CHAPTER 3

English for Specific Purposes

3.0 The Emergence of ESP

3.1 English for Specific Purposes (ESP): The concept

3.2 ESP: Course Design

3.3 ESP: Approach to Course Design

3.4 Materials Evaluation

3.5 English for Science
3.0 The Emergence of ESP

ESP like any form of language teaching is primarily concerned with learning. ESP is not a planned and coherent movement, but rather a phenomenon that grew out of a number of converging trends. One can identify the three main reasons for the emergence of ESP.

I. The end of the second world war in 1945 brought enormous expansion in scientific, technical and economical activity on an international scale which generated a demand for an international language and soon English became the accepted international language of technology and commerce. This created a new generation of learners who knew specifically why they were learning a language – businessman and women who wanted to sell their products, mechanics who had to read instruction manuals, doctors who need to keep with developments in their field and a whole range of students whose course of study included textbooks/reference books available only in English. English suddenly became big business and commercial pressures began to exert an influence. Time and money constraints created a need for cost-effective courses with clearly defined goals.

The general effect of all this development was to exert pressure on the language teaching profession to deliver the required goods.

II. At the same time, the demand was growing for English courses tailored to specific needs, influential new ideas began to emerge in the study of language. Traditionally the aim of linguistics had been to describe the rules of English usage, that is, the grammar. The new studies shifted attention away from defining the formal features of language usage to discovering the ways in which language is actually used in real communication (Widdowson, 1978). One finding of this research was that the language we speak and write varies considerably, and in a number of different ways, from one context to another. In English language teaching, this gave rise to the view that there are important differences between, say, the English of commerce and that of engineering. These ideas married up naturally with the development of English courses for specific groups of learners. The idea was simple, if language varies from one situation of use to another, it
should be possible to determine the features of specific situations and then make these features the basis of the learners’ course. “Tell me what you need English for and I will tell you the English that you need” became the guiding principle of ESP.

III. Focus on the learner – New developments in educational psychology also contributed to the rise of ESP, by emphasizing the central importance of the learners and their attitudes to learning. Learners were seen to have different needs and interests, which would have an important influence on their motivation to learn and therefore on the effectiveness of their learning. This lent support to the development of courses in which ‘relevance’ to the learners’ needs and interests was supreme. The standard way of achieving this was to take texts from the learners’ specialist area – texts about Medicine from Medicine, Engineering from Engineering etc. Because the language acts here as a vehicle to acquire the subject matter besides the language.

The concept of ESP is an outcome of a combination of three important factors:

(a) The specialized study of learning strategies.
(b) Analysis of language variety according to the character of work.
(c) Linguistic factors involved in this language variety used.

3.1 English for Specific Purposes

The term English for specific purposes has been applied to situations where learners have some specific reason for wanting to learn the language. English for specific purposes (ESP) has for about 20 years been a separate branch of English Language Teaching. It has developed its own approaches, materials and methodology and is generally seen as a very active movement that has had considerable influence over the more general activities of TESOL and applied linguistics. ESP has always seen itself as materials-driven and as a classroom-based activity concerned with aspects of teaching materials production and text analysis rather than with the development of a theory of ESP. As Strevens (1975) defines it:

‘Special purpose English teaching occurs whenever the content and aims of the teaching are determined by the requirements of the learner rather than by external factors.’
The key defining feature of ESP is that its teaching and materials are founded on the results of ‘needs analysis’. The first question when starting preparation for teaching an ESP course is almost always: What do students need to do with English, which of the skills do they need to master and how well, which genres to they need to master, either for comprehension or production purposes? In ESP, one can be more precise about learners’ needs, their needs being defined by a learning or occupational situation in which English plays a key role. Specific needs can be identified by examining, that situation and the texts in details.

Apart from the primacy of needs analysis, defining features of ESP can be difficult to identify. Robinson, in her first overview of ESP (1980), suggested that ‘limited duration’ (i.e. an intensive course of a fixed duration) and ‘adult learners’ are defining features of ESP courses. However, in her second survey (1991) she accepts that, although many ESP courses are of limited duration, a significant number are not (e.g. a three or four – year programme as part of a university degree) and, while it is true that the majority of ESP learners are adults, ESP can be taught at school level. Similarly, ESP is generally taught to intermediate or advanced students of English, but can also be taught to beginners.

The ESP teacher needs to bear in mind and exploit the specific subject knowledge, which leads to classroom interaction and teaching methodology that can be quite different from that of general English. However, in some situations: e.g. pre-study courses where learners have not started their academic or professional activity and therefore have less subject knowledge – teaching methodology will be similar to that of general English. The use of a distinctive methodology is therefore a variable characteristic of ESP.

ESP materials will always draw on the topics and activities of that specific purposes, in many cases exploiting the methodology of the subject area or the profession (Widdowson, 1983). For example, an English course for science students will use scientific situations to present relevant language and discourse. A business English course will use case studies as these are widely used in business training. ESP is concerned with teaching language, discourse and relevant communication skills : it exploits topics and the underlying methodology of the target discipline or profession to present language, discourse and skills.
3.1.1 Major Characteristics of ESP

1. ESP is designed to meet the specific needs of the learners.
2. ESP makes use of the underlying methodology and activities of the discipline it serves.
3. ESP is centered on the language (grammar, lexis, register) skills, discourse and genres appropriate to these activities. (Dudley – Evans and St. John 1998 : 4 – 5).

3.1.2 Variable Characteristics of ESP

1. ESP may be related to or designed for specific disciplines.
2. ESP may use, in specific teaching situations, a different methodology from that of general English.
3. 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 used for learners at secondary school level.
4. ESP is generally designed for intermediate or advanced students. Most ESP courses assume basic knowledge of the language system, but it can be used with beginners as well.

3.1.3 Classification of ESP Courses / Varieties

ESP is usually classified into two main categories : English for Academic Purposes (EAP) and English for Occupational Purposes (EOP). EAP largely speaks for itself, it relates to the English needed in an educational context. EOP relates to professional purposes, for example, the English for doctors, lawyers, engineers or business people. The biggest branch of EOP is business English, the teaching of which can range from teaching general business related vocabulary to the teaching of specific skills important in business.

Another key distinction is between more general ESP and more specific ESP. Dudley – Evans and St. John (1998) drawing on an idea from George Blue (Blue, 1988) make a distinction between English for general academic purposes (EGAP) designed for pre-study groups or groups that are heterogeneous with regard to discipline, and English for specific academic purposes (ESAP) designed to meet specific needs of groups from the same discipline. A similar distinction can be made
between the teaching of general business-related language and skills (English for general business purposes EGBP) and the teaching of specific business language for skills such as negotiation, or the writing of letters or faxes (English for Specific business purposes ESBP).

It is often convenient to refer to types of ESAP or ESBP by profession. For example, medical English, English for engineers or English for administration. But then, medical English may include EAP for students following a degree course in medicine where English is the medium of instruction at the same time it may also mean EOP for practicing doctors using English. Similarly, English for engineers may be for students of engineering or for practicing engineers. In the USA, ESAP is often called content-based instruction (CBI), which is seen as separate from ESP (Brinton et. al., 1989). Other commonly used abbreviations are EST (English for Science and Technology), EBE (English for Business and Economics) and ESS (English for Social Sciences). In the USA, EVP (English for Vocational Purposes) is frequently used for teaching English for specific trades or vocation. This branch of EOP is often subdivided into Vocational English (concerning language and skills needed in a job) and pre-vocational English (concerning skills needed for applying for jobs and being interviewed).
As the tree of ELT shows, what they have in common is that they are all primarily concerned with communication and learning the language. ESP should be seen not as any particular language product but as an approach to language teaching which is directed by specific reasons for learning. ESP is not different in kind from any other form of language teaching, in that it should be based in the first instance on principles of effective and efficient learning. Though the content of learning may vary there is no reason to suppose that the processes of learning should be any different for the ESP learner than for the General English learner. However, in an ESP course,
there are some features which can be identified as ‘typical’ of a particular context of use and which, the learner is more likely to meet in the target situation. But these differences should not be allowed to obscure the far larger area of common ground that underlines all English use. One can have the ratio of 60/40 i.e. 60% can be devoted to the identified features of that ESP course and 40% to the common English use. However this ratio can vary according to the kinds of learners and their needs.

3.1.4 Needs Analysis

The initial needs analysis provides information about the target situation, what learners will have to do in English and the skills and language needed. This is generally called ‘target situation analysis’. While initial needs analysis will always be the first step for ESP, it is usually the next stage that involves the most detailed analysis and there has been increasing emphasis on investigating these additional factors. Information about the learners – particularly their level in English, weaknesses in language and skills needed and also their own perceptions of what they need – are investigated.

For example, the need to understand lectures is an objective need that comes under target situation analysis. Learners’ confidence or lack of confidence in their listening abilities and their perception that they need more vocabulary to understand lectures, is subjective. This investigation of subjectively felt needs is called ‘learning situation analysis’. The investigation of learners’ weakness or lack is called ‘present situation analysis’. Analysis of the learning situation within the teaching institution is also important and is called ‘means analysis’ (Holliday and Cooke, 1982). For ESP courses to be successful the environment in which English is taught versus that in which it is used must be assessed.

3.2 ESP Course Design

Course design is the process by which the raw data about a learning need is interpreted in order to produce an integrated series of teaching – learning experiences, whose ultimate aim is to lead the learners to a particular state of knowledge. In particular terms this entails the use of the theoretical and empirical information available to produce a syllabus to select, adopt or write materials in accordance with the syllabus to develop a methodology for teaching those materials and to establish
evaluation procedures by which progress towards the specified goals will be measured.

3.2.1 Factors affecting ESP course design

Language Description

**Classical Grammar**: It’s influence on ESP is negligible apart from the fact that it provides a kind of indirect source of guidance to a teacher.

**Structural Linguistics**: In a structural description the grammar of the language is described in terms of syntagmatic structures and notions. This led to the structural syllabus where items are graded so that simple structures precede the complex ones. This kind of syllabus provides the learners with a systematic description of the generative core of language. However, it fails to provide the learners with an understanding of the communicative use of the structures.

**Transformational Generative Grammar**: In 1975, Chomsky came out with syntactic structures arguing that the structural description was superficial. It cannot provide the deep level meaning. ESP drew an important lesson from Chomsky’s work i.e., the distinction between ‘performance’ and ‘competence’. A simple way of seeking the distinction between performance and competence is in one’s capacity to understand the meanings of words one has never met before. For example, the word ‘multiangular tower’ is new to somebody. But if he knows the prefix ‘multi’ and the word ‘angle’ and the basic word formation rules of English, he can make out that a multiangular tower is a many-sided tower. This will not be possible unless there is an underlying competence, separate from the performance features of language.
In the early stages of its development, ESP put more emphasis on describing the performance needed for communication in the target language. In the later stage, it leads to the three stages of development: language variation and register analysis, language as function, discourse analysis.

**Language variation and register analysis**: The concept of language variation gave birth to the ESP based on register analysis, which came with an argument that if language varies as per the context, it should be possible to identify the language associated with a specific context. With the result much ESP work was focused on determining the formal characteristics of various registers to establish a basis for the selection of syllabus items. The work of Ewer and Latore (1969) and Swales (1971) is significant in this direction. However, register analysis has ultimately proved to be an insubstantial basis for the selection of syllabus items. As Coffey (1984) puts it: "Research and experiment continue, but in general the results have not been encouraging. In short, register cannot be used as main basis for selection, because there is no significant way in which the language of science differs from any other kind of language”.

The classic example of this is the use of passive in scientific English. Tarone et al. (1981) found in their analysis of two Astrophysics journal papers that the active accounted for over 80% of the verbs used. Therefore, the assumption that language variation implies the existence of identifiable varieties of language related to specific contexts of use, has in effect, proved to be unfounded.

**Functional Grammar**: ESP has also been influenced by the functional/notional concept of language description. Taking function as a sum of structure + context many ESP courses have opted for functional syllabuses. Brumfit (1981) proposes a similar approach with his ‘snakes and ladders’ syllabus. A core ladder of structure is interwined with a spiraling snake of related function. The drawback with this kind of functional syllabus is that it lacks a systematic conceptual framework and does not help the learners to organize their knowledge of the language.

**Discourse analysis**: This development has a profound effect on ESP, particularly through the influence of Henry Widdowson and the Washington School of American Linguists. In two key ways the results of studies into the nature of discourse have been used in ESP teaching materials.

(i) Learners are made aware of the stages in certain set-piece transactions associated with particular specialist fields. One of the most influential projects
of this kind has been the analysis of doctor-patient communication by Candlin, Bruton and Leather (1976).

(ii) The second use of discourse analysis in ESP has been through materials which aim to explain how meaning is created by the relative positions of the sentences in a written text. This has become the central feature of a large number of ESP textbooks aimed at developing a knowledge of how sentences are combined in texts in order to produce a particular meaning (Allen and Widdowson, 1974). This approach has led to the text diagramming type of exercise found in many ESP materials.

However, the ESP teacher has to understand that all communication has a structural level, a functional level and a discoursal level. They are not mutually exclusive, but complementary and each can have its place in the ESP course. One should also keep in mind that describing a language for the purposes of linguistic analysis does not necessarily carry any implication for language learning. Stern (1983) sounds a note of caution for ESP practitioners:

"Whether techniques of linguistic analysis – however well they may lend themselves to linguistic research – are equally applicable to language teaching is of course open to question".

One must make a distinction between what a person does (performance) and what enables him to do it (competence).

Theories of Learning

In ESP, the emphasis has always been on language analysis. Learning factors are not thought about. If they are considered at all, they are incorporated only after the language base has been analysed and systematized. ESP has in fact been more concerned with arriving than with the journey. However, if one wishes to improve the techniques, methods and content of language teaching, one must try and base what one does in the classroom on sound principles of learning. But we still do not know very much about learning. It is important, therefore, not to base any approach too narrowly on one theory. As with language descriptions, it is wise to take an eclectic approach, taking what is useful from each theory and trusting also in the evidence of one's own experience as a teacher. It is probable that there are cognitive, affective and behaviourist aspects to learning and each can be a resource to the ESP practitioner. That is, one may choose a behaviourist
approach to the teaching of pronunciation, a cognitive approach to the teaching of grammar and use affective criteria in selecting the text.

3.2.2 Approaches to ESP Course Design

Course design is the process by which the raw data about a learning need is interpreted in order to produce an integrated series of teaching-learning experiences, whose ultimate aim is to lead the learners to a particular state of knowledge. In short, this entails the use of the theoretical and empirical information available to produce a syllabus, to select, adapt or write materials in accordance with the syllabus, to develop a methodology for teaching those materials and to establish evaluation procedures by which progress towards the specified goals will be measured. There are probably as many different approaches to ESP course design as there are course designers. However, three major approaches can be identified:

1. Language–Centered Course Design

This is the simplest kind of course design process and is probably the most familiar to English teachers. It is particularly prevalent in ESP. The language–centered course design process aims to draw as direct a connection as possible between the analysis of the target situation and the content of the ESP course.

It proceeds as follows:

A language–centered approach to course design

- Identify learners' target situation
- Select theoretical views of language
- Identify linguistic features of target situation
- Create syllabus
- Design materials to exemplify syllabus items
- Establish evaluation procedures to test acquisition of syllabus items
Though this design is quite popular, it has certain minus points. It starts from
the learners and their needs and so it might be considered a learner-centered
approach but in fact, it is not learner-centered. The learner is simply used as a means
of identifying the target situation. Moreover only a limited area of language is taken
care of. It appears to be systematic. But in doing so it endangers the false belief that
learning itself is systematic that the systematic analysis and presentation of language
data will produce systematic learning in the learner. But the most important factor
here is that it must be an internally-generated system not an externally-imposed
system. Moreover, data such as that produced by a needs analysis, is not important in
itself. Data must be interpreted. What is actually happening in the language-centered
approach is that an analytical model is being used as a predictive model. An analysis
of what happens in a particular situation is being used to determine the context of
pedagogic syllabus and materials. But there are other factors which will influence
these activities. Thus, if materials are based on the language-centered model, then
either there are other factors being used which are not acknowledged in the model or
these learning factors are not considered to be important at all. A teacher once
remarked at a seminar on materials writing, “It doesn’t matter if it is boring. It’s
ESP.” So a good course-designer should take into consideration all these while
designing a language-centered course. In this approach the syllabus is the prime
generator of the teaching materials.

This sort of approach is still widely used in ESP. The syllabus is quite clearly
the determiner of the entire course. It is the crystallization of what the course is all
about—the inspiration for the production of texts and exercise and the basis on which
proficiency will be evaluated.

2. Skills-Centered Course Design

The skills-centered approach to ESP has been widely applied in a
number of countries, particularly in Latin America. Students in universities
and colleges there have the limited, but important need to read subject texts in
English, because they are unavailable in the mother tongue. In response to this
need, a number of ESP projects have been set up with the specific aim of
developing the students’ ability to read in English. This approach is founded
on two fundamental principles, one theoretical, the other pragmatic:

a) The basic theoretical hypothesis is that underlying any language
behaviour are certain skills and strategies, which the learner uses in
order to produce or comprehend discourse. A skills-centered approach aims to get away from the surface performance data and look at the competence that underlies the performance. A skill-centered course, therefore will present its learning objectives in terms of both performance and competence.

b) The pragmatic basis for the skills-centered approach derives from a distinction made by Widdowson (1981) between goal-oriented courses and process-oriented courses. Holmes (1982) points out that:

“In ESP the main problem is usually one of time available and students’ experience. First, the aims may be defined in terms of what is desirable - i.e. to be able to read in the literature of the students’ specialism, but there may be nowhere near enough time to reach this aim during the period of the course. Secondly, the students may be in their first year of studies with little experience of the literature of their specialism....” Accordingly both these factors ... may be constraints which say right from the start, ‘The aims cannot be achieved during the course.’

Holmes puts his finger on a contradiction that arises from interpreting ‘needs’ in the narrow sense of ‘target situation necessities’. If the ESP course is designed in terms of goals, there is in effect a tacit admission that a large number of students will fail the course. Since ESP is by its very nature a process that is intended to enable people to achieve a purpose, it is at best a little odd to frame the course in such a way as to almost predict failure. The process-oriented approach tries to avoid this problem by removing the distinction between the ESP course and the target situation. The ESP course is not seen as a self-sufficient unit from which learners emerge as proficient target situation performers, because, as Holmes points out, a number of students are unlikely to achieve this proficiency. Instead, the ESP course and the target situation are seen as a continuum of constantly developing degrees of proficiency with no cut-off point of success or failure. The emphasis in the ESP course, then, is not on achieving a particular set of
goals, but on enabling the learners to achieve what they can within the given constraints:

"The process-oriented approach ... is at least realistic in concentrating on strategies and processes of making students aware of their own abilities and potential, and motivating them to tackle target texts on their own after the end of the course, so that they can continue to improve". (Holmes 1982).

The skills-centered model, therefore, is a reaction both to the idea of specific registers of English as a basis for ESP and to the practical constraints on learning imposed by limited time and resources. In essence it sees the ESP course as helping learners to develop skills and strategies which will continue to develop after the ESP course itself. Its aims is not to provide a specified corpus of linguistic knowledge but to make the learners into better processors of information. The role of needs analysis in a skills-centered approach is two-fold. Firstly, it provides a basis for discovering the underlying competence that enables people to perform in the target situation. Secondly, it enables course designer to discover the potential knowledge and abilities that the learners bring to the ESP classroom. The skills-centered approach therefore, can claim to take the learner more into account than the language-centered approach. Because-

(1) It views language in terms of how the mind of the learner processes it rather than as an entity in itself.

(2) It tries to build on the positive factors that the learners bring to the course, rather than just on the negative idea of 'lacks'.

(3) It forms its objectives in open-ended terms, so enabling learners to achieve at least something.
A skill – centered approach to course design

The syllabus in a skill – centered approach is not a prime generator. According to Holmes, it is a linear process, it is more likely that there is a degree of negotiation between texts and skills. Thus, the skills syllabus, as well as establishing criteria for the ordering and adaptation of texts, will probably also play a role in their initial selection. At the same time, the texts available will affect what can be focused on in exercises and assessment.

3. A learning – centered approach

The learner – centered approach is based on the principle that learning is totally determined by the learner. A teacher can influence what he teaches, but what learners learn is determined by the learners alone. Learning, is seen as a process in which the learners use what knowledge or skills they have, in order to make sense of the flow of new information. Learning, therefore is an internal process, which is crucially dependent on the knowledge the learners already have. There are problems with this approach also as the learner is not the only factor to consider.
A learning – centered approach to course design

In a learning – centered approach to course design, the methodology cannot be just grafted on to the end of an existing selection of syllabus items and texts; it must be considered right from the start. To achieve this, the syllabus must be used in a more dynamic way in order to enable methodological considerations, such as interest, enjoyment, learner involvement, to influence the content of the entire course design. The simplest way of achieving this is to break down the syllabus design process into two levels:

This general syllabus can be used as the basis for the selection of texts and writing of exercises/activities; on the basis of this, the material writers can prepare materials and the materials themselves will produce a detailed language syllabus. This materials – generated syllabus can then be checked against an independent syllabus produced from the needs analysis. Gaps and overlaps can then be dealt with. At the same time, it maintains relevance to target needs.

There is also one ‘The post hoc approach’ which is quite widespread. In this approach, there is no one criteria for writing materials and a kinds of cosmetic syllabus is prepared as per the needs of the sponsors/teachers/students.
3.3 Materials Evaluation

Having completed the needs analysis and course design, one has to turn to actual teaching materials. There are three possible ways of doing this:

1. Select from existing materials: materials evaluation.
2. Write one’s materials: materials development.

Evaluation is basically a matching process. The evaluation process can be divided into four major steps.

1. Defining criteria
2. Subjective analysis
3. Objective analysis
4. Matching.

The materials evaluation process:

- **Define criteria**
  - On what bases will you judge materials?
  - Which criteria will be more important?

- **Subjective Analysis**
  - What realizations of the criteria do you want in your course?

- **Objective Analysis**
  - How does the material being evaluated realize the criteria?

- **Matching**
  - How far does the material match your needs?

Apart from these four major factors one has to consider like on what is the content, how the units are sequenced, which language items are covered, what teaching techniques can be used in order to teach that particular course, what aids are available for teaching that course, how the learners will react to that particular course etc.

3.3.1 Materials Design

Materials writing is one of the most characteristic features of ESP in practice. While writing materials one should keep the following points in mind:

1. Materials should provide a stimulus to learning. Good materials should contain: interesting texts, enjoyable activities which stimulate the learners’
thinking capacities, opportunities for learners to use their existing knowledge and skills, content which both learner and teacher can cope with.

2. Materials should provide a clear and coherent unit structure which will guide teacher and learner through various activities in such a way as to maximize the chances of learning.

3. Materials reflect the nature of the learning task. Therefore Materials should try to create a balanced outlook which reflects both, the complexity of the task, yet makes it appear manageable.

4. Materials should provide models of correct and appropriate language use.

A Materials design model

```
+---+       +---+
| INPUT |       | LANGUAGE |
|      |       |          |
| CONTENT       | TASK |
```

The primary focus of the unit is the 'task'. The model acts as a vehicle which leads the learners to the point where they are able to carry out the 'task'. The language and 'content' are drawn from the 'input' and selected according to what the learners will need in order to do the task. An important feature of the model is to create coherence in terms of both language and content throughout the unit. This provides the support for more complex activities by building up a fund of knowledge and skills.

3.3.2. Learner Assessment

As with any language course there is a need to assess students’ performance at strategic points in the course. For example, at the beginning and at the end. But this assessment takes on a greater importance in ESP, because it is concerned with the ability to perform particular communicative tasks. The facility to assess proficiency is, therefore, central to the whole concept of ESP. Davies and West (1984) list 14 examinations in specific purpose English offered by British institutions. The London chamber of commerce and industry, the Associated Examination Board (AEB) and Pitman Examinations Institute offer examinations in secretarial and commercial
English. Cambridge offers English for Business and English for Science. The city and Guilds of London Institute offers examinations in Technical English. AEB also offers an examination in English for Academic purpose (TEEP), as does the British council (ELTS). The English Teaching Development Unit (ELTDU) has produced scales of Attainment and Test Battery for Occupational English.

In ESP there are three basic types of assessment:

(I) **Placement Tests**

The aim of the placement test is to determine the learners' state of knowledge before the ESP course begins. The placement test is therefore in the first instance a proficiency test. The test has a formative value, that is, the test results will be used in forming the nature and content of the ESP course.

(II) **Achievement Tests**

It is usually internal to the course and reflects the nature and content of the course itself. The ESP teacher should construct this test keeping in mind the standard norms of ‘testing’. The test should be ‘valid’ and the test items should be designed keeping in mind ‘what’ learners have learnt so far.

(III) **Proficiency Tests**

In the introduction to their ‘Guide to English Language Examinations’, Davies and West (1984) identify the primary purpose of the language testing as ‘proficiency testing designed to assess whether candidates will be able to perform the language tasks required of them’. Such tests are primarily criterion referenced. Proficiency tests for specific purpose should be able to give a reliable indication of whether a candidate is proficient enough to carry out the tasks that will be required.

### 3.3.3 Testing Techniques

Testing techniques are techniques, which elicit behaviour that is a reliable, and a valid indicator of the ability in which the designer is interested. They elicit behaviour that can be reliably scored and are as economical of time and effort as possible. They also have a beneficial backwash effect. It is of paramount importance that a test reflects the right information about candidates’ abilities that a test is intended for. This information helps in grading candidates, as well as, revising.
instructional procedures and testing techniques. There are various techniques followed for testing the four macro skills.

Testing Writing

The best way to test people’s writing ability is to get them to write sentences, articles, guided composition, etc. For tests designed to test writing, writing tasks need to be the proper representative of the population of tasks that the students are expected to perform. If a student is expected to write business letters, reports and minutes, the test should cover items on the same. The tasks should elicit samples of writing which truly represent the student’s ability and it is essential that the samples of writing can and will be scored reliably.

In order to judge whether the tasks set are representative of the population tasks, test specifications need to be clearly laid down. The next step is to set as many tasks as feasible to ensure validity of the test. Variety makes tests interesting and gives a better picture about the ability of students because individuals are better at certain tasks compared to others. An ideal test is one that requires candidates to perform all the relevant potential writing tasks. Practically the length of a test depends on how accurate the information collected from the test should be. For instance, if it is a matter of placing students in classes from which they can be moved to a more appropriate one, then accuracy is not very important and a single sample of writing can suffice the need.

For testing writing in ESP classes, as in any ELT class, it is important to see that the test tests only writing ability and nothing else. Writing skills, should be a portrayal of writing functions needed in examinee’s area of specialization. Lack of intelligence or lack of wide general knowledge should not be the cause for penalising students.

Obtaining reliable scoring of writing may be done either holistically or analytically. Holistic scoring involves assigning a single score to a piece of writing on the basis of an overall impression of it. This kind of scoring has the advantage of being very rapid. ‘Experienced scorers can judge a one-page piece of writing in just a couple of minutes or even less’. (Hughes, 1989). The scoring however is not very precise about the ability of students in the various sub skills.
Methods of scoring that require a separate score for each of a number of aspects of a task are said to be analytic. There are a number of advantages to analytic scoring. It disposes of the problem of uneven development of sub skills in individuals. Secondly, scorers are compelled to consider aspects of performance that they might ignore otherwise. The scoring in this is also far more reliable as each component of the language is given equal weightage.

The problem with this type of scoring is that it is very time consuming. Besides, concentration on different aspects can divert attention from the overall effect of the piece of writing.

Testing Oral Ability

The objective of teaching spoken language is the development of the ability to interact successfully in a particular language and that involves comprehension as well as productions. For testing oral ability, tasks set need to form a representative sample of the population of oral tasks that the candidates are expected to be able to perform. The tasks should elicit behaviour that truly represents candidates’ ability and should be scored reliably and validly.

At the time of setting the tasks, test specifications are clearly laid down. Tasks should be set in conjunction of specifications with the criterial levels of students’ ability.

Tasks in oral tests can be set on three general formats – interview, interaction with peer and responses to tape recordings.

The most obvious format for the testing of oral interaction is the interview. In its traditional form, it has at least one potential serious drawback. The relationship between the examiner and the candidate is usually such that the candidate speaks as to a superior and is unwilling to take the initiative. As a result only one style of speech is elicited and functions like asking for information are not represented in the candidate’s performance. Introducing a variety of techniques into the interview situation can do away with this drawback. The appropriateness of each technique depends upon the specification of the test and most of them can be fitted easily within an interview framework.
In the framework of interview, yes/no questions should generally be avoided in the process of eliciting information. Various functions can be elicited through requests of the kind ‘can you tell me what you think of...?’

Role-play is another technique in interview situation. Candidates are asked to assume a role in a particular situation and this allows the ready elicitation of all the language functions. Ideally two candidates can carry out role-play with an examiner as an observer. Students of ESP class can be asked to play roles of situations related to their area of specialization.

Discussion between candidates are also a valuable source of information. These may be general discussions of a topic or in order to come to a decision.

Scoring for oral testing will be valid and reliable only if clearly recognizable and appropriate descriptions of criterial levels are written properly and clearly. In scoring for oral testing too, descriptions may be holistic or analytic, with each having their advantages and disadvantages.

The accurate measurement of oral ability is not easy, more so when a single scorer has to do the job alone. It takes considerable time and effort to obtain valid and reliable results. Nonetheless, where backwash is an important consideration, it is worth spending the requisite time and effort for evaluation.

Testing Reading

Testing reading can be done at different levels like scanning test to locate specific information, skimming text to obtain the gist. Identifying stages of an argument and identifying examples presented in support of an argument. These skills can be used to test the pronunciation abilities of students, ability to guess meaning of unfamiliar words from the context and understanding the relations between parts of text by recognizing indicators in discourse.

Setting of tasks should be preceded by test specifications and should be of reasonable length with as many fresh starts as possible.

After fixing the specifications, test should be so selected that they are representative samples. Tests of appropriate length should be chosen. Passages of
about 2,000 words with discrete pieces of information are appropriate for scanning while detailed reading can be tested using passages of just a few sentences. Besides this, a greater number of fresh starts makes a test interesting and increases its reliability though practical considerations impose constraints specially when scanning and skimming are to be tested.

Testing Listening

Listening being a receptive skill, the testing of listening parallels in most ways the ways of testing reading.

Tests of listening may be taken to test students’ abilities to acquire specific information, obtain the gist of what is being said and follow instructions and directions. Some of the possible techniques for testing listening are multiple choice, calling for short answers, information transfer and note taking. The technique of information transfer is a useful one as it makes minimal demands on any productive skill. It can involve activities such as labelling diagrams, filling-up forms, etc.

Testing Grammar

Though testing grammar specifically, especially in an ESP class is out of vogue now, yet, testing grammar cannot be totally done away with. For communicative ability, accuracy and appropriateness are equally important. The lack of grammatical abilities limits the abilities of students to use their skills. Hence grammar, in some form or the other need to be taught. And whenever teaching grammar is thought necessary, it is important that tests include a grammar component. The components need not be given much importance in tests, as development of various macro-skills of any language constitutes the primary objective of language courses.

Modified cloze and completion are two techniques that can be used to test grammar satisfactorily.

Modified cloze is a technique where grammatical categories such as articles, figures of speech, etc., are to be used to meaningfully complete given sentences.
In completion, the technique used is to test a variety of structures – parts of speech, tenses, interrogative forms, etc.

For valid and reliable scoring of grammar, in items on testing grammar, nothing should be deducted for non-grammatical errors. For instance, if an item on completion tests ‘tenses’, marks should not be deducted for spelling mistakes.

It is however essential that tests do not accord much importance to grammar and thereby create a backwash effect that undermines the achievement of the objectives of teaching and learning where these are communicative in nature.

3.3.4 Course Evaluation

The ESP course, like any course should regularly demonstrate that its existence is justified. Since the ESP course exists to satisfy a particular educational need, evaluation helps to show how well the course is fulfilling the need. Evaluation of an ESP course helps to establish whether it is meeting its aims. There are four main aspects of ESP course evaluation to be considered. (Alderson and Waters, 1983).

1. What should be evaluated?

The short answer to this question is: everything of significance. However one can ask one’s own self the following questions and find out what modifications to the course are required.

Q. 1. Is the course fulfilling the learners’ language learning need?
Q. 2. Has the course fulfilled or is the course fulfilling the learners’ language using needs?

2. How can ESP courses be evaluated?

There are many ways in which the ESP course can be evaluated ranging from simulations to suggestion boxes. However, in practice, most ESP courses are evaluated using one or more of the following techniques:

- Test results
- Questionnaires
3. Who should be involved in the evaluation?

The extent of involvement of any group will vary according to the types of course. For ESP course it is advisable to approach teachers and professionals dealing with ESP courses. Evaluation is concerned with people's perception of value and their views therefore, it will vary according to their concerns with learners. At times it may be difficult to get feedback which is an expression of their real views. They may be reluctant to criticize their teacher and the course. The teacher should therefore, create an atmosphere of trust and openness. The teacher should also give some orientation exercises to get the learners accustomed to expressing their views honestly regarding various matters. This can be quite helpful to get frank feedback.

4. When (and how often) should evaluation take place?

It is difficult to prescribe how often course evaluation should be done. All responsive and sensitive teaching will include this as a continuing feature however much will depend on the characteristics of the individual teaching situation. There is also a danger in doing course evaluation too frequently. Advisably, evaluation should be done at the following points:

i). In the first of the course.
ii). At regular intervals throughout the course. For example, every half term.
iii). At the end of the course.
iv). After the course. (if possible)

This is the ideal time when one can get an overall picture of the success of the course.

3.4 English for Science

Science students in colleges and universities need to know English for various purposes. The first among them is to be able to understand the lectures, instructions given in English. One way to help them out is to give students of science an intensive course in
language learning emphasizing reading comprehension skills. But that raises an important question. How useful and effective this reading skill will be which is taught in isolation. Efficient reading needs more than one ability. Moreover students are supposed to write their answers, practicals, reports in English. They have to give seminars, presentations in English. This can be achieved only by a well-planned and effective programme in English. This is contradicted by the realities of the situation today in science teaching institutions. The English syllabus in the science curriculum is not only small in size but also small in importance.

In science teaching institutions students’ attitude is also one major problem. They think it is an arts subject and they need not pay much attention to it. As they are burdened with their science subjects they find little time for English. Moreover they do not find in the English class, any such activities as performing experiments in the laboratories. Therefore, teaching English to science students require thinking, careful planning and efforts to make the whole course useful and interesting.

Material and the syllabus for the science students should be designed keeping in mind the temperament of science students. They have analytical mind and altogether a different way of looking at things than arts students. Those who deal with science have a different perception of the world around, than others. They have to deal with concrete things rather than abstractions. They are comfortable with only those things which they visualize and which are part of their experience. This does not mean that they lack imaginative power. Imaginary vision is a vital force behind any invention. But they can’t stretch their imagination in to vacuum. They need some concrete base for it. Creativity in them is double-folded.

Language for them, is a matter of exactness and precision. They will not put things in a roundabout way. They will only talk to the point. They are neither to glorify their experience nor to demean it. That’s why using the right kind of language is
absolutely necessary for them. For them if the experiment fails, it fails. A science student has to state the failure in a straightforward way unlike an arts student who might try to encapsulate the failure by using ornamental language, and thereby making it a kind of sugar-quoted quinine. For a science student, a quinine is a quinine. Even if he tries to sugar-quote it, he would do so giving an exact process description of it. It is a language of honesty and frankness.

The Genera of Scientific English

It is a language of either task accomplished or tasks which are to be accomplished. So simple present tense is frequently used to describe the process. For example:

"Take liquid A in a test tube. Heat it to 30 degree °C. Take liquid B. Mix it with liquid A. Shake it well. Observe the change ...".

Sometimes simple passive is also preferred. For example:

"Liquid A is heated in a test tube. It is heated to 30 degree °C........."

Present perfect is used to report about something: For example:

"Recent research has shown a connection between smoking and lung cancer".

Present perfect is at times used in passive: For example -

"Various types of reactors have been designed for different purposes".

Scientific texts generally place the emphasis on what happens to things instead of on the person who performs the action. Therefore, they frequently use the passive voice: For example:

"The oil is injected directly into the combustion chamber".

It is a language of probability so repeatedly they will be using can/can be/could/could be. For example:

"These planes can fly at 800 miles per hour".
"The steel can be lubricated with grease".
"This type of disease can cause death".
"These symptoms could be of jaundice".
Scientific language is a language of contrast also. Facts and assumption go hand in hand. They go on using 'if', 'if only', 'suppose', etc. which is concretising of abstract thoughts. For example:

"Steam flow through the nozzle will be smooth if the nozzle is properly designed."

"Suppose the turbine speed increases, the governor automatically comes into operation."

Science shows us relation between cause and effect. ‘This’ happened because ‘that’ happened. Language here is used to express causality using –‘because, since, due to, on account of, owing to, in spite of, despite, though, although, even if, even though’ for example –

"The steam pressure falls due to condensation in the cylinder."

"Because of the high temperature, special alloys are used."

"On account of the expansion of the shaft, misalignment occurs at the bearing."

"Owing to the intense stresses involved, a high-carbon steel must be used."

Another aspect of the scientific language is to see through, to penetrate, to pierce into things which is done using prepositions like in, into, out of etc. very frequently. For example:

"The petrol/air mixture is sucked into the cylinder by the piston."

"The control rods are taken out of the reactor core by remote control."

To indicate the locality and movements, preposition like on, under, by, out of, are used.

In science, most of time experiments have reference of time, which is shown using as soon as, when, as, while, the moment, till, until. For example

"The moment liquid A gets mixed with liquid B, it changes its colour."

"Keep this solution in the sunlight, till it gets thickened."

Another important feature of the scientific language is ‘functional shifts’. An important factor in the control of scientific English is to know which words can serve as both nouns and verbs – For example – burn, cause, form, like, move, result. Another
thing is words ending in ‘ing’. The English ending ‘ing’ can not be overlooked when
dealing with scientific English, as words with this ending have different grammatical
functions that sometimes mislead the students. Words ending in ‘ing’ may function as
adjectives: For example—creeping plants, burning rays, opposing force etc. They may
also function as nouns: For example—the moving of the matter, the trembling of the
leaf, such burning destroys organic matter etc. Words ending in ‘ing’ may also function
with the force of verbs: For example—a river flowing (that flows), the rays coming (that
come) etc.

Some words likely to occur in a scientific context are derived from Latin or Greek
They have irregular plurals: For example:

<table>
<thead>
<tr>
<th>Singular</th>
<th>Plural</th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>basis</td>
<td>Bases</td>
<td>micron</td>
<td>Micra</td>
</tr>
<tr>
<td>crisis</td>
<td>Crises</td>
<td>minimum</td>
<td>minima</td>
</tr>
<tr>
<td>criterion</td>
<td>criteria</td>
<td>nucleus</td>
<td>Nuclei</td>
</tr>
<tr>
<td>datum</td>
<td>Data</td>
<td>ovum</td>
<td>Ova</td>
</tr>
<tr>
<td>quantum</td>
<td>quanta</td>
<td>phenomenon</td>
<td>phenomena</td>
</tr>
<tr>
<td>pendulum</td>
<td>pendula</td>
<td>serum</td>
<td>Sera</td>
</tr>
<tr>
<td>fungus</td>
<td>Fungi</td>
<td>viscus</td>
<td>viscera</td>
</tr>
<tr>
<td>genus</td>
<td>genera</td>
<td>medium</td>
<td>Media</td>
</tr>
</tbody>
</table>

Morphology plays an important role in scientific English. A lot of words are
formed by adding a syllable or word in front (prefix) or at the end (suffix) of the root
word. The meaning of the derived word is related to that of the root word:
Prefixes:

**non** — meaning not
  non luminous — that does not have luminosity
  nonessential — that is not essential

**mis** — meaning wrong, wrongly
  misunderstand — understand wrongly
  mis-fit = not fit for something

75
misspell = spell wrongly

dis - meaning away, apart, opposite to, not
disable = to render incapable
disarm = to deprive of arm or weapon
disobedient = not obeying

Suffixes:

-ness - meaning state, condition or quality of being
redness = the condition of being red
darkness = the condition of being dark
brightness = the condition of being bright

-less - meaning ‘without’
endless = without end
weightless = without weight
colourless = without colour

-en - used to form verbs from adjectives or nouns
hard - harden, thick - thicken,
less - lessen, wide - widen

There are many other prefixes and suffixes that are commonly used and which are quite common. For example

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>microfilm, microscope</td>
</tr>
<tr>
<td>Thermo</td>
<td>thermometer, thermonuclear</td>
</tr>
<tr>
<td>Aero</td>
<td>aeronautic</td>
</tr>
<tr>
<td>Hydro</td>
<td>hydrometer</td>
</tr>
</tbody>
</table>

A large number of words are formed with the suffix ‘ology’. For example, astrology, cytology, ecology, genecology, biology, etymology, zoology.

Science students should also know about words describing, colour, shape, form etc. For example:

Colour – red, green, yellow etc.
Shape – square, triangle, round etc.
Form – liquid, gas, air etc.

Certain abbreviations are also necessary to know:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>Centigrade, Celsius</td>
<td>math</td>
<td>Mathematics</td>
</tr>
<tr>
<td>ca</td>
<td>About, approximately</td>
<td>Nt. Wt.</td>
<td>Net weight</td>
</tr>
<tr>
<td>e.g.</td>
<td>For example</td>
<td>p.</td>
<td>Page</td>
</tr>
<tr>
<td>ft</td>
<td>Feet</td>
<td>pp</td>
<td>Pages</td>
</tr>
<tr>
<td>gr</td>
<td>Gram, grain</td>
<td>p.c. %</td>
<td>Percentage</td>
</tr>
<tr>
<td>i.e.</td>
<td>that is</td>
<td>Viz.</td>
<td>Namely</td>
</tr>
<tr>
<td>i.g.</td>
<td>The same as</td>
<td>Sq.</td>
<td>Square</td>
</tr>
<tr>
<td>m</td>
<td>Meter</td>
<td>Vs.</td>
<td>Versus</td>
</tr>
<tr>
<td>cm</td>
<td>Centimeter</td>
<td>yd</td>
<td>Yard</td>
</tr>
</tbody>
</table>

Students of science should also be made familiar with various apparatuses related to different science subjects with the help of which they are going to perform their experiments. Because later on they will have to refer to these apparatuses when they write their practicals in journals.

For example: microscope, galvanometer, spectrometer, vernier-calliper etc.

Register is also an important part of scientific English. Providing a list of register to science will definitely help the students as Register is an instance of language in action which include the relevant objects and participants and helps to provide meaning in a particular context. However, register for science can be further subdivided into different categories according to a particular science subject. For example: Physics: pressure, volume, resistance etc.

Discourse analysis is also an important feature where instead of analysing the sentence, the meaning generated between two sentences should be examined, which plays an important role in the discourse. This can be taken care of by giving examples from different contexts. For example:

What do you think is wrong with it?
I think the bowl needs cleaning. (bowl = A revolving cylinder)

In scientific language, the style of presentation is remarkably different. It is impersonal and is devoid of any literary flavour. For example:

In order to make a batik piece, one has to pass through the following process:

Text A:

Take a cloth of your choice and cut it to the desired size. Draw the design that you want to make on the cloth with a pencil. Now take some wax and melt it. Dip the cloth in the first colour that is the background colour. Allow it to dry. Apply melted wax on the parts where you want to keep the first colour. Dip the cloth in the second colour. Allow it to dry. Apply wax on the parts where you want the second colour. Dip the cloth in the third colour. Allow it to dry. Repeat this process till all desired colours are painted. After, the colours dried up, remove the wax by hand or just by placing the hot iron on it. Your batik piece is ready.

Text B:

1. Cut cloth to desired size.
2. Draw design on cloth in pencil.
3. Dip cloth in the first colour and allow it to dry.
4. Melt wax.
5. Paint melted wax on parts, which should keep first colour.
6. Dip cloth in second colour and allow it to dry.
7. Apply second coat of wax on parts, which should keep second colour.
8. Repeat dipping in paint and waxing until all desired colours are painted.
9. Remove wax when completely dry by hand or by using a hot iron.

In both the texts, the illocutionary force is the same. But in the text A, the style is personal, less formal. While in the second example it is precise and exact, which should be the style of scientific English.
Since Science students have analytical mind and while performing experiments they go step by step, they have a tendency to see everything from either parts to whole or whole to parts. While writing their practicals also they need to write out the step by step procedure followed by them. Therefore, they need to develop cohesion in their writing. Hence, a course for science students should also include guided compositions, development of paragraphs etc.

In the classes of science subjects, the teachers use only fixed and limited expressions. At times it is like a baby-talk so the science students need rich exposure to language – abundant, varied an appropriate.

Students of science use language only superficially. They have to deal with only surface level meaning. So they, at times fail to understand the complexities of language. Thus they should be given problem-solving tasks, where they have to apply their critical faculty of mind, have to opine regarding a critical issue taking into consideration others opinions and reach to a final conclusion.

Science students are good observers. They find it easy to talk about things, which they visualize and which are the part of their first hand concrete experience. Thus materials for science students should be related to science and should be in the context of various fields of science. They are much more relaxed dealing with things related to science which give them some familiar air. Abstract thinking makes them puzzled and creates unease among them. Materials related to science will definitely accelerate learning of scientific language. Once they realize the relation between language and its use pertaining to science, they will be automatically motivated. Strengthening of this kind of language will also develop scientific temperament in them. This will enhance their thinking ability and will provide clarity of thoughts and concepts. Scientific language is a bold language, which has precision, clarity and exactness. The language itself will provide for the users of it and will in turn make them rational and courageous human beings. The dynamics of scientific language will then metamorphose its users and will make them dynamic.