English Language Skills for Engineering Students:

A Needs Survey

G.Venkatraman*, Senior Lecturer in English, SASTRA University, Thanjavur, India

P. Prema, Professor of Education, Alagappa University, Karaikudi, India

*Corresponding author

Editor's Commentary

Abstract

It is often said that students are the best judges of the curriculum, course structure and teacher performance. A needs survey conducted by G. Venkatraman among the students of B.Tech courses at SASTRA University, India, on the language skills they need reveals that communication skills are among their top priorities. In the globalized context, students of Engineering and Technology need a specific set of language skills for their success in education and career. English for Science and Technology (EST) poses a challenge to them. Industries are also voicing their concerns about the need for better communication skills among students of Engineering. Therefore, English for Science and Technology programmes in Engineering colleges should be revamped to suit the requirements of the evolving curriculum and the world of work outside college.

Key words: Engineering students; English language needs, communication skills

Rationale

The current system of school education in India, especially in the Tamil Nadu State, does not prepare school-leavers for direct entry into the first year of an undergraduate programme in Engineering and Technology. The recent processes in the world, such as globalization, have underscored the need to increase understanding and to improve communication among peoples, as well as individuals.

The professional profile of a modern qualified engineer should include well-developed communication skills and high English language proficiency to help him achieve success in the modern highly competitive global work arena. In the process of educating future engineers special emphasis on English for Science and Technology (EST) becomes necessary. Students of Engineering and Technology are the main stakeholders of EST. In order to identify their English language needs, the researcher designed and administered a questionnaire.

Objectives of the Study

The survey was conducted with the following objectives in view:

1. to find out the language needs of the Engineering students the authors teach,

2. to test their basic understanding of the nature of EST,

3. to discover their expectations regarding their teachers of English and

4. to identify a specific set of competencies for teachers of English at Engineering colleges in the state, based on the needs survey.

Theoretical Background

EAP (English for Academic Purposes) researchers, such as Christison and Krahnke, 1986; Ferris, 1998; Ostler, 1980, have surveyed L2 students enrolled in subject-matter courses to ascertain their perceptions about the relative importance of language skills and classroom tasks for academic success (Stoller, 2001). Ostlers early study showed that students felt the greatest need to develop the ability to read textbooks (indicated by 90% of respondents), followed by the need to listen and take notes (84%), ask questions in class (68%), write research papers (58%). According to Stoller, faculty and

student input have provided the impetus for many of the changes and innovations in curricular modifications.

Huckin and Olson (1983), while talking about the importance of communication skills, refer to the survey conducted by the American Society for Engineering Education to determine which academic subjects are most needed for engineering careers in industry. Responses were received from 4057 experienced engineers. The results show that communication skills rank above any other type of skill, capturing five of the nine most needed categories. Other items in the list (the rank secured by each item is given in brackets): technical writing (2), public speaking (4), working with individuals (6), working with groups (7), and talking with people (9). In contrast, technical skills rank toward the bottom of the list.

The Language Studies Unit of the Curriculum Development Cell, IIT, Kanpur conducted a national survey in 1990 for the purpose of identifying English Language Needs for Technical Education. This survey was funded by the Department of Education, Ministry of Human Resource Development, New Delhi. Data was collected on the nature of language- related needs of technical students across the country to provide an objective database for developing a more learnercentred curriculum. Basing on the findings, the following courses were developed: 1.Introduction to Technical Communication 2. Advanced Technical Writing.

Research Tool and Methodology

Our needs survey was conducted on 254 B.Tech Degree students at SASTRA University with the aim to identify the students language needs. A close-ended questionnaire with ten categories, supplied with specifications for each category, was administered. The respondents were students from the first to the final years of study at the following departments: Mechanical Engineering, Computer Science and Engineering, Chemical Engineering and Bio-technology.

The students were asked to rank the ten skills listed in the questionnaire in the order of priority. Their responses were pooled, tabulated, and final rank for each category was computed.

There were five other close-ended questions related to the other objectives of the survey.

Findings

The main objective of the survey was to find out the perception of the students of Engineering and Technology of the kind of language skills required.

1. Out of the language skills and sub-skills, Categories 1 and 5 were ranked the highest They are:

Category 1. Listening Skills

(Comprehension of scientific texts)

Category 5. Professional Speaking Skills

(Job interviews, Group Discussion, Debates etc.)

Categories 2,3 and 6 got ranked second. They are:

Category 2. Speaking Skills

(Defining and describing objects, dialogues,

oral presentations etc.)

Category 3. Reading Skills

(reading and understanding scientific texts, note-making, predicting the content, skimming, scanning etc.)

Category 6. Professional Writing Skills

(writing Business letters, reports, proposals, projects, technical articles etc.)

The remaining five skills and sub-skills, which are: *writing skills, study skills, referencing skills, grammar skills and interpretative, and appreciation skills,* received lower ranks.

The responses to the other research questions of the survey were:

Question No. 1 : *Are you aware of the special features of EST, like its objectivity, use of impersonal language etc?*

61.7% answered in the affirmative.

Question No 2: *Do you agree that teachers of English in Engineering colleges need a special set of competencies, other than those of General English teachers?*

98.9% of the students said YES

Question No 3: *Whose job is it to teach you the language of science and Technology? English teachers / Subject teachers (Teachers of Civil, Mechanical, Electrical Engineering etc)/ Both English teachers and subject teachers.*

15.6% of the students said that it is the duty of their English teachers, 10.2% are of the view that it is the duty of Subject teachers and 74.2% of the respondents said that it is the duty of Both English teachers and Subject teachers.

5. Question No 4: *Do you want the teachers of EST to explain to you theories of language learning?*

56.3% of the students said YES.

6. Question No 5: *Do you want the teachers of EST to be facilitators, who know the strategies of modern classroom teaching, who give you lot of activities in the classroom and make you an active participant?*

91.7% of students stated YES

Recommendations

1. The Engineering students surveyed have very clearly indicated which English language skills they needed for their education and future career. Basing on the findings, we can design and develop a modern curriculum in English and Communication studies for Engineering and Technology education of Tamil Nadu.

2. 98.9% of the students agree that teachers of English in Engineering colleges need a specific set of competencies because of the skills they are expected to develop in their students. Hence, the teachers can be given competency-based training in order to provide more audience-targeted instruction in EST.

3. Whose job is it to teach the language of Science and Technology? is an on-going academic debate. To this question 74.2% of the students responded that it is the duty of both English teachers and Engineering teachers. Their subject teachers will provide the content which is to be studied and introduce them to the discourse of their specific area of studies, while the English language teachers, with competencies in teaching methodology, rhetoric, EL vocabulary/terminology and grammar and some knowledge of the subject, can train the students in professional communication skills.

4. The fact that the students want their English teachers to be facilitators and trainers in the classroom is a clear indication of the existing need to rethink the roles of English teachers at Engineering colleges and a sign that teachers have to change in tune with the demands of the modern rapidly transforming world.

Concluding Remarks

The participants of the survey, who are students of Engineering and Technology, have supplied us with telling data that require action. As already stated, students are the best judges of their own needs apart from being the main stakeholders of Engineering education. Thus, we recommend that their views be taken into consideration when formulating the English curriculum and developing courses in engineering colleges and universities in the future. The English language programme for students of Engineering will motivate them only when they see the direct benefits it brings to them. This survey is a part of the on-going Ph. D. research project on developing a set of competencies for the teachers of English in Engineering colleges in Tamil Nadu conducted by the first author of the paper. The findings of the survey will be incorporated in the thesis.

Acknowledgements