

A Course in English for Students of Engineering with Emphasis on Problem Solving Methods

***G.VENKATRAMAN**

Senior Lecturer in English, School of Humanities and Sciences
SASTRA University, Thanjavur – 613 402, Tamil Nadu E-mail:gvr.eng@gmail.com

B. KRISHNAMURTHY

Professor of English, School of Humanities and Sciences
SASTRA University, Thanjavur – 613 402, Tamil Nadu E-mail:bekeyem@yahoo.com

*Corresponding author

Abstract

This paper undertakes to highlight the problem-solving approach adopted by SASTRA University, Thanjavur, India, in their English language courses with the prospect of this experiment being accepted as a possible model. It shows how best problems solving skills can be inculcated in the learners even through English language courses, especially for the students of Engineering programmes. The paper also presents the results of a feedback questionnaire received from students in this regard.

Key words: English courses; problem solving skills

1. Introduction

The Eleventh Plan of India focuses on quality and employable education to more people and getting chances to study in world-class institutions. According to Daggubati Purandareswari (2008), Union Minister of State for Human Resource Development, India, the educational system will be restructured to impart competitive skills and capabilities of global standards.

‘The Hindu’ editorial dated 21st March 2008, titled “Taking the stress out of schools” very rightly points out the existing school education system in India at 10th Standard and Plus Two levels is extremely stressful to the students. The parents expect them only to score more than 90% to gain admission in prestigious institutions. Other objectives of education are subordinated to this aspect. The editorial also argues that there has been a gradual shift from content-based to problem solving and competence-based testing in the examinations at the tertiary level. But this has to be introduced at the school level and speeded up and the focus turned away entirely from rote-learning. According to the editor the goal’s of school education should be for preparing students for life outside the classroom, laying the foundation for higher studies, and equipping them for the job-market. The editorial also adds that the teaching methods must be reviewed and the teachers trained to adapt themselves to the changing environment. But the truth remains that even at the tertiary level it is not achieved. This scenario calls for immediate steps to

develop courses with emphasis on problem solving methods in secondary and tertiary levels in almost all subjects.

2. Problem-solving Skill

Problem-solving skill is beginning to be considered as a strategic tool nowadays. Industries are spending a lot of time and money to promote the managerial skills, technical skills and interpersonal skills of their employees. Problem-solving is one of the key areas that come under technical skills (Wilson 2001).

Problem-solving requires a range of critical thinking skills from identification, description and analysis to synthesis and evaluation. It also requires understanding of the theoretical principles and governing frameworks behind classification of the problem and application of the solution method. The students need to understand and be able to explain what it is that you are doing as you proceed to solve the problems. The common stages of problem solving are:

- Identification
- Classification
- Transformation
- Substitution and
- Comparison

Problem-solving exam questions are favoured in a range of disciplines from physics, engineering and mathematics to architecture, law and linguistics (Exam. Wing, University of Melbourne). In problem-solving questions the students may be asked to propose and justify a course of action to address a specified situation, or to develop a reasoned explanation based on data analysis.

3. Need for English Courses with emphasis on Problem-Solving Skills

The English language courses taught at the tertiary level in India are mostly knowledge based. Only very recently universities and colleges have introduced skill-based courses with focus on communication skills. But efforts taken in this direction are not adequate. The reasons for these lacunae are that the course objectives are not well defined, as a sequel, nor are teaching methodology, testing and evaluation.

As a result, the graduates produced by the universities/colleges suffer largely due to lack of communicative skills to study in the world-class institutions or work in global atmosphere. So there arises a need for English language courses with emphasis on creativity and problem solving skills.

4. The English Courses for Engineering Students at SASTRA University

For the last three years, SASTRA University, Thanjavur, India, has been taking efforts to transform their English courses towards this problem solving approach, in their course objectives, material, classroom methods and evaluation.

The English programme for the First year B.Tech students of SASTRA University being offered now has no memory based questions in either the mid-semester or in the

semester-end examinations. The questions involve application of the understanding of the theory of Technical Communication Skills. The course has been evolved over a period of two years, first by offering it as a two-week certificate programme and then as two-semester course of 3 credits each.

Starting in Semester I with Strategies in Communication in listening, speaking, reading and writing, the course concentrates on Technical Communication Skills in Semester II. This helps the students to make effective presentation and writing reports and projects. The overwhelming response from the learners to the shift in learning from memory to problem solving methods persuades the authors of this paper in suggesting this programme as a viable model for other Engineering colleges in the country.

4.1. Course Objectives

- To provide the learners with the basic strategies for day-to-day communication which is general in nature
- To make the learners, who are students of Engineering and Technology, understand the basics and the importance of Technical Communication
- To enhance their ability in listening comprehension by making them understand the listening process, the barriers and so on and by giving a training in listening.
- To train them in Professional speaking by imparting the knowledge of the various speech/presentation situations they have to face as technical students and as professionals later.
- To equip them with the professional writing skills by giving training in writing various writing tasks like reports, proposals, projects, business memos/e-mails, user manuals and product descriptions etc. and the technicalities of writing like editing and proof reading, referencing and so on.

4.2. The Course Structure

Semester I – STRATEGIES IN COMMUNICATION

- In the two text books prescribed five prose selections meant for detailed study, Short Stories and One-act Plays three each for extensive study have been prescribed. In these text books language practice activities and other exercises are provided to meet the objectives of the course. Questions on these texts are oriented towards understanding contemporary issues and branching out from the text as text.
- Special Applications of Grammatical Elements in Science and Technology (like impersonal passive, disambiguating sentences and tightening of the rambling sentences to gain clarity etc.)
- Speech Practice (Formal & Informal Interactions) – Meant for Classroom Practice and Internal Assessment.
- Writing – Official and Business Letters, Discourse based writing such as definition, description, comparison and contrast, narration, argument etc.
- Seminar Presentation – Meant for Classroom Practice and Internal Assessment.

Semester II – TECHNICAL COMMUNICATION SKILLS

Units:

1. Nature of Technical Communication
2. Listening Comprehension (For Internal Assessment only)
3. Professional Speaking (For Internal Assessment only)
4. Professional Writing
5. Extensive Reading (Short Stories and One-act Plays 2 each) to be done by self-study and making presentations on them by students. Plays in particular are used for doing assigned roles to improve speaking skills.

4.3. Teaching Methodology

The teaching methodology being adopted includes: peer/pair discussions, small/large group discussions and seminar presentations. An interactive method of teaching is being followed. Sentence level teaching and explanation is being avoided and a paragraph is considered a unit of discourse for teaching and discussion. The question pattern reflects the teaching methodology indicated and tests the students' English language skills learnt and practiced in the classes and not mere knowledge of the text. In fact there are no questions that test the memory of the students. All questions are oriented to test the problem solving skills.

4.4. Assessment and Evaluation

1. Given five short passages each of the following and the examinees are asked to *identify* and *explain*:
 - Flow of Communication – Downward/Upward/Lateral and Horizontal
 - Levels of Communication – Interpersonal/Organizational/Mass
 - Nature of Communication – General and Technical
2. Given five items of reference, examinees are asked to present them in the appropriate pattern/format, arranged in alphabetical order.
3. Given a passage with a few errors, the examinees are asked to edit and proof read using appropriate symbols and also asked to rewrite the correct version of the passage.
4. Given a passage of verbal description examinees are asked to transcode the same into a visual representation using appropriate graphics or given a chart/figure/diagram they are asked to transcode the same into verbal description.
5. Given some specifications examinees are asked to write a User Manual/Product Description for a particular product.
6. Given certain details, the examinees are asked to write a memo/e-mail message.
7. Given certain details, the examinees are asked to write a report/proposal

The learners' mastery is being assessed objectively and the scores of the formative tests and end examination are taken into account for the award of final grades in the ratio of 50:50.

5. Feedback from Students

In order to collect the views of the students who are the ultimate stakeholders of the courses, the first author of the paper conducted a survey on 60 students of II Semester B. Tech classes of SASTRA University. A questionnaire with six close-ended questions with a three point scale was used for the survey. The questions were intended to elicit their responses on the usefulness of the course. The responses were collated, tabulated and percentage analysis was carried out. The analysis of each item is shown under:

1. 95% of the respondents averred that the course is either VERY RELEVANT or RELEVANT.
2. 95% of the respondents stated that the content of the course is either HIGHLY ADEQUATE or FAIRLY ADEQUATE.
3. 51.66% responded that the distribution of Theory/Practical is EVEN.
4. 83.33% opined that the syllabus distribution and coverage is SATISFACTORY.
5. 96.66% stated that they like the course
6. 90% of the respondents are of the view that the course helps them to develop problem-solving skills (15% - Very Much; 75% - Reasonably)

5.1. Inference

From the statistical analysis made of student's feedback it is clear that over 90% of the students are for the course. Thus it is established that the course very well serves the intended objectives of promoting the critical thinking and problem solving skills of the students of engineering courses.

6. The Learning Outcome

Thus the English Department of SASTRA University, Thanjavur has been trying to address the national problem of the lack of communicative, analytical and problem-solving skills by introducing certain new elements in the curriculum, necessary modifications in the teaching methodology and testing and evaluation system. The learning outcome of the two courses in English which are taught during I & II Semester of the B.Tech programmes offered at the university is very encouraging. Not only has the performance in the classroom and examination of English, but their participation in the learning of other subjects touched pleasing notes. The feedback of the students also confirms the same.

7. Concluding Remarks

The course, by being different from usual, hones not only the communicative skills of the learners but also the creativity, analytical as well as problem-solving skills. The learners find the course interesting as well as useful. The teachers, while teaching and evaluating are able to identify the keen interest shown by the students on the course and the desirable outcome. Thus the SASTRA University's experiment in redesigning the English courses as communication skills courses with definite emphasis on learning rather than teaching has brought about changes in the syllabus, methodology and evaluation. This in turn has contributed to the development of problem solving skills among students.

8. References

1. "Problem Solving in Exams." Exam. Wing, University of Melbourne:
<http://www.services.unimelb.edu.au/llsu/exams/exam003.html>
2. Purandareswari, Duggubati. 2008. "Aim to Provide Employable Education."
Hyderabad: The Hindu, Education Plus. Jan. 21, 2008
3. Ramani, P. 2006. Technical Communication Skills. Thanjavur: SASTRA University
Publication.
4. Seshadri, KG. 2005. English Communication. Thanjavur: SASTRA University
Publication.
5. "Taking stress out of schools." 2008. Editorial, The Hindu, March 21, 2008.
6. Wilson, Graham. 2001. Problem-Solving and Decision-Making. New Delhi: Crest
Publishing House.

G. VENKATRAMAN

Working as a Senior Lecturer in English in the School of Humanities and Sciences, SASTRA University, Thanjavur, Tamil Nadu, Mr. G. Venkatraman has got two decades of teaching experience. He has taught English programmes to Degree and Diploma students of Engineering and also Business Communication and HR Skills to MCA and MBA programmes. He has also taught specialized courses like "Technical Writing" and "Technical Communication."

Mr. Venkatraman has worked on "*Developing a Set of Competencies for Teachers of English for Engineering Colleges*" for his Ph.D., programme. He has 3 Journal Articles and 20 Conference Presentations to his credit, one of which was at an international conference in Malaysia in November 2005. He has acted as resource person for many teacher training programmes. He is a member of the editorial board of *ITIHAS* – the quarterly Newsletter of SASTRA University.

Dr. B. KRISHNAMURTHY

Dr. B. Krishnamurthy is currently working as a Professor of English, in the School of Humanities and Sciences, SASTRA University, Thanjavur, India. He has got 44 years of experience in teaching English language and literature at college and university level. He has also worked as Professor of English at College of Arts, Hodeidah University, Hodeidah, Republic of Yemen for six years.

Dr. Krishnamurthy's areas of research interest includes: English Literature, American Literature, Indian Writing in English, Critical Theories and Teaching of English Language and Literature. He has got experiences in editing newsletters and journals and materials production.