target needs of engineering students.

The researcher had a series of structured interviews with members of the recruiting team and HR managers. Though request for interviews were sent to 20 members of recruiting teams and HR personnel employed in various IT companies and core engineering companies were sent, only 9 members responded positively to be interviewed. Out of the nine interviewees 6 were members of recruiting teams and the other three were in charge of HR management in IT companies.

The role of a recruiting team is to give aptitude tests, conduct group discussions and interviews to shortlist and select candidates at different educational institutions selected by the companies the members of the recruiting team represent. Candidates

are selected on the basis of their possession of the skill sets employers look for in prospective employees.

The structured interview aimed to gain insight into the job responsibilities of various engineering positions and get answers to the following questions:

1. What skill sets do employers look for in engineering graduates?
2. On what basis do you select candidates to different job positions?
3. What skills do you impart during the training period?
4. What are the job responsibilities of professional engineers in different positions?
5. Please mention three key non-technical skills engineers must have in order to carry out their responsibilities in an effective manner?

What skills do employers look for in engineering graduates?

The following skills / qualities were mentioned by all the interviewees:

- technical skills
- effective communication skills
- presentation skills
- reasoning
- positive attitude
- readiness / willingness to learn new things
- adaptability

On what basis do you select candidates to different job positions?

Given below is a summary of their responses.

- consistent performance in studies
- good behaviour
- the required skills specified by the company

What skills do you impart during the training period?

- English language skills (encouraging them to take BEC)
- Soft skills

What are the job responsibilities and functions of professional engineers in different positions?

Given below is a list of responsibilities and functions.

- delegating
- managing
- supervising
- planning
- orgnanizing
- budgeting
- reporting
- correspondence

All the functions listed above require engineers to have excellent communication skills.

Please mention three key non-technical skills engineers must have in order to carry out their responsibilities in an effective manner?

All the interviewees mentioned communication skills as one of the three important skills. The other skills mentioned are:

- problem-solving
- group skills
- interpersonal skills
- creative thinking

The structured interviews with the members of recruiting team gave an insight into the type of English the engineering graduates need at the workplace. Many IT companies (HCL, TCS and CTS to name a few) encourage their staff to take BEC exams. Incorporating some components of BEC (vantage) can be incorporated into the Engineering English course.

3.2.9 Analysis of Job Advertisements

Job advertisements play an important role in helping job seekers apply for right jobs. A typical job advertisement has these main sections: company details, position advertised, job responsibilities, required skills and remuneration. Job responsibilities for various engineering and managerial positions are clearly mentioned in most job advertisements and such responsibilities imply that the candidates should have soft skills including communication skills.

Engineering graduates who have been recruited by reputed IT companies and engineering firms attribute their success to their possession of soft skills. Many engineering graduates do not apply for certain jobs related to their specialization just because they know that they do not have the skill sets mentioned in the job advertisements and required by the recruiters.

Whether it is for a teaching position in an educational institution or for any other position in a multi-national company, an engineering candidate is expected to have good proficiency in English and along with that a set of soft skills such as problem-solving, analytical abilities, team-playing, critical thinking, etc.

Many engineers and technologists from India migrate to other countries for a number of reasons. Job opportunities for engineers are plenty in both developed as well as developing countries. A global engineer should have excellent communication skills. For example, a global engineer is expected to be broadly knowledgeable and to prove that they have knowledge they need to communicate it and in order to survive in the global environment they should be good at intercultural communication.

A careful analysis of more than 100 job advertisements (posted on the Internet and appeared in different newspapers in India and abroad) aimed at engineering and technology graduates showed that engineers and technologists need to possess both technical as well as non-technical skills in order to climb up the ladder of success in their career. The non-technical or soft skills desired in them are: communication skills, problem-solving skills, negotiation skills, critical

thinking skills, interpersonal skills, team work skills, etc. These skills can be very well called 'survival skills'.

The advertisements were selected based on the following criteria:

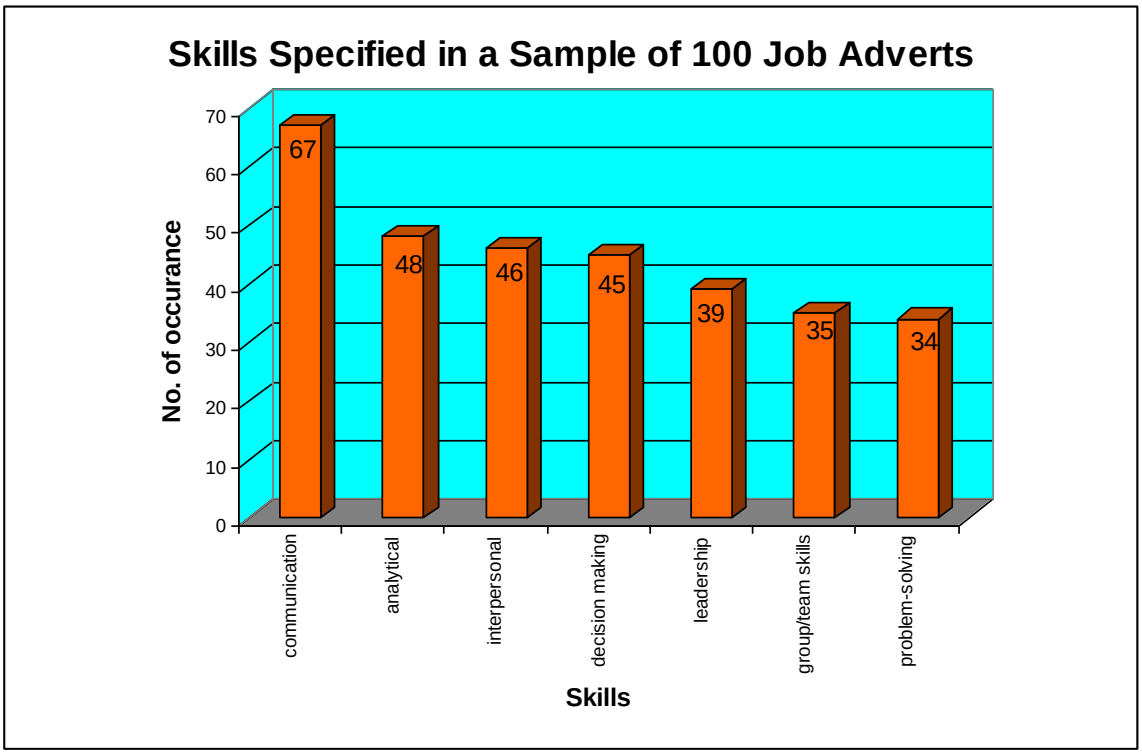
- the advert is addressed to engineering graduates.
- it should state clearly what it expects of the candidate: qualifications, experience, job responsibilities, skills required, etc.

The skills listed in a sample of one hundred job advertisements targeted at engineers and technologists were analyzed. The following are some of the important skills mentioned in the advertisements and the number of advertisements that have specified the skills is also given:

- oral and written communication skills (67)
- analytical skills (48)
- interpersonal skills (46)
- decision-making (45)
- leadership skills (39)
- group / team skills (35)
- problem-solving (34)

The figure 2.8 given below shows the required skills for engineers and the number of advertisements out of a sample of 100 adverts analysed.

Figure 2.8 Skills Specified in a Sample of 100 Job Advertisements



The analysis of job advertisements helped the researcher gain an insight into the target needs of engineering students. The skills sets specified for various job positions should be incorporated into the English curriculum in order to develop students' employability skills.

3.2.10 Summary of the Needs Analysis

The results of a few previous surveys conducted to assess the language and communication needs of engineering and technology students also match with the present survey to some extent. P'Rayan (2006) conducted a similar survey among a group of first-year undergraduate biotechnology students with the aim of assessing their present needs via questionnaires. The learners had mentioned the following skills as their immediate language needs:

- attending seminars and listening to lectures (listening skills),

- reading texts related to biotechnology (reading skills),
- taking part in group discussions, giving seminars / presentations (speaking skills)
- defining technical terms
- writing assignments based on the functions such as describing, defining, discussing, analyzing, comparing and contrasting, enumerating, evaluating, illustrating, summarizing.

Venkatraman (2007) reports that he carried out a needs analysis to find out the perception of the students of Engineering and Technology of the kind of language skills required and the respondents ranked listening and professional speaking skills the highest among the six skills.

The analysis of the needs assessment questionnaires have led to these conclusions:

1. Needs assessment is the basis of English for Engineering (EE) curriculum design.
2. Target situation analysis (TSA) and present situation analysis (PSA) or study needs should determine the content of the English for Engineering curriculum design.
3. TSA shows the need for introducing Business English as well as academic writing in the EE curriculum. The components of the Business English Certificate (BEC) Vantage should be introduced to enable learners develop their proficiency in the language.
4. The level of listening and speaking is low while the demand for the skills is highly valued by employers. The EE curriculum should give importance to these skills.
5. Examinations should have four components: listening, speaking, reading and writing and should assess the learners' proficiency in these skills.

In the light of the results of the needs analysis, the existing *Engineering English* curriculum is evaluated and recommendations for appropriate action are given.

3.3 Engineering English: An Evaluation

The focus of this section is to gather information about the effectiveness of the existing *Engineering English* course, analyze the data and recommend changes in the curriculum. The word evaluation means to judge the quality or value of something. Evaluating a course means analyzing the effectiveness of it in terms of the aims and objectives stated. According to Dudley-Evans and St John (1998), "evaluation is a whole process which begins with determining what information to gather and ends with bringing about change in current activities of influencing future ones". This implies that the evaluation process must include action. The purpose of evaluating an ESP course is to focus on what has been going well and to ask what have been the most significant contributing factors so that less successful aspects can be modified. A good evaluation emphasizes the successes and discusses less successful aspects. Here the evaluation of the *Engineering English* curriculum implies the evaluation of the following:

1. Course objectives
2. Syllabus
3. Course materials
4. System of assessment
5. Teaching methodology
6. Effectiveness of the programme

While evaluating an ESP course it is necessary to find answers to the following questions:

1. What are the aims and objectives of the course?
2. Do the objectives reflect the needs of the learners?
3. Are the objectives in tune with the target needs?
4. Are the objectives achievable?
5. Have the measures taken to achieve the objectives been effective?

6. What are the successful and less successful aspects of the course?
7. Has learning been maximized?

3.3.1 Technical English Course

The *Technical English* course is common for all the first-year engineering/technology students studying at colleges affiliated to the Anna University and deemed universities in Tamil Nadu.

3.3.1.1 Aim

The aim of the course is to encourage learners to do participative learning of the English language and help them in acquiring communication skills.

3.3.1.2 Objectives

The objectives of the course are:

- To help learners improve their vocabulary and to enable them to use words appropriately in different contexts.
- To familiarize learners with different rhetorical functions of Scientific English.
- To help learners develop key techniques that could be adopted while reading texts.
- To help learners develop listening skills for academic and professional purposes.
- To help learners acquire the ability to speak effectively in English in real life situations.
- To provide practice in realizing the meaning potential of a text and to make the learners become familiar with different reading strategies
- To help learners acquire interpretative and study skills, including library and Internet reference skills.
- To train learners in organized academic and professional writing.
- To develop aural competence and oral fluency of learners.

- To help learners achieve proficiency in the effective use of language in various authentic career-related situations.

3.3.1.3 The Syllabus

The syllabuses of the Anna University and a few other universities in Tamil Nadu seem to have the combination of both transmission and transactional models.. The syllabuses had the following components: Listening, Speaking, Reading, Writing and Language in Use.

1. Listening (10 hours)

The subskills listed are: extensive listening, listening for general content, listening to fill up information gap, listening for specific information and note-taking,

2. Speaking (14 hours)

The subskills listed are: oral practice, developing confidence, introducing oneself, asking for or eliciting information, describing objects, offering suggestions and recommendation, analyzing problems and providing solutions, expressing opinions (agreement / disagreement), describing uses/functions, comparing, analyzing problems and providing solutions, predicting, expressing possibility/certainty, framing questions, providing answers, describing processes, stating purpose, offering opinions, suggestions and recommendations, summarizing, reporting, free discussion of chosen topics and pronunciation practice (word stress, consonant clusters – homonyms**)**

3. Reading (18 hours)

The subskills listed are: skimming, scanning, inferring meaning, identifying stylistic features in texts, evaluating texts, understanding discourse coherence, guessing meaning from the context, note-making/transferring information, understanding the organization of texts, predicting and evaluating content, evaluating style, interpreting tables and flow-charts.

4. Writing (18 hours)

The subskills listed are: sentence definition, static description, extended definition, comparison and contrast, classification of information, recommendations, highlighting problems and providing solutions, formal and informal letter writing, flow charts/diagrams, paragraph writing, editing, process description, cause and effect analysis, stating choice and justifying it, safety instructions, check list, letter of application and data sheet/resume.

5. Focus on Language (30 hours)

The grammar items listed are: word formation with prefixes and suffixes, discourse markers and their functions, degrees of comparison, expressions relating to recommendations and comparisons, active and passive voice, synonyms and antonyms, tense forms, gerunds, condition sentences, modal verbs of probability and improbability, acronyms and abbreviations, compound nouns and adjectives, prepositions, adverbs, passive voice, sequence words/discourse markers, connective adverbs, numerical expressions, rules for writing SI units, language of instructions, checklists, cause and effect, purpose and means, indefinite adjectives of number and quantity, and spelling and punctuation.

The duration of the course is 9 months and the total number of teaching hours is 90. The hours allotted for each component are:

1. Listening: 10 hours
2. Speaking: 14 hours
3. Reading : 18 hours
4. Writing 18 hours
5. Language in Use: 30 hours

The prescribed textbook for the courses were:

1. Department of Humanities and Social Sciences, Anna University, *English for Engineers and Technologists*, Vol.1, Second Edition, Orient Longman Ltd., 2002
2. Department of Humanities and Social Sciences, Anna University, *English for Engineers and Technologists*, Vol.2, Second Edition, Orient Longman Ltd., 2002

3.3.2 Evaluation of the Engineering English Curriculum

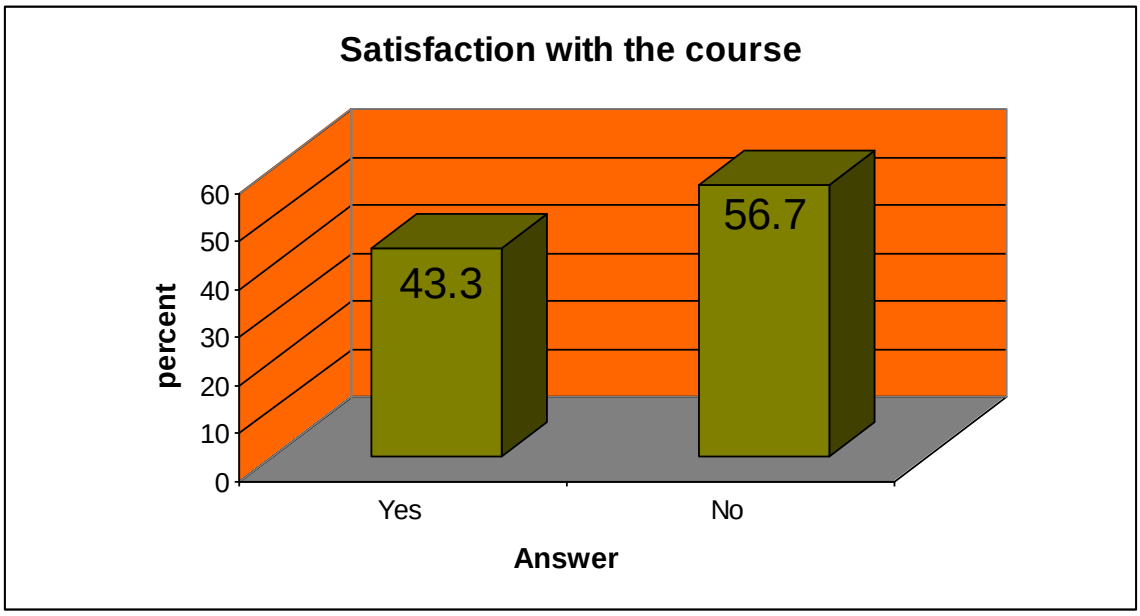
In order to evaluate the effectiveness of the *Engineering English* curriculum feedback about the course and views on the curriculum were collected from the learners, ex-students, EST practitioners, other subject teachers and professional engineers. Their suggestions were also gathered to make the course more effective. A diagnostic test and a communication apprehension test were also administered to a sample group to assess the effectiveness of the programme on students. The diagnostic test scores of the students were compared to their university exam scores in order to assess the effectiveness of the system of assessment.

3.3.2.1 Evaluation by Senior Students

The questionnaire containing 15 items asked students to evaluate the *Engineering English* course and suggest ways to make the course more effective. Given below is the analysis of the responses collected from 90 students.

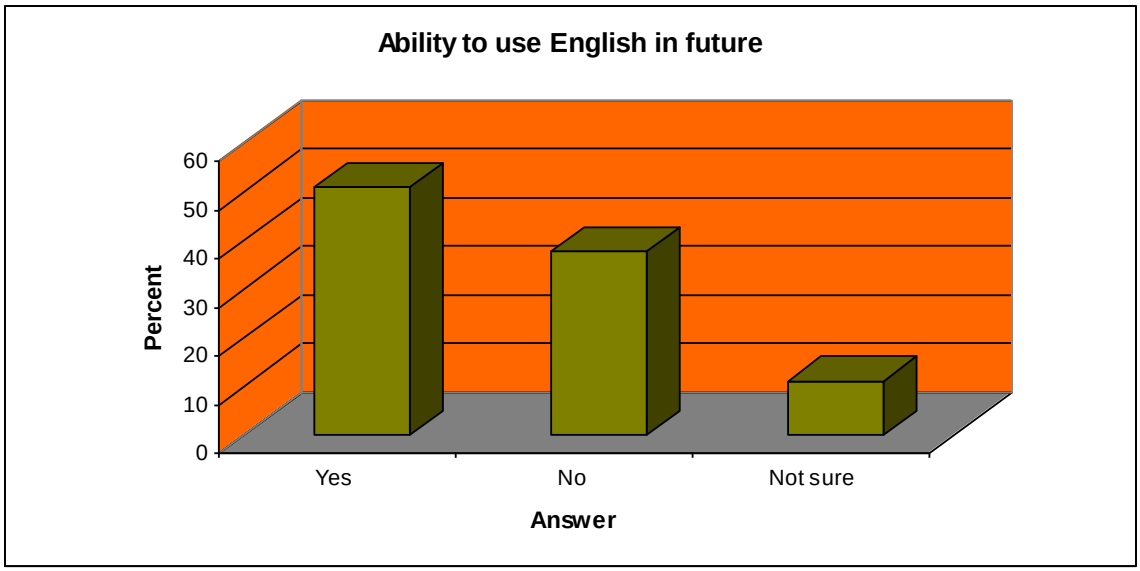
The students were asked whether they were satisfied with the *Engineering English* course. Figure 3.1 shows that thirty-nine students (43%) said they were satisfied and the rest (56.7%) answered they were not satisfied with the course.

Figure 3.1 Satisfaction with the course



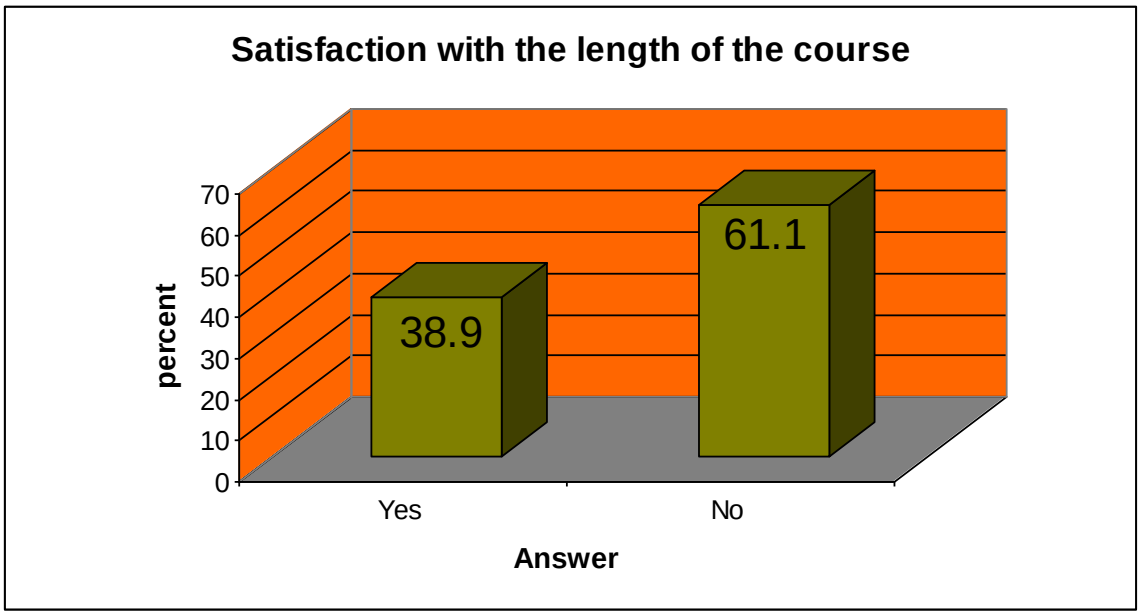
To the question whether the students are ready to use English in their future jobs, 51.1 percent of the respondents said 'yes', 37.8 percent of them said 'no' and 11.1 percent of them that were not sure. The pictorial representation of the data is shown is figure 3.2.

Figure 3.2 Ability to Use English in Future



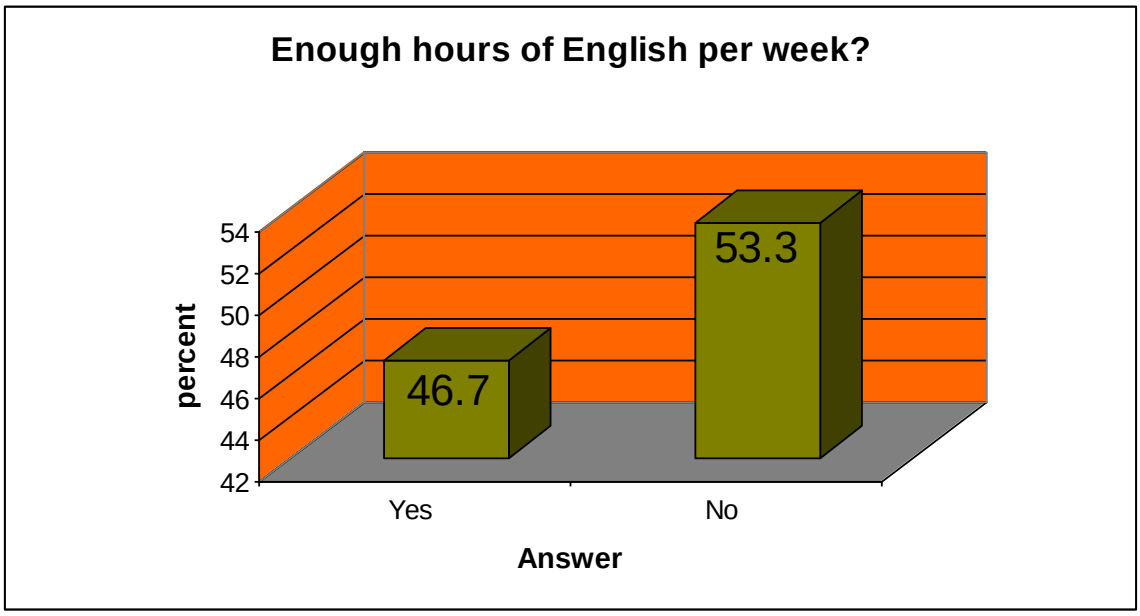
Only 38.9 percent of the respondent said that they were satisfied with the length of the English course while 61.1 percent of them were not satisfied with it. See figure 3.3

Figure 3.3 Satisfaction with the length of the course



To the question whether they had enough hours of English per week 46.7 percent of the students said 'yes' and the remaining 53.3 percent said 'no'. See figure 3.4

Figure 3.4 Enough hours of English per week?



Forty-six students (51.6 %) said that English should be taught at the first year 6 hours per week, thirty-two students (35.5 %) said 5 hours per week, eight students (8.8 %) said 4 hours per week and the remaining 4 students said that the language teaching should be just 3 hours per week.

The respondents were asked to state whether the English course helped them develop the skills listed in the figure 3.5. More than 80 percent of the respondents said that speaking and listening skills were not given importance. The students did not respond to the item 8.6 as they did not understand what study skills constitute. The analysis of the responses shows that the focus has been mainly on grammar, structure and vocabulary.

Figure 3.5 Necessary Skills

No.	Skills	YES		NO	
		N	%	N	%
8.1	Understanding spoken English in professional context	10	11.1	80	88.9
8.2	Developing oral professional communication skills	10	11.1	80	88.9
8.3	Developing reading strategies for professional purposes	42	46.7	48	53.3
8.4	Developing professional (business / technical) writing skills	44	48.9	46	51
8.5	Developing academic writing skills	54	60	36	40

8.6	Developing study skills	-		-	
8.7	Developing fluency	24	26.7	66	73.3
8.8	Improving accuracy	66	73.3	24	26.7
8.9	Increasing the English vocabulary, including professional	55	61.1	35	38.9
8.10	Developing oral presentation skills	23	25.6	67	74.4
8.11	Developing professional negotiation skills	0	0	90	100
8.12	Developing telephoning skills	5	5.6	85	94.4
8.13	Developing ability to take part in discussions / debates	16	17.8	74	82.2
8.14	Developing ability to take part in meetings	4	4.4	86	95.6
8.15	Developing 'social communication' skills	18	20	72	80

Activities such as reading for information, writing compositions, writing business correspondence have been given importance because questions of this type are asked in tests and examinations. This implies that the teaching of the course has been examination-oriented. The most neglected activities or sub-skills of listening are listening for general information and listening for specific information and watching videos. The figure 3.6 also shows that the students did not have the activity of writing reports on the course.

Figure 3.6 Key Activities

No.	Activities	YES		NO	
		N	%	N	%
9.1	reading for information	85	94.4	5	5.6
9.2	reading for specialist information	34	37.8	56	62.2
9.3	summarizing the texts	14	15.6	76	84.4
9.4	writing compositions	90	100	0	0
9.5	writing reports	0	0	90	100
9.6	writing business correspondence	67	66.7	23	33.3
9.7	listening for general information	25	27.8	65	72.2
9.8	listening for specific information	25	27.8	65	78.2
9.9	watching videos	0	0	90	100
9.10	discussions/debates	24	26.7	66	73.3
9.11	role-play	37	41.1	53	58.9
9.12	making presentations	0	0	90	100
9.13	**fulfilling the exercises**	90	100	0	0
9.14	taking tests	90	100	0	0
9.15					

Almost all the students found activities reading for information, reading for specialist information, summarizing the texts, writing compositions and writing business correspondence both useful and appropriate.

Though the majority of the respondents did not have activities listening for general information, listening for specific information watching videos, discussions and debates, making presentations during the course, they rated the activities as enjoyable and useful.

All the respondents rated pair work, group work and team work as interesting and enjoyable. Sixty-five percent of the students rated project work as useful.

The questionnaire asked the respondents whether different English tests they had during the year and the examination at the end of the year tested their language skills listening, speaking, reading and writing. All students stated that the various tests and exams assessed only their reading and writing skills. It shows that listening and speaking skills were not given importance and they can be called 'neglected skills'. Figure 3.7 gives statistical details of the students' response.

Figure 3.7 Assessment of Skills

	Skills	**Yes**	**No**
12.1	Listening		100 %
12.2	Speaking		100 %
12.3	Reading	100 %	
12.4	Writing	100 %	

Forty-eight respondents (53.3 %) said that it was easy to score high marks in the English examination without having good proficiency in English. These were the remarks of the students about examinations.

- Even students who are not proficient in English have scored above 60.
- The tests / exams are not creative.
- They test only our memory power.

- In writing section, if we know the layout (structure) letters, reports, etc. and some readymade phrases we can score marks.
- All students pass.

The questionnaire also asked the respondents to give their suggestions to make the tests and exams more useful and 48 students had stated that listening and speaking components should be included.

The following is a compilation of suggestions given by the students to make the *Engineering English* course effective.

- Get our opinions and suggestions about the course
- Involve students in the course design
- Use interesting newspaper and magazine materials. (authentic materials)
- Promote group work (Collaborative learning)
- Involve students in all possible ways
- Focus on listening and speaking skills
- Technology-enhanced teaching and learning

The analysis of the students' responses clearly shows that the English course has not had any positive effect on the learners. The analysis shows that the majority of English classes are of a non-communicative nature. The majority of students have not had communicative activities such as discussions, role-plays, interviews, presentations, etc. in their English classes. It implies that the majority of ESP classes are teacher-dominated.

Listening and speaking skills have been very much neglected by the teachers. The reason could be that these skills were not assessed during the final examination. The students' suggestions should be taken into consideration to make the course useful and effective.

3.3.2.2 Evaluation by Ex-students

The questionnaire was completed by sixty-five ex-students. The evaluation section of the needs analysis questionnaire had 11 items (See questions 13-23 in Appendix 2).

3.3.2.2.1 Assessment of Components of EE Curriculum

The respondents were asked to rate the components such as syllabus, content, skills, teaching methodology and the system of assessment. Figure 3.8 shows that the majority of the participants of the survey rated the components 'average'. Though forty-three percent of them have rated the syllabus 'good', over 70 percent of the respondents rated that the content was average.

Figure 3.8 Assessment of components of EE curriculum

Components	Low	Average	Good	V.good
Syllabus	1	34 (52.3 %)	28 (43 %)	2
Content	1	46 (70.8 %)	17 (26.2 %)	1
skills taught	7	41 (63 %)	17 (26.2 %)	0
teaching methodology	1	37 (56.9 %)	20 (30.8 %)	7
Assessment (tests / exams)	4	45 (69.2 %)	14 (21.2 %)	2

Commenting on the syllabus most respondents said that it was for average students and did not focus on listening and speaking skills. The majority of them said that the content was not interesting though relevant and useful. Some students were not happy with the teaching methodology and the reasons given were lack of competence and lack of interest in teachers.

3.3.2.2.2. Evaluation of Skills

To the question on which skills were given importance during their first year 'Engineering English' programme, the majority of the respondents mentioned the following:

- reading
- writing
- grammar

The respondents said that the following skills were overlooked or not given adequate importance

- Listening
- Speaking
- Interpersonal skills
- Group skills
- Problem-solving skills
- Critical thinking skills
- Verbal reasoning

3.3.2.2.3 Effectiveness of the EE Course

To the question whether the *Engineering English* course meets their present and future needs and the requirements of the recruiters, fifty-five respondents (84.6 %) replied in the negative while six students (9.2%) said 'yes' and four students (6.2 %) answered 'not sure'.

Fifty-one students (78.5 %) said that the *Engineering English* course did not prepare them for the campus recruitment / placement and listed the following limitations of the course.

- Undue focus on grammar, reading and writing
- Less focus on speaking, listening, thinking and problem-solving
- Less practical exposure
- No projects-oriented activities
- Did not reflect the students' interests and needs.
- Boring reading passages
- Examination-oriented teaching

All the respondents said that the EE course did not course cover the following skills.

- Interaction skills
- Presentation skills
- Seminar participation skills

- Oral skills
- Aural skills (listening skills)

To the question whether the EE course was student-centred, fifty-five students (61 %) replied in the negative.

The participants of the survey said that they did not have computer-assisted language learning, web-enhanced language learning or any sort of technology-integrated language learning during their first-year *Engineering English* programme.

The respondents' views on placement training and communication skills lab course and suggestions to improve the effectiveness of the course were also collected

3.3.2.2.4 System of Assessment

To the question whether different tests and examinations assessed their skills properly, thirty-three students (50 %) of the students replied in the affirmative and 30 students (46 %) replied in the negative.

A) Yes (33) B) No (30) C) Don't know (2)

The questionnaire asked the respondents to comment on the type of tests and exams they were given. The following are their comments:

- undue focus on grammar and structure
- listening and speaking skills not assessed
- not challenging
- even students who don't know English scored high marks
- didn't test students' proficiency

Thirty-seven students (57 %) said that the scores that they got in English tests/exams did not reflect their proficiency level.

Fifty-four percent of the respondents are of the view that equal weight should be given to internal assessment marks and the reasons given are:

- All the skills will be tested
- Students' language skills will be assessed properly
- Students will be motivated
- Learning outcome will be effective

P'Rayan (2006) conducted a similar survey among a group of first-year biotechnology students at a deemed university in Chennai. The students who evaluated the coursebook prescribed to them highlighted the limitations of the book and gave the following suggestions.

- The teacher should provide supplementary materials.
- The teacher should carry out a thorough needs analysis and based on the findings should design a supplementary course.
- The students should be involved in the course design.

In summary, the analysis of the students' responses revealed that most students were not happy with the course and the system of assessment. Besides revealing the learners' assessment of the English course, the analysis of the evaluation revealed interesting information about the learners' likes and dislikes with regard to course materials and their learning style.

3.3.2.2.5 Evaluation of Course books

3.3.2.2.5.1 Role of Course books / Materials

Highlighting the purpose of materials Dudley-Evans (1998) state materials play a crucial role in exposing learners to the language, which implies that the materials need to present real language, as it is used, and the full range that learners require that materials play a crucial role in exposing learners to the language, which implies that the materials need to present real language, as it is used, and the full range that learners require. The following four reasons are given for using materials which seem significant in the ESP context:

1. as a source of language
2. as a learning support
3. for motivation and stimulation
4. for reference

What is the role of course books? ELT professionals believe that course books provide well-presented materials. According to O'Neil, R. (1990), course books make it possible for students to look ahead and back to what has been done; they facilitate the teachers' job by providing teachers and students with topical, grammatical, and functional framework within which to work, at the same time allowing them to adapt and improvise.

3.3.2.2.5.2 Criteria for Selecting Materials

There are several proposals intended to orientate teachers in terms of the criteria for selecting materials and designing activities. Examples of these attempts are those of Bell (1981), Nunan (1991; 1999), Nuttall (1982), and Omaggio (1986). The most relevant criteria have been summarized here.

1. It is important to get to know the students, their backgrounds, goals as well as proficiency levels and skill needs.

2. It is necessary to use visuals (charts and graphs for students of science and technology) to support instruction. English language learners need context in their learning process.

3. It is relevant to think about a course that fosters a safe classroom environment.

4. It is necessary to be consistent in relation to philosophy of learning-teaching, techniques and activities throughout the course.

5. It is essential to use authentic materials in the classroom. Using materials like newspapers, signs, sale flyers, telephone books, and brochures in the classroom exposes the learner to the reality of the language.

6. It is necessary to integrate the four language modes: reading, writing, speaking and listening. Integrating the four language modes encourages students to improve in EFL integrally.

7. It is important to consider the students' cognitive learning strategies. Not everyone learns the same way. Some learners are more visual, others are better listeners and some and more kinetic. Developing different activities that encourages all cognitive learning strategies will create a more efficient learning atmosphere.

8. It is relevant to rely on activities that promote problem-solving and reflection. Promoting activities that enable students to think critically enables active participation and a reliable atmosphere for constructing meaning.

3.3.2.2.5.3 Factors Teachers Consider Important while Selecting Course books

The Anna university syllabus recommends the book prepared by the Department of Humanities and Social Sciences. English for Engineers and Technologists (Volumes 1 and 2) is the outcome of a project jointly undertaken by the Department of Humanities and Social Sciences and the Overseas Development Administration of the United Kingdom and the British Council Division, Chennai. The objective of the project was to develop suitable course materials for students of engineering and technology.

The book mentioned above has many positive aspects, but this is not used by teachers in many engineering colleges.

The analysis of teachers' responses related to the question of what factors they consider important while selecting course books shows that 77 percent of the teachers are guided by these factors:

- the students should find the course easy to follow
- the students should be able to read on their own
- even if students do not attend English classes regularly they should be able to pass the examination by going through the book the course book should contain many exercises for practice
- the coursebook should be easily available
- the coursebook should be examination-oriented
- the coursebook should provide a teacher's manual and it should contain answer keys to the exercises

The analysis of the responses shows that in selection of coursebooks, only 23 percent of the teachers are guided by the quality of the course book.

Course books are the main means of instruction in all engineering colleges. Teachers are comfortable using course books for a number of reasons. Though there are a few books of good standard, most teachers prefer course books that contain many practice exercises and provide answer key and that help their students prepare for examinations and score high marks.

Modern teaching aids such as video, computers and the Internet are not available for teachers and even if they are available teachers do not employ these teaching aids.

3.3.2.2.5.4 Checklist for Evaluating Course Books

Based on the criteria for selecting materials and designing activities and based on the principles of ESP courses, a checklist was designed to evaluate the effectiveness of coursebooks prescribed at various engineering colleges.

Checklist

1. Are the aims of the course clearly stated?
2. Are the objectives of each unit of the course stated clearly?
3. Do the topics serve the learners' interests?
4. Do the topics reflect globalism?

5. Are the English language skills presented in an integrated manner?

6. Are there warm-up exercises?

7. Is the carrier content suitably presented?

8. Are the activities meaningful?

9. Do the activities promote critical thinking?

10. Is there scope for application of information gathered?

11. Does the coursebook suggest project work?

12. Are the activities central to the core objective?

13. Do the activities focus too strongly on carrier content?

14. Are the activities too mechanical?

15. Are the rubrics well stated?

18. Do the materials stimulate and motivate?

19. Does the material match the stated learning objectives?

20. To what extent will the materials support that learning?

21. Can the coursebook (CB) be customized?

22. Does the CB reflect majority of students' needs and interests?

23. Does it encourage learners to select their own topics?

24. Does the CB provide materials that are interesting and relevant?

25. Does the course provide motivating activities?

26. Does the course aim at fostering learners' critical thinking?

27. Does the course promote cooperative / collaborative learning?

28. Does the CB facilitate learning?

29. Does it enhance learners' English language skills?

30. Does it promote multi-skill learning?

31. Does it use authentic materials?

32. Does the teacher's edition provide assessment ideas or tools? Are they sufficient? 33. Does the teacher's edition provide a variety of suggestions for adapting lessons to meet individual student needs?

34. Are answers to exercises, tests, etc. provided?

35. Does the teacher's edition or resource package include any technology such as a CD or video? If so, are they useful and able to be run on your equipment?

3.3.2.2.5.5 Drawbacks of Course Books Used in Engineering Colleges

When analyzed on the basis of the checklist given above it was found that the majority of 'English for Engineering and Technology' course books prescribed to students have the following weaknesses.

- The coursebooks are based on a structural/grammatical approach
- Most book are based on the transmission model of learning in which the learner is considered to be a passive participant whose main role is to memorize information presented by the teacher who is the only person responsible for the assessment process.
- They do not cover the four macro-skills (listening, speaking, reading and writing)
- The books contain irrelevant and uninteresting texts
- They have a limited choice of text types
- They lack communicative exercises
- The coursebooks have few or no accompanying materials (teacher's guide, assessment materials, audio support)
- The books are not based on students' needs
- They are not compatible with the syllabus.
- Objectives are not stated clearly
- Tasks are not based on the communicative approach to language teaching
- Books have been authored by teachers who have not had training in ELT in general and ESP in particular and the books are not based on the principles of ESP course design
- Skills are presented in isolation. The four macro skills are not presented in an integrated manner.
- Activities are highly mechanical and do not foster critical thinking.
- Course materials are presented with the aim of preparing students for exams.
- More grammar-based units.
- Activities are not challenging to the majority of students.

- Reading passages do not have the elements of attractiveness, usefulness and relevance.
- Listening and speaking skills are not given equal importance.
- Activities are not motivating.
- Activities do not promote collaborative / cooperative learning
- Learner interest has not been taken into consideration
- In summary, 80 percent of the content of the coursebooks analyzed do not reflect learners' present and future communication needs

3.4 Communication Apprehension and Communication Skills

3.4.1 Rationale

In order to evaluate the effectiveness of the Engineering English course it is important to assess students' proficiency in the language by giving them a proficiency test. The results will show whether the course has been effective or not.

The personal report of communication apprehension (PRCA-24) (see appendix 8) instrument (McCroskey, 1982) was administered to a sample of 120 students at the Jeppiaar Engineering College, Chennai, in order to assess the communication apprehension and communication skills of students who already had one year of Engineering English,. A speaking test was also given to the sample group to assess their speaking and communication skills. The following section answers how the students' CA was measured, how their speaking skill was assessed and what measures were taken to help students overcome their CA.

3.4.2 Communication Apprehension (CA)

Originally McCroskey (1970) viewed CA as a multi-based anxiety linked to oral communication. Later, he redefined the construct to include more than an oral communication component. McCroskey (1982) denotes CA as "an individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons.

A simple definition of CA is anxiety or fear of communicating in different situations. According to Berger, McCroskey & Baldwin (1984), it is "the way a *person feels* about communication, not *how* they communicate". The fear or anxiety could be due to any of the following reasons: lack of proficiency in the target language, lack of practice, insecurity or any pre-programmed thought pattern. Even those who have high level of proficiency in a language can experience CA. Some people may be good at communicating through writing but they may have problems speaking in front of an audience. Some may be good at interpersonal communication, but may not feel comfortable making presentations and vice versa.

Fear of speaking in public has been shown to be very common. According to Wilder (1999), these fears take one of five forms: i) career terror, ii) perfectionism, iii) panic, iv) avoidance and v) trauma. Wilder defines the five fears as follows: career terror is "rooted in the awful feeling that your job, your career, your future is on the line every time you step before a group, enter a meeting, or pick up the telephone". Perfectionism paralyzes the speaker when they demand of themselves that each speech or presentation be perfect. Panic is the combination of unreasonable expectations with fear of failure and real physical symptoms. Avoidance "is a self-sabotage that virtually guarantees anxiety, fear, and diminished performance". Trauma is fear rooted in a long history of being told you're not good enough.

In order to assess the communication apprehension of students of engineering, a sample of 120 students of engineering was asked to complete the personal report of communication apprehension (PRCA-24) (McCroskey, 1982). "The PRCA is the most commonly employed measure of CA in research involving this construct. It has a variety of forms, all of which correlate among themselves about 0.90." (Berger, McCroskey & Baldwin, 1984). This instrument is composed of twenty-four statements concerning feelings about communicating with others. It is used to assess the respondent's communication apprehension in the following four areas: i) group discussion, ii) meetings, iii) interpersonal communication and iv) public speaking. The students were required to indicate the degree to which each statement applied to

them by marking whether they: strongly disagreed = 1; disagreed = 2; were neutral = 3; agreed = 4; strongly agreed = 5. See Appendix 1.

The overall PRCA scores can vary from 24 to 120. Those who have scored less than 50 have low communication apprehension and those who have scored above 70 have high communication apprehension.

3.4.3 Analysis of PRCA – 24

Figure 3.9 shows the overall communication apprehension of the 120 students who completed the PRCA-24 questionnaire (see appendix 9). The mean value of communication apprehension among them was 68.98. The highest was 97 and the lowest 34. The standard deviation was 14.27.

Figure 3.9 Analysis of 120 students' overall communication apprehension

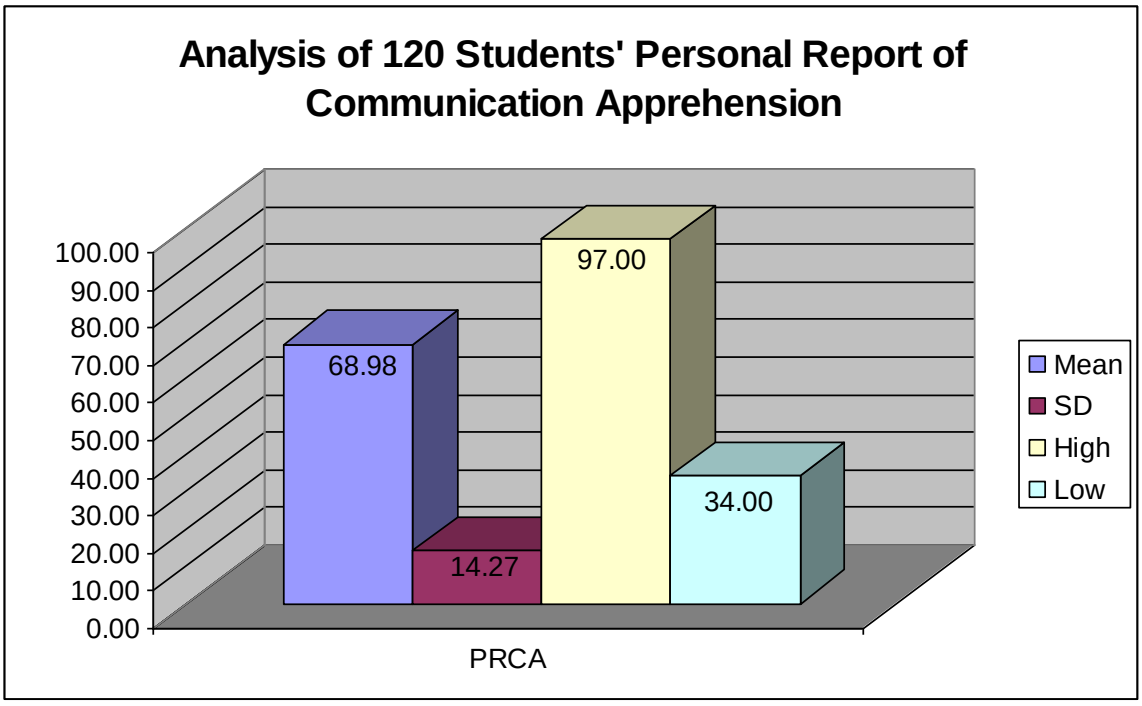


Figure 3.10 presents the details of PRCA scores of the sample group. Only 12 out of 120 students (10 %) have low CA; forty-four students (36.6%) have medium level of

CA and 54 students (45%) have high CA. It is an indication that almost half of the sample group has high CA.

Figure 3.10 Communication Apprehension Scores of 120 Students

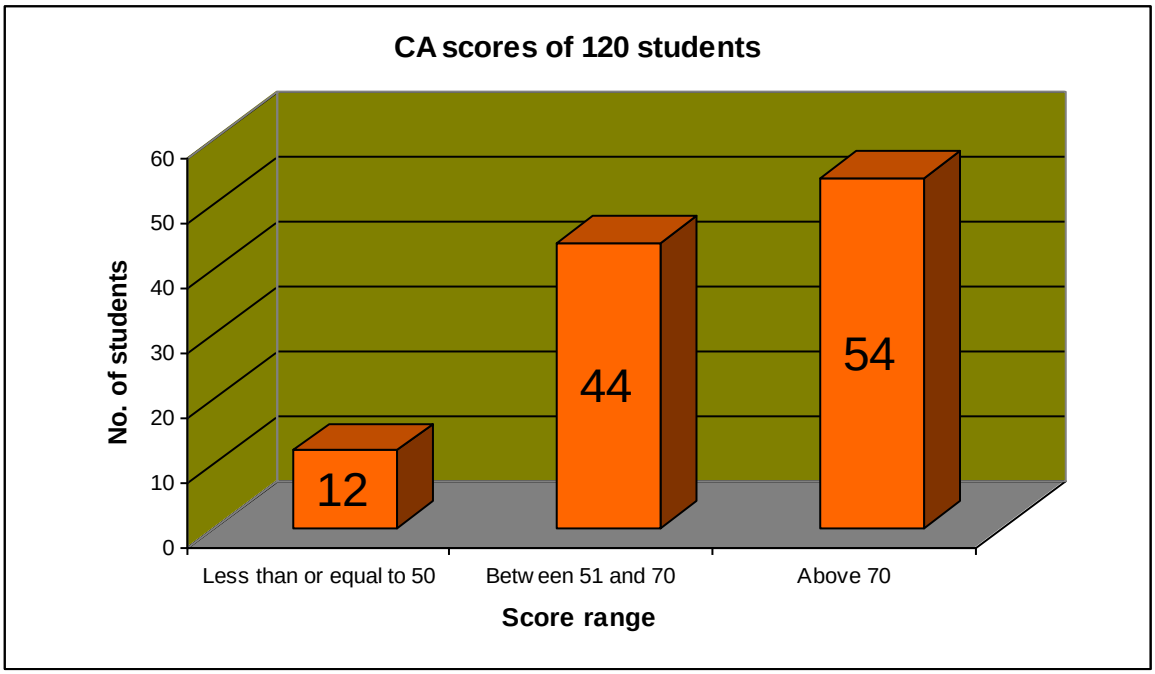


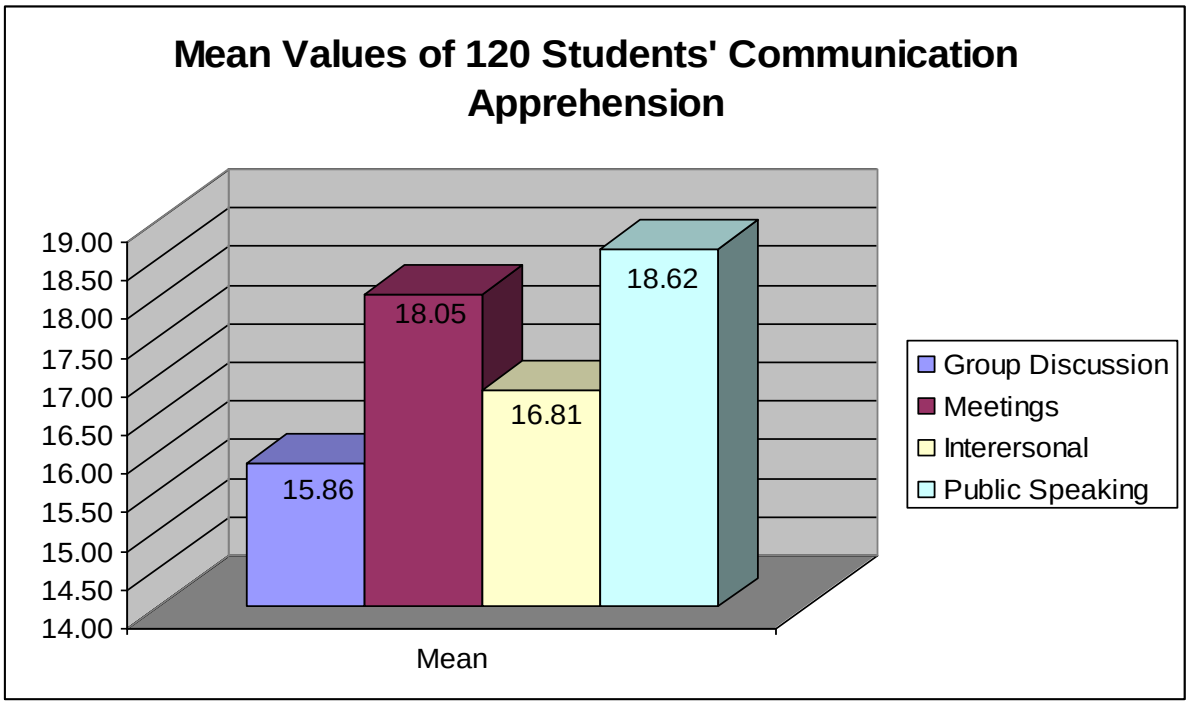
Figure 3.11 shows the mean value of the students' communication apprehension in four areas: group discussion, meetings, interpersonal communication and public speaking.

This is how the scores in each area are interpreted. Those who have scored less than 12.5 have low level of communication apprehension in the particular area and those who have scored above 17.5 have high level of communication apprehension.

The chart indicates that the mean value of communication apprehension in public speaking is the highest among the four sections. It is an indication that students need more training in public speaking (oral presentation) skills.

A study by Wallechinsky (1977) illustrated that 41% of respondents listed public speaking as their greatest fear while only 19% of respondents' number one fear was dying**.**

Figure 3.11 Mean values of 120 students' communication apprehension in four speaking sub-skills



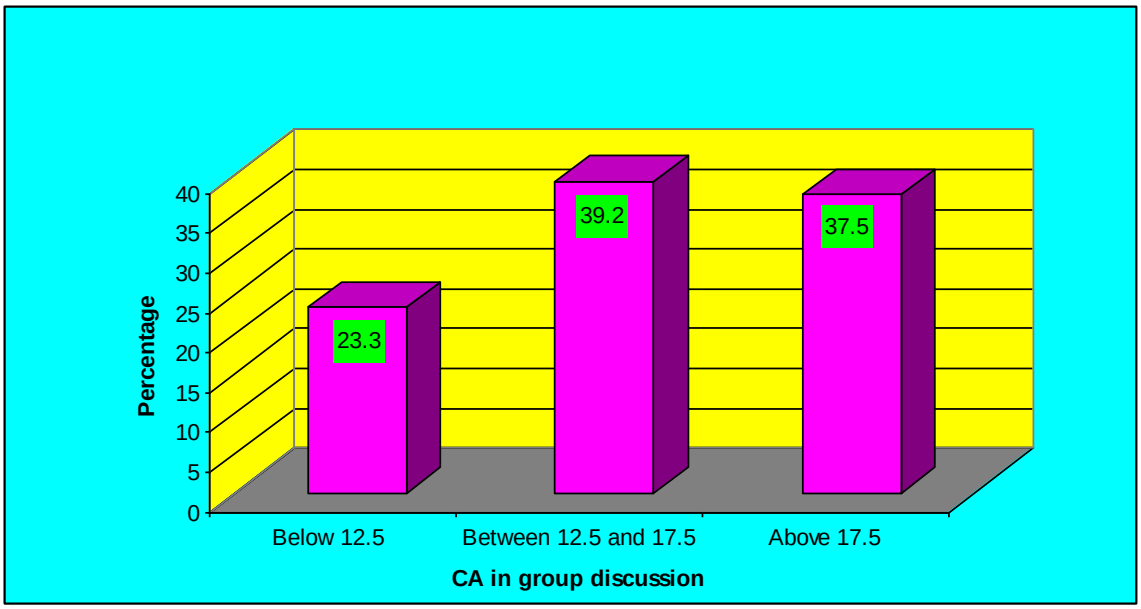
3.4.3.1 Analysis of Students' Communication Apprehension in Group Discussion

The following items are part of PRCA-24 and this part is related to the area of group discussion. The students were asked to indicate the degree to which each statement applied to them by marking whether they: strongly disagreed = 1; disagreed = 2; were neutral = 3; agreed = 4; strongly agreed = 5.

1. I dislike participating in group discussions.
2. Generally, I am comfortable while participating in group discussions.
3. I am tense and nervous while participating in group discussions.
4. I like to get involved in group discussions.
5. Engaging in group discussion with new people makes me tense and nervous.
6. I am calm and relaxed while participating in group discussions.

The analysis of the results showed that 23.3 percent of students had low CA and 39.2 percent had medium level of apprehension and 37.5 percent had high CA apprehension in the area of group discussion. The pictorial representation is shown in figure 3.12.

Figure 3.12 Analysis of CA in Group Discussion



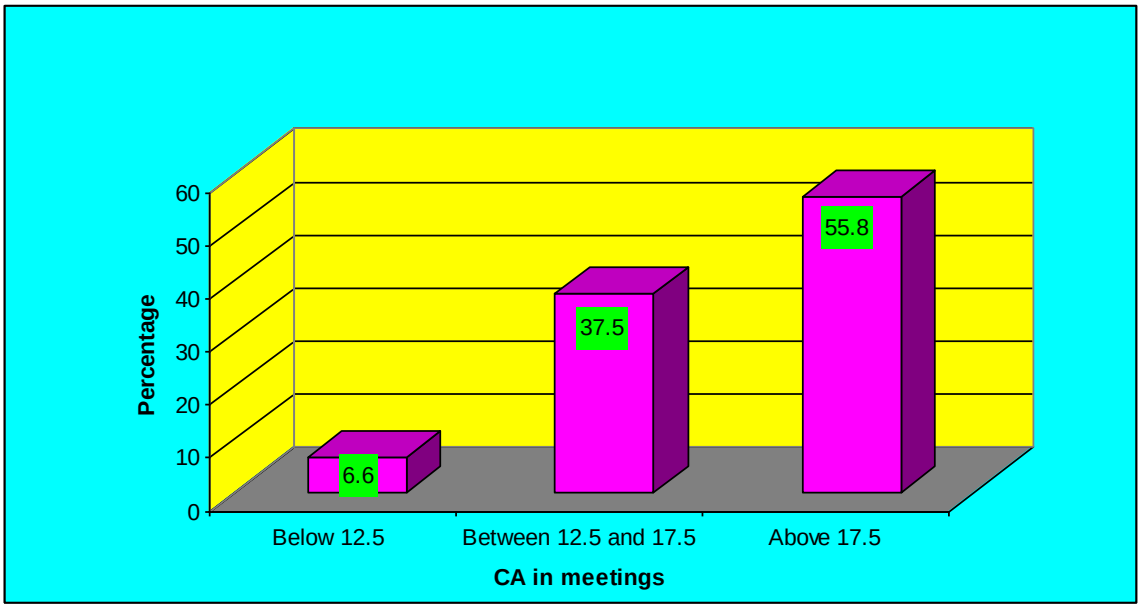
3.4.3.2 Analysis of Students' Communication Apprehension in Meetings

The following six items are related to the area of meetings.

1. Generally, I am nervous when I have to participate in a meeting.
2. Usually, I am comfortable when I have to participate in a meeting.
3. I am very calm and relaxed when I am called upon to express an opinion at a meeting.
4. I am afraid to express myself at meetings.
5. Communicating at meetings usually makes me uncomfortable.
6. I am very relaxed when answering questions at a meeting.

The analysis of the results showed that only 6.6 percent of students had low CA and 37.5 percent had medium CA and 55.8 percent had high level of apprehension in the area of meetings. Figure 3.13 is the pictorial representation of the details.

Figure 3.13 Analysis of CA in meetings



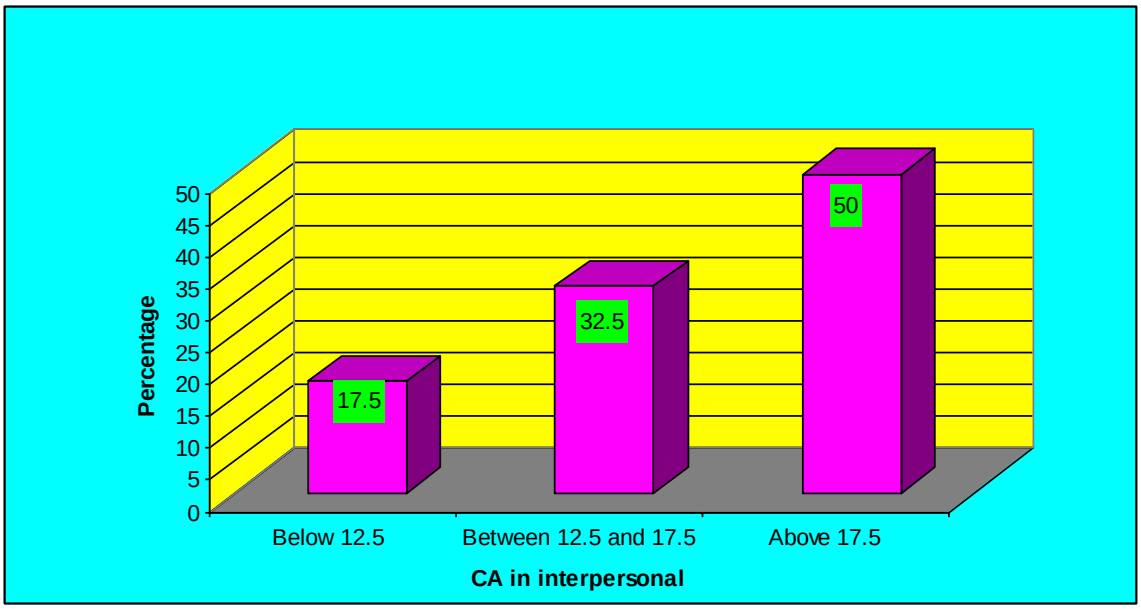
3.4.3.3 Analysis of Students' Communication Apprehension in Interpersonal Communication

The following six items are related to the area of interpersonal communication.

1. While participating in a conversation with a new acquaintance, I feel very nervous.
2. I have no fear of speaking up in conversations.
3. Ordinarily I am very tense and nervous in conversations.
4. Ordinarily I am very calm and relaxed in conversations.
5. While conversing with a new acquaintance, I feel very relaxed.
6. I'm afraid to speak up in conversations.

The analysis of the results showed that 17.7 percent of students had low communication apprehension and 32.5 percent had medium level of CA and 50 percent had high level of apprehension in the area of interpersonal communication. The pictorial representation is shown in figure 3.14.

Figure 3.14 Analysis of CA in interpersonal communication



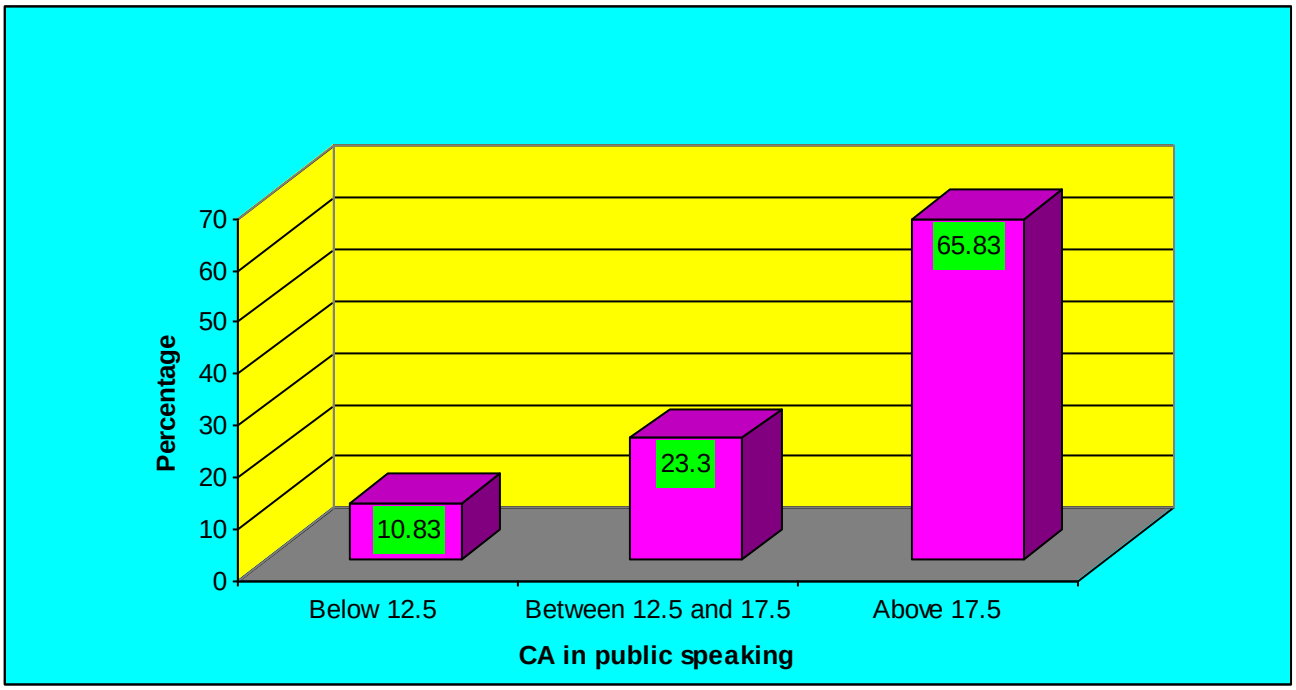
3.4.3.4 Analysis of Students' Communication Apprehension in Public Speaking

Given below are the six items related to public speaking (presentation).

1. I have no fear of giving a speech.
2. Certain parts of my body feel very tense and rigid while giving a speech.
3. I feel relaxed while giving a speech.
4. My thoughts become confused and jumbled when I am giving a speech.
5. I face the prospect of giving a speech with confidence.
6. While giving a speech, I get so nervous I forget facts I really know.

The analysis of the results showed that 13 students (10.83 %) had low level of communication apprehension in public speaking. Twenty-eight students (23.3 %) had medium level of CA and 79 students (65.83%) had high level of apprehension in public speaking. Given below is the pictorial representation (figure 3.15).

Figure 3.15 Analysis of CA in public speaking



3.5 Proficiency Test in Speaking

In order to compare the students' PRCA-24 scores in the area of public speaking with their actual performance, the students were given a proficiency test in speaking at the beginning of the course. They were asked to give a short talk on a general topic for three minutes and were awarded marks based on the following criteria: confidence level, effective communication, appropriate body language, comfort in handling questions and self-assessment. The topics were given to students just a minute before their presentation. The students were also asked at the end of their presentations how they felt before and while giving their oral presentations.

3.5.1 Analysis of the Proficiency Test Scores

Sixty percent of the students scored less than 50 per cent and they attributed their poor performance to lack of exposure and practice. Forty percent of the students said that it was their first experience to speak in front of an audience.

The mean value of communication apprehension in public speaking (18.62) was the highest of the mean values of apprehension in other areas: group discussion, meetings and interpersonal communication.

It was found that in most cases both the students' personal report of communication apprehension in public speaking and their performance in the diagnostic speaking test matched.

The results of the communication apprehension exercise and the proficiency test show that students lack communication skills and the first-year engineering course has not had positive effect on them.

3.6 The System of Assessment and Diagnostic Test

This section explains the system of assessment which is in practice in most engineering colleges and a diagnostic test administered to a sample group to assess the gap between the marks students score in final exams and the score they received in a standardized test that tests all the four language skills.

There are two types of assessment: 1) formative assessment and 2) summative assessment.

3.6.1 Formative Assessment

Continuous assessments are in the form of tests given periodically during a semester or an academic year. The majority of engineering colleges follow this pattern:

- Unit Test (after each unit is completed)
- Mid-semester Test (after two units are completed)
- Model Examination (after the completion of all the units)

These tests have only a written component and it is based on some combination of grammar, reading and writing. There is no oral component. Listening and speaking skills are not tested.

3.6.2 Summative Assessment

Summative assessment is usually conducted in the form of exams at the end of the course. The exams have only a written component and it is based on some combination of grammar, reading and writing. There is no oral component. Listening and speaking skills are not tested.

3.6.3 The Examination Structure

Students take a three-hour written examination at the end of the academic year and it contains the written tasks such as:

Part A

- Matching the words with their meanings
- Filling the blanks in sentences with the comparative forms of adjectives given
- Completing sentences. Example: 'If there were no automobiles in the city …."
- Writing the definitions of words such as computer, cell phone, and calculator
- Filling the blanks with the appropriate forms of words (parts of speech)
- Filling the blanks with the appropriate forms of verbs
- Expanding compound nouns. Example: computer education, resource utilization
- Editing a small passage (which contains grammatical and punctuation errors)
- Punctuation
- Adding suitable endings to the words given. Example: mature (maturity)

Part B

- Read the following passage and answer the questions that follow it. (testing reading comprehension)
- Letter writing (job application, letters to the editor)
- Writing a paragraph presenting the information contained in charts

- Using the information drawing a chart
- Writing a set of eight recommendations. Example: Write a set of eight recommendations that will help to reduce the air pollution in the city.
- Writing a set of eight instructions. Example: Write a set of eight instructions that should be followed by the students in a computer lab.

A sample examination paper (see Appendix 7) can be found in the appendix. The items in Part A are mostly grammar- and structure- based. The items do not test students' productive skills. Most items in Part B are mechanical. Items such as writing a set of instructions, recommendation and job application letters do not test students' originality.

3.6.4 Analysis of Examination Results

The analysis of the university exams for five years shows that exams in *Engineering English (Technical English)* has been quite easy even for students who do not have proficiency in English.

The university examination results of students of five different batches of an engineering college were analysed. Every year the pass percentage has been above 98 percent and some years it has been even100 percent. The students' marks in English may give an indication to others that the students are proficient in the language. It is not the case. EST practitioners, placement trainers and recruiters are of the opinion that students do not have good language and communication skills and on that ground many have not been recruited.

There is no correlation between the marks students score in the examinations and their proficiency level. It clearly shows that students' language skills are not assessed properly. The figure 3.16 given below gives the analysis of results of students belonging to different batches. See Appendix 9 for the detailed analysis of the results for each department.

Figure 3.16 Analysis of examination results (5 batches)

Batch	No. of students appeared	No. of students passed	No. of students failed	Pass percentage	Marks (above 60)
2003-2007 (first sem)	299	295	4	98.7	258
2003-2007 (second sem)	299	297	2	99.3	233
2004-2008 (first sem)	393	389	4	99	337
2004-2008 (second sem)	394	375	19	95.6	260
2005-2009	389	386	3	99.3	315
2006-2010	397	396	1	99.7	349
2007-2011	567	567	-	100	NA
TOTAL				98.8	

3.6.5 Diagnostic Test

In order to measure students' proficiency in English a diagnostic test (see Appendix 10) was given to a sample of 37 students who wanted to register for the Business English Certificate (BEC) preparation course conducted at Jeppiaar Engineering college periodically. All the students had scored above 70 in their first-year English examinations. There were 23 second-year and 14 third-year students in the group and they were from different branches of engineering.

The diagnostic test included items from a standardized Business English Certificate (BEC) Test (vantage level) prepared by the University of Cambridge ESOL. It had the following components. Listening, Speaking, Reading and Writing. Each section carried 25 marks.

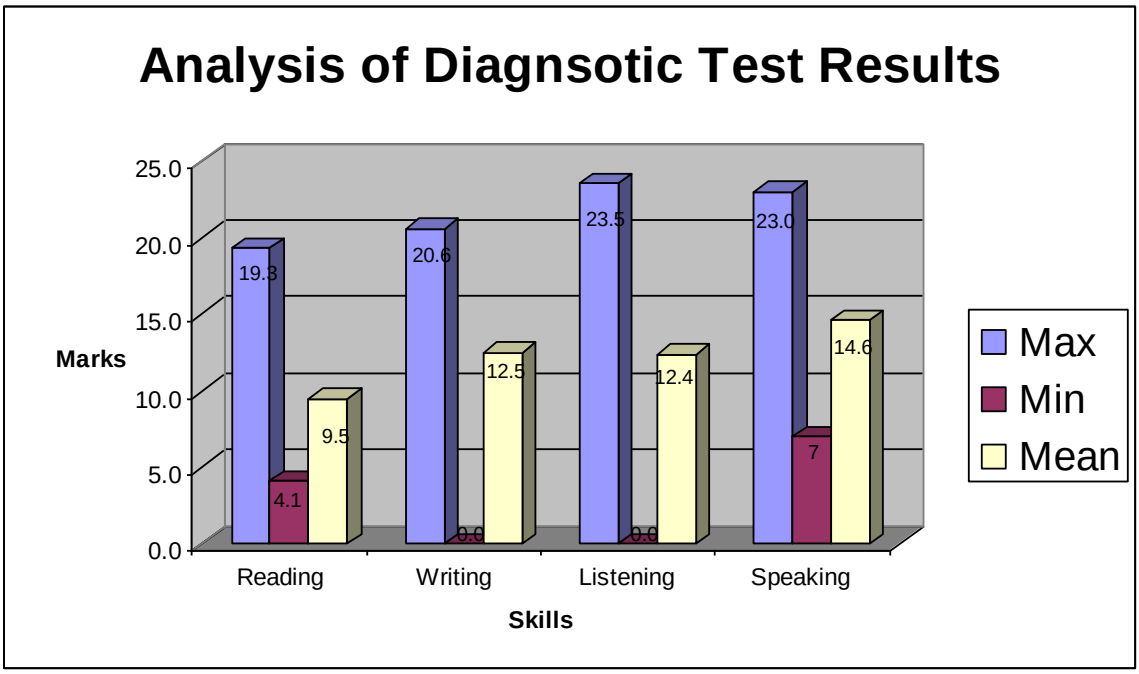
The number of students who scored less than fifty percent in four language skills is given below:

- Reading : 12
- Writing : 13
- Listening : 14
- Speaking : 12

The mean score of the thirty-seven students in each of the four components is given below:

- Reading: 9.5
- Writing: 12.5
- Listening: 12.4
- Speaking: 14.6

Fig. 3.17 Analysis of diagnostic test results



The analysis of the diagnostic test results shows that more than fifty percent of the students have scored less than the pass mark (50) in the diagnostic test though they all

scored above 70 in their Engineering Exams. It implies that there is no correlation between students' proficiency in English and the marks they have scored in the university examinations.

The comparison of students' university examination marks in English and the diagnostic test (based on the desired level for students who have completed their first-year engineering course) marks shows that the system of assessment is not effective and should be changed.

3.7 Summary of Evaluation

It has already been mentioned in sections 3.3.1.1 and 3.3.2.3.4 that students were not happy with the system of evaluation. It has been observed by the researcher and the EST practitioners who took part in the survey and clearly expressed by students that the different tests and exams given to the learners do not test all the skills. The tests and exams have the following drawbacks:

- They contain more grammar- and structure-based items
- Listening and speaking skills are completely neglected.
- The exams are quite easy. Even students who have low level of proficiency in English score above sixty percent in the final examination.
- The pattern is entirely different from the standardized tests such as IELTS, TOEFL and BEC which have these four components: listening, speaking, reading and writing.

The need of the hour is to change the system of assessment and the pattern of the examination which is on par with the standardized examinations.

3.8 Conclusions

The evaluation of the Engineering English curriculum reveals many shocking facts and calls for a radical change.

The *communicative approach* to English language teaching is currently recognized as the dominant approach. It implies teaching language as a skill and as a means of communication, in communicative contexts based on authentic materials, by modeling communicative situations form the real world in the classroom. The analysis of the questionnaire data shows that the majority of English classes are of a non-communicative nature. Most students did not have communicative activities such as discussions, role-plays, interviews, presentations, etc. in their English classes.

The analysis of the data also shows that the majority of ESP classes are teacher-dominated. As a result, the learners' productive skills have been ignored much.

The information technology and communication tools have not been utilized in the English class.

Textbooks are also of a non-communicative nature. Most course books that are used in engineering colleges do not cover all the four skills and do not promote collaborative learning and critical thinking in learners.

Though it is stated in the objectives and the syllabus of the Anna University and other universities that listening and speaking skills should be covered, these skills have been completely ignored by many colleges.

Since continuous assessment tests and the final examination do not have listening and oral components, the majority of teachers do not give importance to listening and speaking activities. These are two neglected skills. Only in one out of the fifteen engineering colleges the researcher visited the first-year students are trained in listening and speaking and have practice in the English language laboratory. There is a wide gap between the marks students score in tests and exams and their proficiency in the language.

A number of researchers and ELT professionals have researched on the role played by information technology and web tools in enhancing learners' language skills. In the absence of competent teachers, English learning material in the form of compact discs

(CDs) and web-enhanced language laboratory environment can help students develop their listening and speaking skills. The need for integrating technology into the Engineering English curriculum is discussed in the next chapter.

CHAPTER FOUR

INTEGRATION OF TECHNOLOGY INTO ENGINEERING ENGLISH

4.1 Introduction

Computer assisted language learning (CALL) has become a central resource in many educational institutions and its potential to promote learner autonomy and develop English language skills in learners has been reported by a number of researchers. The need for integrating information and multimedia technology (IMT) or technology enhanced language learning (TELL) into the *Engineering English* programme has been emphasized by researchers and ELT professionals.

Having realized the potential of CALL, the Anna University has instructed all its affiliated engineering colleges to set up language laboratories, but many colleges do not seem to have exploited the potential of CALL.

Here in this chapter the rationale for integrating IMT technology into the Engineering English curriculum is explained in brief, the stakeholders' views on the technology-integrated language learning are analysed and two case studies, one concerning developing learners' writing skills with the focus on collaborative learning and the other fostering learners' critical thinking skills, are reported.

4.2 Rationale

Technology offers the possibility of alternative materials and classroom interactions. The developments in technology have brought interactive packages. For the learner, CD-ROM offers information and the opportunity for repetitive practice. CD-ROM offers greater interactivity than paper-based materials.

The Internet is bringing further changes as language courses can now be downloaded from all over the world. The interactive exercises on the Internet provide the learners plenty of opportunities to assess their language skills. Posdcasts, voice chats, blogs and authentic materials available on the Web enable learners to develop their listening, speaking, writing and reading skills respectively. One point expressed in much of the literature related to TELL is the potential of ICT to assist second language acquisition.

English as a second language (ESL) learners have difficulty with English pronunciation. Students often have a poor grasp of how sounds in English are made, and as a result these sounds are produced poorly and unintelligibly. With advances in technology, the use of multimedia resources such as animations, audio files, and on-line videos in pronunciation teaching has become increasingly popular. The Internet provides limitless possibilities for learners of English.

4.3 Literature review

Levy (1997) defines CALL as "the search for and study of applications of the computer in language teaching and learning". More recent approaches to CALL have favoured a learner-centred, explorative approach rather than a teacher-centred, drill-based approach to CALL.

A feature of many multimedia CALL programs is the role-play activity, in which the learner can record his/her own voice and play it back as part of a continuous dialogue with a native speaker.

The Web offers enormous potential in language learning and teaching. Felix (2001) advises adopting hybrid approaches to CALL, integrating CD-ROMs and the Web and running audio conferencing and video conferencing in conjunction with Web activities.

CALL authoring programs offer a do-it-yourself approach to CALL. Modern CALL authoring programs are designed to be used by language teachers. A**uthoring**

packages are also available, e.g. *Hot Potatoes* software: http://web.uvic.ca/hrd/halfbaked.

Learner-centered web-based environments have been reported to be effective because they promote active learning and offer a setting where students can conduct learning at anytime using wired computers.

Mohammad (2003) states that "the internet is a powerful means of communication which has become an abundant and ever growing resource for English language teachers and learners." She states further that "in recent years, using the internet in language classrooms has gained popularity as more teachers and learners are embracing it. This practice is expected to experience an unprecedented growth as the internet holds potential as a tool for developing language as well as critical thinking skills".

"There is a growing body of anecdotal evidence, however, suggesting positive effects of task-based learning using the Web in a variety of projects, approaches and languages." (Barson et al 1993, Meagher and Castanos 1996, Warschauer 1995 cited in Felix 2001)

There has been greatly increased communication with the teacher by e-mail, allowing for faster, more individualised and more frequent feedback.

Higher motivation and a better attitude towards learning have also been reported in Web-based teaching (Atkinson 1998), which seems to reflect general findings in CALL where effects on learning outcomes have always been equivocal at best, but where positive affective factors have been consistently reported."

Felix (2001) states that "the great advantage that Web-based teaching and learning offers is variety of content, approach and media. It allows flexibility in finding meaningful activities, often available at no cost, for different students, and most of all it allows for authenticity." The Web provides "an environment for meaningful

interactive tasks in authentic settings, or at least in settings that are rich in authentic language and culture."

There are many studies that show how the integration of CALL into the English programme help learners develop their English language skills and promote collaborative learning and critical thinking. The summary of a few studies are reported here to show that CALL plays an important role in the English language programme.

Discussing and evaluating the integration of CALL and ICT into a tertiary level English programme Ayres (2003) proposes a five-stage framework that might be used to guide integration and examines some of the issues involved.

Step 1: Identify the course pedagogic philosophies and learning outcomes

Step 2: Identify available CALL/ICT resources

Step 3: Match learning outcomes with appropriate resources

Step 4: Make the CALL/ICT learning objectives explicit

Step 5: Encourage learners to take responsibility for their learning

There are several reasons why information and multimedia technologies should be used by language teachers to teach a target language and there is empirical evidence to prove that these technologies enhance language learning. "Computer-mediated communication allows users to share not only brief messages, but also lengthy documents – thus facilitating collaborative writing" (Warschauer, 1996). According to Fletcher, technology-based instruction can increase instructional effectiveness, reduce time and costs needed for learning and can make individualization affordable and thereby help ensure that all students learn. (Fletcher, www.techknowlogia.org). Warschauer states that

> *"hypermedia provides a number of advantages for language learning. First of all, a more authentic learning environment is created, since listening is combined with seeing, just like in the real world. Secondly, skills are easily integrated, since the variety of media make it natural to combine reading, writing, speaking and listening in a single activity." (Warschauer, 1996)*

P'Rayan (2003) gives five reasons why web-enhanced language learning should be introduced in the English class.

Nothing can be taught but everything can be learnt.

Internet cafés are more attractive than traditional classrooms.

The Internet is more resourceful than language teachers.

Unlike language teachers, computers are not moody.

The Internet is more interesting than language teachers.

4.4 Students' views (see appendices 1&2)

The Anna University introduced a course entitled 'Communication Skills Lab' (GE1352) for the third-year students for one semester. The course had two components: Language Lab & Career Lab. The students had computer-assisted activities 2 hours a week for a period of 15 weeks.

The questionnaire asked the students whether they found the course useful. Forty-eight students out of sixty-five students who took part in the survey said that they found the course useful. It implies that students enjoy the computer-assisted language learning (CALL) environment and the learning outcome is better.

The respondents were asked to express their views on how the CALL environment was different from their first-year Engineering English course. Most respondents said that the CALL environment was interesting, motivating and enjoyable.

They mentioned the following merits of the programme.

- we had listening and speaking practice
- we could improve our pronunciation
- the downloaded podcasts from VOA Special English website and The Guardian Weekly websites were quite useful. Those audio files helped us develop our listening skills.
- cloze exercises were very useful. The activities on the computer enabled us to develop our reading skills.
- computer-based tests were good
- we could work on our own without depending on the teacher (learner autonomy)

- we were motivated by interactive exercises
- good exposure to language skills
- the activities were very interesting
- if the course had been introduced in the first year of our programme it would have been more useful.

When asked whether they thought that technology-enhanced language teaching and learning would be relevant and useful to them, fifty-three students (82%) said that it was very useful to them.

Fifty-one students (78 %) said that they liked the idea of Blended Learning refers to a language course which combines a F2F (face-to-face) classroom component with an appropriate use of technology.

Even EST practitioners and professional engineers who took part in the survey said that CALL activities are very useful to students as they develop learner autonomy.

4.5 Case studies

4.5.1 Technology-Integrated Language Learning (TILL) at JEC

Technology-integrated language learning is very much in use at Jeppiaar Engineering College. The software used at the language laboratory aims to help students develop the four major language skills: listening, speaking, reading and writing.

The first-year students of engineering and technology spend an hour a week at the CALL lab. Besides using a number of software, they also practise their language skills by listening to audio files and podcasts downloaded from the Internet and taking part in discussions in blogs.

They have found VOA Special English audio files very interesting, relevant and useful. Some students with better proficiency in English listen to podcasts downloaded from the BBC and The Guardian Weekly website. These web-based listening activities have helped their listening and speaking skills to a great extent.

Students are comfortable posting their assignments in yahoo groups created exclusively for each class. Some of them voluntarily blog at www.raydeal-blogspot.com created by the researcher with the aim of developing communication skills.

Students are encouraged to download relevant field-related articles that can be used in the English class. A project on designing an Engineering English course by involving learners in the course design is going on. Learner-generated material is used in the class.

Cloze exercises created with the Hot Potato software have been found very useful by the learners.

The CALL environment has had positive impact on the learners. It has empowered them linguistically.

4.5.2 Blogging can Promote Learner Autonomy

Blogging is an effective tool that enhances bloggers' writing skill. The benefits of blogging for language learners have been reported by researchers. For example, Jo

Mynard in her paper entitled "How blogging can promote learner autonomy" , presented at the Independent Learning Association Conference held in Chiba, Japan in 2007, reported findings from an ongoing research project with different groups of Japanese female college students. According to Mynard the following are the benefits of blogging for language learners:

Blogs provide learners with an authentic outlet for practising their language as well as giving them valuable experience of writing for an audience.

Blogging is a collaborative pursuit in that a blog invites responses from readers.

Blogs are believed to have the potential to develop learner autonomy as language learners are involved in key facets of autonomous behaviour such as decision making, taking control or making connections.

Blogging develops critical reflection in bloggers.

Jo reported that three groups of students had been involved in the research over three years. All students were first year college students. Two groups kept their blogs while on study abroad programmes (in the UK in 2005 and 2006). The third group kept blogs in Japan. Jo stressed that that the aim of the research was not to compare groups but to gather initial impressions on the usefulness of blogs as tools for reflection and language learning. Data was collected by questionnaires, interviews, researcher observations and analysis of blog content and, sometimes, language.

The findings revealed that students (in all groups) were generally positive about blogging, feeling that it had helped them to develop their language skills. In particular, students were keen on the social nature of blogging. There was evidence of students personalizing language that they had previously studied in class.

There was also evidence of reflection. Furthermore, analysis of content revealed that a third of blog postings had a reflective element. Students reflected on their language ability, on activities they had done in class or on the differences between British and Japanese culture.

Students reported that that they were motivated to write more because they knew people were reading their blogs.

4.5.3 Web-based English Language Learning (WELL)

P'Rayan (2003) reports on the Web-based English Language Learning (WELL) Project which supports collaborative learning. P'Rayan's aim in the five-stage WELL project was to help his students at the Kigali Institute of Science and Technology in Rwanda was to help his students develop from dependent learners into independent learners, and finally into interdependent learners who are both effective communicators and collaborators.

The WELL project was just an experiment to find out whether students' writing skill could be enhanced more effectively through WWW-based activities than traditional classroom activities.

Before the real objectives were set, twenty prospective participants were briefed about the WELL project and its main objective of fostering students' writing abilities, and asked to fill in information and needs analysis questionnaires. They expressed their need to write essays of different types and desire to improve their writing skills. They wanted the teacher to play the role of a guide or facilitator and not as a traditional teacher who always looks for language mistakes and tries to correct them. The responses of the students in the questionnaires revealed their enthusiasm to improve their writing skills through web-based activities.

4.5.3.1 Objectives of the WELL Project

After analyzing the needs analysis questionnaires, the following objectives were set:

- To motivate participants to become 'interdependent' learners and promote collaborative learning.
- To give practice to participants to express themselves freely on any topic of their choice.

To motivate them to channel their enthusiasm in surfing the Internet for constructive purposes.

To expose them to a wide variety of reading materials available on the Web.

To develop their critical thinking.

To instill confidence in them that they can write well.

To enhance learner autonomy and make them feel that their learning environment is very much learner-centred.

The main objective was to encourage students to write and write better in a more acceptable manner. As it was found that that the majority of the students lack critical thinking, it was emphasized by the participants that the project should help them develop their critical thinking and that should be a basis for their writing effectively.

4.5.3.2 Collaborative Learning

A good communicator is the one who is interdependent. All those who learn languages and become effective communicators go through these 3 stages: dependent → independent → interdependent. P'Rayan (2003) describe the three types of persons, as far as social communication is concerned, in the following words:

A dependent person

- lacks critical thinking
- is not an effective communicator
- is hesitant to use the resources available properly

An independent person

- is individualistic
- lacks good receptive skills such as listening to others and respecting the views of others
- is not an effective communicator
- is not socially acceptable

An interdependent person

- is an effective communicator
- listens to others and respects the views of others
- has a healthy attitude towards others
- is socially acceptable

is collaborative

Discussing the nature and advantages of cooperative learning Johnson & Johnson emphasize the importance of interdependence (Johnson & Johnson, 1996).

> *Cooperation* is working together to accomplish shared goals (Johnson & Johnson, 1989). Within cooperative activities, individuals seek outcomes that are beneficial to themselves and beneficial to all other group members. *Cooperative learning* is the instructional use of small groups so that students work together to maximize their own and each other's learning. In cooperative-learning situations, there is a positive interdependence among students' goal attainments; students perceive that they can reach their learning goals if and only if the other students in the learning group also reach ' their goals (Deutsch, 1962; Johnson & Johnson, 1989).

During the orientation meetings participants were reminded how important it is to become interdependent persons and respect the views of others. They realized the importance of reaching the interdependent stage in order to participate effectively in the project. Reaching the interdependence stage promotes collaborative learning and that was essential for the success of the WELL project.

4.5.3.3 Stages of the project

The WELL project programme was carried out in five stages. Each stage had certain objectives and the tasks were done by the participants in a stipulated time.

Stage One

Tasks:	Exchanging emails with one another.
Topics:	Sharing with participants about their interests, hobbies, hostel life, courses, favourite persons, ….
Objectives:	To encourage free writing, To know one another and build mutual trust.
Duration:	2 weeks

Barkuizen says "Writing letters to the teacher is not a process. It is spontaneous writing which takes place in a non-threatening, non-structured manner. For these reasons, the students enjoy the "break" and some often produce their best writing in their letters, albeit with a few errors" (Barkuizen, 1995).

Leki says, "There is a place for error-free writing, but it does not have to be the main goal for writing classes" (Leki, 1991).

Stage Two

Tasks:	Downloading anecdotes, jokes, articles, news stories, about persons they like, looking for job advertisements, … and passing them on to other participants as an email attachment and expressing their comments on the pieces of writing.
Objectives:	To expose the participants to vast resources on the Internet To promote learner autonomy To develop their critical thinking
Duration:	2 weeks

The main objective of this task was to help the participants foster their critical thinking and improve their writing skill.

Stage Three

Tasks:	Discussion on topics such as *Homosexuals and their rights*, Meaning of Christmas, Street Children in Rwanda, Role of Engineers, etc. Phase 1: Reading Phase 2: Expressing their views Phase 3: Commenting on the views of others (agreeing and disagreeing)
Objectives:	To expose the participants to authentic language To give them practice in cohesive writing To develop their critical thinking To develop their self confidence
Duration:	6 weeks

The WELL participants having felt the importance of discussing current affairs expressed the need for reading articles related to such topics and giving their views on the topics. "Authentic reading materials require students not only to understand information but to interpret and evaluate it as well… academic writing follows from listening and reading, and thus requires students to synthesize facts and ideas from multiple sources as preparation for writing" (Brinton, Snow, and Wesche 1989). The texts chosen by students can be used as "Text As a Linguistic Object (TALO)", and "Text As a Vehicle of Information (TAVI)" (John and Davies, 1983).

Stage Four

Tasks:	Expansion of the club Intranet ⇒ Internet
	Exchanging emails with epals in different countries
	Exchanging emails with native speakers of English
	Discussing current topics.
Objectives:	To expose participants to authentic language
	To help them have fun
Duration:	No time limit (ongoing process)

Ever since the Internet has become affordable to common people, communication has become easier and it is easy to communicate with anyone in the world. The concept of keypal or e-pal is well understood by everyone. It has become a fashion among the youth to exchange emails and chat with persons whom they have never met.

The WELL project participants at this stage exchange emails with epals, including native speakers of English, and discuss topics of their interest.

Stage Five

Tasks:	Taking part in discussion forums such as BBC Talking Point
	Writing Letters to the Editor
	Contributing to BBC Focus on Africa
Objectives:	To develop participants' critical thinking
	To make them feel confident that they can publish their views
Duration:	No time limit (ongoing process)

One of the motivating factors for the participants is to see their writings on the web or get their pieces published in newspapers or magazines. The World Wide Web provides them with opportunities to take part in discussion forums and get their views published on the Web. As one of the participants put it there is a great joy in sharing one's view with others and seeing it on the Web or in print. The ultimate aim of the WELL project was to instill confidence in participants that they can write well and publish their pieces. As one of the participants has already done it before it was an encouraging sign for others. "There is a relationship between student motivation and student interest and a student's ability to process challenging materials, recall information, and elaborate" (Alexander, Kulikowich, and Jetton, 1994).

4.5.3.4 Evaluation

At the end of the project, the participants were asked to answer the following questions in the questionnaire.

> What skills have you developed through the project?
> How did your peers help you in developing your writing skills?
> What aspects of the WELL project were helpful to you?
> What is your contribution to the success of the project?
> How successfully have you involved yourself in the WELL project?
> Could you translate the objectives of the project in to action? If 'no' why?
> What are your suggestions?

All the participants expressed that they enjoyed involving themselves in the project and what they liked the most was collaboration from one another and the learning process was quite 'interdependent'. Free writing in the first two weeks of the project instilled confidence into them that they can write in English fluently. The two weeks

of exchanging emails helped them know one another and build up mutual trust. They could enrich their reading skill by getting exposed to many interesting and thought-provoking reading materials downloaded from the Web by them and passed on to them by other participants. They could also come in contact with some native speakers of English and exchange emails with them. Their experience was an exposure to authentic English. Almost all of them said that the objectives of the project were fulfilled.

4.5.3.5 Conclusion

There are many advantages of technology-enhanced language learning in the English class. There is increased participation and collaboration in tasks with an element of production (Chun & Plass, 2000). TELL enhances authenticity (Harmer 1991). TELL promotes independent learning skills and strategies (Bratt, 1995).

As mentioned earlier Web-based activities have the potential to develop learner autonomy, enhance learners' communication skills, promote collaborative learning and foster critical thinking. Engineers need all these skills: communication skills, critical thinking skills and group skills. Engineering students who depend much on technology find the TELL environment very conducive for language learning and therefore technology should be integrated into the Engineering English curriculum.

CHAPTER FIVE

BRIDGING THE GAP: THE DESIGN OF ENGINEERING COMMUNICATION - AN INTEGRATED SKILLS APPROACH

5.1 Introduction

Based on the principle that the process of evaluation of an ESP course must include action, certain actions have been taken. The actions are in the form of modifying the existing course and suggesting changes for future action.

5.1.1 Overall Aim

Since the overall aim of ESP teaching and learning is to prepare students to communicate effectively in their academic and professional environments, the *Engineering English* curriculum should aim at helping students develop their communicative competences in English required for academic and job-related situations.

5.1.2 Overall Objectives

Formulating goals and objectives for a particular course allows the teacher to create a clear picture of what the course is going to be about. As K. Graves (1996 as cited in Sysoyev, P. 2000) explains, goals are general statements or the final destination, the level students will need to achieve. Objectives express certain ways of achieving the goals. In other words, objectives are teachable chunks, which in their accumulation form the essence of the course. Clear understanding of goals and objectives will help teachers to be sure what material to teach, and when and how it should be taught. The course objectives, according to Ellis and Johnson, are "the goals of a course in English, as indicated by the needs analysis, and expressed in terms of what the learner should be able to do" (p221).

As given in the English for Specific Purposes (ESP) document prepared by the Ministry of Education and Science of Ukraine, more formal objectives can be stated in three parts:

i) the activity (what students will be able to do);

ii) the conditions (under what circumstances), and

iii) the standards (how well they should be able to perform) (ESP, 2005)

Based on the analysis of the data collected from the needs analysis and evaluation exercises, it is recommended that the *Engineering English* course reflect the learners' present and future needs and the course have the following objectives (ESP 2005):

5.1.2.1 Listening

- to understand main ideas and identify relevant information in extended discussions, debates, formal talks, lectures, conversations etc., on study- or specialism-related topics
- to understand in detail non-routine telephone conversations
- to understand gist and much of relevant detail in authentic radio and TV programmes related to academic or professional area
- to understand fairly complex messages and instructions in academic or professional environment
- to identify speaker's purpose and appreciate impact
- to identify speakers' attitude and point of view
- to comprehend different registers: how people talk and write to friends, strangers, colleagues, employers, and people of different ages and social status for different purposes

5.1.2.2 Speaking

- to respond to main ideas and identify relevant information in extended discussions, debates, talks, conversations etc., on study- or specialism-related topics
- to participate in clear argument on topical issue in academic and professional areas (e.g. seminars, discussions, debates, etc.)
- to participate appropriately in common social, academic and professional settings (e.g. meeting, coffee break, party, etc.)

to react to non-routine telephone conversations

to make telephone calls for specific purpose related to academic or professional area

to offer opinions on content of authentic radio and TV programmes related to academic or professional area

to react to announcements, fairly complex messages and instructions in academic or professional environment

to respond appropriately to speaker's attitude / point of view

to adjust to changes of direction, style and emphasis normally found in conversation

to perform and respond to a wide range of language functions, using their exponents flexibly

to give clear prepared individual presentation on wide range of topics within academic or professional field

to produce clear, detailed monologue on wide range of study and specialism-related topics

to use basic cohesive devices to link utterances into clear, coherent discourse

5.1.2.3 Reading

to understand authentic texts related to study or specialism areas from textbooks, newspapers, magazines, specialist journals or Web-based sources

to identify writer's attitudes and viewpoints in authentic texts related to academic or professional area

to identify writer's purpose and appreciate the impact of writing (e.g. memos, letters, reports, etc.)

to understand details in fairly complex instructions; specifications (e.g. for operation of devices/ equipment); advertising materials

to understand authentic academic and professional correspondence (e.g. letters, faxes, e-mails, etc.)

to comprehend different registers: how people talk and write to friends, strangers, colleagues, employers, and people of different ages and social status for different purposes

5.1.2.4 Writing

to write clear, detailed texts for variety of purposes related to personal and professional areas (e.g. letter of application, etc.)

to write detailed study- and specialism-related assignments and reports in standard format

to draft and produce business and professional correspondence

to take messages from telephone and word of mouth accurately

to write summaries, minutes, etc. with high degree of accuracy

to fill in forms for academic or professional purposes with high degree of accuracy

to use basic cohesive devices to link their utterances into clear, coherent discourse

to perform and respond to a wide range of language functions, using exponents flexibly

to interpret charts and tables and write paragraphs

to write instructions, recommendations, etc.

5.1.3 Content

The *Engineering English* content should help the learners achieve the target language proficiency level reflected in the objectives stated above. Such a level of language proficiency will enable engineering graduates to function competently in a professional and academic context, and provide them with a platform for life-long learning. The content should be focused on professional communicative competence. It requires the acquisition of linguistic competence (language skills and language

knowledge), and the socio-linguistic and pragmatic competences needed for performing study and job-related tasks.

5.2 Engineering Communication – An Integrated Skills Approach

Reflecting the learners' present study needs and future professional needs and considering the objectives mentioned above an attempt was made to design a course entitled "*Engineering Communication – An Integrated Skills Approach*" and pilot it. The sample course was designed based on the following nine principles expressed by the majority of stakeholders.

5.2.1 Principles

1. Learners' present and future language needs should form the basis for the design of the EE course.
2. Learners' views should be taken into consideration while designing the course.
3. Involving learners in the course design may enhance learner involvement and result in effective learning.
4. The skills should be taught in an integrated manner.
5. Learning should be fun (not always) and therefore interesting activities should be introduced to facilitate learning (mainly to develop students' speaking skills).
6. The process approach to oral presentation skills enables learners develop multi-skills.
7. Group discussions should be conducted with the focus on developing the skills employers look for in prospective employees.
8. Technology-integrated language teaching and learning is effective in developing students' communication skills.
9. Project-oriented activities should be given to students to develop their language skills.

5.2.2 Components experimented / piloted

Due to time constraint only a few components were experimented / piloted in the class. Translating the principles into action the following components of the proposed course were experimented.

1. Designing an ESP course (English for Biotechnology as a sample) involving learners and using it in the ESP class.
2. Developing learners' speaking skills thru role-plays
3. Developing learners' presentation skills through a process approach
4. Developing learners' language skills through project-based activities

5.2.2.1 DESIGNING AN ENGLISH FOR BIOTECHNOLOGY COURSE INVOLVING LEARNERS

A supplementary course 'English for Biotechnology' was designed involving 30 first-years students of biotechnology who were not satisfied with the content of their *Technical English* course. After carrying out a detailed needs analysis and gathering data from the learners and core subject teachers the course objectives were set, materials collected and the course designed.

5.2.2.1.1 Course Objectives

The goal was to enable students to make the transition from *English for Engineers and Technologists* (common to all branches of engineering) to *English for Biotechnologists* (more specific) environment by providing them with scientific English through content-cum-task based teaching-learning materials and through the integration of the four major language skills: listening, speaking, reading and writing.

The following specific objectives were set based on the needs of the students:

1. to develop the learners' reading skills to ensure comprehension of biotechnology related reading materials.

2. to develop the learners' technical writing skills with the focus on defining technical terms, essay writing, and summary writing.
3. to enable the learners to acquire speaking and presentation skills.
4. to develop the learners' listening comprehension skills.

5. to develop learner autonomy
6. to foster the learners' critical thinking skills through various tasks.
7. to develop their interpersonal skills through various group activities.

5.2.2.1.2 Selection of Materials

Materials play an important role in the design of any language course. If students do not find the materials interesting and the teaching methodology creative, they lose their motivation. It is the role of the teacher to set the track right for the learners by creating an environment that is conducive for learning. This has been articulated in Dulay, Burnt, and Krashen (1982).

> "Learning a second language can be exciting and productive….or painful or useless. One's efforts can end in the acquisition of native-like fluency or a stumbling repertoire of sentences soon forgotten…The difference often lies in how one goes about learning the new language and how a teacher goes about teaching it. To be successful, a learner need not have a special inborn talent for learning language. Learners and teachers simply need to "do it right"" (p-3)

5.2.2.1.3 Learner involvement

Most learners had expressed that the reading materials in the prescribed book were not relevant to the students of biotechnology. To the question on how they would like to involve themselves in the design of the course, the learners had stated that they

would select appropriate authentic reading materials. The process of selecting and producing materials took about three weeks.

Initially, the learners were briefed about the importance of authentic materials. Schleicher (1999) defines authentic materials as "oral and written texts that occur naturally in the target language environment and that have not been created or edited expressly for language learners". According to Swaffer (1998) there are many advantages of using authentic texts in the classroom:

1. learning is enhanced by the use of texts of particular interest to a class
2. there will be an increase in variety and spontaneity in classes that introduce authentic materials
3. exposure to a variety of vocabulary and structures will occur
4. students will capitalize on their prior cultural and schematic knowledge to contrast target situations and genres with those of their own culture (p.18)

As part of the first assignment each student was given the task of selecting his / her own reading texts from sources such as newspapers, magazines, journals, books and the Internet and was also asked to give his / her reasons for selecting the reading material. The response to the assignment was very positive.

The following were some of the topics submitted by the learners: Eugenics, Biodiesel, Nanotechnology in biotechnology, The future of cloning, Genetic engineering, Human genome project, Biofuels, Anti-cancer drugs, and Vaccine through biotechnology. The reasons given by them can be summarized as follows:

- The reading material is related to the field of biotechnology.
- The article is a very interesting piece and motivates us to read.
- The selected reading material is an authentic text.
- The reading text contains technical words.

- The reading passage has optimal word length.
- It is a very interesting topic for group discussion and for writing essays.
- The language is not too technical.
- Many tasks can be devised using the material.

The second assignment was done in groups of six members. Each group was given six reading texts and was asked to select the best two based on the aforementioned reasons given by the learners for selecting their texts. They were also asked to list as many technical words as possible from the selected texts and write their definitions. The other task given to them was to write two discussion questions for each selected text. The response to the second assignment was very encouraging as the learners were told that the assignment would be considered for their internal marks.

A careful analysis of the materials selected by the learners showed that learners can be trained and used effectively in materials modification and development. Though not all, about 70 per cent of the texts selected by different groups were appropriate, authentic, rich in content and vocabulary and stimulating. The tasks devised by the groups needed only slight modifications.

The reading texts selected by individuals but not shortlisted by groups were not rejected. The students were asked to prepare an oral presentation based on the same topic. This further enhanced their interest and motivation in the course.

According to Ghani, S. (1995), developing an ESP reading course for ESL students is a challenging task. He lists four major problems the material designer faces:

1. deciding on the purpose of the reading in order to determine the level of reading difficulty.
2. deciding on the cognitive level of comprehension.
3. selecting reading texts with the right level of difficulty for both students and teachers.

4. deciding on the appropriate length of the text.

The researcher too faced the same problems. He was not happy with some of the texts selected by the students as they were either too technical or too long. He had to ask them to explain their rationale for selecting such texts and if not convinced by their explanations, he asked them to choose some other better texts.

5.2.2.1.4 Course Structure

The course had 5 units and each unit had two or three reading texts. (See Appendix 12). All the four major language skills are taught in an integrated manner. The activities / tasks were of three types: i) Pre-reading, ii) While-reading and iii) Post-reading. As it is not practically possible to cover all the sub-skills that the learners considered important in the limited time, only some skills were prioritized and covered in the supplementary course: reading technical texts, technical writing (definition of technical terms, summary, and essay), oral presentation skills and listening skills.

Title	**English for Biotechnology**
Nature	Supplementary to the main course
Duration	30 hours
Period	2 months
Total number of units	5
Number of hours required to cover the five units	5x4=20 hours
Number of hours required for students' oral presentation	10 hours

An intermediate level of proficiency level is required for students to successfully complete the course. Those students whose proficiency level in the English language is low were advised to have some remedial coaching before doing the supplementary course.

5.2.2.1.5 Skills: Tasks and Activities

All the four language skills are taught in an integrated manner. Students are tested in their reading, listening, speaking and writing skills. They are also tested in their knowledge of grammatical structure and usage in the context of a reading text. Each unit consists of the following seven sections:

1. Getting started
2. Reading
3. Writing
4. Listening
5. Speaking
6. English in use
7. WWW-based activity

The tasks are arranged around the themes dealt with in the five units of the course. The sections given below explain the rationale for introducing certain tasks and the benefits of using them in the supplementary course.

Getting started

The getting started section contains many warm-up exercises such as brainstorming, pair work and puzzles. It tests students' pre-knowledge in the theme/topic dealt with in the unit and prepares them to understand the topic better and perform well.

Reading

Reading texts are authentic texts, selected based on certain criteria: content, technical vocabulary, grammatical structures and complex language, which are suitable to students at the undergraduate level.

The objectives of teaching reading skills are as follows:

1. To make students read a range of biotechnology related texts in class.
2. To enable them to interact with reading texts by focusing on pre-reading questions.
3. To stimulate their interest in the topics dealt with.
4. To train them in prediction techniques.
5. To give them practice in skimming and scanning.
6. To make them use different reading strategies by asking them to attempt answering different types of questions.
7. To make them get into the habit of analyzing texts.
8. To develop their critical thinking skills.

The following are different types of tasks:

- Sequencing jumbled sentences
- Reading comprehension questions to test their skimming and scanning skills.
- Cloze
- Vocabulary exercises
- Crossword puzzles

Writing

The following are the objectives of teaching writing:

- To give students practice in writing tasks.
- To help them link ideas properly.
- To give them practice in using a variety of sentence structures and complex language appropriate to the task.

- To improve their technical communication skills.

The following are different types of tasks:

1. Technical definition
2. Report
3. Paragraph / Essay
4. Letters

Students are taught to follow the process approach to writing which requires the following sequence:

1. Prewriting
    - Determining objectives
    - Gathering data
    - Considering audience

2. Writing
    - Organizing the draft
    - Formatting the content

3. Rewriting
    - Revising
    - Editing

Listening

Language learning depends on listening. A good speaker is a good listener. Listening provides the aural input that serves as the basis for language acquisition and enables learners to interact in spoken communication. Listening strategies are techniques or

activities that contribute directly to the comprehension and recall of listening input. Given below are some of the strategies that the students were taught to master on the course.

- listening for the main idea
- predicting
- drawing inferences
- summarizing
- listening for specific details

VOA Special English listening material was used on the course. The reasons for using the material is as follows:

The goal of Voice of America's Special English program is to communicate by radio in clear and simple English with people whose native language is not English. Three elements make Special English unique. It has a core vocabulary of 1500 words. Most are simple words that describe objects, actions or emotions. Some words are more difficult and they are used for reporting world events and describing discoveries in medicine and science. Special English broadcasters read at a slower pace, about two-thirds the speed of standard English. This helps people learning English hear each word clearly. It also helps people who are fluent English speakers understand complex subjects.

The task is that students listen to a news report from their area of specialization and answer comprehension question and write a summary of the report.

Speaking

Almost all the students expressed their need to improve their speaking skills. The following are the speaking activities:

- Group Discussions
- Role-plays

- Brainstorming
- Interviews
- Oral Presentation

The reasons for including these activities in the speaking session are given below:

Group Discussions

After a content-based lesson, a discussion is held for various reasons. The students may aim to arrive at a conclusion, share ideas about an event, or find solutions in their discussion groups. This activity fosters critical thinking and quick decision making, and students learn how to express and justify themselves in polite ways while disagreeing with the others. In class or group discussions the students learn how to ask questions, paraphrase ideas, express support, check for clarification, and so on.

Role-plays

In role-play situations, students pretend they are in various social contexts and have a variety of s roles. This exercise helps them gain an insight into different roles of people in their fields and also helps them gain confidence.

Oral Presentation

Making an oral presentation on a biotechnology-related topic is an important component of the course.

Use of English

The main objective of this section is to help students learn and use grammar in context. The different types of exercises included in this section reflect the students' interests.

The following are the types of tasks:

1. Cloze
2. Error correction
3. Word formation
4. Crossword puzzle

The details of each task type is given below:

Cloze

A text is given and it has 15 gaps. Each gap represents a missing word or phrase. The text is followed by 15 words or phrases. Students have to choose the word or phrase that best fits the gap. Different types of words are tested in this task.

Error Correction

The text contains errors typically made by students at the undergraduate level, e.g. incorrect verb forms, wrong pronouns, prepositions and articles. The students must detect the errors and correct them. If there are any additional words, they must delete them and if there are any words missing, they must supply the missing words. Tasks of this type help students acquire grammatical competence in context.

Word Formation

The text contains some gaps. At the end of each gap a word in parentheses is given. Students have to produce a new word based on this word which can be correctly inserted in the gap.

Crossword Puzzle

The crossword has long been a favourite puzzle for everyone. This programme helps students learn new sets of words. Definitions are given and students should use the clues and guess the correct word for each definition.

5.2.2.1.6 Course Outline

The outline of the course is given below.

Unit 1

Theme: **Biotechnology, the Technology of the Twenty-First Century**

Getting started:

i) Speaking: Pair work

ii) Vocabulary: 'Bio-' words

Reading:

Text 1: What is Biotechnology?

Text 2: Biotechnology – A Collection of Technologies

Text 3: The Future of Biotechnology

Writing:

Summary,

Extended Definition

Listening:

VOA Special English Agriculture Report: As Biotech Crops Increase, E.U. is Found to Stand in the Way

Speaking: Group Discussion

English in use:

i) Crossword (Biotech Terms)

ii) Text Cohesion –Sequencing

iii) Cloze

iv) Editing

v) WWW-based activity: Blog

Unit 2

Theme: **Genetically Modified (GM) Food**

Getting Started:

i) Discussion – Pair work

ii) Writing - Definition

Reading:

Text 1: Genetically Modified Foods

Text 2: Genetically Modified Crops in India

Writing:

i) Essay (Listing)

ii) Technical Definition

iii) Essay (Argumentative)

Listening: VOA Special English Agriculture Report: *Going Biotech - A Spanish Farmer Discusses His Experience*

i) Comprehension

ii) Note-making and Summary

Speaking:

i) Debate

ii) Role play

English in Use:

i) Affixes: Prefixes and Suffixes

ii) Word Formation

iii) Crossword (Genetic Terms)

iv) Text Cohesion: Sequencing sentences

v) WWW-based activity: Blog

Unit 3

Theme: **Cloning**

Getting Started:

i) Class discussion

ii) Writing

Reading:

Text 1: Snuppy, the cloned dog

Text 2: Transgenic Animals

Text 3: Professor Mario's Speech

Writing:

i) Flowchart

ii) Interview questions

iii) Essay

Listening: VOA Special English News Report: Progress Made in Stem Cell Research

i) Comprehension

ii) Note-making and Summary

Speaking:

i) Role-play

English in Use:

Matching (Cloning Terms)

Cloze

Text Cohesion

Editing

Grammar in Context (Passive Voice)

WWW-based activity: Blog: Pros and Cons of Cloning Animals

Unit 4

Theme: **Biometrics**

Getting Started:

i) Speaking: Classroom Discussion

ii) Puzzle

Reading:

i) Text 1: Biometrics

ii) Text 2: The Chips are Coming

Writing:

i) Essay

ii) Letters to the Editor

Listening: A Drug to Protect Against Bird Flu Succeeds in First Tests

i) Comprehension

ii) Note-making: Summary

Speaking:

i) Group Discussion

ii) Role-play

English in Use:

i) Crossword Puzzle

ii) Cloze

iii) Text Cohesion: Sequencing

iv) Editing

v) Grammar in Context

WWW-based activity: Blog:

Unit 5

Theme: **Bioethics**

Getting Started:

i) Speaking: Classroom Discussion

ii) Puzzle

Reading:

i) Text 1: Ethical Issues of Human Genome Project

ii) Text 2: Ethical Issues of Cloning

Writing:

i) Report

ii) Essay

Listening: Scientists Clone Pigs to Make Omega-3 Fatty Acids

i) Comprehension

ii) Note-making: Summary

Speaking

i) Group Discussion

ii) Role-play

English in Use:

i) Crossword Puzzle

ii) Cloze

iii) Text Cohesion: Sequencing

iv) Editing

v) Grammar in Context

WWW-based activity: Blog

5.2.2.1.7 Teaching Methodology

The learners wanted the ESP teacher to play the role of a facilitator while teaching the course. According to Nitu (2002), the *communicative approach* to teaching seems to be not only a modern method, but also the most appropriate teaching theory for an ESP course.

The ESP teacher is aware that he is a language specialist and not a subject (Biotechnology) expert. The teacher facilitates learning by encouraging students to actively participate in various language activities, such as role-play, group discussion and class discussion. The teacher helps students develop their critical thinking skills.

5.2.2.1.8 Conclusion

Designing an ESP course with the collaboration of learners was a challenging task. The orientation session helped the learners understand the concept of ESP and trained them in evaluating ESP course materials and selecting appropriate texts for the supplementary course. Almost all the students actively participated in the process of the course design. The results of the evaluation of the effectiveness of the course is discussed in the next chapter.

5.3.2.2 DEVELOPING ENGINEERING STUDENTS' SPEAKING SKILLS THROUGH ROLE-PLAYING ACTIVITIES

5.3.2.2.1 Introduction

A lot of changes have taken place in the field of English Language Teaching (ELT) since 1980. The traditional way of teaching the language took into consideration only the intellectual aspect. Language is not merely an intellectual matter. A human is a bundle of emotions and therefore this aspect also should be taken into consideration while teaching a language to learners. There is a need to entertain the learner to enhance learning. (P'Rayan, 2008).

The term 'commutainment', coined by P'Rayan (2008), refers to communication through entertainment. He calls roleplays, puzzles and problem-solving games commutainment activities as they enable learners to develop their communication skills in an entertaining environment.

ELT professionals have found role-plays, puzzles and problem-solving exercises interesting and useful for students. If well used, they have the potential to promote meaningful communication, provide fun, develop team-work, foster creative thinking and create opportunities for learners to interact with one another. Students also have expressed the need for such activities in the Engineering English class.

5.3.2.2.2 Background

In view of the underlying roles, such commutainment activities play in the English class, as an experiment a class of students of engineering was split into a number of groups and each group was asked to work on different role-play situations. The experiment had different stages from conceptualizing situations to enacting them.

5.3.2.2.3 Role plays

According to Crookall and Oxford (1990), there is little consensus on the terms used in the role playing and simulation literature. A few of the terms often used interchangeably are ‘simulation', games, role play, simulation-game, and role play simulation and role playing game.

A role playing game is an activity or a language game in which the participants or students of a language course assume the roles of some imaginary characters and as a team create a story based on a situation and enact the play in front of an audience.

5.3.2.2.4 Objective of role-plays

The objective of role-plays is to help students practice certain language functions and learn speaking skills. Here is a sample situation:

> *You are a software engineer working in Mumbai. A pickpocket has stolen your purse and you have lost your train ticket, money and debit cards. The train to your hometown will arrive at the station in 30 minutes and if you miss the train you will have to wait at the station for about 18 hours. Your brother’s wedding is at your hometown the following day and your presence is very much required at home. You talk to a stranger and try to convince the person and succeed in reaching your town.*

This role-play situation requires two persons to perform it. One assumes the role of the software engineer and the other plays the role of the stranger in the situation. The duo together creates a story based on the situation and plan how they are going to carry out the role-play.

If the main objective of asking students to enact this role play is to enable students to confidently use the language functions such as describing, explaining and persuading, during the preparation stage, the teacher can pre-teach a set of common phrases used to perform such functions. Then they are given opportunity to practice it.

5.3.2.2.5 Rationale for using role-plays

Why should role-plays be used in the English class? "It is not enough merely to provide students with opportunities to speak in English, as teachers we need to encourage students to speak in a variety of different situations, and hence help them to learn to speak with confidence." (Role Plays in the ESL Classroom**,** Instructions to the English teacher)

Role-plays can help students practice many language functions in an informal, natural and non-threatening environment and enable them to develop their fluency. In a class of 30 students, the teacher can put the students into ten groups of three members. In 15 minutes' time each group can create a story and practice a role play. In activities like role-plays all students are given opportunities to speak and participate. According to http://www.learnenglish.de/Teachers/roleplays.htm, "The effective use of role-plays can add variety to the kinds of activities students are asked to perform. It encourages thinking and creativity; lets students develop and practice new language and behavioural skills in a relatively safe setting, and can create the motivation and involvement necessary for real learning to occur".

Scarcella and Crookall (1990) elaborate how role plays facilitate second language acquisition. In three learning theories they discuss how learners acquire language when:

1. they are exposed to large quantities of comprehensible input,
2. they are actively involved and
3. they have positive attitudes.

According to Krish (2001) role play encourages peer learning, and sharing of responsibility, between teacher and the learner in the learning process, takes place. Krish further states that language teaching can be an interesting challenge when teachers make the effort to explore a variety of approaches. Role play is just one of the many methods available for exploitation.

5.3.2.2.6 Features of a good role-play

What are the features of a good role-play?

- A good role-play is based on a familiar situation .
- The situation should pose a conflict.
- The group of characters does not exceed 2-3 members.
- It takes 4-7 minutes.
- It gives extensive speaking practice to the participants.
- It is based on real world contexts and allows students to speak naturally.
- It is interesting and enjoyable.
- It develops the participants' creativity.
- It fosters their critical thinking skills.
- It develops interpersonal skills.
- It breaks monotony and makes other students participate.

5.3.2.2.7 Sample group

The group of students with whom roleplay activities were experimented consisted of 35 first-year undergraduate engineering students. Most of them were from semi-

urban areas and though 85 per cent of them had their schooling in English-medium, they were not

comfortable expressing themselves in English. During their school days, they never had opportunities to speak in front of the class. The challenging task given to me was to motivate them and develop their speaking skills. When invited to talk on some familiar topics, only a few students volunteered and the others were reluctant. Their passivity was attributed to their lack of self-confidence, fear of making mistakes and being laughed at by their friends.

A motivating session helped them gain confidence. Then the importance of role-play activities and how they would help them develop their fluency and other speaking skills were explained to the group. A few sessions were devoted to role-play games.

Given below is the account of how role-playing games were introduced in the English class. The whole process was divided into three stages: i) Pre-role play, ii) During role play, and iii) Post-role play.

5.3.2.2.8 Three stages of Role-playing

1. Pre-role play stage

At this stage of the process, planning and the execution of the plans took place. The following steps were followed at the pre-role play stage:

- The objectives of role-play activities were explained to students
- Required vocabulary and functional language appropriate to the situation and to the role-play were explained
- The students were divided into groups of 2-5 members
- Whether the students were familiar with the situation was assessed

- Students were asked to discuss the situation and prepare a story based on the situation
- 15-20 minutes was allocated to prepare and practice

2. During role play stage

At this stage role plays were performed and the participants' performance was assessed.

- Each team was invited to perform its role-play
- Some students were asked to assess the performance of each group based on the criteria provided

3. Post-role play stage

The final stage included these steps:

- The participants were asked to give self-assessment of their own performance
- The assessors were asked to give their feedback based on certain criteria
- Each group's performance was discussed and suggestions for improvement were given by the teacher

The following are some of the situations for role playing that were practiced and enacted in the class.

Sample role-play situations

Situation 1

You have passed your +2 exams and scored 92 percent. Your dream is to

get a degree in information technology and become a software professional, but your parents do not have regular income to support your studies. You want to apply for a study loan. You along with your father go to a bank and meet the bank manager.

Roles: a student, a parent, a bank manager
Language functions: introduction, discussion, persuasion

Situation 2

You have opted for B. Tech Biotechnology and you want your friend also to join the same course. But he / she is interested in information technology. You should tell him / her the advantages of specializing in biotechnology. Your friend will highlight the advantages of getting a degree in information technology.

Roles: 2 students
Language functions: agreeing and disagreeing, persuasion

Situation 3

You are the only child of your parents. Your parents and a close relative of yours want you to join in a reputed college of arts and science in your hometown which does not have many industries or businesses. You want study in Chennai. You discuss the advantages of studying in Chennai.

Roles: parents, a relative, a student
Language functions: agreeing and disagreeing, persuasion

After a few sessions of role playing simple situations, complex situations with elements of conflicts were introduced in the class. The students were distributed role play cards and given a few minutes to prepare and carry out the role play. Given below are sample role play cards:

Role Play Card 1

Student 1: You have applied for the post of a programmer in a software company. You have been called for an interview. As per the advertisement, you are required to have 3 years of experience in a reputed IT company. But you have only 2 years of experience and that also not in a reputed company. During the interview you should highlight your strengths and convince the interviewer that you are the best suitable person for the job.

Student 2: You are the interviewer. During the interview through your questions you should find out the candidate's family background, education, qualifications, skills and suitability for the job.

Role Play Card 2

Student 1: You want to go to US for your higher studies. You are required to take the TOEFL test. You don't have any idea about the test. You approach the career counselor of your college and discuss your plans with him / her and get details about the TOEFL test.

Student 2: You are a career counselor. You listen to the student and give guidance to him / her.

The effectiveness of roleplay activities on the engineering students is discussed in the next chapter.

5.3.2.3 PROJECT-BASED LEARNING

5.3.2.3.1 Project Work: Introduction

By encouraging students to move out of the university classroom and into the world of work, project work helps to bridge the gap between language study and language use. It is therefore a valuable means of extending the communicative skills acquired in the classroom. Unlike traditional language learning, where all tasks were designed by the teacher, project work places responsibility for learning on the students themselves.

5.3.2.3.2 Characteristic Features

Project work, in its various guises, has a number of characteristic features (Stoller, 1997). Project work:

- focuses on content learning rather than on specific language targets. Real-world subject matter and topics of professional interest to students can become central to projects
- is student-centred, though the teacher plays a major role in offering support and guidance throughout the process
- is cooperative rather than competitive. Students can work on their own, in pairs or small groups, or as a class to complete a project, sharing resources, ideas, and expertise along the way
- leads to the authentic integration of skills and processing of information from various sources, mirroring real-life tasks which students will encounter in their future jobs
- culminates in an end product (e.g. an oral presentation, a poster session, a bulletin board display, a report, or a stage performance) that can be shared with others, giving the project a real purpose
- is potentially motivating, stimulating, empowering, and challenging. It usually results in building student confidence, self-esteem and

autonomy, as well as improving students' language skills, content learning, and cognitive abilities.

The value of such work, however, lies not just in the final product but in the process of working itself. Thus, project work has both a process and product orientation, and provides students with opportunities to focus on fluency and accuracy at different stages of the project.

5.3.2.3.3 Stages of project work

A full-scale project involves three main stages:

Classroom planning. The content and scope of the project are discussed and specific language needs are predicted. Ways of gathering necessary material, projected interviews and visits are decided upon

Carrying out the project. The students move into the world of work and perform the tasks which they have planned

Reviewing and monitoring the work. This implies discussions and feedback sessions, group analysis of the work, and self5monitoring by the participants.

5.3.2.3.4 Projects

In this section the details of two projects given to the students of engineering are explained.

Project 1: Visit to an IT Company

The students were given these instructions before they started their project.

Visit an IT company and meet a HR manager or a few IT professionals. Talk to them about their job responsibilities and ask them who they talk

to in English at the workplace and what language skills are important for them at work?

Your tasks are to identify their language needs, share your experience in groups of 6-8 students and write a report to the teacher suggesting ways to modify the English language course to suit their present and future language needs.

Objectives:

The objectives of the project are:

to enhance students' speaking (interviewing) skills
to develop their writing skills (report)
to expose them to the real world communication
to raise their awareness of what is happening in their future workplace
to identify the language needs of IT professionals
to enable students to suggest activities and tasks to make the *Engineering English* course more effective
to involve learners in the course design

It said it instilled confidence in them.
The task created awareness among students about the language needs of students.
They identified the language needs of IT professionals and it motivated them to prepare themselves to the workplace.
They gave some valuable suggestions to modify the course.

Project 2: Preparing a CV and job application letter

Each student was asked to select three job advertisements aimed at engineering / technology graduates from a newspaper or from the Web and was asked to carry out multitasks.

Task 1: Browse the Internet and select three job adverts aimed at engineering graduates based on the criteria:

Criteria:

- the advert is addressed to engineering graduates
- it should give in detail job responsibilities
- it should state clearly what it expects of the candidate: qualifications, experience, skills required, etc
- it should have been published recently (within a month)

Task 2: Prepare a table and list the details under these headings:

position advertised
job responsibilities
qualification
required skills
contact details
source (URL with date)

Task 3: Discuss in groups of six why you selected the advert and give the details of the advert

Task 4: Prepare a CV in response to the advert selected

Task 5: Write a job application letter in response to one of the three adverts

Objectives:

- to raise students' awareness regarding the target needs
- to develop their CV and job application writing skills
- to foster their critical thinking

5.3.2.4 PROCESS APPROACH TO ORAL PRESENTATION (PAOP)

5.3.2.4.1 What is PAOP?

A process is defined as a series of actions that one takes in order to achieve a result. The process approach to oral presentation is a process during which the student goes through three key stages and carries out activities such as choosing a topic, discussing it with a group of students, preparing an outline of the presentation, preparing power point slides, etc. before making the final presentation.

5.3.2.4.2 Aim and objectives

The overall aim of this approach is to enable students to develop their oral presentation skills. The objectives are:

- to enhance students' communication ability
- to foster their critical reading and thinking skills
- to enhance their confidence level
- to develop their skills to analyse different perspectives on a topic
- to develop their ability to identify opinion and bias in the work of others
- to improve their writing skills through assignments

5.3.2.4.3 Why PAOP?

Giving a topic to students and asking them to speak on it without giving much time to prepare may not help them develop their critical thinking skills. The product approach is concerned with the final product. Most students fail to enhance their confidence level and their analytical and logical reasoning skills. On the contrary the process approach develops students' multi-skills in an integrated manner. The role of educational institutes is to ensure that students learn the skills and abilities which help them function successfully on the job and in their daily decision-making.

5.3.2.4.4 Duration

Twenty contact hours were allotted to cover the oral presentation skills component. The students' meeting with the teacher to discuss the topic and different assignments, their preparation and discussion with peers did not constitute the contact hours.

5.3.2.4.5 The Key Stages

The whole process is divided into three stages: pre-presentation, presentation and post-presentation. In the table given below the three stages and different steps of each stage of the process are listed. This section describes the different stages of PAOP, explains in detail the translation of theory into practice, and evaluates the effectiveness of the approach.

Process Approach to Oral Presentation (PAOP)

Stage 1: Pre-presentation

1. Selecting a topic
   ↓
2. Discussing the topic with a group to get members' views on the topic
   ↓

3. Preparing an outline plan of presentation and uploading it to a yahoo group. (Assignment 1)

↓

4. Discussing the outline plan with the teacher

↓

5. Writing a review of a peer's presentation outline plan and uploading it to the group. (Assignment 2)

↓

6. Preparing slides for power point presentation (Assignment 3)

↓

7. Discussing the slides in groups

↓

Stage 2: Presentation

1. Power point presentation (7 minutes)

↓

2. Handling questions

↓

Stage 3: Post-presentation

1. Oral feedback (peer- , self- , teacher-)

↓

2. Evaluation

Stage One: Pre-presentation

The pre-presentation stage consists of seven steps. The students were explained what they were expected to do at each step. The students were divided into four groups and four volunteers were assigned the task of creating yahoo groups, one for each group. The volunteers' role was to moderate their groups.

1. Selecting a topic

The students were asked to select a topic based on the following criteria:

- Non-technical (preferably issue based)
- Interesting, useful, relevant to the group.

- Stimulating
- Thought-provoking
- Debatable

An effective presenter is required to have high level of analytical skills. The main objective of this step was to develop students' analytical skills. The students were required to refer to literature related to their topics and analyze it.

Given below are some of the topics selected by students:

1. Is population explosion a threat to India?
2. Can we eradicate caste system through inter-caste marriages?
3. Do mobile phones spoil the youth / students?
4. Should corporal punishment be continued in schools?
5. Should death sentence be abolished?
6. Is it just to force people to retire?
7. Is modernity a curse?
8. Rice in petrol prices – an analysis
9. Does brain drain pose a threat to India?
10. Recent trend of divorce in India

2. Discussing the topic with group members to get their views on the topic

The second step is about students discussing their topics with their respective groups. The objectives are:

- to enhance students' confidence level
- to develop their listening and speaking skills.
- to develop their analytical skills

The skills focused are:

- Asking for opinion
- Giving opinion
- Analytical thinking

The students were divided into groups of 7 members. Each student was required to discuss with their group their topic, the sources from which they collected material for their presentation, the difficulties and challenges they faced while finalizing the topic. After each member's sharing of their experience, other members were asked to give their opinions on the topic whether it fulfill the criteria, etc.

The students find this activity interesting and useful. Some students had to change their topics based on the suggestions given by their groups.

3. Preparing an outline of presentation and uploading to Yahoo groups

The students were asked to prepare an outline based on the following format:

1. Topic
2. Source
3. Reasons for selecting the topic
4. Introduction
5. Key points
6. Conclusion
7. Discussion questions

The aim of the assignment was to develop the students' ability to understand, interpret and comment on the work of others.

The objectives were:

- to enable students to read authentic texts related to the topic
- to develop their ability to distinguish between factual/non-factual information, important/less important items, relevant/irrelevant information
- to enhance their ability to draw inferences and conclusions
- to enable them to read texts with some degree of critical awareness, choosing appropriate information
- to develop their critical thinking skills
- to develop their writing skills
- to use the Internet effectively (uploading the assignment to yahoo groups)

The skills focused are:

- Critical reading
- Writing an outline
- Logical reasoning
- Reference skill
- Defining terms
- Integrating web technology

Yahoo groups

- Role of moderators
- Rationale for creating groups

Role of moderators

- creating yahoo groups

- inviting members to join
- posting important messages
- acting as a link between the teachers and group members
- sending reminders

Rationale for creating yahoo groups

- integration of technology
- easy access to peers' assignments
- learning from others
- students take the assignments seriously

Problems observed:

Most students had difficulty in formulating topics, formulating questions, organizing ideas and defining terms

Students' feedback:

- It was a very useful task
- It was difficult to choose a topic that fulfilled all the criteria
- We had to constantly analyze the topic.
- The task made us apply our analytical skills
- Writing the outline was a challenge. It honed our writing skills.
- It was an opportunity for us to read our classmates assignments.
- It was a multi-task assignment: preparing an outline, uploading it to respective yahoo groups on the Internet, reviewing other students' assignment, suggesting discussion questions, summarizing the presentation in 100 words, etc.

4. Discussing the topic with the teacher

Objectives:

- to improve students' confidence level
- to develop their speaking skills
- to enable them to handle questions effectively
- to make them think clearly and logically
- to help them identify the strengths and limitations of the assignment

Procedure:

Each student was asked to explain their topic to the teacher and answer questions related to the topic.
Based on the comments given by the teacher, the students were asked to either redo or modify their outline.

(Pause before you give the student answers and information and challenge yourself to ask the student a question that will help him or her to discover the answer.)

List of sample discussion questions

1. Why is brain drain predominant in India?
2. Should the government take measures to control brain drain?
3. Why is divorce rate increasing day by day in India?
4. In most cases which gender prefers and applies for divorce in India – male or female? Why?

Feedback:

- Discussing the topic with the teacher was very useful.

- It enhanced our confidence level.

- It motivated us.
- The discussion shaped our thinking.
- It was an opportunity to develop our speaking skills.
- The task of meeting the teacher and explaining the topic developed our thinking skills.
- It was a challenge.
- We took it very seriously.
- The questions asked by the teacher made us think clearly.

5. Reviewing oral presentation outline and uploading it to yahoo groups

The aim of the assignment was to develop the students' ability to understand, interpret and comment on the work of others.

Objectives:

- to enhance their ability to critically review their peers' assignments
- to improve their writing skills

Procedure:

Each student was asked to go through the assignment of their classmates, available on respective yahoo groups created for the purpose of encouraging students to upload their assignments and read them when required, and write a review of the assignment based on the following criteria or checklist.

Checklist for reviewing students' outline of oral presentation

Items	**Questions**
Title	1. Is the title clearly stated, in a phrase? 2. Does the title indicate precisely and accurately the focus of the paper?

Reasons	1. Has the student clearly stated his reasons for selecting the topic? 2. Are the reasons convincing? If 'no' why?
Reference	1. Has the student mentioned 'reference'? 2. Is the given URL correct?
Introduction	1. Is the introduction original? 2. Does it give an overview of the subject?
Main points	1. Are the main points arranged in a logical sequence? 2. Are all the points directly related to the topic?
Conclusion	1. Is the conclusion convincing? 2. Has the student given his own views?
Discussion questions	1. Have the discussion questions been framed well? 2. Do they promote critical thinking among audience?
Language	1. Do punctuation and spelling follow standard practice? 2. Does grammatical usage follow standard practice?
Overall	1. Does the student demonstrate clarity? 2. Does the outline reflect the aspects of critical thinking? 3. Do you think the audience will be interested in the presentation of the topic?

Feedback:

- It was a very challenging task.
- For the first time we had this type of task.
- It enabled us to develop our thinking skills.

- It helped us develop our writing skills.

6. Preparing power point slides

Objectives:

- to enable students to use multimedia technology as a tool to making an effective presentation.
- to develop their logical thinking skills

Rationale:

Visual aids such as power point can enable students to overcome their communication apprehension or speech anxiety. Since the focus of the audience is on the visuals rather than on the person who makes a presentation, the presenter feels his/her communication apprehension is reduced. Power point slides, if they are effective, can create a positive impact about the presenter on the audience and can act as an effective tool in raising the confidence level of the presenter.

Procedure:

Tips on making pp slides were given and explained. Students were asked to outline their presentation. (How many slides? What is the content of each slide? Then they were asked to sequence the content.

7. Discussing the outline of pp presentation in groups

Objectives:

- to enhance their speaking skills
- to develop their critical thinking skills

Procedure:

Students were grouped. Each group consisted of 6-8 members. A moderator was appointed to facilitate discussion among members. Each student explained his power point presentation outline and asked the members to comment on the content and sequence.

Stage Two: Presentation

2. Power point presentation

Objectives:

- to enable students to demonstrate their ability to make effective presentations
- to demonstrate their thinking skills
- to utilize the availability of multimedia technology to make their presentations effective.

Procedure:

- Each student was given 5-7 minutes to make their presentation

Observation:

- Most students performed well.

- They faced the audience confidently
- Students were comfortable making presentations
- Very few students had communication apprehension

3. Handling questions

Objective:

- to develop students' question-handling skills

Procedure:

- Anyone from the audience can ask a question to the presenter
- Two or three questions related to the topic are allowed
- The presenter should answer the questions

Evaluation

- some questions were very sharp
- the questions tested not only our knowledge about the topic but also our thinking skills
- the pre-presentation discussion on the topic with the teacher and groups helped us gain confidence
- it was a learning experience for us

Stage Three: Post-presentation

1. Assessment (peer-, self-, teacher-)

Peer assessment

After each presentation two students were assigned the task of giving their feedback on the presentation based on the following criteria: content, language, body language, eye contact, audience response, handling questions, time limit and overall effect.

Objective:

The objective was to develop students' evaluating skills.

Those who were assigned to give feed were given oral presentation peer evaluation forms and asked to complete them. They were also given tips on giving feedback and trained in using the type of language they should use while giving feedback.

- Be constructive in your criticism
- Highlight the positive aspects of the presentation
- Appreciate the presenter for making a good presentation
- Be sensitive and without hurting the feelings of the presenter suggest areas for growth.
- Use positive language

  "You'd better ……."

  "It would have been better if you had ……."

  "It would have been effective ……"

Oral Presentation Peer Evaluation Form

S.No.	**Criteria**	**Your response**
1	Was the presenter (presentation) clear?	Yes / No
2	Did the presenter do address the topic?	Yes / No
3	Did the presenter define key terms and clarify important concepts when necessary?	Yes / No
4	Did the presentation have a proper structure?	Yes / No
5	Did the writer demonstrate clear thinking?	Yes / No
6	Is the presenter's reasoning well supported?	Yes / No
7	Did the presenter explain concepts in a language that is simple?	Yes / No
8	Was the presenter's body language appropriate?	Yes / No
9	Did the presenter maintain good eye contact?	Yes / No
10	Did the presenter handle the questions properly?	Yes / No
11	Were the power point slides effective?	Yes / No
12	Did the presenter complete the presentation in a stipulated time?	Yes / No

13	Was the audience response good?	Yes / No

Self assessment

What followed after peer assessment was self assessment. The presenter was asked to assess their own presentation based on the following checklist:

- Am I satisfied with my preparation?
- Am I satisfied with my presentation?
- Did I handle questions well?

Teacher assessment

The teacher's assessment of the presentation was based on the criteria: presentation, handling questions and audience response. The main objective was to appreciate the presenter and encourage them to develop their presentation skills.

The effectiveness of the process approach to oral presentation that was experimented with two groups of students is discussed in detail in the next chapter.

5.4 Conclusion

Based on the needs assessment and evaluation of the existing Engineering English course an attempt was made to teach the language skills in an innovative way. The effectiveness of the experiments carried out with the students is discussed in the next chapter.

CHAPTER SIX

EVALUATION OF THE REDESIGNED COURSE

6.1 Introduction

This chapter deals with how some components of the redesigned course were piloted with students and how the effectiveness of the components were evaluated. The evaluation was done via questionnaires and discussion.

As mentioned in Chapter 5, the overall aim of English for Engineering is to help students develop their communicative competences in English required for academic and job-related situations.

Based on the needs analysis and evaluation of the existing Engineering Englishcourse, the decision to redesign the course was taken with the objectives listed in Chapter 5.

Due to time constraint only the following components were piloted:

1. English for Biotechnology
2. Developing learners' speaking skills thru role-plays
3. Developing learners' presentation skills through a process approach
4. Developing learners' language skills through project-based activities

The main objective was to develop the four language skills in an integrated manner. That is why the redesigned course has been named "Engineering Communication: An Integrated Skills Approach" The new course was designed based on the nine principles stated in the previous chapter. The principles can be summarized as follows: learners' present and future needs as the basis of any course design, involving learners in the course design, teaching the four skills LSRW in an integrated manner, learning should be fun, process approach to oral presentation, GD skills with

the focus on what employers look for in prospective employees, technology-enhanced language learning and project-based activities.

6.2 Evaluation

6.2.1 Evaluation of English for Biotechnology

Evaluating a course means analyzing the effectiveness of it in terms of the aims and objectives stated. The objectives of the 'English for Biotechnology' course were:

1. to develop the learners' reading skills to ensure comprehension of biotechnology related reading materials.
2. to develop the learners' technical writing skills with the focus on defining technical terms, essay writing, and summary writing.
3. to enable the learners to acquire speaking and presentation skills.
4. to develop the learners' listening comprehension skills.
5. to develop learner autonomy
6. to foster the learners' critical thinking skills through various tasks.
7. to develop their interpersonal skills through various group activities.

The course was designed based on the collaborative approach to course design. The students were involved in selecting materials and suggesting activities and tasks. The following section discussion discusses the effectiveness of the experiment.

6.2.1.1 Course Delivery: Teaching-Learning

The teaching-learning process started much earlier than the actual course content was delivered to the students in a formal manner. The students started learning new things related to *English for Biotechnology* at a stage when it was decided to design the supplementary course and the ESP teacher asked each student to select and submit a reading passage related to the field of biotechnology. They could acquire knowledge

and develop their language skills at various stages during the process of designing and the delivery of the course.

First, the students were asked to give their reasons for selecting a particular text and list all the technical terms and the meanings / definitions of the words. Then at a later stage the students were grouped and were asked to select two out of the 6-8 reading texts, give their reasons for selecting the texts, list the technical terms and find out the meanings/definitions, and write two discussion questions. Each group leader was asked to present the report of group dynamics to the whole class.

During the process they could go through many technical texts, discussed the relevance of such texts with their fellow classmates, gave their reasons for selecting or not selecting certain reading passages, referred to dictionaries to find out the meanings/definitions of technical term, suggested discussion topics and wrote and presented the reports to the class. The whole process helped them become familiar with technical texts, develop their interpersonal and communication skills and to have a good beginning.

The second stage was delivering the course content and achieving the course objectives. The effectiveness of the second stage depended both on the ESP teacher and the learners.

The teaching-learning materials required the ESP teacher and the students to play an active role in the process of the course delivery. The teacher was a facilitator and the students were active participants.

6.2.1.2 Teacher as a Facilitator

When the ESP teacher actually started teaching the course, he found it enjoyable and at the same time challenging. His role was to develop the four language skills through various tasks and activities, promote learning and foster critical thinking in the students. In order to play the role effectively he had to use a different approach to teach each skill.

The students did the reading tasks by themselves and later the answers were checked in the class. There was much interaction and discussion and the teacher encouraged it.

The teacher spent more time on teaching writing. The students were taught the process approach to writing. Before attempting any writing task, the students were asked to prewrite, write and rewrite the draft. This process approach to writing helped the students improve their writing skills.

During the group discussion activity the teacher joined some groups and mingled with the students. This was a source of inspiration for some students.

Due to time constraint the ESP teacher could complete only three units and only 29 students could make oral presentations. Only the first unit is appended. (See Appendix 12)

Students' feedback on each section of the unit was collected after completing a particular unit. This helped both the ESP teacher and the learners: the ESP teacher could modify the programme as per the suggestions given by the students or change

his teaching methodology and the learners could participate more actively and contribute in a better way to the success of the programme.

6.2.1.3 Learner Participation

Students started attending English classes regularly and participated in carrying out activities and tasks enthusiastically. Since most students were familiar with the topics dealt with, their participation in class and group discussions and role-plays was better than was expected.

Giving an oral presentation on a biotech-related topic by each student was one of the requirements of the course. The suggestion for developing the students' presentation skill emanated from the subject experts and the students themselves.

Each student was asked to select a topic related to the field and give an oral presentation for 6-7 minutes. The checklist below summarizes how the students were asked to prepare themselves for the oral presentation:

CHECKLIST FOR ORAL PRESENTATION

1. Have you selected a topic?
    - Is the topic related to biotechnology?
    - Is it an interesting topic?
    - Do you have supporting materials?
    - Is it easy to understand?
    - Will your classmates be interested in the topic?
2. Have you prepared a list of reasons for having selected the topic and supporting materials?
3. Has your ESP teacher approved your topic?
4. Have you prepared an outline?
    - Does it have a proper introduction?
    - Have you mentioned the main points?
    - Does it have a proper conclusion?
5. Did you show it to your ESP teacher and get his feedback?
6. Do you know the meaning of all the technical terms that you might use in your presentation?
7. Have you prepared a list of questions that your teacher and classmates might ask you after your presentation?
8. Are you ready to make your oral presentation?

Twenty-nine students gave oral presentations. After each oral presentation, the presenter was required to say whether he was satisfied with his/her performance, feedback was given by both the teacher and other students.

The response was so good that about 70 percent of the students came well prepared and presented their topics. The following is the list of oral presentation topics selected by the students.

1. Biotechnology: meeting the needs of the poor?
2. The Pros and Cons of Genetic Engineering.
3. The Pros and Cons of Genetically Modified Food
4. Bioethics
5. Genetically modified foods
6. Genetically engineering microbes for bioremediation
7. Cloning whole organisms
8. Embryonic stem cell research
9. Gene therapy
10. Genetic testing
11. Genetic Engineering of Animals
12. Genetic Engineernig of Plants
13. Application of Genetic Engineering to Human beings and their health.
14. Biometrics
15. Biotechnologists are playing God.
16. Herbicides and its effects on human health.
17. What is biotechnology?

18 The human genome project

19 Ethical issues of human genome project.

20 Whose genome is it, anyway?

21 An interview with DNA Forensics Authority Dr Bruce Weir

22 The chips are coming (biochips)

23 GM products: benefits and controversies

24 Genetically modified crops in India

25 Cloning the first human

26 Brave new cloning world

27 Human clones

28 Scientific reasons for not cloning humans.

29 Eugenics

30 Biologically-inspired machines

31 Trading human life

32 DNA Fingerprinting

33 Application of Biotechnology in Healthcare

34 Biosensors

35 Recombinant DNA Technology

36 The Pros and Cons of Stem Cell Research

37 Environmental Biotechnology

38 Biotechnology and Ethics

39 Biotechnology Drugs

6.2.1.4 Group Dynamics

Since the collaborative approach to ESP course design was used, it is very important to discuss how the ESP teacher and his students worked together and how the students worked in group to achieve the objectives.

It was a great challenge to work with a mixed group of students with a wide range of abilities in English. The moment they felt that they were given importance they were motivated and later it was easy to convince them and get their cooperation. Most students submitted their assignments in time. Only one or two members in each group were either passive or could not contribute much to the success of group activities due to some personal reasons. In each group one student was a moderator and his/her role was to assign work to each member and get the work done. Finally, the moderators were asked to present their reports to the class. All the reports were quite positive about the students' participation.

6.2.1.5 Students' Feedback

How did the students find *English for Biotechnology*? Did it achieve the purpose for which it was designed? Were the course objectives fulfilled? To find answers to these questions it was decided to give an achievement test at the end of the course. But, due to time constraint, the test was not administered. Anyhow, the students were asked to complete an evaluation questionnaire and give their feedback on the following areas: the process of designing the course, the course delivery, their participation, overall impact of the course on them.

Course Design Process

The learners found the process of involving themselves in the course design and later presenting their topics in front of the class more rewarding. Their feedback can be summarized as follows:

- The orientation session helped us gain an insight into the world of ESP.
- We felt important since our views were considered throughout the process.
- The whole exercise was something new for us.
- The assignments were very innovative and useful.
- The process of designing the course instilled confidence in us.
- We could use the English language in context.
- The process of selecting reading and listening materials was a challenging task.
- Group activities were very useful and helped us develop our interpersonal skills.
- We got a real exposure to technical texts. Before deciding on one topic, we had to read three or four articles.
- We were asked to explain the rationale for selecting a particular reading text. It developed our critical thinking. The process of shortlisting reading texts in groups also fostered our critical thinking.
- It was a learning experience. By identifying technical terms and finding meanings to the terms, we could learn many new things.
- It was an opportunity to develop our presentation skill.

Reading texts

- The reading texts reflect our interests and needs.
- Since the reading materials were selected by the students, we feel that we are very much part of the course.
- All the reading texts are related to biotechnology.
- The texts are not too technical to read.
- The language is clear, has varied sentence structure and complexity.
- The topics have novelty.
- Most classmates find the reading texts interesting.
- The texts are very much student-centred.

Listening material

- VOA Special English is a very interesting programme.
- It is easy to understand.
- The programmes are a great source of information.
- VOA Special English helps us improve our English.
- It is easy to learn American English by listening to VOA Special English.
- VOA Special English listening material is the best part of our course.
- The programme helps us improve our pronunciation.
- We had many delightful listening sessions.

- It helps us improve our listening skills.
- I enjoyed the slow pace of reading by the newsreader.

Speaking and Oral Presentation

- We enjoyed taking part in group discussions.
- Role plays were good, but only a few could take part in such activities.
- Oral presentation was the best part of the course.
- All did not get a chance to speak.
- This activity instilled confidence in us.
- Not much was done to involve shy

English in Use

- Crossword puzzles were very challenging.
- Error detection and correction exercises were very useful.
- We were not given time to complete all the tasks.
- The teacher was in a hurry to complete the course.

Writing

- We found the process approach to writing very useful.
- It would have been better if the teacher had assessed at least one essay of each student and given his feedback.

- Due to time constraint, we could not complete all the tasks.

- We need more practice in writing.

The same supplementary course "English for Biotechnology' with some modification was taught to another group of students in a different college and students found the course interesting, useful and relevant. It is very important to involve learners in the ESP course design to increase the learning outcome.

6.2.2 DEVELOPING LEARNERS' SPEAKING SKILLS THRU ROLE-PLAYS: EVALUATION

6.2.2.1 Evaluation

The main objective of role-playing activities is to help students practice certain language functions and learn speaking skills in an environment of fun. Even top business schools conduct role-play activities to develop business executives' interpersonal and group skills.

The students were asked to express their views on how role plays helped them develop various skills, what strategies and methodology a teacher of English should to facilitate learning in the class. Their responses were collected via a feedback session. The following is the summary of their feedback.

Roleplay activities:

- broke the ice
- boosted our confidence level
- stimulated students' interest
- increased our participation and involvement
- injected enthusiasm in us

- engaged students in meaningful conversation
- helped us develop social skills (turn taking, adjusting, etc)

- cement relationship
- kindled our imagination
- nourished our reasoning skills (solving problems)
- provided fun
- created a conducive environment for learning
- fostered our creativity
- allowed natural conversation
- developed active listening skills
- encouraged cooperation among participants
- promoted team spirit
- motivated us to interact with one another
- made the discussion lively
- exposed students to real conversational English
- strengthened our language skills

The carrying out of roleplay activities had a catharsis effect on them. They expressed that role play games were instrumental in developing their communication skills.

Through this activity, students practiced many language functions and learnt to work with others. Loui (2006) expressing his views on using cases in role-plays, agrees that role play exercises help learners collaborate with others to achieve wise solutions to difficult problems. Larsen-Freeman (1986) and Ladousse (1987) share the view that role play exercises give learners an opportunity to practice communicating in different social contexts and develop their fluency in the language, promote interaction in the classroom and increase motivation.

6.2.2.2. Reflections

Roleplay activities in the English class facilitate learning and help learners learn the target language in a meaningful manner. The new way of teaching English demands a lot from the English teacher. They should play a radical role, entirely different from a traditional teacher's role. They should:

- assess the needs of the learner
- create a wonderful setting for students to enjoy learning English
- amuse and entertain them
- capture students' imagination
- bring language alive by introducing humour and using stories, jokes, etc.
- motivate them to learn and be productive
- develop their creativity and thinking abilities
- play a non-threatening role
- involve students in the learning process
- make the class interactive
- always get students' feedback and modify their teaching methods to suit the taste of the majority of students.

Role-playing activities play an important role in the career advancement of engineering students in India. It is an inevitable tool for those who aim at establishing a wide contact in the global village and climbing up the ladder of success. It is the responsibility of teachers of English to teach the language effectively. Speaking skills can be taught and learnt in an interesting and at the same time effective manner through various commutainment activities. What is important is that language teachers should be ready to evaluate their teaching and get feedback from their students. If they did not achieve the result they had aimed at, they must be ready to change their teaching methodology and techniques. A certain amount of openness in the language teacher can really do wonders. They should ask themselves how to make English language teaching and learning more enjoyable and how to enhance students' learning and maximize their productivity.

6.2.3 PROJECT-BASED LEARNING: EVALUATION

There are many benefits of introducing project-based activities in the Engineering English curriculum. Students enjoy visiting industries and meeting people. Of late, the importance of industry-institution has been stressed in many different forums. Though some reputed engineering colleges have made industry visits compulsory for their students, not much has been done by EST practitioners in the project-based learning.

The researcher initiated project-based activities for a few groups of students and the initiative has been much appreciated by the students.

6.2.3.1 Evaluation

Project 1: Visit to an IT company

The students were very enthusiastic about meeting professional engineers employed in IT companies. They talked to them and identified the following language skills IT professionals need to carry out their responsibilities effectively at the workplace.

List of language skills / functions

- speaking politely
- using positive language
- distinguishing between formal and informal speech
- speaking convincingly
- reporting
- breaking the ice before trying to talk to strangers
- delegating
- asking questions and handling questions
- suggesting
- recommending
- clarifying

- persuading
- active listening
- writing reports
- giving an oral presentation
- speaking to a group
- etc

The student also discussed in small groups their experience of meeting IT professionals. This task enabled them to develop their speaking skills in a non-threatening environment.

Then each student wrote a report to the teacher based on the tips given to them on writing reports.

The effectiveness of the task was evaluated and during the evaluation session students gave their feedback about the task.

Most students found the project meaningful and enjoyable though some of them had difficulty meeting people and interviewing them.
They found the multi-tasks meaningful.
It helped them develop their speaking skills.
It raised their awareness level.
They expressed their need to have more projects of this type.

The students found the second task also very useful. Analysing advertisements, preparing a curriculum vitae based on the requirements specified in the adverts and writing a job application letter helped the students learn the basic professional communication skills in a meaningful manner.

Most students involved themselves enthusiastically in the project-based activities as they found the activities motivating.

6.2.4 PROCESS APPROACH TO ORAL PRESENTATION

6.2.4.1 Evaluation

The process approach to writing is a well-known concept for ELT professionals. Based on the model the process approach to oral presentation was devised. The three stages and ten steps involved in the process approach to oral presentation helped the learners in many ways. It instilled confidence in them and created a conducive environment for them to develop their speaking and critical thinking skills.

At the end of each presentation the presenter was asked to complete an evaluation questionnaire. The questionnaire asked the respondents to comment on the effectiveness of the process approach to oral presentation, various assignments given and the skills focused (presentation, critical thinking, analytical, critical reading, listening, writing and group skills). The respondents were also asked to comment on the way their performance was assessed.

6.2.4.2 Analysis of the evaluation questionnaire

All the students found the different stages of process approach to oral presentation useful. Above 90 per cent of them said that the process enabled them to develop their presentation, critical reading, critical thinking, analytical and group skills. According to the students, the assignments i) writing an outline of oral presentation, ii) writing a review, and iii) preparing power point slides helped them improve not only their writing skills but also the other skills mentioned above. The students said that the activities such as discussing the topic in groups, asking for group members' views on topics proposed, discussing with the teacher, preparing an outline of presentation and uploading it to respective yahoo groups, reviewing peers' assignments, preparing slides, making presentation, peer feedback, self assessment, and completing the evaluation questionnaire enabled them to develop multi-skills.

Seventy percent of the students were satisfied with their presentation and they said they felt comfortable facing the audience and make presentations with confidence. All the students said that the process helped them reduce their communication apprehension.

All students have stated that teachers should continue to follow the process approach to oral presentation to the next batch of students.

6.3 CONCLUSION

The hypothesis of the study is that if the *Engineering English* course offered during the first year of the four-year engineering programme at engineering colleges affiliated to the Anna University and deemed universities is redesigned or modified based on the corporate expectations /needs / requirements, delivered (taught) properly by competent English for Science and Technology (EST) practitioners and students' language skills are assessed effectively during and at the end of the course, then the course will achieve its goal by instilling confidence in the students and preparing them to higher education, campus recruitments and thus to the workplace.

The four experiments piloted have been found to be effective as the skills engineering students need as students and later as professional engineers at the workplace have been focused in the activities. It has been proved that by identifying the learners needs and involving the learner in the course design the EST practitioner can increasing the learning outcome. Students of engineering need to develop their speaking skills and that can be done effectively only if the environment is non-threatening. That has been proved by introducing role-playing activities in the English class. Presentation skill is one of the most important skills employers look for in engineering graduates. The process approach to oral presentation has been found very effective as it has helped students develop multi-skills including presentation and critical thinking skills. Project-based tasks enable engineering students to acquire the necessary language skills in an authentic environment.

The findings and recommendations of the study are discussed in the next chapter.

CHAPTER SEVEN

CONCLUSIONS

7.1 INTRODUCTION

English as an international language has had a great impact on the engineering workforce in India. Thanks to globalization the English language is spreading globally and its dominance is being felt by all countries. Proficiency in English is considered one of the employability skills. The study has helped to identify the skill sets engineering students need in order to be successful as students and as professional engineers in future, to evaluate the existing Engineering English curriculum and to take some measures to bridge the gap that exists.

The following sections deal with the findings of the study and recommendations to improve the Engineering English curriculum.

7.2 FINDINGS

The study "Engineering English: A Critical Evaluation" revealed that:

- the existing *Engineering English* course offered at the colleges affiliated to the Anna University is very much examination oriented and there is a wide gap between students' final examination scores in English and their proficiency in the target language.

- learners are well aware of their needs.

- most students lack skill sets the recruiters look for in prospective employees.

- the *Engineering English* course does not meet the present and future language needs of the students.

- the absence of skills-oriented teaching results in ineffective learning.

- there is a gap between the target situation (employment market) and the existing proficiency of learners. The reasons for this gap are absence of effective syllabus, methodology, course organization, assessment and learning outcome.

- the absence of standard coursebooks contribute to students' lack of English language and communication skills.

- most teachers are from literature background (master degrees in literature) and do not have ELT training. They lack competences required to be effective teachers of English communication at institutes of technology.

- the potential of information and multimedia technology has not been utilized to develop engineering students' communication skills.

- the majority of the students surveyed are not happy with the engineering English curriculum.

- the system of assessment is not effective .

- even students who scored above 70 percent marks in the university examinations in English could not get 50 percent in the proficiency tests administered to them.

- the skills students consider more important for them are not covered or focused in the English class.

- the teachers seem to prepare students for examinations and do not seem to teach English as a life skill or survival skill.

- listening and speaking skills are not given adequate importance.

- the Engineering English course does not foster students' critical thinking skills which employers consider as something very important.

- many IT companies ask their employees to take Business English Certificate (BEC) examinations which has been found to be a great help in developing employees' skills in the use of the English language and sensitizing them to the needs at the workplace.

- the students planning to go for higher students want the IELTS and the TOEFL components to be incorporated into the Engineering English course.

7.3 **RECOMMENDATIONS**

Based on the findings the study recommends:

- that the *Engineering English* course be aimed at the target situation (job market) and the study needs (learners' language requirements while they are students.

- that the teaching of Technical English with the components of placement training such as verbal reasoning, group discussion, mock interviews, etc. be blended.

- that the *Engineering English* syllabus / course be based on the principles of globalism.

- that the course be innovative in content (interesting and useful material for reading and listening, commutainment activities, oral presentation, group discussion, mock interviews, etc.), in methodology (eg. a process approach to oral presentation, focus on the integration of skills) and in learning outcomes.

- that students be prepared for the Business English Certificate (Vantage level) examination.

- that an innovative approach that focuses on creativity, critical thinking skills, group skills, interpersonal skills, functional competence, intercultural competence, etc. be promoted.

- that effective measures be taken to shift from basic language skills to wide-range of skills required at work

- that the activities foster learners' critical thinking and group skills.

- that the course develop learner autonomy through language labs, web-based learning.

- that learners' views be taken into consideration while modifying or redesigning Engineering English course

- that project-based activities given to learners to develop their language skills in a meaningful manner.

- that the increasing focus on tests and exams be arrested

- that technology-integrated language learning be introduced.

- that the teachers be trained to teach creatively, effectively, …

- that staff development opportunities be made available to enable them to understand the target situation and manage it.

- that corporate people be involved in the design of the course.

- that the course be evaluated and modified every year.

7.4 IMPLICATIONS

It is believed that the study will have an impact on curriculum planners, EST course designers, EST practitioners and future engineering students. The teacher competencies have not been discussed much here. Some other researcher may carry out a research in that area and contribute positively to the field of English language teaching.

7.5 LAST WORD

In the light of the role the English language plays in the twenty-first century, there is an urgent need to teach English as a life skill. Life skills are abilities individuals can learn that will help them to be successful in living a productive and satisfying life. The urgent need of the hour is to gear up engineering students for the job market by teaching them job-oriented English language skills.

In the age of globalization teachers of English need to undergo a paradigm shift and change their teaching methodology that will suit the needs of learners. They should be willing to come down to the level of learners and instill confidence in the latter. They should assess the present and future language needs of learners and teach them how to fish instead of giving them fish to eat. Teachers of English are not mere teachers of grammar; they are expected to play the role of soft skill trainers. They should teach English as a life skill and this is how they do justice to the learners. This is possible

only if curriculum designers become aware of the real needs of the future engineers of the country.

GLOSSARY

1. accuracy: (in language learning) the use of correct language, without making mistakes

2. aims: underlying reasons for, or purposes of, a course of instruction; long5 term goals

3. approach: a theory about the nature of languages and how languages are learnt Different theories imply different ways of teaching a language (the methods), and different methods make use of different kinds of classroom activities (the techniques)

> 3.1 communicative approach: an approach to language teaching in which the focus is on processes of communication rather than on grammar or translation, etc.
>
> 3.2 integrated approach: the teaching of the language skills of listening, speaking, reading and writing in conjunction with each other and in a consolidated way
>
> 3.3 learner-centred approach: an approach to teaching which is based on the principle that learning is to some extent determined by the learner
>
> 3.4 learning-centred approach: an approach to second language teaching which is concerned with maximising the value of the learning as opposed to the teaching
>
> 3.5 plurilingual approach: an approach which emphasises the fact that individual person's experience of language in its cultural contexts expands, from the language of the home to that of society at large and then to the languages of other peoples
>
> 3.6 situational approach: an approach to syllabus organisation which is based on the predicted situations in which students are likely to need to use the language
>
> 3.7 skills-centred approach: an approach which treats the learner as a user of language skills rather than as a learner of language knowledge

4. assessment: the measurement of the progress, achievement, attainment or proficiency of a language learner

> 4.1 continuous assessment: assessment of class performances throughout a course

4.2 formative assessment: (falls under continuous assessment) an on going process of assessment of the extent of learning which the teacher can feed back into course planning and the actual feedback given to students

4.3 self assessment: checking one's own success in using a language summative ~ final assessment at the end of a course

5. assessment: (also tools) used to gather data about student learning.

6. authentic: natural discourse (spoken or written)

7. authentic texts: (spoken or written) taken from authentic sources (newspapers, magazines, radio, TV, etc.)

8. autonomous learning: based on the principle that students should take maximum responsibility for, and control of, their learning styles and stages outside the constraints of the traditional classroom

9. backwash effect: the effect (positive or negative) of testing on teaching

10. benchmark: something that is used as a standard by which other things can be judged or measured

11. BEC: Cambridge Business English Certificate, a standardised test

12. coherence: the relationships which link the meanings of utterances in discourse or text

13. coherent: free from internal contradictions

4. cohesion: the grammatical and/or lexical relationships between the different elements of a text. This may be the relationship between different sentences or between different parts of a sentence

15. communicative competence: it comprises linguistic, sociolinguistic and pragmatic competences

16. commutainment: a portmanteau word used to imply communication in the form of entertainment (P'Rayan, 2008)

17. criteria: statements about the dimensions of competency that specify important components of the desired knowledge or skill that the student should learn and be able to demonstrate. For example, in oral presentations, one criterion could be "maintaining eye contact with the audience". Used in syllabus specifications for outcomes and assessment

18. critical thinking: a process by which the thinker improves the quality of his or her thinking

19. curriculum: an educational programme (one or more subject areas) which states:

- the educational aims of the programme (the expected outcomes)

- the objectives, the content, teaching procedures and learning experiences which will be necessary to achieve these aims (the means)

- instruments for assessing whether or not the aims and objectives have been achieved

20. descriptor: a statement which may, for example, serve as a criterion for assessing language proficiency, materials, learning language, competence

21. EFL: English as a Foreign Language

22. ELT: English Language Teaching

23. ESP: English for Specific Purposes

24. evaluation: the process of determining the effectiveness of teaching which may be by means of formal tests and examinations, or by formal/informal feedback from students and teachers via questionnaires, interviews, impact study, etc.

25. exponent: an item that is an example of a particular language function. For example, 'Could you make me a cup of tea, please?' is an exponent of the function 'making polite requests'

26. feedback: any information which provides evidence of something being evaluated

27. fluency: the features which give speech the qualities of being natural and normal, including native-speaker-like use of pause, rhythm, intonation, stress, use of interjections and interruptions, etc.

28. function: the purpose for which an utterance or unit of language is used, e.g. apologizing, warning etc.

29. generic referring to, shared by, or typical of a whole group of similar things (syn. common), e.g. generic job5related skills. Also 'generic features' = typical linguistic features of a specific genre, or sub5genre (such as newspapers: 'newspaper editorials')

30. IELTS: International English Language Testing System

31. information gap: the missing or incomplete part of a message which makes communication necessary

32. input (in language learning) language which a learner hears or reads and with which she or he can learn

33. interview

> 33.1 focused interview: an interview that explores a particular aspect of an event or situation, particularly with a group of individuals who have had a similar experience of the event
>
> 33.2 structured interview: an interview in which the interview organisation and procedure, the topics, questions and order in which they will be presented have been determined in advance

34. innovation: planned change within a system or organisation

35. item: an individual question or exercise in a test

36. job analysis: the method used to obtain a detailed description of a with particular regard to the use(s) of English required for it

37. language portfolio a set of documents which presents different aspects of the learner's language development and capabilities and competences

38. language: a person's skill in using a language for specific purposes. Whereas language achievement describes language ability as a result of learning, proficiency refers to the degree of skill with which a person can use a language, such as how well a person can read, write, speak, or understand language for different purposes in different situations. Proficiency may be measured through the use of a proficiency test

39. language skills: listening, speaking, reading, writing. Listening and reading are called 'receptive' skills; speaking and writing are called 'productive' skills

40. learning outcomes: what students are expected to know and be able to do by the end of a course relative to some predetermined criteria. Outcomes are the reflection of the stated course learning objectives and are measured by the assessment instruments

41. learning style: an individual approach to acquiring skills or information which can be described or characterized according to well5accepted norms

42. level of proficiency: a level reached by a student measured against agreed standards (e.g. CEF)

43. medium: of the language via which a particular subject or curriculum is taught

44. method: a way of teaching a language which is based on systematic principles and procedures, i.e., which is an application of views on how a language is best taught and learnt

45. modular: relating to the organisation of courses in units called modules

46. module: a separate part or unit of a particular academic course

47. multiple-choice: test items for which several possible choices or answers (called 'distractors') are given. The student usually has to select one of the four or five distractors as the best or correct choice.

48. needs analysis: the process of determining and prioritising the needs for which learners require a language in order to design an appropriate language course for those students

49. notion: a concept. General notions refer to the ways in which a language expresses categories like space, time, result, causality, etc. Specific notions may be simpler meaning elements and are often interpreted to be the lexical items, or vocabulary, of a language

50. objective: a statement describing what students will be able to do as a result of taking a course. In a syllabus, they usually state what students should know, be able to do, feel (affective factors) and have practised/experienced) by the end of a course of learning.

51. problem solving: a learning strategy which involves students working (usually collaboratively) in order to solve a stated problem/reach a desired goal

52. presentation: a pre-planned, prepared, and structured talk which may be given in formally or informally to a specified audience. In language teaching the process and impact of the objective (e.g. to inform or to persuade) is often assessed by the teacher/peers using predetermined criteria

53. project work: an activity which centres around the completion of a major task, and which usually requires an extended amount of independent work either by an individual student or by a group of students

54. reliability: the extent to which a test or test item measures its results consistently

55. scanning: a type of speed reading used when the reader wants to locate a particular piece of information without necessarily understanding the rest of a text

56. simulation: classroom activities which reproduce or simulate real-life situations and which often involve role-play, problem-solving and decision-making

57. situation: the place and circumstances in which language is used

58. skills

58.1 macro ~ listening, speaking, reading, writing

58.2 micro ~ individual processes and abilities which are used in carrying out particular macro skills(e.g. reading for detail, inferring meaning etc.)

58.3 productive ~ speaking, writing

58.4 receptive ~ listening, reading

59. skimming: reading quickly with the aim of understanding the general meaning or 'gist' of a text

60. specialism; the particular subject a student studies, or majors in

61. standard: a description of the expected level of student performance. Each student's work is compared to the standard, rather than to the work of other students

62. study skills: abilities, techniques, and strategies used in reading, writing, listening or speaking for academic purposes

63. syllabus: a statement of objectives and content used as the basis for planning, selecting and grading courses of various kinds

64. target language the foreign language being learned

65. target level: the degree of mastery which the learner will need to gain in the target language

66. target situation: a specific situation in which the students will use the foreign language

67. task: an activity (e.g. problem solving) which focuses on the content and purposes of the activity and not on the language *per se*

68. tertiary: higher education

69. test: any procedure for measuring ability, knowledge, or performance

achievement ~ measures the achievement of specific objectives, what has been taught on a course

cloze ~ a global language test in which words are removed from a text and replaced with spaces (e.g. every seventh word)

diagnostic ~ enables the tester to diagnose the strengths and weaknesses of the candidate

placement ~ designed to place students on a particular course or at an appropriate level on a course

proficiency ~ measures the learner's general level of language mastery (not related to a particular course) (usually sub-skills)

progress ~ designed to check the students' achievement/abilities at the end of a lesson, unit, course, or term

summative ~ given at the end of a course of instruction which measures or 'sums up' what a student has learned/can do

70. test item: an element in a test which requires an answer or response

71. validity: the extent to which a test measures exactly what it is supposed to measure

APPENDICES

Appendix - 1

ENGINEERING ENGLISH: A CRITICAL EVALUATION

Questionnaire for Students

Dear friend!

The purpose of this questionnaire is to evaluate the effectiveness of your first-year *Engineering English* course and to find out the present and future language needs of engineering students. This questionnaire can influence greatly the teaching of English for Engineering students, the improvement of which will contribute significantly to preparing students for placement/campus recruitment and thus to the workplace. I will highly appreciate if you answer the questions frankly.

Please, fill in the blanks with appropriate information or **bold** the appropriate choice.

_____
_

1. Dept:

2. Batch:

3. Were you satisfied with your first-year English classes? Yes / No

4. If yes, are you ready to use English in your future job? Yes / No / Not sure

5. Are you satisfied with the length of the English course? Yes / No

6. Do you think you had enough hours of English per week? Yes / **No**

7. How many hours of English a week do you think is enough for you? ___ hours.

8. You study English to:

8.1 use English for professional purposes □
8.2 have access to information via Internet □
8.3 get information from text books, journal □
8.4 make presentations at symposiums, conferences, etc. □

8.5 write assignments, reports, proposals, etc. □

8.6 make summaries □
8.7 write business letters, memos, messages □
8.8 use English for oral communication □
8.9 use English for further studies □

8.10 succeed in your carrier □

8.11 get job with MNCs □
8.12 get personal satisfaction □
8.13 pass the exam □
8.14 All

9. State whether your first-year English course helped you develop the following skills. Bold your choice.

9.1 Understanding spoken English in professional context Yes / No
9.2 Developing oral professional communication skills Yes / No
9.3 Developing reading strategies for professional purposes Yes / No
9.4 Developing professional (business / technical) writing skills Yes / No
9.5 Developing academic writing skills Yes / No

9.6 Developing study skills Yes / No
9.7 Developing fluency Yes / No
9.8 Improving accuracy Yes / No
9.9 Increasing the English vocabulary, including professional Yes / No
9.10 Developing oral presentation skills Yes / No
9.11 Developing professional negotiation skills Yes / No
9.12 Developing telephoning skills Yes / No
9.13 Developing ability to take part in discussions / debates Yes / No
9.14 Developing ability to take part in meetings Yes / No
9.15 Developing 'social communication' skills Yes / No

10. Did you have the following activities in your English class? If 'yes' Bold it.

10.1 reading for information Yes / No

10.2 reading for specialist information Yes / No

10.3 summarizing the texts Yes / No

10.4 writing compositions Yes / No
10.5 writing reports, technical documents Yes / No
10.6 writing business correspondence Yes / No

10.7 listening for general information Yes / No
10.8 listening for specific information Yes / No
10.9 watching videos Yes / No
10.10 discussions/debates Yes / No
10.11 role-play Yes / No
10.12 making presentations Yes / No
10.13 fulfilling the exercises Yes / No
10.14 taking tests Yes / No
10.15 Others:

11. Are the following activities useful (U)/not useful (NU), appropriate (A) / not appropriate (NA) to your level, interesting /enjoyable (I/E) or not interesting/enjoyable (NIE)? (More than one tick is possible in one line.)

	Activities	**U**	**NU**	**A**	**NA**	**IE**	**NIE**
11.1	Reading for information						
11.2	Reading for specialist information						
11.3	Summarizing the texts						
11.4	Writing compositions						
11.5	Writing reports						
11.6	Writing business correspondence						
11.7	Listening for general information						
11.8	Listening for specific information						
11.9	Watching videos						
11.10	Discussions/debates						
11.11	Role-play						
11.12	Making presentations						
11.13	Fulfilling the exercises						
11.14	Taking the tests						

12. Are the following types of class work useful (U)/not useful (NU), interesting/enjoyable (IE) or not interesting/enjoyable (NIE) for you?

	Type of class work	**U**	**NU**	**IE**	**NIE**
12.1	Individual work				
12.2	Pair work				
12.3	Group work				
12.4	Team work				
12.5	Project work				
12.6	Autonomous work				

13. Did the different English tests (unit, mid-sem, etc.) and examinations (model and end-semester) that you had during your first-year programme assess the following language skills?

	Skills	**Yes**	**No**
13.1	Listening		
13.2	Speaking		
13.3	Reading		
13.4	Writing		

14. Do you think it is easy to score high marks in English without having good proficiency in English? Justify your answer.

Yes / No

15. Do you have any suggestions to make tests and exams effective?

16. Do you have any suggestions to make the Engineering English course effective?

THANK YOU FOR YOUR COOPERATION

Albert P'Rayan

Appendix - 2

Engineering English: A Critical Evaluation

Questionnaire for Ex-students

Dear Respondents,

I'm working on English for Engineering for my PhD. The research topic is "Engineering English: A Critical Evaluation". I'd like to get your feedback on the Engineering English course offered during the first year of the four-year engineering programme at engineering colleges affiliated to the Anna University and also your suggestions to improve the quality of the course. Your feedback about the course and suggestions on how to modify the course content and how the course should be taught and learnt are very valuable to my research.

Please be assured that the details you provide will be kept confidential and will be used only for my research purpose.

Name: _____ Year: _____ Dept: _____

AN EVALUATION OF *ENGINEERING ENGLISH* COURSE

Given below are 50 questions. Please answer ALL the questions by ticking the appropriate number.

0=none	1=low	2= average
3=good	4=very good	5=excellent

Tick the appropriate number:

A. Level of proficiency in English

2. How would you describe your **proficiency level** in English?

0 1 2 3 4 5

3. How would you describe your **skills** in the following areas?

Listening	0	1	2	3	4	5
Speaking	0	1	2	3	4	5
Reading	0	1	2	3	4	5
Writing	0	1	2	3	4	5
Grammar	0	1	2	3	4	5
Interpersonal skills	0	1	2	3	4	5
Working in groups	0	1	2	3	4	5

4. Rate your level of proficiency in the following writing skills. Tick the appropriate number.

1=low 2= average
3= good 4=very good

• organizing and drafting documents	1	2	3	4
• memos, letters, and e-mail	1	2	3	4
• proposals	1	2	3	4
• progress reports	1	2	3	4
• reports and journal articles	1	2	3	4

5. Rate your level of proficiency in the following speaking skills. Tick the appropriate number.

1=low 2= average

3= good 4=very good

• Expressing yourself clearly	1	2	3	4
• Talking on the phone effectively	1	2	3	4
• Taking part in group discussions	1	2	3	4
• Interviewing others	1	2	3	4
• Making oral presentations	1	2	3	4
• Motivating and directing others	1	2	3	4
• Being tactful and diplomatic	1	2	3	4

6. Are you satisfied with your language proficiency?

   A) Yes B) No

7. If 'yes', list the factors that contributed to your language ability. If 'no', state the reasons for having not reached the required level of proficiency.

8. How would you describe your **attitude** towards English? Tick the appropriate number.

   0=negative 1=neutral 2=positive

B. Need awareness

9. Do you agree that the most successful engineers and scientists are skilled writers?

   A) Yes B) No

10. Do you agree that the most effective engineers and scientists have good oral communication skills?

    A) Yes B) No

C. Present and Future Needs

11. What language skills are required in order to succeed during the four years of the undergraduate programme? List the skills in the order of priority.

12. What language skills are required in order to get placed in a good industry/company/organization? List the skills in the order of priority.

13. List the skills that you think are important in future (at the workplace)?

D. Evaluation of the *Engineering English* Curriculum

14. During the first year of your engineering programme, you had '*Engineering English*' course. How do you rate the following?

0=none 1=low 2=average
3=good 4=very good 5=excellent

the syllabus	0	1	2	3	4	5
the content	0	1	2	3	4	5
skills taught	0	1	2	3	4	5
teaching methodology	0	1	2	3	4	5
assessment (tests/exams)	0	1	2	3	4	5

15. Give your feedback on the following:

the syllabus
the content
skills taught
teaching methodology
assessment (tests/exams)

16. Which of the following language skills are important for you during your four-year engineering programme and later at work?

- Listening
- Speaking
- Reading
- Writing
- Grammar
- Interpersonal skills
- Group skills
- Problemsolving skills
- Critical thinking skills
- Verbal reasoning

17. Which of the following skills were given importance during the first year 'Engineering English' programme?

- Listening

- Speaking
- Reading
- Writing
- Grammar
- Interpersonal skills
- Group skills
- Problemsolving skills
- Critical thinking skills
- Verbal reasoning

18. Which of the following skills were overlooked or not given adequate importance?

    - Listening
    - Speaking
    - Reading
    - Writing
    - Grammar
    - Interpersonal skills
    - Group skills
    - Problemsolving skills
    - Critical thinking skills
    - Verbal reasoning

19. Has the *Engineering English* course been designed to meet your present and future needs and the requirements of the recruiters?

    A) Yes B) No

20. Do you think that the *Engineering English* course prepares you for the campus recruitment / placement?

    A) Yes B) No

21. If 'yes', explain how it helped you. If 'no', explain the drawbacks of the course.

22. Did the course cover the following skills?

    - Interaction skills
    - Presentation skills
    - Seminar participation skills
    - Oral skills
    - Aural skills (listening skills)

23. Was the course student-centred?

A) Yes B) No C) Don't know

24. Did you have computer-assisted language learning, web-enhanced language learning or any sort of technology-integrated language learning during your first-year Engineering English programme?

A) Yes B) No C) Don't know

E. Placement Training

25. Did you find the placement training useful?
A) Yes B) No

26. How useful was the placement training? List the benefits.

27. How was the placement programme different from the 'Technical English' course?

28. What aspects of the placement training programme should be incorporated into the Technical English course in order to make it more effective?

F. Communication Skills Lab Course

29. Did you find the 'Communication Skills Lab' (GE1352) introduced by the Anna University for 3rd year students useful?

A) Yes B) No C) Don't know

30. How was it different from your first-year Engineering English course?

31. What were the strengths and limitations of the course?

G. System of Assessment

32. Do the tests and exams assess your skills properly?

A) Yes B) No C) Don't know

33. Comment on the type of tests and exams given.

34. Do the scores that you get in English tests/exams reflect your proficiency level?

A) Yes B) No C) Don't know

35. Should equal weight be given to internal assessment marks? Give your reasons.

A) Yes B) No C) Don't know

Reasons:

H. Suggestions

36. What are your suggestions to improve the following areas of the *Engineering English* course: syllabus, materials, skills, teaching methodology, assessment pattern (tests/exams)?

37. List the changes that you would like to bring in in the *Engineering English* course.

In your view, the *Engineering English* course should contain ----------

38. Do you think that technology-enhanced language teaching and learning will be relevant and useful for you? Give your reasons.

A) Yes B) No C) Don't know

Reasons:

39. *Blended Learning* refers to a language course which combines a F2F (face-to-face) classroom component with an appropriate use of technology. Do you like the idea of 'blended learning'? Explain how it will help you.

A) Yes B) No C) Don't know

Reasons:

40. Do you think it is important to develop critical thinking competence in learners?

A) Yes B) No C) Don't know

Reasons:

41. Do you think it is important to incorporate critical thinking tasks into course materials and examinations?

    A) Yes B) No C) Don't know

    Reasons:

42. Do you think it is important to involve students in the design of course materials? Why?

    A) Yes B) No C) Don't know

    Reasons:

43. How do you want to involve yourself in the course design? (proposing professional topics, …)

44. Comment on the idea of treating students as partners of teaching/learning process.
45. Do you think it is good to have a skills-oriented syllabus?

    A) Yes B) No C) Don't know

    Reasons:

46. Do you think it is good to teach job-related language skills in the first year of your engineering programme?

47. Give your suggestions on modifying the *Engineering English* course based on the corporate needs (placement). What should be incorporated into the syllabus? What type of tasks (exercises) should be included? Given below are some examples of activities that can be incorporated into the course. Add a few more activities that you think are important to the list.

    - Problem-solving games
    - Group discussions
    - Role-plays
    - Interviews

48. How do you want to be taught? Tick your choice.

    face-to-face lecture
    group discussion
    take-home assignments

pc-based learning
any other (please add)_____--

49. How do you want the following skills to be taught?

- Listening (eg. by doing more listening exercises in the English multimedia lab)
- Speaking
- Reading
- Writing

50. How do you want to learn? List your preferences.

50. Any other comments. Please contribute your views related to the research.

Thank you for your patience and timely help.

Albert P'Rayan, Dept of English, Jeppiaar Engineering College, Chennai.

Appendix - 3

Engineering English: A Critical Evaluation

Questionnaire for EST practitioners

Dear Respondents

I'm working on English for Science and Technology for my PhD research. The research topic is "Engineering English: A Critical Evaluation". I'd like to get your views related to the topic. Your feedback on the *Technical English* course and suggestions on how to modify the course content are very valuable to my research.

Please be assured that the details you provide will be kept confidential and will be used only for my research purpose.

PERSONAL DETAILS

1. **Gender: Male / Female**
2. **Qualification:**
3. **Name of the orgnaization:**
4. **Designation:**

A. Professional Details

1. How long have you taught the course *English for Engineering / Technical English?*
2. What are your educational qualifications?
3. Have you had any special training in ELT?
4. If 'yes' give details.
5. Do you think a teacher without any specific ELT training can teach the course 'English for Engineering'? Give your reasons.
6. What competencies does an EST teacher need to have in order to be successful in teaching the course 'English for Engineering'?

B. ESP practitioners' views on their students

7. Which language skills do your students need most?

8. Which language skills do they lack most?

C. ESP practitioners' views on the 'English for Engineering' course

9. What do you think of the first-year English course?

10. Does the English course cater to the needs of students?

11. Doe the course prepare them to the workplace?

12. Do you use any course book in the class? Name the course book.

13. Are you happy with the course book?

14. What are your reasons for selecting the course book?

15. Do your students have practice in English language lab (technology-enhanced ELTL)?
16. What are your suggestions to improve the quality of the course?

D. Testing and Evaluation

17. Are you happy with the way the students are assessed?

18. What are your views on the tests and exams?

19. Do you think the students should be tested in all the four skills: listening, speaking, reading and writing? Please give your reasons.

20. What are your suggestions to improve the quality of assessment?

E. Teaching methods and approach

24. Do you carry out needs analysis before starting a course?
25. How do you teach each of these skills: Listening, Speaking, Reading and Writing?

26. Do you think computer-assisted language teaching and learning is essential to develop your students' language skills? Give reasons to justify your answer.

THANK YOU

Albert P'Rayan, Email: rayanal@yahoo.co.uk, Phone: 9884380861

Appendix - 4

Engineering English: A Critical Evaluation

Questionnaire for Subject Teachers

Dear Respondents

I'm working on English for Science and Technology for my PhD research. The research topic is "Engineering English: A Critical Evaluation". I'd like to get your views related to the topic. Your feedback on the students' study needs and suggestions on how to modify the *Technical English* course are very valuable to my research.

Please be assured that the details you provide will be kept confidential and will be used only for my research purpose.

PERSONAL DETAILS

5. **Gender: Male / Female**
6. **Qualification:**
7. **Name of the orgnaization:**
8. **Designation:**

---

1. What is your subject area?

2. Which of the following language skills do your students need and which do they have difficulty with?

Skills	Needs	Difficulties
2.1 Speaking		
a. presentation skills		
b. participating in informal meetings		
c. giving instructions		
d. other (please specify)		
2.2 Listening		
a. following lectures		
b. understanding discussions		
c. other (please specify)		
2.3 Writing		
a. taking notes at lectures		
b. writing assignments		
c. writing essays		
d. writing lab reports		
e. summarizing texts		
f. other (please specify)		
2.4 Reading		
a. reading technology-related textbooks		
b. reading journal articles		
c. other (please specify)		

THANK YOU

Albert P'Rayan

Appendix - 5

Engineering English: A Critical Evaluation

Questionnaire for Placement Trainers

Dear Respondents,

I'm working on 'English for Engineering' for my PhD. The research topic is "Engineering English: A Critical Evaluation". I'd like to get your views related to the topic. Your views and suggestions are very valuable to my research.

Please be assured that the details you provide will be kept confidential and will be used only for my research purpose.

A. Professional Details

1. Name:
2. Name of your organization:
3. How long have you been involved in recruitment?
4. What is your area of specialization?

B. Skill sets for engineers

1. What skill sets do engineering graduates need to be placed in reputed IT companies or core engineering firms?

2. What skill sets do they need to achieve success at the work place?

C. About candidates applying for jobs (engineering students)

1. In your estimate, what is the percentage of students who have employability skills?

2. What skills do most engineering students lack?

D. Role of English language teachers and engineering colleges

1. Do you agree that soft skills should be incorporated into the '*English for Engineering*' syllabus? Please justify your answer.

2. Do you agree that teachers of English at institutes of technology can play the role of soft skills trainers? Please justify your answer.

3. How do you see the role of English language teacher evolving over the next 5 years?

4. What steps should be taken by institutes of technology to improve the employability skills of engineering students?

E. Any other

Please feel free to add your comments related to the topic.

Thank you for spending a bit of your time.

Albert P'Rayan, Dept of English, Jeppiaar Engineering College, Chennai.

Email: rayanal@yahoo.co.uk, raydeal@indiatimes.com Phone: 9884380861

Appendix - 6

Engineering English: A Critical Evaluation

Questionnaire for Professional Engineers

Dear Respondents,

I'm working on *Engineering English* for my PhD. The research topic is "Engineering English: A Critical Evaluation". I'd like to get your views on the corporate needs and expectations and also get your suggestions on modifying the Engineering English curriculum. Your contribution is very valuable to my research.

Please be assured that the details you provide will be kept confidential and will be used only for my research purpose.

A. Professional Details

9. Qualification:

10. Name of the company:

11. Designation:

12. How long have you been with the present company? Years:

13. Have you had any special training in communication skills? Yes / No

B. Professional Communication Needs

6. Do you agree that highly effective engineers have good writing skills? Yes / No

7. Do you agree that highly effective engineers are good communicators? Yes / No

8. What skill sets do students of engineering need in order to be placed in reputed IT companies or core engineering companies?

9. What skill sets do recruiters look for in prospective employees?

10. What skills do professional engineers (various positions) need in order to be effective at the workplace?

C. Suggestions

11. What are your suggestions to improve the following areas of the *Engineering English* curriculum: syllabus, materials, skills, teaching methodology, assessment pattern (tests/exams)?

12. List the changes that you would like to bring in in the *Engineering English* course.

In your view, the *Engineering English* course should contain ----------

13. Do you think that technology-enhanced language teaching and learning will be relevant and useful for the learners? Give your reasons.

A) Yes B) No C) Don't know

Reasons:

14. *Blended Learning* refers to a language course which combines a F2F (face-to-face) classroom component with an appropriate use of technology. Do you like the idea of 'blended learning'? Explain how it will help the learners.

A) Yes B) No C) Don't know

Reasons:

15. Do you think it is important to develop critical thinking competence in learners?

A) Yes B) No C) Don't know

Reasons:

16. Do you think it is important to incorporate critical thinking tasks into course materials and examinations?

A) Yes B) No C) Don't know

Reasons:

17. Do you think it is important to involve professional engineers in the design of course materials? Why?

A) Yes B) No C) Don't know

Reasons:

18. How do you want to involve yourself in the course design? (proposing professional topics, …)

19. Do you think it is good to have a skills-oriented syllabus?

A) Yes B) No C) Don't know

Reasons:

21. Do you think it is good to teach job-related language skills in the first year of your engineering programme?

22. Give your suggestions on modifying the *Engineering English* course based on the corporate needs (placement). What should be incorporated into the syllabus? What type of tasks (exercises) should be included? Given below are some examples of

activities that can be incorporated into the course. Add a few more activities that you think are important to the list.

- Problem-solving games
- Group discussions
- Role-plays
- Interviews

23. How do you want the following skills to be taught?

- Listening (eg. by doing more listening exercises in the English multimedia lab)
- Speaking
- Reading
- Writing

24. Any other comments. Please contribute your views related to the research.

Thank you for your patience and timely help.

Albert P'Rayan, Dept of English, Jeppiaar Engineering College, Chennai.

Email: *rayanal@yahoo.co.uk*, *raydeal@indiatimes.com* Phone: 9884380861

Appendix - 8

COMMUNICATION APPREHENSION QUESTIONNAIRE

Indicate in the space provided the degree to which you agree or disagree with each statement by noting whether you:
5 *Strongly Disagree;* ***4*** *Disagree;* ***3*** *Are Undecided;* ***2*** *– Agree;* ***1*** *– Strongly Agree.*
There are no right or wrong answers. Work quickly to record your first impression. You do not have to answer any question you do not wish to answer.

S.No.	Statements	Answer

1	I dislike participating in group discussions.	
2	Generally, I am comfortable while participating in group discussion	
3	I am tense and nervous while participating in group discussions.	
4	I like to get involved in group discussions.	
5	Engaging in group discussion with new people makes me tense and nervous.	
6	I am calm and relaxed while participating in group discussions.	
7	Generally, I am nervous when I have to participate in a meeting.	
8	Usually I am calm and relaxed while participating in meetings.	
9	Usually, I am calm and relaxed when I am called on to express an opinion at a meeting.	
10	I am afraid to express myself at meetings.	
11	Communicating at meetings usually makes me uncomfortable.	
12	I am very relaxed when answering questions at a meeting.	
13	While participating in a conversation with a new acquaintance, I feel very nervous.	
14	I have no fear of speaking up in conversations.	
15	Ordinarily, I am very tense and nervous in conversations.	
16	Ordinarily, I am very calm and relaxed in conversations.	
17	While conversing with a new acquaintance, I feel very relaxed.	
18	I'm afraid to speak up in conversations.	
19	I have no fear of giving a speech.	
20	Certain parts of my body feel very tense and rigid while I am giving a speech.	
21	I feel very relaxed while giving a speech.	
22	My thoughts s become confused and jumbled when I am giving a speech.	
23	I face the prospect of giving a speech with confidence.	
24	While giving a speech, I get so nervous that I forget facts I really know.	

Score Sheet

This score sheet will help you compute an overall communication apprehension score and a summary of your apprehension in four specific situations: group, meeting, dyadic (one on one), and public.

Group Score:
Question 2 ___
+Question 4 ___
+ Question 12 ___
Total ___
- Question 7 ___
- Question 10 ___
- Question 11 ___
Total ___
Add 18
Final Score ___

Meeting Score: Question 8 ___
+ Question 9 ___
+Question 6 ___
Total ___
- Question 1 ___
- Question 3 ___
- Question 5 ___
Total ___
Add 18
Final Score ___

Dyadic Score: Question 14 ___
+Question 16 ___
+Question 17 ___
Total ___
-Question 13 ___
-Question 20 ___
-Question 22 ___
- Question 24 ___
Total ___
Add 18
Final Score ___

Public Score: Question 19 ___
+Question 21 ___
+Question 23 ___
Total ___
-Question 15 ___
-Question 18 ___
Total ___
Add 18
Final Score ___

Overall Communication Apprehension (CA) = Add your group, meeting, dyadic, and public scores.
Overall CA Score = ____

Appendix - 9

ANALYSIS OF 120 STUDENTS' COMMUNICATION APPREHENSION

S.No.	GD	Meetings	Interersonal	PS	PRCA
1	12	14	16	18	60
2	15	13	18	18	64
3	11	11	14	11	47
4	16	14	18	19	67
5	11	18	13	19	61
6	9	11	11	17	48
7	17	18	14	15	64
8	17	22	23	15	77
9	15	21	19	18	73
10	19	13	21	21	74
11	8	16	19	19	62
12	20	22	15	20	77
13	12	18	22	21	73
14	18	17	16	14	65
15	13	13	15	17	52
16	11	13	11	11	46
17	9	9	11	12	41
18	9	13	13	12	47
19	12	13	14	10	49
20	11	17	12	21	61
21	15	14	16	14	59
22	11	11	12	11	45
23	20	17	25	18	80
24	15	25	21	18	79
25	9	11	10	9	39
26	15	14	14	16	59
27	13	15	14	16	58
28	22	15	17	13	67
29	16	20	18	18	72
30	16	23	25	23	87
31	13	14	12	12	49
32	13	18	10	18	59
33	19	16	24	25	79
34	18	23	19	23	83
35	13	14	18	18	63
36	9	14	8	15	46
37	18	19	15	16	68
38	13	20	14	25	72
39	17	13	20	14	64
40	19	23	22	15	79
41	23	24	23	24	94
42	20	13	18	18	69
43	23	22	25	23	93
44	21	21	23	21	86
45	8	16	18	20	62
46	6	12	10	6	34
47	10	10	12	14	46
48	20	23	23	24	70

49	22	14	16	19	71
50	21	15	18	18	72
51	14	16	14	17	61
52	17	20	18	18	73
53	20	22	18	25	85
54	22	21	22	22	87
55	19	22	10	18	69
56	13	19	18	18	68
57	22	25	22	28	97
58	19	19	15	19	72
59	10	15	15	20	50
60	19	25	16	25	85
61	10	13	5	12	40
62	18	20	18	17	73
63	19	16	18	22	75
64	13	15	13	18	59
65	20	17	14	14	65
66	16	20	18	26	80
67	24	22	19	24	89
68	17	23	21	20	81
69	21	23	20	23	87
70	15	18	15	12	60
71	14	24	11	22	71
72	10	16	13	17	56
73	15	20	12	21	68
74	11	19	14	16	60
75	10	14	14	15	53
76	21	26	22	22	91
77	13	13	20	21	67
78	19	27	18	18	82
79	14	15	14	8	51
80	23	20	20	29	92
81	15	25	19	18	77
82	18	31	21	26	96
83	19	17	20	19	75
84	18	21	9	27	75
85	16	18	23	27	84
86	16	27	24	23	90
87	24	20	22	25	91
88	13	19	14	16	62
89	13	17	12	19	61
90	17	20	17	25	79
91	16	18	19	19	72
92	12	16	15	18	61
93	17	18	23	16	74
94	15	18	17	18	68
95	15	18	19	20	72
96	19	20	13	24	76
97	8	19	12	14	53

98	9	13	9	12	43
99	20	23	25	24	92
100	15	18	14	16	63
101	16	14	16	14	60
102	10	16	10	13	49
103	15	17	14	18	64
104	17	13	19	24	73
105	17	18	18	18	71
106	23	21	21	21	86
107	20	20	18	24	82
108	23	20	22	22	87
109	21	21	20	21	83
110	21	19	16	19	75
111	17	21	20	18	76
112	10	18	19	20	67
113	20	18	20	22	80
114	13	17	13	20	63
115	13	10	8	13	44
116	17	19	15	20	71
117	18	19	15	15	67
118	12	17	20	20	69
119	21	22	27	23	93
120	19	21	18	23	81
Mean	**15.86**	**18.05**	**16.81**	**18.62**	**68.98**
SD	**4.28**	**4.18**	**4.41**	**4.52**	**14.27**
High	**24**	**31**	**27**	**29**	**97**
Low	**6**	**9**	**5**	**6**	**34**

Appendix - 12

UNIT 1

Biotechnology, the technology of the twenty-first century

I. GETTING STARTED:

A. Discuss with your partner the following questions:

1. Why did you opt for biotechnology?
2. What are you going to do after completing your B Tech?
3. What is your career goal?
4. Have you heard of any well-known biotechnologist in India? What is his/her contributions to the field of biotechnology?

B. Match the words in column A with their meanings / definitions in column B.

Column A **Bio words**	**Column B** ***Meanings / Definitions***
1) biocide	a) an apparatus in which biological agent such as an enzyme is used to detect, measure or analyze specific chemicals.
2) bioconversion	b) a mixture of methane and cardon dioxide produced from fermenting waste such as animal refuse.
3) biodegradation	c) fuel made wholly or partly from organic products.
4) biodiecel	d) a substance that kill living organisms.
5) biodynamics	e) a single living organism in an ecosystem.
6) biogas	f) a large tank used for growing microorganisms in industrial production.
7) bioreactor	g) the part of the earth and its atmosphere where organisms live.

8) biosensor	h) the study of living organisms and the production of energy.
9) biosphere	i) the breaking down of a substance by natural processes
10) bion	j) the changing of organic waste into a source of energy.

II. READING

Text 1

What is Biotechnology?

1. Biotechnology is "any technique that uses living organisms or substances from those organisms, to make or modify a product, to improve plants or animals, or to develop microorganisms for specific purposes" (Office of Technology Assessment, United States Congress).

2. Although the term sounds contemporary, biotechnology is not new. Over 9,000 years ago, people discovered that microorganisms could be used to make bread, brew alcohol, and produce cheese. Although this process of fermentation was not thoroughly understood at the time, its use still constitutes a traditional application of biotechnology. What is new, however, is the extent of applications and sophistication of biotechnology techniques currently employed. Researchers can manipulate living organisms and transfer genetic material between organisms. Genetic engineering, the specific modification or transfer of genetic material, underlies modern biotechnological innovation.

3. These current applications of biotechnology are predominantly practiced in the fields of agriculture and medicine. Modern techniques allow for the production of new and improved foods. Virus resistant crop plants and animals have been developed and advances in insect resistance have been made. Biotechnology applications in the field of medicine have resulted in new antibiotics, vaccines for malaria, and improved ways of producing insulin. Diagnostic tests for detecting serious diseases such as hereditary cancers and Huntington's chorea have been developed as well as ways of detecting and treating AIDS.

4. Biotechnology is also being applied in the areas of pollution control, mining and energy production. Genetically engineered microorganisms and plants are used to clean up toxic wastes from industrial production and oil spills. Biotechnology applications have also been introduced into the forestry and aquaculture industries. These strategies offer hope for conservation biologists. Genetic methods can be used to identify particular populations of endangered

species. Thanks to biotechnology, minute traces of animal or plant remains can be used to track and convict poachers. Genetic analysis can help botanical gardens, zoos, and game farms improve their breeding programs by determining the genetic diversity of various plant and animal populations.

5. Overall, biotechnology has significantly impacted and improved the quality of life for people on this planet. And it doesn't end there. Complementing the creative endeavors of researchers and engineers are the efforts to commercialize biotechnology products with the input of business management and marketing personnel. The expertise of intellectual property and patent lawyers are also a necessary component in the process. New career opportunities in the area of bioinformatics are on the increase.

6. There are many exciting opportunities for scientists and non-scientists in the biotechnology sector. It is apparent that biotechnology does and will have a strong impact on our world.

(Source:http://biotechnology.usask.ca/whatisbiotech.html)

A. State whether the following statements are True (T), False (F) or Not Given (NG).

1. Biotechnology is not contemporary.
2. People knew the process of fermentation thousands of years ago.
3. Genetic engineering is about engineering genes.
4. Virus resistant crop plants have been developed in the United States.
5. The sophistication of biotechnology has solved many human problems.
6. Biotech offers a cure for AIDS.
7. Biotech has a positive impact on our world.
8. Of late many students specialize in biotechnology because the sector offers exciting opportunities for them.

B. Answer the following questions in about 25-30 words.

9. What is the author's attitude towards biotechnology? Give examples to justify your answer.
10. Does the author discuss any threat posed by the technology? List the threats, if any.
11. List the fields in which biotechnology is applied?
12. What impact does the text have on you?

Text 2

Biotechnology: A Collection of Technologies

Using biological processes is hardly a noteworthy event. We began growing crops and raising animals 10,000 years ago to provide a stable supply of food and clothing. We have used the biological processes of microorganisms for 6,000 years to make useful food products, such as bread and cheese, and to preserve dairy products. Why is biotechnology suddenly receiving so much attention?

During the 1960s and '70s our understanding of biology reached a point where we could begin to use the smallest parts of organisms—their cells and biological molecules—in addition to using whole organisms.

A more appropriate definition in the new sense of the word is this: "New" Biotechnology — the use of cellular and biomolecular processes to solve problems or make products.

We can get a better handle on the meaning of the word *biotechnology* by simply changing the singular noun to its plural form, *biotechnologies*. Biotechnology is a collection of technologies that capitalize on the attributes of cells, such as their manufacturing capabilities, and put biological molecules, such as DNA and proteins, to work for us.

Cells are the basic building blocks of all living things. The simplest living things, such as yeast, consist of a single, self-sufficient cell. Complex creatures more familiar to us, such as plants, animals and humans, are made of many different cell types, each of which performs a very specific task.

In spite of the extraordinary diversity of cell types in living things, what is most striking is their remarkable similarity. This unity of life at the cellular level provides the foundation for biotechnology**.**

All cells have the same basic design, are made of the same construction materials and operate using essentially the same processes. DNA (deoxyribonucleic acid), the genetic material of almost all living things, directs cell construction and operation, while proteins do all the work. Because DNA contains the information for making proteins, it directs cell processes by determining which proteins are produced and coordinating their activities.

All cells speak the same genetic language. The DNA information manual of one cell can be read and implemented by cells from other living things. Because a genetic instruction to make a certain protein is universally understood by all cells,

technologies based on cells and biological molecules give us great flexibility in using nature's diversity.

In addition, cells and biological molecules are extraordinarily specific in their interactions. Because of this specificity, biotechnology's tools and techniques are precise; they are tailored to operate in known, predictable ways. As a result, biotechnology

products will solve specific problems, generate gentler or fewer side effects and have fewer unintended consequences. *Specific, precise, predictable.* Those are the words that best describe today's biotechnology**.**

Answer the following questions:

1. Give the contextual meanings of the following underlined words in the text.

    - manufacturing
    - building blocks
    - construction
    - manual
    - tailored
    - interactions

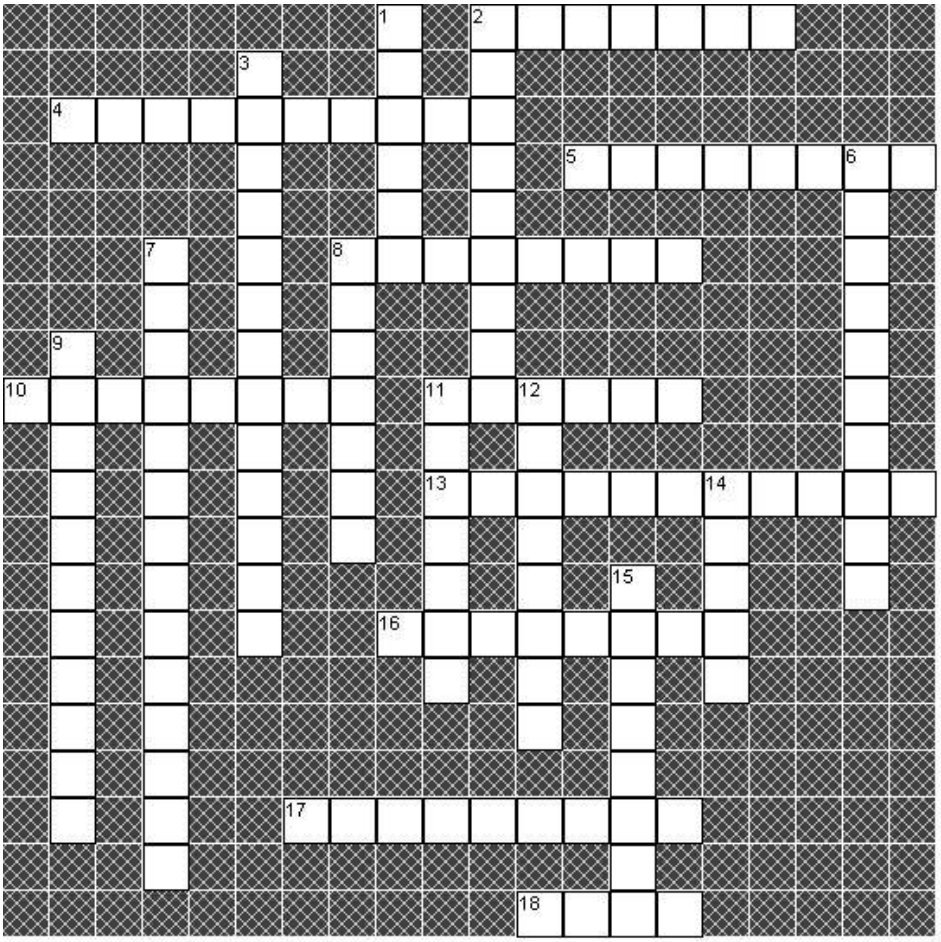
2. Explain the meaning of the following underlined sentences in the text.

    - "New" Biotechnology
    - Biotechnology is a collection of technologies
    - This unity of life at the cellular level provides the foundation for biotechnology
    - All cells speak the same genetic language
    - *Specific, precise, predictable.* Those are the words that best describe today's biotechnology**.**

III. ENGLISH IN USE

A. Crossword Puzzle

Biotechnology Terms



Across

2 Molecules composed of amino acids (7)

4 Building block of DNA or RNA (10)

5 The sum total of the genetic information of an organism including the linkage relationships between genes (8)

8 An enzyme that cleaves proteins (8)

10 The study of the structure and function of genome (8)

11 The full chromosome set containing all the genes of a particular individual. (6)

13 DNA or RNA (7,4)

16 A spontaneous or induced genetic change in the DNA of an organism (8)

17 The molecular building blocks for proteins (5,4)

18 The basic unit of inheritance. A segment of DNA that codes for a particular protein. (4)

Down

1 A small segment of DNA which binds to a complementary strand of DNA (6)

2 The observable characters of an organism due to genetic and environmental effects on development. (9)

3 Fragments of DNA that appear in multiple copies in a single individual. (10,3)

6 The study of the structure and function of proteins (10)

7 DNA that has been cut and spliced back together in a new sequence. The DNA may be from one organism or from more than one organism (11,3)

8 A small circular piece of DNA in bacteria that resembles the bacterial circular chromosome, but is dispensable. (7)

9 The introduction of new genes into individuals to cure diseases or genetic abnormalities. (4,7)

11 Transformation technique that uses accelerated particles coated with DNA to introduce foreign DNA into recipient plant. (4,3)

12 Any enzyme that cuts nucleic acids (8)

14 An exact duplicate of a fragment of DNA / an entire organism (5)

15 Joining two fragments of DNA end to end (8)

Albert P'Rayan

B. **Sequence the jumbled sentences in a logical order.**

The Future of Biotechnology

1. Two particular works—Aldous Huxley's novel, A Brave New World, and Andrew Niccol's film, Gattaca—paint futuristic societies wherein biotechnology has
perfected genetic engineering.

2. Could these scenarios be our future?

3. We all await the future. Quite possibly, the next chapter in the Information Age
may be the "Age of Biotechnology."

4. Also, don't forget that we have all long been aficionados of ominous, sci-fi themes. Yes, authors glamorize to gain an audience, yet the fact remains that the technology underlying each of these works looms as a very real possibility within the next few decades.

5. Similarly, Gattaca (spelled using only the letters representing the four DNA nucleotides) depicts a world of genetic selection in which parents can choose which of their gene combinations they wish to hand down to their children.

6. What does the future hold for biotechnology?

7. We may see forms of genetic engineering of human beings. We may be bred for
most advantageous characteristics. Who knows?

8. Biotechnology is flourishing and is continually producing applications.

9. Certainly, these stories are fictive, and, if they did not provoke reality by presenting novel, question-raising prospects, few people would be their audience.

10. In A Brave New World, children are 'produced' in the Hatchery rather than born.

11. The answers to this question are as varied as the individuals to whom the question is posed.

C. Cloze

Using the words in the box below write one word in each gap. The first one is done for you.

improvements	expunged	Dystrophy	panacea	reason
future	fight	Untapped	chest	treatments
malnutrition	biodegradation	Therapy	broached	*Biotechnology*

The Future of Biotechnology

Progress in (1) *biotechnology* is currently working on environmentally-friendly (2)_____ processes for a cleaner, healthier planet, experimenting with until-now (3)_____ energy sources, and devising useful consumer chemicals such as adhesives, detergents, dyes, flavors, perfumes, and plastics.

With the progress seen thus far in the (4)_____ against deadly diseases such as polio and small pox, it is not beyond (5)_____ that biotechnology may hold the promise for effective (6)_____ or even cures for, say, cancer and AIDS.

Gene (7)_____ may well become the method whereby we correct congenital disease caused by faulty genes.

Stem cell research may prove the (8)_____ for Parkinson's disease, multiple sclerosis, and muscular (9)_____.

Also, given the genetic (10)_____ made with crop yield and nutritive value, world hunger and (11)_____ may witness their denouement with the continual advancement of biotechnology.

The future for biotechnology is a (12)_____ of ineffable promise—the quality of life improved, diseases (13)_____, hunger terminated, and untold possibilities (14)_____.

We all await the (15)_____. Quite possibly, the next chapter in the Information Age may be the "Age of Biotechnology."

D. Editing

There are twenty errors in the following passage. Identify the errors and correct them. If there are any additional words, delete them and if there are any words omitted add them.

More than 325 million people worldwide has been helped by the more than 155 biotechnology drugs and vaccines approved by the U.S. Food and Drug Administration (FDA). Of the biotech medicines on the market, 70 percent is approved in the last six years.

There are more than 370 biotech drug products and vaccine currently in clinical trials targeting more than 200 diseases, including various cancers, Alzheimer's disease, heart disease, diabetis, multiple sclerosis, AIDS, arthritis.

Biotechnology is responsible to hundreds of medical diagnostic tests that keep the blood supply safe from the AIDS virus and detect other conditions early enough to be successfully treated.

Consumers already are enjoyed biotechnology foods such as papaya, soyabeans and corn. Hundreds of biopesticides and other agricultural products also are being used to improve our food supply and to reduce our dependence in conventional chemical pesticides.

Environmental biotechnology products makes it possible to clean up hazardous waste more efficient by harnessing pollution-eating microbes without the use of caustic chemicals.

Industrial biotechnology applications have led for cleaner processes that produce less waste and use less energy and water in such industrial sectors as chemicals, pulp and paper, textiles, food, energy, and metals and minerals. For an example, most laundry detergents produced in the United States contain biotechnology-based enzymes.

DNA fingerprinting, biotech process, has dramatically improved criminal investigation and forensic medicine, as well afforded significant advances in anthropology and vildlife management.

There are 1,457 biotechnology companies in United States, of which 342 are publicly held.

Biotechnology is one of the more research-intensive industries in the world. The U.S. biotech industry spent $15.7 billion in research and development on 2001.

IV. LISTENING

You are going to listen to a VOA Special English Agriculture Report. The title of the report is *As Biotech Crops Increase, E.U. Is Found to Stand in the Way*. **As you listen answer the questions given below.**

State whether the following statements are true (T) or false (F) or not stated (NS)

1. Biotech crops are grown only in farms in developed countries (NS)

2. Soybeans is the only crop that has been genetically engineered and grown in the United States. (F)

3. Biotechnology in agriculture is well accepted in India. (NS)

4. Many genetically engineered crops have been banned by the European Union. (T)

5. The US, Canada, Argentina and fifty more countries were involved in the negotiation. (F).

6. Genetically engineered crops are grown in most Asian countries. (F)

7. Twenty-one developing countries grow biotech crops. (F)

8. Many Non-Governmental Organizations (NGOs) support the use of biotech crops to feed the poor. (NS)

9. Rice is bio-engineered in Iraq. (NS)

10. Rice is the most important crop in Asian countries. (T)

V. WRITING (Summary)

A. Based on what you have listened write a paragraph of about 100 words on biotech crops.

Defining Technical Terms

The sentence definition of a technical term includes the following:

Term + Type + Distinguishing characteristics

The *term* consists of the words, abbreviations, and/or acronyms you are using. The *type* explains what class your term fits into. For example, a "car" is a "thing," but the word *thing* applies too many "things," including bananas, hammers, and computers. You need to classify your term more precisely. What type of thing is a car? "Vehicle" is more precise classification.

But motorcycle, a dirigible ballon, and a submarine are also types of vehicles. That's when the *distinguishing characterists* become important. How does a car differ from

other vehicles? Perhaps the distinguishing characteristics of a car would include the facts that cars are land-driven, four-wheeled vehicles. Thus, the definition would read as follows:

A car(term) is a vehicle(type) that contains four wheels and is driven on land (distinguishing characteristics).

An **extended definition** of a paragraph or more, in addition to providing the term, type, and distinguishing characteristics, also includes examples, procedures, and descriptions.

Reference: Gerson, S.J. and Gerson, S.M. (2000) Technical Writing: Process and Product. Pearson Education

B. Given below is a list of definitions of biotechnology. Some are sentence definitions and the rest are extended definitions. Choose any two sentence definitions and extend them.

1. The use of living things to make products.
   ehrweb.aaas.org/ehr/books/glossary.html
2. A set of biological techniques developed through basic research and now applied to research and product development. In particular, the use of recombinant DNA techniques.
   pewagbiotech.org/resources/glossary/
3. Any technique that uses living organisms, or parts of organisms, to make or modify products, improve plants or animals, or to develop microorganisms for specific uses.
   www.doe.mass.edu/frameworks/scitech/2001/resources/glossary.html
4. The industrial application of living organisms and/or biological techniques developed through basic research. Biotechnology products include pharmaceutical compounds and research materials.
   www.bioscreening.net/glossary/
5. Technologies that use living cells and/or biological molecules to solve problems and make useful products.
   www.perlegen.com/science/dictionary.html

6. Any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use
   www.wfed.org/resources/glossary/
7. Techniques that use living organisms or parts of organisms to produce a variety of products (from medicines to industrial enzymes) to improve plants or animals or to develop microorganisms to remove toxics from bodies of water, or act as pesticides.
   www.nsc.org/ehc/glossary.htm
8. The use of biologic al processes to manufacture products.
   www.exploratorium.edu/genepool/glossary.html
9. The application of biological research techniques to the development of products which improve human health, animal health, and agriculture.
   www.cs.uu.nl/people/ronnie/local/genome/b.html
10. Using living organisms or their products to make or modify a substance. Techniques include recombinant DNA (see Genetic Engineering) and hybridoma technology. 2. Industrial application of biological research, particularly in fields such as recombinant DNA or gene splicing, which produces synthetic hormones or enzymes by combining genetic material from different species.
    www.amfar.org/cgi-bin/iowa/bridge.html

VI. SPEAKING

Discuss any one of the topics in groups of 6-8 members

1. **Can biotechnology meet the needs of the poor in developing countries?**
2. **Which biotech research priorities could most benefit us in India?**

VII. WWW-BASED ACTIVITY

Write a blog on how Biotech can help protect the environment.

Appendix – 13

Oral Presentation: A Process Approach

Evaluation questionnaire

Dear student

The purpose of this questionnaire is to evaluate the effectiveness of the process approach to oral presentation. Please answer the questions objectively. The results of this questionnaire will be used only for research purposes.

Name: Department: Batch:

1. Did you find the different stages of process approach to oral presentation useful?
   Yes / No

2. If 'yes', did the process approach to oral presentation enable you to develop the following skills? Write your response either 'Yes' or 'No' in the space provided.

S.No.	Skills	Your

		response
2.1	Presentation	
2.2	Critical thinking	
2.3	Analytical	
2.4	Critical reading	
2.5	Listening	
2.6	Writing	
2.7	Group skills	
2.8	Technical (uploading to yahoo group)	

3. Did you find the assignments given to you useful? For each assignment you have to say whether it was: not useful (0), less useful (1), useful (2), more useful (3)

S.No.	Assignment	Usefulness
3.1	Outline of oral presentation	0 1 2 3
3.2	Writing a review	0 1 2 3
3.3	Preparing power point slides	0 1 2 3

4. How useful were the following activities? For each activity given below you have to say whether it was: not useful (0), less useful (1), useful (2), more useful (3)

S.No.	Activities	Rating
4.1	Discussing the topic in groups	0 1 2 3
4.2	Getting the views of group members	0 1 2 3
4.3	Discussing the topic with the teacher	0 1 2 3
4.4	Preparing an outline	0 1 2 3
4.5	Peer review	0 1 2 3
4.6	Preparing slides	0 1 2 3
4.7	Presentation	0 1 2 3
4.8	Uploading assignments to yahoo groups	0 1 2 3
4.9	Peer feedback	0 1 2 3
4.10	Self assessment	0 1 2 3

5. Please assess your presentation

S.No.	Assessment Questions	Your response
5.1	Are you satisfied with your presentation?	
5.2	Mention any three positive aspects of your presentation?	
5.3	Mention the areas in which you need more	

	training and practice?	
5.4	Did the whole process help you gain confidence?	
5.5	Has your communication apprehension with regard to making presentations reduced?	
5.6	If you were to rate your own presentation, what score would you give out of 10?	

6. Do you think that we should continue to follow the process approach to oral presentation and give the same type of assignments to the next batch of students? Justify your answer.

Yes / No

7. Please add here any other comments you would like to make.

Thank you

Appendix – 14

University Examinations in English: Results Analysis

Batch 2003 - 2007

ENGLISH -1

1st semester

Branch	No.of students Appeared	Passed	Failed	Pass %	Above 60
IT	55	53	2	96	48
BIO	29	29		100	26
CSE	59	59		100	54
MECH	48	48		100	41
ECE	60	59	1	98.3	52

EEE	48	47	1	97.9	37
TOTAL	299	295	4	98.7	258

ENGLISH - 2

2nd semester

Branch	No.of students Appeared	Passed	Failed	Pass %	Above 60
IT	55	55		100	48
BIO	29	29			23
CSE	59	58	1	98.3	49
MECH	48	48		100	41
ECE	60	60		100	40
EEE	48	47	1	97.9	32
TOTAL	299	297	2	82.7	233

Batch 2004 - 2008

ENGLISH -1

1st semester

Branch	No.of students Appeared	Passed	Failed	Pass %	Above 60
IT	60	60		100	56
BIO	38	38		100	34
CSE	60	60		100	52
MECH	58	55	3	95	48
ECE-A	60	60		100	55
ECE-B	60	60		100	47

EEE	57	56	1	98	45
TOTAL	393	389	4	99	337

ENGLISH - 2

2nd semester

Branch	No.of students Appeared	Passed	Failed	Pass %	Above 60
IT	59	59		100	47
BIO	29	29		100	24
CSE	60	58	2	97	37
MECH	69	63	6	91	35
ECE-A	60	59	1	98	46
ECE-B	60	58	2	97	40
EEE	57	49	8	86	31
TOTAL	394	375	19	95.6	260

Batch 2005 - 2009

ENGLISH -1

1st semester

Branch	No.of students Appeared	Passed	Failed	Pass %	Above 60
IT	60	60		100	49
BIO	60	59	1	98	55
CSE	60	59	1	98.3	45
MECH-A	45	45		100	36
MECH-B	45	44	1	99	30
ECE-A	59	59		100	52
EEE	60	60		100	48
TOTAL	389	386	3	99.3	315

ENGLISH - 2

2nd semester

Branch	No.of students Appeared	Passed	Failed	Pass %	Above 60
IT					
BIO	60	60		100	58
CSE	NA	NA	NA	NA	NA
MECH	45	45		100	43
ECE-A	59	59		100	52
ECE-B	60	60		100	57
EEE	59	59		100	55
TOTAL	283	283		100	265

Batch 2006 – 2010 (Non-semester system)

Branch	No.of students Appeared	Passed	Failed	Pass %	Above 60
IT-A	59	59		100	46
IT-B					
BIO	58	58		100	54
CSE-A	59	59		100	54
CSE-B	60	60		100	51
MECH-B	42	42		100	40
ECE-A	60	59	1	98	50
ECE-B	NA	NA	NA	NA	NA
EEE	59	59		100	54
TOTAL	397	396	1	99.7	349

Batch 2007 – 2010 (Non-semester)

570 students appeared for the final examination and all the students passed. The pass percentage is 100.

Branch	No.of students Appeared	Passed	Failed	Pass %	Above 60
IT-A	60	60		100	
IT-B	60	60		100	
BIO	58	58		100	
CSE-A	60	60		100	
CSE-B	60	60		100	
MECH	90	90		100	
ECE-A	60	60		100	
ECE-B	60	60		100	
EEE	59	59		100	
TOTAL	567	567		100	

Bibliography

Allen, J. P.B. (1984) "General-Purpose Language Teaching:a Variable Focus Approach" in Brumfit, C.J. (ed.) *General English Syllabus Design*. Pergamon Press Ltd. and The British Council.

Alexander P., J.Kulikowich and T.Jetton. (1994). The role of subject-matter knowledge and interest in the processing of linear and non-linear texts. *Review of Educational Research*, 64, 2, pp 201-252.

Allison, D., Corcos, R., and Lam, A. (1994). Laying down the law? Reflecting on course design in progress. Hong Kong Papers in Linguistics and Language Teaching, Vol, 17, pp. 1-11.

Amran Halim, (1976) "Decision-making in Language Course Design" in Wilson,G.H.(ed.) *Curriculum Development and Syllabus Design for English Teaching Singapore*. SEAMEO Regional English Language Centre.

Anthony, L. 1997. ESP: What does it mean? ON CUE. http://interserver.miyazaki-med.ac.jp/~cue/pc/anthony.htm Retrieved from the World Wide Web.

Ashley, J (1996). *Overcoming stage fright in everyday life*. New York: Clarkson Potter.

Aviv, R. (2007). Don't be shy. Retrieved 30 January 2008 from http://www.nytimes.com/2007/11/04/education/edlife/reticence.html?fta=y&pagewanted=all

Ayres, J. & Hopf, T. (1993). *Coping with speech anxiety. Norwood, NJ: Ablex Pub.*

Balaraman (2006). Welcome address. Seminar on War for Talent. Chennai. 1 June 2006.

Barkuizen, P. (1995). Spontaneous Writing: Letters to the Teacher, *English Teaching Forum*, 33, 2 pp 44-47

Baumgardner, R. and A.Kennedy. 1995. The Use of Local Contexts in the Design of EST Materials. In K. Thomas (Ed.) *Creative English Teaching Forum.* Washington: English Language Programs Division

Beder (2000). "Valuable skills learned from basket-weaving" in Engineers Australia, March 2000, p.46

Bell, R. (1981). An introduction to applied linguistics. Approaches and methods in language teaching. London: Batsford. Academic and Educational.

Berger, McCroskey & Baldwin (1984). Reducing Communication Apprehension: Is there a Better Way? American Journal of Pharmaceutical Education, 48, Spring (1984) Retrieved from www.jamesmccroskey.com/publications/117.pdf

Berwick, R. (1989). Needs assessment in language programming: from theory to practice. In: Johnson, R. K. (Ed). The second language curriculum (pp.48-62). Cambridge: Cambridge University Press.

Bhatia, V. J. (undated). Applied genre analysis and ESP. Available at: http://exchanges.state.gov/education/engteaching/pubs/BR/functionalsec4_10.htm

Bormann, E.G. & Bormann, N. C. (1972). *Speech communication: An interpersonal approach.* New York: Harper & Row.

Brett,P. (1995). Multimedia for listening comprehension: The design of a multimedia-based resource for listening skills. System. 23 (1).

Brindley, G. (1989). The role of needs analysis in adult ESL program design. In: Johnson, R. K. (Ed). The second language curriculum (pp.63-78). Cambridge: Cambridge University Press.

Brinton, D., M.Snow, and M. Wesche. 1989. *Content-based Second Language Instruction.* New York: Newbury House.

Byrne, D. (1980), *English Teaching Perspectives*, Longman, London.

Candlin, C.N.(1984) "Applying a System Approach to Curriculum Innovation in the Public Sector" in Read, J.A.S. (ed.) *Trends in Language Syllabus Design*. Singapore: SEAMEO Regional Language Centre.

Candlin, C.N. (1984) "Syllabus Design as a Critical Process" in Brumfit, C.J. (ed.) General English Syllabus Design. Pergamon Press Ltd. and The British Council.

Carter, D. (1983). Some propositions about ESP. *The ESP Journal*, 2, 131-137.

Chambers, F. (1980). A re-evaluation of needs analysis. ESP Journal, 1/1, pp. 25-33.
Dudley-Evans, T., and St. John, M. (1998). Developments in ESP: A multi-disciplinary approach. Cambridge: Cambridge University Press.

Corder, P.S. (1973). *Introducing Applied Linguistics*. London: Penguin Books.

Crombie, W. (1985). *Discourse. and Language Learning: A Relational Approach to Syllabus Design*. Oxford: Oxford University Press.

Chun, D.M. & Plass, J.L. (2000). Networked multimedia environments for second language acquisition. In M.Warschauer & R.Kern (Eds). Network-based language teaching: Concepts and practice (pp. 151-170) Cambridge: Cambridge University Press.

Cooper, M. 1980. Reading for meaning. ELT Documents, The University of Malaya ESP Project, British Council, pp. 1-16.

Cummins, J. (1979). Cognitive/academic language proficiency, linguistic interdependence, the optimum age question and some other matters. Working Papers on Bilingualism, 19, 121-129.

Davies, A. (2006). What do learners really want from their EFL course? *ELT Journal*. Vol.60. No.1 pp 3-12.

Desberg, P. (1996). *No more butterflies: Overcoming stage fright, shyness, interview anxiety and fear of public speaking.* Oakland, CA: New Harbor Pub.

Division of Humanities and Social Sciences of Anna University, English for Engineers and Technologists (2002). Hyderabad: Orient Longman

Dominiguez, R. Participatory Learning Techniques for Socio-Cultural ESP Students. *The Internet TESL Journal*, Vol. XII, No. 12, December 2006 http://iteslj.org/Techniques/Dominguez-SocioculturalESP.html Retrieved from the Internet

Downey, G. L., J. C. Lucena, B. M. Moskal, R. Parkhurst, T. Bigley, C. Hays, B. K. Jesiek, L. Kelly J. Miller, S. Ruff J. L. Lehr, A. Nichols-Belo. 2006. The globally competent engineer Working effectively with people who define problems differently. Journal of Engineering Education 95 (2): 107-22.

Dudley-Evans, T. & Jo St John, M. (1998). *Developments in English for Specific Purposes*. Cambridge: Cambridge University Press.

Dudley-Evans, T. and Maggie Jo St John, 1998. *Developments in English for Specific Purposes*. Cambridge: Cambridge University Press.

Egbert, J. & Hanson-Smith, E. (Eds.) (1999). CALL Environments: Research, Practice, and Critical Issues. Virginia: TESOL Publications.

Engineering Education in a Global Context. Retrieved from www.redorbit.com/news/business/1255790/engineering_education_in_a_global_context/

English Language Skills for Engineering Students: A Needs Survey retrieved from www.esp-world.info, Vol 6(17) 2007.

Estes, R. (1979). The profession's changing horizons: A survey of practitioners of the present and future importance of selected knowledge and skills. *The International Journal of Accounting Education and Research*, 14, 47-70.

Felix, U. (2001). *Beyond Babel: Language Learning Online*. Melbourne: Language Australia. Reviewed at http://www.camsoftpartners.co.uk/FelixReview.htm.

Finney, D. (2002). The ELT curriculum: A flexible model for a changing world. In: Richards, J. C. & Renandya, W. A. (Eds). Methodology in language teaching : An anthology of current practice (pp. 69-79). Cambridge: Cambridge University Press.

Fletcher, J.D. Does this stuff work? A Review of Technology used to teach. www.techknologia.org/TKL-archive-pages2/currentarticles

Fordham, D. R. & Gabbin, A.L. Skills versus apprehension: Empirical evidence on Oral Communication. *Business Communication Quarterly*, Vol. 59, No. 3, Sept. 1996, pp. 88-97.

Friedrich, G. & Gass, B. (1984). Systematic desensitization. In Avoiding communication: Shyness, reticence and communication apprehension. Daly, J.A. & McCroskey, J.C. (Eds). London: Sage Publications.

Fultcher, G. (1999). Assessment in English for academic purposes: Putting content validity in its place. Applied Linguistics, Vol, 20/2, pp. 221-236.

Gardner, H. (1983). Frames of mind: The theory of multiple intelligences. New York, NY: Basic Books.

Gatehouse, Kristen. (2001). Key Isses in English for Specific Purposes (ESP) Curriculum Development. *The Internet TESL Journal*, Vol. VII, No. 10, October 2001 http://iteslj.org/ Retrieved from the Internet.

Ghani, S. 1995. ESP Reading: Some Implications for the Design of Materials. In K. Thomas (Ed.) *Creative English Teaching Forum.* Washington: English Language Programs Division

Graves, K. (1996). *Teachers as course developers*. England: Cambridge University Press.

Hadfield, J. (1987), *Advanced Communication Games*, Thomas Nelson and Sons Ltd., Edinburgh.

Hamp-Lyons, L. (2001). English for academic purposes. In: Carter, R. and Nunan, D. (Eds). The Cambridge guide to teaching English to speakers of other languages. (pp. 126-130). Cambridge: Cambridge University Press.

Harmer, J. (1991). *The practice of English language teaching: new edition.* London: Longman

Harrison, R. (1996). The training of ESP teachers in Russia. *English for Specific Purposes - Russia, 2*: 24-26.

Hatfield, E., Cacioppo, J.T. & Rapson, R. L. (1992). Primitive emotional contagion. In M.S. Cark. (Ed.), *Emotional and social behavior*, pp. 153-154. Newberry Park: Sage.

Hayriye Kayi. (2006). Teaching Speaking: Activities to Promote Speaking in a Second Language The Internet TESL Journal, Vol. XII, No. 11, November 2006 http://iteslj.org/

Hoff, R. (1988). *I can see you naked: A fearless guide to making great presentations*. Kansas City: Andrews & McMeel.

Hissey, T.W. (2007) Enhanced Skills for Engineers (Pt. 2): Technical Expertise Alone Is Not Enough Retrieved from http://www.todaysengineer.org/2002/Aug/skills2.asp

http://www.learnenglish.de/Teachers/roleplays.htm (2008), *Role Plays in the ESL Classroom***,** Instructions to the English teacher, retrieved 28 Dec.

Hutchison, T. & Waters, A. (1987). *English for Specific Purposes: a learner-centered approach*. England: Cambridge University Press.

Hutchinson, T., and Waters, A. (1987). English for specific purposes: A learning-centered approach. Cambridge: Cambridge University Press.

Indo US Collaboration for Engineering Education. 2007. Indo-US Action Planning Forums. http://www.iucee.org/.

Infoys (2007), Retrieved from http://campusconnect.infosys.com/login.aspx

Iwai, T., Kondo, K., Limm, S. J. D., Ray, E. G., Shimizu, H., and Brown, J. D. (1999). Japanese language needs analysis. Available at: http://www.nflrc.hawaii.edu/Networks/NW13/NW13.pdf

Johns, A. (1991). English for specific purposes: Its history and contribution. In Celce-Murcia, M. (Ed). Teaching English as a second or foreign language (pp.67-77). Boston, MA: Heinle & Heinle.

Johns, T.F. and F.Davies. (1983). Text as a vehicle for information: the classroom use of written texts in teaching reading in a foreign language. *Reading in a foreign language*. 1: 1-19

Johnson & Johnson. (1996). Cooperation and the use of technology. In Jonassen (ed.) *Handbook of research for educational communication and technology* (pp 1017 – 1044). New York: Simon and Schuster

Johnson, K. (1982). *Communicative Syllabus Design and Methodology*. London: Pergamon Press.

Johnson, K. and Brumfit, C.J. (ed.) (1979). *The Communicative Approach to Language Teaching*. Oxford: ELBS/Oxford University Press.

Jonassen et al. (2006) Everyday Problem Solving in Engineering: Lessons for Engineering Educators, Journal of Engineering Education. Retrieved from the Web

Jordan, R. R. (1997). English for academic purposes: A guide and resource book for teachers. Cambridge: Cambridge University Press.
Karnik (2007) Retrieved from http://www.networkworld.com/news/2006/060806-nasscom-job-screening.html

Kaur, A. (1990). "Considerations in Language Syllabus Design " *The English Teacher* Vol XIX July 1990

Krish, P. (2001), *A Role Play Activity with Distance Learners in an English Language Classroom*, *The Internet TESL Journal*, **7**(7) retrieved 18 Dec. 2007 from http://iteslj.org/article/Krish-RolePlay.html

Kyzystofik, A. T. & Fein, R. (1988). Does your firm use the right approach in hiring campus recruits? *Journal of Accountancy*, 166, 83-88.

Ladousse, G. P. (1987), *Role play*, Oxford University Press, Oxford.

Larsen–Freeman, D. (1986), *Techniques and Principles in Language Teaching*, Oxford University Press, Oxford.

Leary, M. (1983). *Understanding social anxiety: Social, personality and clinical perspectives.* Beverly Hills: Sage Publications.

Leke, I. (1991). Teaching Second Language Writing: Where we seem to be. *English Teaching Forum*, 29,2, pp 11-26

Levy, M. (1997). *CALL: Context and Conceptualisation*. Oxford: Oxford University Press.

Loui, M. (2007), *Role Playing in an Engineering Ethics Class, Online Ethics Center for Engineering*, retrieved 28 Dec. from www.onlineethics.org/CMS/edu/instructguides/loui2.aspx

Lucena, J. C., and G. Downey, guest eds. 2006. Special issue: From region to countries: Engineering education in Bahrain, Egypt, and Turkey. IEEE Technology and Society Magazine 25 (2).

Lynch, A. 1982. "Authenticity" in language teaching: Some implications for the design of listening materials. The British Journal of Language Teaching, 21, pp. 9-20

Mackay, R. and Mountford, A. (eds.) (1976). *English for Specific Purposes*. London: Longman.

Mackay, R. and Bosquet, M. (1981) "LSP Curriculum Development - From Policy to Practice" in Mackay, R. and Palmer, J.D. (eds.). *Languages for Specific Purposes: Program Design and Evaluation*. Rowley, Massachusetts: Newbury House.

Mackey, W.F. (1965). *Language Teaching Analysis*. London: Longman, Green and Co.

Mager, R.F. (1962). *Preparing Objectives for Programmed Instruction*. Belmont, California: Fearon,

Maley, A. (1984) "Constraints-based Syllabuses" in Read, J.A.S. (ed). *Trends in Language Syllabus Design. Singapore*: SEAMEO Regional Language Centre.

Manivannan, *Technical Writing and Communication: What & Why*. www.usingenglish.com/articles/technical-writing.html Retrieved from the World Wide Web.

Maley, A. & Duff, A. (1982). *Drama Techniques in Language Teaching*. Cambridge University Press, New York
McDonough, J. (1984). ESP in perspective: A practical guide. London: Collins ELT.

McDonough J. and Shaw. 1993. *Materials and Methods in ELT: a Teacher's Guide*. Oxford: Blackwell Publishing.

McLoughlin (2007), Independent Learning Association Conference 2007 How Blogging can Promote Learner Autonomy.htm

McMath, Jr., R. C. 2006. Book review of Engineering in a land- grant context. In Technology and Culture 47 (2): 428-29.

Miller, R. (1984). Some (moderately) apprehensive thoughts on avoiding communication. In *Avoiding communication: Shyness, reticence and communication apprehension*. Daly, J. A. & McCroskey, J. C. (Eds). London: Sage Publications. Pg. 237-246.

Mohamed (2003). The effects of internet-enhanced language learning (INTELL) on the development of ESL learners' critical thinking skills. In Directions in CALL: Experience, experiments and evaluation. Hong Kong: English Language Centre

Morrow, K. 1977. Authentic Texts in ESP. In S. Holden (Ed.), *English for specific purposes.* London: Modern English Publications.

Munby, J. (1978). *Communicative Syllabus Design*. London: Cambridge University Press.

Munby, J. (1984) "Communicative Syllabus Design: Principles and Problems" in Read, J.A.S. (ed.) *Trends in Language Syllabus Design*. Singapore: SEAMEO Regional Language Centre.

Nitu, Raluca. (2002) *Designing an ESP course – A Case Study*. Dialogs 6/2002

Noss, RB. and Rodgers, T.S. (1976) "Does English for Special Purposes Imply a New Kind of Language Syllabus" in Wilson, G.H. (ed.). *Curriculum Development and Syllabus Design for English Teaching*. Singapore: SEAMEO Regional Language Centre.

Nunan, D. (1989). *Designing tasks for the communicative classroom.* Cambridge: Cambridge University Press.

Nunan, D. (1991). Language teaching methodology. A textbook for teachers. London: Prentice Hall International.

Nunan, D. (1991). Language teaching methodology. A textbook for teachers. London: Prentice Hall International.

Nunan, D. (1999). Second language teaching & learning. Boston: Heinle & Heinle.

Nunan, D. (1988). *Syllabus Design*. Oxford: Oxford University Press.

Nuttall, (1982). Teaching reading skills in a foreign language. London: Heinemnn.

Oberst, B. S., and R. C. Jones. 2006. Commentary on the special issue: Today and tomorrow: Engineering education in transitioning societies. IEEE Technology and Society Magazine 25 (2).

Omaggio, A. (1986). Teaching language in context. Proficiency-oriented instruction. Boston: Heinle & Heinle.

Pardis, J.G. & Zimmerman, M. (1997) The MIT Guide to Science and Engineering Communication. MIT press.

Phillips, G. M. (1991). *Communication incompetencies: A theory of training oral performance behavior*. Carbondale: Southern Illinois University Press.

Prabhu, N.S. (1984) "Procedural Syllabuses" in Read, J.A.S. (ed.) *Trends in Language Syllabus Design*. Singapore: SEAMEO Regional Language Centre.

P'Rayan, A. (2008:1) Assessing Communication Apprehension, Education Express, The New Indian Express, 11 Aug. p.2.

P'Rayan, A. (2008), *Commutainment*, Education Express, The New Indian Express, 10 Jan. p. 2.

P'Rayan, A. (2007), *Making Students Speak, MAP Formula*, Education Express, The New Indian Express, 24 Aug. p. 2.

P'Rayan, A. (2007), *Master the 5 Cs*, Education Express, The New Indian Express, 20 July, p.2.

P'Rayan, A. (2008) My Encounter with a Reader, Education Express, NIE, 8 Sept 2008

P'Rayan, A. (2008: 2) Overcoming Communication Apprehension, Education Express, The New Indian Express, 18 Aug. p.2.

P'Rayan, A. (2007), *Role play games in the English Class*, Education Express, The New Indian Express, 19 Oct. p. 2.

P'Rayan, A. (2003) The Web-based English Language Learning (WELL) Project at the Kigali Institute of Science, Technology and Management. *Directions in CALL: Experience, Experiments and Evaluation.* pp 97-115

Reilly, T. (undated) "Approaches to Foreign Language Syllabus Design". ERIC Educational Reports, Retrieved from http://findarticles.com/p/articles/mi_pric/is_198805/ai_3517574835/

Richards, JO. (1984) "Language Curriculum Development." *RELC Journal*, vol. 14, No. 1, June 1984.

Richterich, A. (1972). *A Model for the Definition of Adult Language Needs*. CCC/EES (72) 49. Council of Europe, Strasbourg. Pergamon Press Ltd.

Robin, M. W. & Balter, R. (1995). Performance anxiety: Overcoming your fear in the workplace, social situations, the performing arts. Holbrook, Mass: Adams Pub.
Robinson, P. 1991. *ESP Today: a Practitioner's Guide*. Hemel Hempstead: Prentice Hall International

Robinson, P. (1991). ESP today: A practitioner's guide. Prentice Hall. UK: Prentice Hall International (UK) Ltd.

Rodgers, T.S. (1984) "Communicative Syllabus Design and Implementation : Reflection on a Decade of Experience" in Read, J.A.S. (ed.). *Trends in Language Syllabus Design*. Singapore: SEAMEO Regional Language Centre.

Shaw, AM. (1975). "Approaches to a communicative syllabus in foreign language curriculum development". Ph.D. Dissertation, University of Essex.

Shaw, A.M. (1982) "Foreign-Language Syllabus Development: Some recent Approaches" in Kinsella, V. (ed). *Language Teaching Surveys*. Longman.

Seedhouse, P. (1995). Needs analysis and the general English classroom. ELT Journal, 49/1, pp. 59-65.

Stern, H.H. (1983). *Fundamental Concepts of Language Teaching*, Oxford: Oxford University Press.

Strevens, P. (1977). *New Orientations in the Teaching of English*. London: Oxford University Press.

Sysoyev, P.(2000). Developing an English for Specific Purposes Course Using a Learner Centered Approach: A Russian Experience. *The Internet TESL Journal*, Vol. VI, No. 3, March 2000 http://iteslj.org/ Retrieved from the Internet.

Sysoyev, P.(1999). Principles of teaching English for Specific Purposes in Russia. *English for Specific Purposes - Russia*, 11: 13-15.

Taba, H. (1962). *Curriculum Development: Theory and Practice*. New York: Harcourt, Brace and World.

Tarone, E. and Yule, G. (1989). Focus on the Language Learner. Oxford: Oxford University Press.

Trim, J.L.M., Richterich, R. van Ek, J. and Wilkins, D. (1973) *Systems Development in Adult Language Learning*. Strasborg: Council of Europe.

Van Ek, J.A. (1976). *The Threshold Levels for Modern Language Learning in Schools*. London: Longman.

Wallace, M. (1991). Training foreing language teachers. A reflective approach.

Cambridge University Press.

Wallechinsky, D., Wallace, D. & Wallace, H. (1977). *The book of lists*. New York: Bantam Books.

Warrier, S. (2007). Retrieved from

http://www.rediff.com/money/2007/jun/04inter1.htm

Warschauer, M. (1996). Computer-assisted language learning: An introduction. In S.Fotos (Ed.) *Multimedia Language Teaching* (pp 3-20) Tokyo: Logos International

Weaver, C. (1994). Reading process and practice. (2nd. Ed.) Portsmouth. NH: Heinemann.

Webb, J. (1976) "Reflections of Practical Experience in Designing and Mounting ESP Courses at the Colchester English Study Centre" in Wilson, G.H. (ed). *Curriculum Development and Syllabus Design for English Teaching*. Singapore: SEAMEO Regional Language Centre.

West, R. (1998). ESP- State of the art. Available at: www.man.ac.uk/CELSE/esp/west.htm

West, R. (1994). Needs analysis in language teaching. Language Teaching, 27/1, 1-19.

Westney, P. (1981) "Notions and Syllabuses" in James, J. and

Westney, P. (eds.). *New Linguistic Impulses in Foreign Language Teaching*. Tubingen: Narr.

White, R.V. (1975) "The Language, The Learner and The Syllabus" RELC Journal, vol. 6, No. 1, June 1975.

Wilder, L. (1999). *7 steps to fearless speaking*. New York: John Wiley & Sons.

Widdowson, HG. (1979). *Explorations in Applied Linguistics*. London: Oxford University Press.

Wilkins, D.A. (1981) "Notional Syllabuses Revisited" *Applied Linguistics II*, (1981): 83-89.

Yalden, J. (1982). *Communicative Syllabus: Evolution, Design and Implementation*. New York. Pergamon Press.

==========

Albert P'Rayan, Ph.D.
Associate Professor & Head, Training Cell
KCG College of Technology
Chennai 600097
Tamilnadu
India
rayanal@yahoo.co.uk