6 TEACHING ENGLISH TO LEARNERS OF POLYMER CHEMISTRY:
THE ALAGAPPA CHETTIAR COLLEGE OF TECHNOLOGY
ESL EXPERIMENT.

6.0.1. ESL in Professional Colleges.

The importance of the study of English in higher educational institutions cannot be overemphasised. However the decisions relating to the study of English in professional colleges have not been consistent with the developments in the field of ESL, particularly the developments relating to the study of English for Specific purposes (ESP). A student of Science, Technology, Engineering, Law, etcetera is now required to

i. spend a lot of time learning literary texts or anthologies of prose and poetry along with an extensive reader presented for study; 

ii. pass an examination which tests memory rather than English language abilities; 

iii. listen without being given an opportunity to interact with the teacher or with his fellow students, in an environment where his difficulties in learning ESL are not analysed or understood.
Ideally, the learners' needs should determine the type of learners' learning experiences. The argument for greater understanding of the learner's needs forms the basis for the teaching of English for Specific Purposes.

English for Specific Purposes (ESP) has to be viewed in relation to the general developments that have been taking place in the last twenty five years:

a. a general trend towards a more learner-centred education,
b. developments in the area of syllabus design, and by implication, its methodological principles and
c. English attaining the status of being the most widely used language in the world.

6.0.2 Learner - Centred Education.

The shift towards the learner is not totally unrelated to the development in other areas. When traditional criticism was author-centred, classroom teaching was actually teacher-centred. Then, the focus shifted towards the objective reading of the text in literary criticism which led to a paradigm shift in English teaching. The focus was now on the language itself. Various schools, including structural linguistics and Chomskyan linguistics, fall under this
Soon it was realised that a language is learnt effectively when the focus is not on language forms, which paved the way for a shift towards communication and the learner. This is similar to what happened in the area of literary criticism where the focus shifted from the text to the reader.

Wolfgang Iser (1990) one of the important exponents of the reader-response theory says that effect and reception are corner stones of reader-response criticism whose methods combine the socio-historical with the text-theoretical. He adds that the focus swung away from the literary paradigm of message and meaning, to those of effect and reception. Reader-response criticism views the text in terms of the process, and its interpretive practice is concerned with the event of meaning assembly. Similarly, in language teaching, learning has to be viewed in terms of the process and from the point of view of meaning assembly in relevant communicative context. Not all the learners will have the same socio-economic, educational and cultural background.

Each individual will have his or her own learning strategies and those strategies will have to be taken into account. Ideally, each individual learner, like
each reader must be given a unique status and treated in a different manner.

6.0.3 Developments in Syllabus Design and their Implications for ESL Syllabus.

In order to design a course for specific purposes for particular groups of learners, the teacher can make use of a variety of techniques and methods, based on linguistic, situational, notional and functional principles. While designing such a syllabus, the teacher can employ a wide range of methods, including communicative techniques.

While designing ESL courses for particular groups of learners, efforts will have to be taken to identify the special features in respect of general English, and the registers of particular subjects. For instance, in scientific texts, we may find long nominal groups, frequent use of the passive, use of subordinate clauses, frequent use of the connective devices such as if, although, unless, whenever, wherever, etcetera. Scientific English does not necessarily mean use of different tenses, modals, prepositions, clause structures, etcetera from the rest of English. Grammatical devices are employed in a particular combination. Scientific writing is also characterised
by a distinct vocabulary. Teaching vocabulary and the related special meanings in particular scientific contexts may not be a major problem as the learners are quite familiar with scientific meanings of particular words.

Another distinct feature of scientific English is - the rhetoric, the discourse and the scientific nature of the texts. A learner of science becomes sensitized the moment he becomes aware of the scientific concepts. It is very difficult to list all scientific features precisely, describe them adequately and teach them in the ESL classroom. However, the following can be listed as the features of scientific discourse.

i. Language is used with precision.

ii. There is a subtle distinction between the language appropriate to theory of science and technology and its applications.

iii. Rhetorical techniques such as time order, space order and causality and result expressions, logical patterns such as order of importance, comparison and contrast, analogy, exemplification, application, etcetera are employed.
iv. Rhetorical functions found in scientific discourse are basically parts of the organisation of scientific and technical information. (rhetoric of description, physical description, process description, rhetoric of definition or rhetoric of classification and rhetoric of instructions are employed).

v. Rhetorical - grammatical features such as passive stative distinctions, the rhetoric of instructions, the use of articles, tenses and non-standard use of modals in scientific texts.

The activities or learning experiences, should be essentially a component of science, engineering and technology. The message however, has got to be translated into English. Hence, practising an activity oriented to the mastery of a scientific concept in the ESL classroom is an excellent method of developing command of English for the purpose of communicating scientific ideas and concepts. Before identifying learning experiences, it would be fair to have a review of the type of science education pursued in the institutions of higher learning.
6.0.4 Design of Science Curriculum Perspectives.

The science curriculum at the undergraduate level seems to be inadequate in terms of its content, range and application to industry. In the early seventies, some attempts were made to prepare the universities to undertake major curricular reforms, but unfortunately, these attempts were not seriously continued. The B.Sc. programmes, for example, continued to follow the old pattern. As a matter of fact, the combination of theory papers and practical papers remained almost unchanged. No effort was made to update the curriculum.

There appears no relationship between the training the learners receive in the laboratories of colleges and universities and the kind of employment they may take up later. Thus, the science graduates, after completing their education in the colleges, flocked to the training institutions to improve their employment opportunities.

The mushroom growth of P.G. Diplomas in Computer Applications, Management, Hotel and Catering Management and Airline operations etcetera revealed a bias towards creation of employment potential. In short, the traditional B.Sc. Programme of the university has remained to this day another general education
programme with no scope for professional development of learners. The five year integrated M.Sc. degree offered by the Indian Institutes of Technology, (IITs) and Birla Institute of Technology and Science, Pilani (BITS) and commended by discerning educationists are experiments which have had a significant impact on the learners in professional colleges.

In fact, to revamp the science education in the universities, the M.Sc. degree has to be considered the first science degree of universities. The University Grants Commission encourages industrial needs-related or need-oriented science programmes in the universities. Even after acquiring an M.Sc degree, the student coming through a traditional system is not fully equipped to face the challenges of times. Teachers teaching science subjects generally agree that the practical laboratories have not been utilised in a professional manner. There is no comparable training provided in the college laboratories. The learners must also be trained in acquiring certain basic skills in communication, mathematics, critical thinking, logical reasoning, simple computation, experimentation and some basic knowledge of computer applications.

The Kothari Commission (1964) and the National Education Policy (1986) of India laid down some
guidelines in terms of overall needs and objectives of a new curriculum. These guidelines were:

i. there must be foundation courses which give adequate exposure to science, technology and humanities

ii. there must be a general core programme which should be followed by a specialised programme

iii. the curriculum must be flexible enough to allow mid-course correction

iv. the learners must be given a fair amount of choices.

v. the curriculum should provide for an interaction between the institution and industry; there can also be collaboration between institutions.

vi. the curriculum should bring the goals of university in consonance with those of national development.

vii. modular courses should be designed and provided

viii. the evaluation should be based on continuous internal assessment (CIA) so that there is regular feedback to the teacher, and to the learners about the success of their efforts which in turn helps the teacher to suggest mid-course modifications in materials/methods of teaching.
The Indian Institutes of Technology, Birla Institute of Technology and Science, Pilani, and several national level institutions introduced the integrated courses in Engineering. Again, the IITs, BITS and Sri Sathya Sai Institute of Higher Learning (a deemed university) have introduced an integrated curriculum for Science. Falling in line with this kind of thinking at the national level, and in consonance with the spirit of the University Grants Commission's recommendations and government's decision towards industry related courses, a five year integrated M.Sc programme in Polymers was initiated by the Department of Polymer Chemistry, Alagappa Chettiar College of Technology University of Madras in 1987. The course took off during the academic year 1988-89.

6.0.5 Developing a Skill-Oriented Proficiency Level Linked English Language Course for the M.Sc Polymers Programme

The Department of Polymer Chemistry, AC College of Technology, introduced along with Core Mathematics, Core Physics, Core Chemistry a paper on English communication skills or English for Science and Technology, in addition to the elective subjects in the first two years of the five year integrated M.Sc.
Polymers Programme. The department also established institutional linkages with the world of work. The concept of institution and industry linkage was achieved by a number of collaborative programmes the department had with the University Department of Chemical Technology, University of Bombay, Indian Petrochemicals Limited, Baroda, Klockner and Windsor India Limited and other polymer-based industries. A practice school programme was also envisaged at the end of the course. The course was finally standardised and the learners reported their industrial experience in the project report.

The practice school programme with the support from the industries provided a variety of learning experiences, especially, to the learners of lower ability group. This programme is comparable to the internship of medical education programme. When the learners work on their project to familiarise themselves with the functioning of industries, the experience helps the individual learners and also the institution as it serves as an input to the enrichment of the curriculum. Incidentally, the industry assumes a role in the design of curriculum and the management of the institution.
In the changing scenario, the Government or the University Grants Commission may not be able to fund the entire higher education system. The industries should come forward to finance higher education. This trend of industries sharing the cost of running higher education institutions is inevitable. The industries also will have to depend on the internees, just as the medical internees are attached to the hospitals or the articulated clerks attached to the practising chartered accountants. Even if it is not possible to have a highly systematized institute - institute collaboration, the educational system will have to provide for some collaboration between the institution and the community in some form or the other. It is not very difficult to establish linkages between the institutions of higher learning and the community. The Botany department can liaise with Soil Testing Research Laboratory and help the nearby villagers in improving the quality of their soil and seeds. The Zoology department can use the research findings of the Entomlogical Research Institutes and help the farmers in the control of pests and insects.

The use of English as a medium of communication in all these channels necessitates making the English curriculum more dynamic, responding positively to
meeting the learners' needs and adjusting to the changing needs of the society. In a traditional undergraduate programme, there is a language component under part I which is normally the L1 of the learner, namely, Tamil, Hindi, Telugu or Malayalam, etcetera, and under part II, General English is taught as a content subject. In an intensive five year integrated post-graduate programme, it may not be possible to accommodate the L1 component. But, English has a vital role to play as the language of all transactions in the university / industry linkage, the classroom, the laboratory and other formal settings. But the shift in emphasis should be towards English being taught as a skills component rather than as a content based subject. The learners should be trained to use English so that they can understand their subjects better. Mastery of English can be achieved through language used in the subjects. A total immersion in life-like situations will help the learners face their lives more confidently and also enable them to use English employing a variety of skills. It is against this background that the researcher with the support of the department planned and implemented a specially devised ESL programme for the first two years of the five year integrated M.Sc Polymer Science. The discussion that
follows relates to some of the materials used and strategies employed.

6.1.0 Learning Experience in Groups.

The researcher's aim was to keep the learners' participatory learning as the core of the ESL project. While organising activities, the investigator took care to identify the learners' interests, skills, motivation levels, attitudes, hobbies, proficiency level of English and subject. Each group had not more than five members. A member from higher ability group, an average learner, a learner from the lower ability group, a learner proficient in non-scholastic abilities and a learner from the regional medium background constituted the group.

The instructional hour normally began with the reporting done by the learner of the lower ability group. Each group was entrusted with a task which should be attempted individually and as a group. For instance, a learner was asked to watch the television news or listen to the radio news and take notes and come to the class. Another learner was asked to come with the news recorded on the audio tape. The third member of the group was asked to read the newspaper and bring a copy of it. The fourth member brought a note
on the important news events reported in the newspaper. The member who came to the class with the news gathered from the TV/radio source presented his notes. Then, the discussion was initiated by other members. They tried to identify common news events, in both radio / TV and newspaper. They also discussed the type of reporting done in the media. Classroom activities invariably culminated in group presentations. Such a team effort served as a method of informing and decision making and it also provided an ideal setting for the interplay of listening, speaking, reading and writing skills. The learners became more committed and performed more effectively than in the conventional classroom. The attitudes of the group members became more positive because of everyone's involvement in the decision making process. Group activities, after all, result in better decisions. In trying to solve a problem, individuals can normally have access only to limited information. But in a group, however, every individual is exposed to a variety of experiences.

The teacher took the role of an evaluator, monitor and facilitator all the time. All activities were oriented towards group participation. However, there were some rules which were framed by the learners themselves and self imposed.
i. The problem or the subject (communicative event) was clearly stated.

ii. No one was permitted to criticise adversely others in the group.

iii. Learners were encouraged to appreciate the positive aspects in the other learners.

iv. Only one was permitted to speak at a time.

v. The group leader summed up the proceedings before the group took up some other activity.

vi. Whenever an idea was presented by a learner the others shared the responsibility of comprehending the message presented.

6.2.0 Critical Thinking and Logical Reasoning Through Scientific Texts.

The researcher used in the integrated M.Sc. Polymer Science programme a number of scientific texts giving details of the scientific inventions. For instance, the sample materials on Joseph Priestley which follow were exploited by the researcher to introduce different classroom strategies to strengthen students' learning experience. In step one the text is used to promote critical thinking and logical reasoning.
Step I Sample Text.

Study the following text looking for logical organisation of facts.

Priestley heated some lead very strongly in the air and watched it gradually turn red. This red powder he treated in exactly the same way that he had heated the red powder of mercury. What Priestley obtained both from the red powder of mercury and the red lead, must have originally come from the atmosphere.

On the eighth of March 1775, Priestley takes two identical glass vessels, fills one with oxygen and the other with ordinary common air and sets them aside over water. He takes one of his captive mice from the trap, takes it by the back of the neck and quickly passes it up into the vessel of common air inverted over water. He sets the mouse on a raised platform within the vessel, out of reach of the water. Then under the second vessel, filled with oxygen, he places an equally vivacious mouse with the same care.

Seated in his chair, Priestley amuses himself by playing the flute as he watches his curious experiments. He has no idea how long he will have to wait. Suddenly he stops playing. The mouse trapped in the glass vessel containing common air begins to show signs of uneasiness and fatigue. Priestley throws away his
flute and looks at his clock. Within fifteen minutes the mouse is unconscious. Priestley seizes its tail and quickly and yet carefully pulls it out of its prison. Unfortunately, the mouse is dead. But in the second vessel with oxygen, the mouse keeps moving about quite actively. After ten minutes, it begins to show unmistakable signs of fatigue. Its movements become sluggish, a stupor comes over it. Priestley sets it free; it is exceedingly chilled, but its heart is still beating. Priestley is happy. He rushes to the fire, holds the little mouse to the heat and watches it slowly revive.

In a few minutes it is as active as ever. For thirty minutes, this animal has remained in his oxygen and survived, while the first mouse, confined in common air, had died in half that time.

What can account for this? Is it possible that his oxygen is purer than common air, or does common air contain some constituent which is deadly to life? Perhaps it is all an accident.

That night Priestley keeps pondering over the mice and his oxygen. He begins to suspect that his oxygen is at least as good as common air. Priestley doesn't want to take any chance. The next morning finds
Priestley experimenting with more mice to probe this mystery of the air.

Priestley was now convinced of the wholesomeness of his oxygen. He might have ended his experiments at this point. But he had the curiosity of the true natural philosopher. He decided to substitute himself for his humble mice. He inhaled some freshly prepared oxygen through a glass tube, and found to his astonishment that the feeling in his lungs was not sensibly different from that of common air. "But I fancied, he noted, that my breath felt peculiarly light and easy for sometime afterward". Priestley foresaw many practical applications of the very active gas. Today pure oxygen is in fact administered in cases of pneumonia where the lungs have been reduced in size and the patient cannot breathe sufficient oxygen from the air. Firemen fighting suffocating fumes, rescue parties entering mines, aviators and mountain climbers, who reach high altitudes where the air is very rare, carry tanks of pure oxygen.
Step Two: Exercises promoting Critical Thinking.

There is an ASSERTION statement in the left hand column and a REASON statement in the right hand column.

<table>
<thead>
<tr>
<th>ASSERTION</th>
<th>REASON</th>
</tr>
</thead>
<tbody>
<tr>
<td>The mouse trapped in the glass vessel containing oxygen died after</td>
<td>The mouse did have enough oxygen but the presence of nitrogen killed it.</td>
</tr>
<tr>
<td>about 10 or 15 minutes.</td>
<td></td>
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<tr>
<td></td>
<td></td>
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<tr>
<td>2. The mouse trapped in the glass vessel containing oxygen did not die</td>
<td>Oxygen kept the mouse alive</td>
</tr>
<tr>
<td>even after 25 minutes.</td>
<td></td>
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<td></td>
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<tr>
<td>3. Common air is as good as oxygen because one mouse might live quarter</td>
<td>All mice can live normally for such a length of time only.</td>
</tr>
<tr>
<td>of an hour in a given quantity of air.</td>
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<td></td>
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<tr>
<td>4. If we breathe oxygen a candle burns out much faster in oxygen than in</td>
<td>A candle burns out much faster in oxygen than in air.</td>
</tr>
<tr>
<td>instead of common air we might live out too fast.</td>
<td></td>
</tr>
</tbody>
</table>

Choose and relate to the statements above

A. If both assertion and reason are true statements and the reason is a correct explanation of the assertion.

B. If both assertion and reason are true statements and the reason is NOT a correct explanation of the assertion.

C. If the assertion is true and the reason is false.

D. If the assertion is false and the reason is true.

E. If both are false.
6.2.1 Gathering Support or Evidences for the Hypothesis

Step 1. 

Read the following carefully

Sample Text :

Priestley had no notion of the real nature of this air. It was around this time, he happened to come to know of one German Scientist by name John Becher, who explained the phenomenon of burning, as due to some inflammable substances in all materials. This he called phlogiston from the Greek 'to set on fire'. According to Becher, when a substance burned, its phlogiston was given off in the form of a flame. Becher believed the gas to be, not the simple substance, namely oxygen but some strange compound of phlogiston, earth and nitric acid. Priestley was befuddled by phlogiston. But he kept studying this mysteriously active gas which had been driven out of his red powder. Fumbling along as best as he could, hampered by meagre funds, a poor foundation in Chemistry and no clear goal before him, he continued to investigate the properties of the gas.

Step 2 From the reading of the text above, you may draw certain conclusions.

Now complete the following:
Scientists try to seek evidence from the past or the findings of the investigation/experiments already carried out to check whether or to seek support

Priestley had already concluded that

He tried to compare his own ________ with the fire principle of John Becher who explained burning as due to some

6.2.2 HYPOTHESIS OUT OF CONCLUSIVE EVIDENCE OR MERE CONJECTURE?

Step 3.

Sample Text:

Read the following passage and complete the exercise below:

During Priestley's time, the atmosphere we live in was thought to be a pure, simple, elementary substance like gold or mercury. Priestley himself had first conjectured that volcanoes had given birth to this atmosphere by supplying the earth with a permanent air, first inflammable, later deprived of its inflammability by agitation in water and finally purified by the growth of vegetation. He had concluded that the
vegetable world was nature's supreme restorative, for when plants were placed in sealed bottle (in which animals had breathed or candles had been burned) the air within them was again fit for respiration. The phlogiston, which had been added to the atmosphere by burning bodies was taken up by plants thus helping to keep the atmosphere pure.

Just about this time, Daniel Rutherford had found two substances in the air. He had absorbed a small amount of carbondioxide from the air, by means of lime water, which turned milky white. Then by allowing a small animal to breathe in a limited supply of air he found that after carbon dioxide had been absorbed, about four fifths of the volume was left in the form of an inert gas. This inactive gas of the air was named nitrogen because of its presence in nitre.

Classify the message in the above paragraph under the following heads:

Observations  Conjecture  Conclusions

1. Priestley.
2. Daniel Rutherford
1. How do you think the conjecture of Priestley acceptable?
2. Are Priestley's conclusions convincing?
6.3. Scientific Experiments as Problem - Solving Activities

In scientific / technical writing, especially in laboratory record or manuals, we find instructions. Instructions guide someone in the laboratory / workshop what to do and how to do to achieve the set goal. Laboratory manuals carry direct instructions, such as, "take dry crystals of copper sulphate in a test tube or a conical flask etcetera. But when you write a report in the laboratory record, you do not write these sets of direct instructions. They will have to be turned into a set of indirect instructions. Dry copper sulphate crystals are taken / should be taken in a test tube or a conical flask. Indirect instructions sound more like suggestions than orders. But in reality they function as imperative statements. Indirect instructions also carry at times modal verbs such as 'may', 'can', 'should', 'must' etcetera.

The sample materials used and the techniques used in the classroom by the researcher are given below:

Step 1:

Sample Text

Read the following instruction.

Take dry crystals of copper sulphate in a test tube or in a conical flask. The crystals are blue in
colour. Close the mouth of the test tube or the flask with a single holed cork. Connect the other end of the glass tube to a test tube placed in a tub of water. Now, heat the test tube with copper sulphate crystals. Observe the changes in the colour of the crystals. (The blue crystals fade and turn white. The fumes from the heated test tube of flask due to evaporation escape through glass tube. Due to condensation the fumes become liquid in the test tube placed in the water tub.) Calculate the boiling point and the freezing point of this liquid. (They are found to be the same as for water). Add water to the cold dry copper sulphate crystals. (They turn blue producing a lot of heat at the same time).

Step : 2

Now, notice the sentences within brackets. They tell us of the changes brought about at every stage in the process of conducting the experiment. Such statements provide us additional information, by way of an explanation, warning, advice, precautions, theoretical principle, etcetera. Thus, we may find i. instructions and ii. additional instructional information in the laboratory manuals. When we report our findings in the laboratory record, we make use of a
set of indirect instructions. Incidentally, you may find that these sentences have passive form of verbs.

**Step : 3**

*Now answer the following questions:*

1. Give a brief description of the apparatus used in this experiment.
2. What is the objective of this experiment?
3. What are the tests conducted with the liquid collected in the test tube in the water tub?
4. What do you conclude from the test?

**Step : 4**

Now write down the procedure for conducting this experiment. You may begin your answer like this

**Procedure:** Dry crystals of copper sulphate are taken in a test tube or a conical flask.............

Please continue and complete the answer.

6.4 Teaching English through General Knowledge.

General knowledge so easily encountered by the learners in newspapers, journals and the visual media provides ample scope for developing language abilities. As a subject, General knowledge offers motivation and is interesting. Hence the researcher developed materials and strategies to exploit general knowledge in the classroom. The sample text offers scope for
introducing a variety of teaching techniques including reading with comprehension, logical thinking, writing etcetera.

Step 1

Read the following passage:

The cockpit voice recorder (CVR) and flight data recorder (FDR) of Air India's ill-fated Boeing Kanishka, have flown in amid heavy guard and tight security.

The "black boxes", as the CVR and FDR are known in aviation circles, were kept sealed in separate airtight containers.

The boxes, which are expected to provide vital clues to the diaster, were brought aboard the AI Boeing, Harsha Vardhana, by the Regional Controller of Air Safety. The AI Boeing 'Kanishka' crashed into the Atlantic ocean off the Irish Coast on............ killing all............. people on board.

Step 2

State whether the following statements are true or false and give your reason for the choice made briefly:

1. Black boxes are black in colour.
2. Air India Boeing Kanishka crashed because it carried ill-luck.
3. Cockpit Voice Recorder (CVR) and Flight Data Recorder (FDR) are known as black boxes.

4. Black boxes are sealed in airtight containers because the information stored on the tapes will leak.

5. Harsha Vardhana brought the Regional Controller of Air Safety safely.

**Step 3:**

Carefully study the two columns: There are numbr of items each of which will consist of an assertion statement in the left hand column and a reason statement in the right hand column.

Choose A if both assertion and reason are true statements and the reason is the correct explanation of the assertion.

Choose B if both assertion and reason are true statements and the reason is NOT a correct explanation of the assertion.

Choose C if the assertion is true and the reason is false.

Choose D if the assertion is false and the reason is false.

Choose E if both are false.
<table>
<thead>
<tr>
<th>Assertion</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. AI Boeing Kanishka crashed into the Atlantic Ocean</td>
<td>It crashed because it carried ill-luck</td>
</tr>
<tr>
<td>2. AI Boeing Kanishka was an ill-fated aircraft</td>
<td>Harsha Vardhana was lucky</td>
</tr>
<tr>
<td>3. CVR and FDR are known as black boxes in the aviation circles</td>
<td>They must be black in colour</td>
</tr>
<tr>
<td>4. The black boxes were brought for examination</td>
<td>They may provide vital clues to the disaster</td>
</tr>
<tr>
<td>5. AI administration have given the names of great kings to their Boeings</td>
<td>Kanishka, Harsha Vardhana, Raja Raja, Akbar and Ashoka are some of the names of the Boeing Aircraft owned by Air India.</td>
</tr>
</tbody>
</table>

### 6.5 Designing Tasks in a Learner-Centred Curriculum

The researcher used learner-centred activities to generate a great deal of learner experiences leading to the learning of the subject studied.

**Example:**

**MAKE AN ESTIMATE OF YOUR PRESENTATION SKILLS**

Presentation skills do really matter in making a man to be successful on the job or elsewhere. Please read the following statements and make an estimate of how good you are in these skills. This exercise will help you identify your strengths and indicate the areas you have to focus your attention in order to increase your competence. A six point scale, 0 to 5 is used, namely, 0 indicating a very poor attainment level and 5
indicating an excellent understanding of the skills listed, you may read each statement and encircle the number that may adequately describe the level of your proficiency of mastery in the particular area listed. If you are excellent encircle 5 and if you are rather poor encircle 0.

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Fair</th>
<th>Very Fair</th>
<th>Good</th>
<th>Very Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I always plan before actual presentation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>I identify some broad objectives of the presentation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>I always consider the needs, attitudes, values strengths and weakness of any specified audience.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>I think very clearly and write down important points before making any presentation and build my presentation around the important points listed.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>I take into account the available information and make an assessment of my own ideas before making a presentation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>I motivate my audience with appropriate details required for the presentation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>I develop my presentation naturally, appropriately and interestingly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>I make use of appropriate illustrations/examples</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>I conclude my presentation naturally recapitulating all the points.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>I provide visual aids wherever possible and necessary.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>I always try to be persuasive and friendly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>I always argue logically to make my point</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>I am never anxious or feel worried before making my presentation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14</td>
<td>I prepare well and practise at least once before making a presentation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15</td>
<td>Though I keep my notes ready, I rarely use them because, I don't want to lose my eye contact with the audience.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16</td>
<td>I anticipate the type of questions during the course of the presentation and get ready to face them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17</td>
<td>I always articulate clearly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18</td>
<td>I make appropriate gestures and they are natural</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19</td>
<td>My voice is very clear and not monotonous</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20</td>
<td>I always have a feeling of fulfilment after making my presentation (The members of the audience also have a sense of satisfaction)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

TOTAL POINTS : OUT OF
WHAT DO THESE SCORES MEAN?

<table>
<thead>
<tr>
<th>SCORES</th>
<th>WHAT THEY MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 - 100</td>
<td>You are a fairly well accomplished Speaker. An exposure to certain skills will make you an excellent presenter.</td>
</tr>
<tr>
<td>60 - 80</td>
<td>You are capable of becoming a very good, effective presenter. You need a good training in the skills.</td>
</tr>
<tr>
<td>30 - 40</td>
<td>You should put in a lot of efforts to become an effective presenter.</td>
</tr>
<tr>
<td>30 and below</td>
<td>you must take a lot of efforts. You must work hard.</td>
</tr>
</tbody>
</table>

Identify the skills in which you lack and practise adequately.

6.6 Production of Parallel Texts

Helping learners to produce texts parallel to the ones used by the teacher is an important part of the teacher's work. The ESL teacher first imparts reading and writing skills at a particular level / standard, and based on the skills acquired gives an opportunity for the learners to produce parallel texts. The production of parallel texts will entail learners' ability to think cogently, logically and express views clearly.

Sample text:

Step 1

Towards alternative sources of Energy: Solar Energy - Solar Heated Water for Pilgrims
Pilgrims to the Lord Venkateswara temple to Tirumala will have hot water supplied by a huge solar collector. The Rs. 2.5 lakh device, designed and built by the Bharat Heavy Electrical Limited, will supply hot water to 3000 people bathing daily at the Kalyana katta, or the tonsuring centre.

It will save about 200 tonnes of firewood a year. In fact, the flat-plate solar collectors have been set up as a demonstration project. They are spread over an area of 100sq. metres and will provide daily 5,000 litres of water at a temperature of 75°C and above.

A bigger solar collector to supply 15,000 litres of hot water will be built on the roof of the Kalyana Katta by June 1984.

Solar energy tapped for this purpose can also be exploited usefully in a number of other ways. It can be increasingly used in the rural areas as most of our population live in the villages. This will avoid dependence on the electricity which is almost crippled due to obvious reasons.

Step 2:

Learners' response to the above text

The following is an authentic parallel text produced by one of the students of the integrated M.Sc. Polymer Science course.
Solar energy for the farmers

Modern agriculture demands increasing quantities of energy in order to achieve the desired level of productivity. Research efforts show that there is a great scope for utilisation of solar energy in agricultural practices such as drying of agricultural produce, pumping of water for irrigation and preservation of fruits and vegetables.

A solar pump for irrigation purposes mainly consists of four parts namely, flat plate collectors, heat exchanger, condenser and diaphragm pump.

The solar heat is absorbed by a number of flat plate collectors and kept at an appropriate inclination for receiving maximum solar radiation during the whole year.

The collectors are made of high conductivity materials like aluminium and silicon. The generated energy makes the diaphragm to vibrate, which causes the water rise and come out of the well.

Solar dryers are used for dehydrating agricultural produce. Solar dryers are of two types, namely solar cabinet dryers and forced convection dryers. These dryers can be used for dehydrating 15 to 20 kg. fruits, vegetables and chillies without affecting the colour
and flavour of the dried produce for a period of five days.

Solar heat generated from flat-plate collectors is also used to separate ammonia from the ammonia solution. The vapourised ammonia is utilised for cold storage. The temperature obtained in this system is 0°C to 10°C. Vegetables, milk and other perishables can be stored in this system. It can also be used in pest control operations.

6.7 Simplification of Texts

The language of a scientist/technologist is highly technical at times. It becomes very difficult for a common man to understand the technical vocabulary. As a scientist speaking to an audience of laymen, it will be necessary to refrain from using highly technical terms. For example, if you tell a common man of 'sodium chloride', he may not understand. It is simpler to tell the common man about the common salt. It is therefore our responsibility to simplify and present a text that poses a lot of problems.

**Step 1.**

Here is a passage with some difficult terms. Read the passage and rewrite for the benefit of a common person. Give a suitable and appealing title.
According to various reports I have collected, eggs can contain salmonella bacteria. So, the question of risk-taking starts with breakfast. At lunch, the meat that you eat may have residues of antibiotics given to the animals. And the vegetables may carry traces of pesticides. They are likely to carry traces of sulphate, urea, etc. The dessert ice-cream too contains chemical additives and possibly salmonella from eggs.

After you have survived the other risks of the day and go to bed, you are still not entirely safe. You are likely to breathe in too much cotton dust from the pillow and you could contract byssinosis, a chronic lung disease. Ensure, too, that your bedsheets are not laundry washed. They sometimes use a cancer causing chemical whitener which makes going to bed carcinogenic.

Step 2.

Learners may at this stage be encouraged to meet in small groups for a short time and discuss the text as a prelude to simplifying it.

6.8 Learning through Field visits.

Here is a brief report prepared by a student of M.Sc. polymers submitted to the department after a
visit to Indira Gandhi Centre for Atomic Research, Kalpakkam.

Learners were encouraged to submit reports individually and as a group. Guidelines and instructions were earlier given.

Report on the visit to the Indira Gandhi Research Centre for Atomic Research Kalpakkam.

We visited the Indira Gandhi centre for Atomic Research Kalpakkam. We were mainly interested the Fast Breeder Test Reactor (FBTR) in the Atomic Centre Kalpakkam. It is the only one of its kind in India and one of the very few fast breeder test reactors in the world. The FBTR at Kalpakkam was indigenously designed, based on Indian technology. The test reactor has been functioning satisfactorily since its installation.

One of the advantages of the FBTR is that we can produce maximum fuel with minimum use of fuel. The nuclear waste also will be minimum. The reprocessing unit takes care of the renewable nuclear waste. At the IGCAR, the fuel is not manufactured on a large scale. It is manufactured only for research purposes.

In the FBTR, water is not used for the purpose of conductivity. Sodium loop is used because it has a very high thermal conductivity. However, wastes from
such units cause disturbances in the eco system. For instance, the sea water that is used at the centre when let in to the sea causes an imbalance in the temperature of the water in the sea. Normal sea temperature is around 25° C. But when the water used in the FBTR is let off into the sea, the temperature shoots up from 30° C to 32° C. As a result of this, fishes are killed and here is an imbalance caused in the eco system. The coastal area is too sensitive to receive such pollutants. The flora and fauna is also affected by the pollutants. To overcome this menace, we have to take into account the nature of ocean current and accordingly let off the water used for cycling purposes.

The above report was exploited for classroom teaching and the following activities for learners were devised.

**Step 1**
Write a letter to the Director, Indira Gandhi Centre for Atomic Research asking him to take precautionary measures while letting off the waste water into the sea.

**Step 2**
Write another report indicating precautions taken by the Director of IGCAR, Kalpakkam.
6.9 Learning Grammar Through Communicative Activities.

The study of grammar has the principal advantage of facilitating writing. The approach to the teaching of English Grammar has changed significantly from the traditional to the more recent communicative methodology. The teaching of English grammar will have to take into account the view that since grammar is essential for meaning it will have to be presented in natural contexts. Learners need to be gently led into grammar without the teacher using labels and jargon to describe it. The researcher has attempted to assist learners in learning English grammar through activities which facilitate communication.

Sample materials:

Step 1
Read the following letter and identify the tense of the verbs and discuss its use:

6, Ganesh Nagar I Street,
Madras - 600 114.
27/08/89

Dear Anand,

I write this letter after a long time. You know our examinations are drawing near. I am working hard
to secure a first class. That is the only way I can repay my mother's love. She gets up very early everyday to prepare tea for me. Remember she is fifty. She is divine.

Are you still the same old lazy bones? I know you are a late riser. Please shed your laziness. You are lucky. You study in a good institution. Make the best use of your opportunity. Lost opportunity is a matter for regret. I hope you will secure a distinction in English.

My father leaves for Delhi on Sunday on an official visit and returns to Madras on Tuesday. Usually he goes to Delhi by train, but he is flying this time. Do you want him to buy anything from Delhi? Feel free to write to me immediately.

Convey my regards to your parents and my best wishes to your dear sister.

Yours Sincerely,

Aravind.

Step 2:

Now imagine you are Anand and send in a reply to Aravind. Please take care to answer the points Aravind has raised.
Begin you answer (if you prefer) like this and complete.

Dear Aravind,

Got you letter. Thank you very much. Sorry, I could not write to you earlier. I realize our examinations are drawing near.............

**Step 3**

Read the following passage and follow the instructions given.

Sir Issac Newton was born on 25 December 1642 at Lincolnshire. When Issac Newton was a young man, he was sitting quietly in his garden in Lincolnshire when he noticed a ripe apple fall to the ground. He asked himself why the apple had fallen directly towards the earth. Why did the apple not move towards the sky, or travel across the surface of the earth? From his observation and the idea which it generated, he developed the law of gravitation.

The mathematical application of the law of gravitation enabled Newton to make calculations to determine the orbit of the moon, satellite of the earth, and the orbits of other planets in the Solar System.

Newton's interest in the Solar System and the movements of the planets led to the invention of the
reflecting telescope. With this instrument, he was able to see some of the eleven satellites of the planet Jupiter.

His analysis of a ray of light by directing it through a prism, a three-sided length of glass, showed that the ray was composed of smaller rays of differing colours. By directing white light through his prism he produced the spectrum, a band of colours like the rainbow.

Issac Newton was appointed Master of the Mint in 1699. In 1703 he was elected President of the Royal Society, the highest honour in Science to which any man could aspire. In 1705, he was knighted by Queen Anne.

Instruction:

Now rewrite the way Newton himself would have written his life history. Begin your answer, if you prefer, like this and complete.

I was born on..............

Step 4

Read the following paragraph

We use the vacuum cleaner for a variety of uses in our homes. Edger Snow, an American entomologist, has invented a giant vacuum cleaner for farm use. He attached the vacuum cleaner to the front of the tractors. It sucks up the insects from the growing
plants. The fans in the vacuum cleaner kill the insects and blow across the field as mulch to return nutrients to the soil.

The American scientist has given a name, Bug-Vac to this vacuum cleaner. American farmers use Bug-Vac mainly in the strawberry fields. Farmers also use Bug-Vac in the tomato and cauliflower fields.

Step 5

Now rewrite the above paragraph beginning

The vacuum cleaner is used by us for a variety of purposes in our houses..............

and complete the paragraph.

6.10 Presentation skills

Presentation skills involve the development of learners'abilities to present a paper in seminars/workshops/conferences, participate in group discussions,panel symposia, debates and lecture before and audience for a specific purpose or write casestudy reports, project reports,feasibility reports, etcetera.

Learners were encouraged to report individually to their group leader. The group leader consolidated the opinions of the members before making a presentation in the classroom. Usually, the learner from the lower ability group was asked to present the report. Some of
the techniques the learners employed such as introducing a topic, developing a topic, recapitulating or concluding a talk, inviting the members of the group to discuss, interrupting politely to make a point, responding to a point made, agreeing/disagreeing with the speaker on a point of discussion, responding to agree/disagree, etcetera were presented to the learners in the form of handouts. A number of skills promoting and integrating presentation skills was practised. A sample activity is provided here.

Activity - Group Discussion

Assume you are Joseph Priestley and your friends are Scheele, the Swedish Chemist, Robert Boyle, Stephen Hales, Eck Salzbach and Daniel Rutherford.

Initiate a discussion listing your achievements and listen to the other scientists for their views and achievements. Arrive at a conclusion. The conclusions should be acceptable to every member of the group.

The activity is oriented towards integration of several skills namely, making use of general knowledge, the text and information gathered from several sources. Details of the scientists and their work are provided in the form of handouts.
6.11 Project work

Project work was one of the important components of this project. After the initial orientation learners were asked to identify a project and present a project outline before peers and teachers. Learners and teachers exchanged opinions freely and contributed ideas towards the implementation of the project. As stated earlier, they were asked to proceed following the principles of systems approach. Learners were also taught the mechanics of report writing. A list of reports submitted by the learners is enclosed in the appendix.

6.12 Remedial Action

As discussed earlier, programmed self-instructional materials were prepared and used. For instance, the learners who faced problems in the areas of subject-verb agreement, tenses, modals, etcetera were given special help.

A sample programme is presented here.

Simple present tense, Entry behaviour,

The learner knows that

i. a verb must agree with its subject,

ii. a verb takes three forms, namely, the present the past and the future tense.
iii. The auxiliaries 'be', 'have' and 'do' also take three forms.

Desired Terminal Behaviour

The learner correctly uses the simple present tense to represent or indicate:

i. an event which happens at the time of speaking writing

ii. a habitual action

iii. a general or universal truth or facts that are permanently true.

iv. he knows that the simple present tense can be used instead of the present continuous in certain cases, such as the Radio/Television running commentary.

All language exercises began with the kind of input provided above. The activities ranged between programmed instructional materials to communication games.

6.13 Testing and Evaluation

An ideal test should measure the learner's abilities to meet the communicative demands of a defined or definable target situation. If a particular test measures the learner's ability to function effectively as a manager, engineer, bank official, etcetera, the test