



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

2395-2636 (Print);2321-3108 (online)

ENGLISH LANGUAGE IN TECHNICAL EDUCATION

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ABSTRACT

This paper highlights the importance of English language and communication skills in technical education in the context of globalization, and discusses the history and status of ELT in India, the ELT situation in A.P., history of technical education, the philosophy of engineering education, and the language requirements in engineering for academic and occupational purposes. It discusses the role of English language teaching in engineering studies and the need for ESP. It also states the research problem, the need for a redefinition of the issues related to ESP course design. It gives a profile of the learners, and defines their needs. This paper also states the aim of the study, significance of the present research, and presents the tools and procedure adopted for the study.

Key Words: ELT, Higher education, engineering philosophy, learner needs, research, goals

1.0 Introduction

Globalization has been marked by technological developments and increasing interconnectedness that makes communication across the world instantaneous. This has resulted in a sharp increase in the number of world organizations and transnational corporations entering into business in the local markets. In the face of such rapid developments the world over, a developing country like India is competing in the global market to develop indigenous technology on par with the developed countries and promote the economic interests of the nation. To promote research and develop indigenous technology, the Government of India has made rigorous attempts to expand technical education since independence. In recent years, Andhra Pradesh has progressively expanded technical education in keeping with the many changes brought about by the Information and Communication Technologies. This has resulted

in a large number of graduates passing out of engineering colleges every year.

Along with the measures taken to expand technical education and produce large numbers of engineers, steps need to be taken for the proper utilization of the services of these engineers to achieve the goals of the economy.

Although fresh engineers find employment in the production / manufacturing, communication and service sectors, today they face a deregulated, hyper-competitive and globalized economy where the potential employers seek a combination of skills in the new recruits. The employers look for managerial skills, which include technical, conceptual and human relation skills. Although they are adequately trained in technical and conceptual skills, they lag behind in human relation skills.

Human relation skills comprise communication skills, motivation skills, and leadership skills. Of these, communication skills are

rated as the most important, since negotiation is an important aspect of any job. Often, young engineers, despite their expertise and competence in the subject areas, fail to be effective communicators. Technical education can be effective only in the presence of a combination of skills, and communication skills are an important component.

1.1 The Status of ELT in India

India has a history of two hundred years of English teaching, beginning as early as 1759 by the East India Company. Though it gained momentum after Macaulay's Minute of 1835, it was motivated more by a political administrative necessity than by an urge to bring about social transformation. The sole purpose was to create a body of clerks to assist in the administration of the country. In spite of this, English played a vital role in uniting the Indians for the freedom struggle.

A section of the India political class, however, resisted the introduction of English education, and the existing facilities for oriental and vernacular instruction were retained. It was a kind of three-language formula in colonial India. While English was taught as a subject in most schools and was the medium of instruction in a few, oriental and vernacular education continued to be encouraged.

During this time the study of English in India, unlike in England, was devoted to the study of classical literature when the learning of English should have been used for the transfer of 'useful knowledge'. (Krishnaswamy and Sriraman, T. 1995)

While the Grammar Translation method continued to be adopted for teaching English in India, English language teaching underwent a drastic change in Europe. The study of teaching methods and procedures in language teaching assumed a central role in applied linguistics.

In the 1920s, Michael West who was working in the Indian Education Service in Bengal made an extensive study of the English Language Needs in India. He published a lengthy report, 'Bilingualism, with special reference to Bengal' in 1926. West recognized that vocabulary was one of the most important aspects of foreign language learning because of the emphasis on reading skills which was the goal of foreign language study.

West carried out a needs analysis in which he advocated developing practical information reading, which would enable Bengalis to have access to the technological knowledge needed for economic development. He proposed different ways of improving reading texts for children.

After independence, the attitude of the Indian society towards English remained ambivalent. But English, a neutral language with no regional or ethnic base seemed to be preferred as the official language. The Kothari Commission reemphasized the need for the three language formula in 1966. The Commission observed that though English could not serve as a link language for a majority of Indians, it should continue as a library language and as a medium of instruction in all major Universities. The Commission also recommended that special units be set up for teaching English as a language skill, distinct from teaching its literature.

The restoration of English to its old status is reflected in the three language formula as modified by the Education Commission (1964-66). In the Lower Primary stage from Class I – IV the mother tongue or regional language would be the medium of instruction. At the Higher Primary stage from Class V to VIII though the mother tongue or regional language would be the medium of instruction, Hindi or English would be an additional subject. For classes VIII to IX, in addition to the instruction of subjects given in the mother tongue or regional language, Hindi and English were also introduced in non-Hindi speaking areas.

In Hindi speaking areas, in addition to the subjects instructed in the mother tongue or regional language, English and a Modern Indian language other than Hindi would be taught.

Though both Indian languages and English are the of instruction at school and university levels, English is the exclusive medium of instruction in higher technical education imparted by national institutions. English continues to be a passport to higher technical and professional education and high-level appointments in public and private sectors. English also serves as a link language for the people of different states within the nation. Therefore the demand for English education has of

late led to a phenomenal growth of English medium schools in the urban areas.

1.2 ELT Situation in Andhra Pradesh

In Andhra Pradesh there are regional medium schools as well as English medium schools. The state follows a three-language formula. While Telugu is the medium of instruction and is a first language, Hindi is the second language and English is a compulsory subject since it is the associate language.

In the regional medium schools, all instruction is in the mother tongue in primary classes, i.e., from class I to class V. Hindi and English are introduced as separate subjects in class VI. In the English medium schools the first language, that is, the mother tongue is taught right from class 1. Hindi, which is considered to be the second language, is taught from class III.

At the intermediate level both groups of students follow the same course book for English in addition to studying a language, which can be the mother tongue, or any other language of the student's choice.

At the undergraduate level, students have English as a compulsory subject in the first two years of their study in addition to one optional language. This is called General English.

In an undergraduate course of Engineering, English is a compulsory subject in the first year. An attempt is made to improve the communication skills of the students in this course.

Having looked at the place of English in the educational system, we will now turn to the need for English in technical education. For this, we need to examine the goals of higher education, the history, relevance and rationale for the expansion of technical education and the philosophical/educational orientation of technical education.

1.3 Goals of Higher Education

Higher education must be geared to accomplish the requirements of social transformation, economic growth and national integration. The goals and objectives of higher education as stated in Challenges to Education (1972) are:

- i) a radical transformation of the education system so as to achieve its fundamental objectives of cultivating new knowledge and promoting a scientific and rational outlook and temper.
- ii) to train competent men and women with a commitment to basic human values, social purposes and national development.
- iii) to strive to enrich the life of the community around through the diffusion of culture and through the solution of problem by the application of science, technology and learning (Challenges to education 1972).

For this we need to plan for a system of technical education that is capable of meeting the challenges of new human, social and technological situation.

1.4 History of Technical Education

Technical education began in India in 1794 in the form of survey schools. It started with certificate programmes and progressed to diplomas, and then to Bachelor's degree in the second half of the 19th century. The fifties of the 20th century saw the emergence of the post-graduate courses. Though engineering education started off with four engineering colleges, one each at Madras, Roorkee, Howrah and Pune, independent India had 100 industrial training institutes, 53 polytechnics, and 38 engineering, Post-graduate education in engineering began after independence, during the early fifties, followed by doctoral programmes. The fifties, sixties and eighties saw the expansion of technical education.

Towards the end of the sixties, there was recession in employment opportunities. Consequently expansion was slowed down, but the demand by private entrepreneurs proved that human resources were insufficient and this motivated the entrepreneurs to start polytechnics and colleges that were self-financing institutions.

Beginning with Karnataka in the seventies, this trend spread to Andhra Pradesh and Maharashtra and later to Tamilnadu. The eighties and early nineties witnessed the establishment of a phenomenally large number of polytechnics, engineering colleges, and pharmacy and management institutions run on a self-financing basis in all these four states.

The advent of Information and Software technologies increased the demand for engineering studies and spurred the excessive expansion of engineering colleges in Andhra Pradesh during the nineties. The sudden boom in the field justified this expansion. Though the late nineties had seen rough times and the uncertainties of the job market left many undergraduates high and dry, opportunities began showing up in the year 2003.

The emergence of the new work order has been making new demands on the employees seeking a combination of skills in which language use becomes an integral part of the workers function. Therefore equipping undergraduates with the skills required to face the stiff competition of the job-market has become challenging.

1.4.1 Engineering Philosophy

Engineering enables human beings to attain the synergic power to obtain things in greater abundance than was otherwise possible with his physical strength and skill alone. Therefore the profession should deliver the goods appropriate to the society. It calls for a realistic approach, professional responsibility and purposefulness of the task in hand.

Hence, the function of an engineer is to seek co-ordination in the use of resources, tools, energy and labour and combine them in a productive entity to achieve the said mission in a given time. Technical education needs to inculcate in engineering students a scientific and rational outlook and temper.

To achieve all these goals, engineering education needs to be given a new orientation. It should equip the young graduates with the skills, incentives and facilities to participate effectively in the whole process of industrial development and technological advancement. Therefore engineering institutions must endeavor to:

- i) encourage entrepreneurial skills in engineers
- ii) promote consultancy work and research sponsored by industry.

Emphasis must be laid on self-reliance and the development of indigenous technology because foreign technology has several inherent drawbacks such as

- i) high price of imported technology
- ii) unsuitability to local conditions
- iii) hindrance to the development of indigenous technology
- iv) perpetuation of dependence on foreign technology and expertise (Challenges to Education: 1972)

1.5. Language Requirements for Employment and Further Education

The emergence of a new work order brought about by globalization and industrialization demands not only specialization in the particular field but a combination of skills among the employees. In addition to the higher order academic skills such as i) extracting information, ii) interpreting data and theories, iii) reporting on latest advances, etc., in particular areas of specialist knowledge and iv) documenting projects undertaken and so on, linguistic skills involving negotiation, product presentation, sales talk, procedure elaboration, trouble shooting, and decision making are also important.

Since any communication is goal directed, context-dependent and embedded in a particular discourse community (Mellinger, 1992), it is important to move beyond the sentence level grammar and understand the relationship between the morphological and syntactic aspects of language and the various socio-linguistic and pragmatic aspects of discourse. For this it is necessary to raise the students' awareness of

- i) English language conventions and the lexico-grammatical features and text patterning and
- ii) The rhetorical structure of English academic texts (i.e., structural interpretation of text genre)

The combined tasks using awareness of the rhetorical structure of articles and linguistic cues helps raise awareness of the relationship between the text form, writer's purposes, audience and the social context. (Maria Isabel de Silva, 2001).

English teaching involves equipping the students with the "basic ability to use the language to receive and convey information associated with specialist studies." (Allen and Widdowson, 1974)

English teaching, therefore, currently needs to provide students with the knowledge of how to achieve communicative purpose through various rhetorical devices and text genres. For this they need to understand the rhetorical functioning of language in use. This cannot be achieved by teaching sentence level grammar because sentence-based view of grammar is inconsistent with the notion of communicative competence which includes four interacting competencies namely, linguistic/grammatical competence, socio-linguistic competence, discourse competence and strategic competence (Canale, 1983). Therefore, it is important to move beyond the sentence level in our conceptions of grammar and focus on discourse. This can be done only through a special curriculum designed specially for the purpose. Hence the need for English for Specific Purposes (ESP).

1.6 Statement of the Research Problem

Linguistic competence is definitely a decisive factor both for academic as well as for professional success in the field of engineering. It is very important to ensure that the goals of education are fulfilled through the curriculum.

A well-designed curriculum should equip the learner with the kind of linguistic competence required for pursuing the goals of higher education and career. Therefore the design of the syllabus should take into account the target situation, the functions to be performed, and the skills to be practised, based on which the objectives, methodology, materials and evaluation pattern need to be specified.

For this study, two universities in Andhra Pradesh, which are offering undergraduate programs in Engineering have been chosen. They are the Acharya Nagarjuna University and the Jawaharlal Nehru Technological University, Kakinada. (*JNTUK R10 syllabus has been changed every year, so for this study R07 syllabus has been chosen.*) Many private colleges are affiliated to these universities.

First year students belonging to different disciplines in engineering courses have English as a common subject. Most students expect their English syllabus to improve their communicative skills (this was evident in the survey conducted) but the course seems to do little, either directly or indirectly, with

realizing this particular objective of the students. This shows that the syllabus as well as the testing patterns in English, as offered by different universities, does not take into account even the primary objective of the professional students studying English in their engineering course. The syllabus documents state the objectives of the course and the content. The documents however, do not include methodology and the evaluation pattern to be adopted. Teacher's resource books were also prepared. Formative evaluations are mentioned but most of the teachers do not have access to the resource books and follow their own procedures. There is a perception that the course needs to be strengthened in order that the learners are able to do what they need to do in English both during the course of study and after finishing it.

Against this Backdrop this Study Aims to:

- i) Redefine the objectives of the English course in the light of the changed communicative needs of engineering students
- ii) Suggest materials approximate to learners' cognitive level and interest to help develop underlying competence
- iii) Establish a close correlation between specification of objectives and their realization through materials
- iv) Understand teachers' and students' expectations of the course, including evaluation.

1.7 Learner Profile and Needs

The group under study is heterogeneous with students coming from diverse socio-economic and cultural backgrounds. Most of them have opted for technical education basically to find jobs. There are students from regional medium schools whose language competence in English is inadequate. Even English medium students, in spite of twelve years of English as a school subject, cannot express themselves in English. They are inhibited, and lack self-confidence in communicating with their teachers. They also feel embarrassed about their inability to communicate with others in English. All these fears and inhibitions raise their affective filter and hinder their efforts at language acquisition. The present course does not seem to be challenging either cognitively or linguistically.

While these are the constraints and difficulties of the learners, the needs of engineering students are related to accessibility to knowledge contained in specialist subject textbooks, periodicals, journals, reports and abstracts, comprehension and negotiation of the difficult intellectual material of the specialist subjects involving interpretation of data and theories and reporting on the latest advances in specialist areas. To be able to comprehend the text material, they need to employ various reading strategies like prediction, skimming to understand the main ideas or gist, scanning for obtaining a specific piece of information, deducing unknown words, distinguishing between important / less important information, relevant / irrelevant, explicit / implicit information etc. To be able to comprehend lectures, and remember the gist of the lectures, they need to employ study skills such as note taking. To be able to interpret data and report on the latest advances, the learners need to acquire a high level of strategic competence in the technical field, which has to be based on linguistic and communicative competence.

The present study is a focus as the English course offered by afore mentioned two universities in the state of Andhra Pradesh. These are Acharya Nagarjuna University, Nagarjuna Nagar and Jawaharlal Nehru Technological University Kakinada. Both these are state universities. The syllabi of these universities have been analyzed thoroughly, with special focus on the objectives specified by the course structure and learner responses. The study does not make any claim to have studied the English courses of the other universities which may offer different syllabi and follow different methodologies of teaching and testing.

The context of teaching language to students of technology demands a necessity for procedural orientation in order to activate language use that may approximate to the kind of activities in which the students will have to engage in their subject areas. This will introduce a high level of cognitive challenge making the tasks worthwhile both from the linguistic and cognitive perspectives. Such tasks could be information transfer or information gap activities. This will also be a

rehearsal of the actual language use later in professional situations.

Regarding the activities based on the texts there is a need for more rigorous attention to correlate linguistic progression with cognitive involvement. A detailed note on the principles on which the materials are based and the ways in which the activities should be worked out should guide teachers and learners. This should lead to an inventory of tasks, successful performance of which would indicate levels of linguistic development.

The Present Study is based on the following Observations:

- i) The learners in engineering colleges are highly motivated students who have undergone a screening test, passed EAMCET and hence possess high cognitive and problem-solving capacities.
- ii) Many of the learners do not have adequate proficiency in English.

It is felt that a reorientation of the materials from a product-orientated, content-based approach towards a more process-oriented, task-based approach is required. Therefore the textbook materials should provide linguistic and cognitive levels of challenge the content should be valid for a period of time to provide interest and motivation the activities and tasks should engage students in workplace oral communication evaluative tasks should correlate to the goals of the course.

In view of this, the following steps have been taken up for the present study:

- i) review of the present curriculum
- ii) examination of the texts and tasks
- iii) correlating materials to curriculum goals
- iv) suggestions for reorientation

1.8 The Tools Adopted for the Study

The tools adopted for the study are:

- i) Questionnaires to the students
- ii) Questionnaires to the teachers
- iii) Informal interviews with freshly recruited employees of various organizations at home and abroad
- iv) A framework of principles of syllabus design to examine the present syllabus
- v) A frame work for examining the course materials.

1.9 Aim of the Study

The study aims at redefining issues involved in syllabus design and materials development on the basis of a review of the existing syllabuses and an examination of the materials in use so that these principles are considered when designing course geared to the communicative competence required for academic and workplace functioning.

1.10.1 Scope and Limitations of the Study

The present study is confined to a selected group of students of the five Engineering disciplines Electronics and Communication Engineering (ECE), Electrical and Electronics Engineering (EEE), Computer Science and Engineering (CSE), Information Technology (IT), Civil Engineering (CE) from the two universities mentioned above. The conclusions may or may not be applied to the English courses of Engineering and Technology streams of other universities which may follow different course materials and teaching and testing methodologies.

The study aims at improving the content and the thrust of the English course for first year Engineering students. It examines the loopholes in the existing materials and tries to remedy these on the basis of advanced research done in the area of ESP.

It attempts to shift the focus away from text-based, register-oriented ESP to ESP that takes into account the communicative demands of the workplace in which the learner group will eventually find itself. It seeks to redefine the issues in syllabus design and materials development in the light of research done in Genre Analysis, Discourse Analysis and Target Situation Analysis keeping in mind the cognitive and linguistic levels of the learner group.

The issues dealt with in the study can be extended to other engineering colleges and colleges in technical education such as Polytechnics and Colleges offering Vocational education for curriculum design.

The study is limited to the syllabus and materials of Acharya Nagarjuna University and Jawaharlal Nehru Technological University, Kakinada in A.P. and does not extend to other Technological Universities.

Informed opinion from teachers was not obtainable because many of them are not acquainted with ESP. The simple tasks and materials worked out with a new perspective could not be tried out in the classroom.

1.10.2 Significance of the Present Research

The present research through its findings will help to shed light on how materials can move from ESP with a narrow focus to ESP with a broad focus.

1.2 Conclusion

This paper makes an attempt to present the importance of communication skills in technical education and shows how the new work order created by a liberal market economy demands a combination of skills in the fresh recruits. It then presents the prevailing ELT situation in the country and in the state. It discusses the goals of higher education, and gives a history of technical education to provide a proper perspective of how technical education can fulfill the goals of higher education. It also specified the language requirements of employment and further education. It then seeks to project the problem of the first year B.Tech. course in English. The objectives of the research are formulated, the scope and limitations of the research are discussed, and the significance of the present research is stated.

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