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TEACHING TECHNICAL ENGLISH FOR ENGINEERING STUDENTS WITH PHYSICS TEXT BOOK - A STUDY

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Language teaching at the tertiary level is a challenging task for the teachers of English. Especially, language teachers at the engineering colleges need to be more dynamic and ever learning. Otherwise catering to the language needs of the heterogeneous engineering students will be difficult task. This paper deals with an experimental study on exploring the possibilities of teaching Technical English through Engineering Physics Textbook to the first year engineering students. It is an attempt to design activities to teach language skills in the first semester syllabus. The main focus is at teaching all the language skills like listening, speaking, reading, writing, vocabulary and grammar. This paper also looks into the practicalities, suggestions, findings and limitations of the study.

Keywords: ESP, Physics, Student centered approach.

Introduction

Teaching technical English at the engineering college is really a challenging task. It is challenging because the students at the engineering colleges are from various background. Most of the students are from the family of first generation graduates. Technical English I & II at the engineering college are not very much demanding for the engineering students. Hence, students are literally not showing any interest in Technical English I & II. The testing part, especially, is very light in nature. They deal with basic language skills and basic grammar, and vocabulary. It does not throw any challenge to the urban students and semi urban students. But it is found very difficult by the disadvantaged vernacular medium students of rural students and even to the students from English medium school students with limited language proficiency. Their language learning styles are different. They are from diverse academic backgrounds. Students are from various economic strata of society. An engineering class room consists of proficient urban students, urban students with limited language proficiency, urban students with average proficiency and urban students with low proficiency. Students from semi urban with various types of socio, economic and educational backgrounds are there. Students from rural English medium schools with diverse socio, economic and educational background and most importantly rural students from socially, economically, educationally disadvantaged first time graduates from vernacular medium schools. This kind of heterogeneity in the language classroom is a real challenge for the language teachers in the engineering colleges in India.

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Review of Literature

Burio, Soomro (2013) has done a study on assessing the academic literacy and learning needs of the undergraduate engineering students of Pakistan. His study has looked at the needs of undergraduate students of QUEST from the perspective of a target needs model prescribed by Hutchinson and Waters (1980) vis-à-vis the importance of language skills and the purpose for learning English. He has used questionnaires to seek the perspectives of the final year students and English teachers. He has reported that the students' specifics needs are not being met. The students feel that productive language skills are more important than receptive skills for their academic and professional success. In addition, students are keen to learn technical vocabulary than general vocabulary. Students are relatively not interested in learning grammar through traditional methods. However, the teachers believe both receptive and productive skills are important for the engineering students to excel in academics and career.

According to psycholinguistic perspectives (Lantolf,1996) tasks are devices that provide learners with data they need for learning. Ellis (2003) says that a task is a workplan that requires learners to process language pragmatically in order to achieve outcome. According to Breen (1987), task refers to a range of workplans facilitating language learning. Long (1985) says that a task is a piece of work undertaken for oneself or for others, freely or for others. For Richards, et al. (1986) a task is an activity or action which is carried out as the result of processing or understanding language as a response.

Student Centered Approach

Engineering students are more interested in their subjects and less interested in learning English. Teaching English language skills through physics text book will be a change in the language classroom. Activities based on physics textbook will be liked by students. Physics Text book a potential resource for learning and teaching English. Physics text book is a viable teaching resource material for teaching listening, speaking, reading, writing, vocabulary and grammar at the tertiary level.

Designing tasks for language teaching and learning to the engineering students is a demanding job. The language teachers at the tertiary level need to be essentially creative while designing the tasks and activities. The aim of the paper is to describe the experimental study on the use of Physics Textbook for developing language skills.

Design of the Study

First pre- test is conducted to know the engineering graduates interest in the English textbook. Tools used for conducting the pre tests are informal interview and discussions among the students. Whether they bring physics book everyday is also checked. Based on n the informal interview and friendly discussions it is found

that students are interested in learning the language with Physics textbook. Around five activities are designed and conducted for the engineering students in the class. Finally, a post-test is conducted to check whether there is any improvement in the language skill and the confidence level of the students.

Hypothesis

The hypothesis designed for the study is that using Physics textbook for designing language activities for engineering students may promote Technical English skills.

Participants

One class of 59 students of the first year B.E. Mechanical Engineering is selected for the study. They are from diverse background. Some students are very passive participants during the language class hour. They are also mute observers in the language classes. Through informal interviews and interactions with students during break hours and lunch timings, it is found that they are interested in learning English language through physics textbook.

Pre-test

A pre-test is conducted using Just a Minute Talk (JAM), and group discussion is also conducted in order to assess their speaking and listening skills. Free writing on a topic of their own choice is conducted in order to assess their writing, vocabulary and grammar skills. With few informal interactions, with the students it is found that they have poor reading skills and rarely, they read things in English.

Physics Text Book

First year engineering students study Engineering Physics I & II as a subject and also they have Physics Laboratory in their first and second semester. It has got a rich and vast resource for learning and teaching English language skills. The Physics text can be used in different ways to teach various components of the language skill. Physics text book is loaded with theories of science and technology. Hence, it is more appropriate to use it for teaching some of the topics in Technical English I & II very effectively and practically.

Discussion

Catering the language needs of the heterogeneous students is an opportunity for the language teachers. They have to explore the various possibilities to motivate the budding engineers to acquire language proficiency. There is a feedback from the recruiters of the multinational companies that most of the engineering students are not industry ready. Recruiters from the corporate expect engineers to be proficient in English. They also expect them to be fluent both in written and spoken communication.

The text book followed in the engineering colleges are not very interesting to the students because the testing part of the Technical English I & II is very light. Most of the students do not study anything for English examination. The technical English I and II do not test speaking skill. They test students' basic grammar, vocabulary, and reading skill. They are very much light and shallow in nature. This kind of less demanding testing has made the students to develop a kind of an attitude and sheer negligence towards English language. Students think that Technical English I & II as any other subjects and they don't think language as a skill for life.

Engineering students hardly spare time for improving their English. They are rather busy with other subjects. English Text book does not attract them anymore. They hardly spend time on reading English. They spend more time for other subjects like Physics, Chemistry, Mathematics, Fundamentals of Computer Programming and Engineering Graphics in the first semester. As the students are very busy with other content subjects they literally do not spare for learning English.

English language plays an important role in engineering graduates' life, because, the job opportunities available in the market demand English language skills. Job opportunities in the core engineering industries are very less whereas, job opportunities in the multinational companies are more in number. The multinational companies expect excellent communication skills in addition to the computational skills. During the campus placements engineering students with exceptional communication skills are getting selected by the multinational companies.

In order to improve the language proficiency of the engineering graduates the language teacher has to be more creative and innovative in their approach. Engineering students they do not much interest in bringing the English text book. Most of the teachers are not trained in English language teaching and are from literature background they do not know how to exploit the ELT text book which is recommended and prescribed. Majority of the engineering colleges mainly insist on result and not on improving the learners' proficiency in English. But, the recruiters from the corporate focus on communication skills and subject knowledge during recruitment.

It is the English language teachers' responsibility to motivate the engineering students and make them industry ready. The engineering students bring physics text book every day to the college. The language teachers can make use of the Physics book to make the learners to learn the language from a different source. This will bring a kind of change from the routine and language teachers can be innovative in imparting communication skills. They can design activities for improving language skills by using physics text book.

The following are some of the activities for language teaching for the first year students of the engineering colleges using Physics textbook as a material.

ACTIVITY 1: Teaching Nouns

Class is divided into groups based on the strength of the class.

Students are asked to make use of the physics text book.

Physics book has five units hence, each group can be asked to focus on one unit each.

Each group is asked to find out nouns from the respective units.

Every student has to contribute by identifying ten nouns from that particular unit of the physics textbook.

In each group there will be excellent students and mediocre students and average students and vernacular medium students.

Teacher has to instruct the class that each group should first brain storm about noun.

Questions like what is a noun?

Describe a noun?

Define a noun.

Types of nouns and examples are discussed among groups.

Ten minutes is allotted for the entire activity.

Once the students have identified the nouns each group is given a chance to present the words in front of the others students.

Each group is asked to write down the nouns in a chart paper so that the same is exchanged among other groups this reduces the noise level of the class.

Students are asked to come up with a poster presentation by using the nouns.

Students are encouraged by the teacher to do a presentation as a group and also represent the group as an individual.

This way the mother tongue medium students are motivated and encouraged to do a rehearsal and do a presentation among the group as well as in front of the whole class.

Students are asked to use the nouns in simple sentences.

Teacher asks the students to write sentences using nouns on their own.

Teacher goes around, checks, verifies, corrects, monitors and offers suggestions to the various groups.

Gifted learners are asked help the slow learners and mother tongue medium students.

Activity ends after the presentation of the students.

ACTIVITY 2: Teaching Adjectives and Comparative adjectives.

Teacher and students brain storm on adjectives – positive, comparatives and superlatives.

Each student is asked to come out with an adjective starting with the first letter of their names.

Students work in group and find out adjectives from their physics book.

Each group is assigned with one unit and asked to find out adjectives.

Students are asked to find out comparative adjectives for the adjectives they have collected from the respective unit.

Teacher asks the students to come up with a poster presentation

Capable students are asked to present the adjectives.

Students are instructed to form simple sentences using adjectives.

Activity gets closed soon after the discussion and the presentation.

ACTIVITY 3: Teaching Tenses-Present, Past and Future

Six students' groups are formed and named appropriately.

Brain storming is done on all the three Tenses.

Each group is assigned the task of discussing on two tense forms. That is group number one will have to discuss on Simple Present Tense, Present Continuous.

Group 2 can be assigned to discuss on Present Perfect, Present Perfect Continuous.

Group 3 will have to discuss on Simple Past and Past Continuous.

Group 4 will discuss on Past Perfect and Past perfect continuous.

Group 5 will discuss on Simple Future and Future Continuous.

Group 6 will discuss on Future Perfect and Future Perfect Continuous.

Teacher asks all the groups to make use of their physics text book to identify the respective tense forms.

Each group is asked to present their discussion before the whole class.

Teacher facilitates the entire presentation process by interacting with the class with necessary inputs.

ACTIVITY 4: Teaching word formation – Synonyms, Antonyms, different forms of the same word, different grammatical forms of the same word

Students and teacher will brain storm on word formation, other parts of speech, and different forms of the same word –Noun-Verb-Adjective, noun-verb- adverb, synonyms, antonyms, prefixes, suffixes, and affixes.

Group 1 is asked focus on synonyms and antonyms

Group 2 will focus their discussion on affixes- prefixes, and suffixes

Group 3 is asked to concentrate on word formation.

Group 4 will discuss on word formation.

Group 5 will have the discussion on noun- verb – adjective forms.

Group 6 is asked to work on noun-verb-adverb.

Students are allowed to use the physics text book for completing the task. Each group is asked to focus on different unit for completing task.

Teacher asks the students to come up with poster presentations.

Students are instructed to write their own sentences using the synonyms, antonyms, other forms of the same word, Noun-Verb-Adjective, noun-verb- adverb, synonyms, antonyms, prefixes, suffixes, affixes.

ACTIVITY 5: Teaching prepositions

Teacher and student will collectively brain storm on prepositions, Types of prepositions

Groups are formed to identify various prepositions using their physics text book

After the discussion each group is asked to make a presentation.

Students take turn to do the presentation rather than the same person doing the presentation.

Students are asked to write their own sentences using prepositions and use them in their speech as well.

The teacher wraps up the task by giving ideas and observations.

Post-test

Post-test is conducted involving extempore group discussion and free writing task on a topic of their choice after the activity sessions. The following are the criteria used to assess the language skills. (1) Students' fluency level, (2) range of vocabulary, (3) their ability to speak grammatically acceptable English, (4) their level of self confidence and grammar. Their presentation skills in terms of body language all have improved.

The students' performance is evaluated by one language teacher and a Physics teacher. The results' have shown that the students have secured in the range of 65 to 70 percent. Whereas, only five students have secured in the range of 45 to 50 percent marks. The score has increased with most of the students than the pre-test. The students performance in the post test reveals that the majority of the students (49 out of 59) have shown considerable improvement in their performance and their language skills.

It is explicit that language activities based on Physics Text book can help the engineering students in improving their language skills. The activities implicitly help them in numerous ways. They boost their confidence and improve their logical and critical thinking skills. Language activities done in group work and pair work inspire even the diffident and introvert students to take part actively in the activities.

Thus, the hypothesis framed for the study, "using Physics textbook for designing language activities for engineering students may promote Technical English skills" stands proved.

Using these activities will make the class more vibrant and interesting. Both the teacher and the students will enjoy the change of the text book and activities. Monotony is broken by giving chances to other students rather than the same student presenting all the time.

Mother tongue medium students also become conversant in the process of activity.There is more student talk time and less teacher talk time during tasks and activities.

Conclusion

Using physics textbook book gives the students a fresh lease of chance to learn English language. Teacher gets a chance to explore new ideas and expand the knowledge base. Class room appears to be a little noisy to begin with. Later on the students get tuned to the activities and become refined. Conventional classroom set up may not work for the activities. In the classes where there are fixed chairs, pair activity and activity among three can be encouraged. Initially mother tongue medium students may not come forward to take part in activities. Later on those mother tongue medium students will also take part in all activities. All the topics in the syllabus can be experimented in this activity based methods like pair work, activity in threes and group work.

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