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Significance of Conducting Need Analysis in ESP Curriculum: A Study with Reference to Engineering Colleges of Odisha, India

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Abstract:
This empirical study examines various aspects of a need analysis in the teaching and learning process of English for engineering purposes. The main purpose was to look at the current English syllabus of different engineering colleges and to study how effectively they have been implemented at the classroom level. It also attempted to find out how language skills along with life-skills can be learnt effectively by engineering students for proper utilization by them in real life situations. Research through focused interview on final year students of different engineering colleges of Odisha had been conducted. The discussion shows that a host of similar challenging problems exist in different engineering colleges in India. This study tries to seek alternative measures to overcome them. No research has been conducted till now in engineering colleges of Odisha on these aspects. Its results and implications will no doubt be of use to policy makers, teachers and also for students to assess the English language needs of learners of engineering colleges of Odisha.

Keywords: English for specific purposes, English for Science and Technology, Need Analysis

1. Introduction - ESP Curriculum: Definition and Focus

ESP functions as one main branch of ELT. It is not a particular methodology, but rather an approach to language learning whereby the content and method are based on the learner's particular needs to learn the language (Hutchinson and Waters, 1987). ESP can be divided into two main areas: English for academic purposes (EAP) and English for occupational purposes (EOP). English for Science and Technology (EST) is a division of ESP. In the initial years when communicative English is introduced to students in engineering colleges the   students come to the class with different mindsets. It is seen that students need not necessarily understand all that the teacher teaches in the classrooms. Mismatch at the learning process level is evident in such situations

Dudley Evans and St. John (1998) describe ELT as a continuum that ranges from General English courses to ESP courses. One of the first and most widely accepted definitions of ESP (Strevens, 1988), states that it refers to the teaching of English which meets the needs of learners, and is related to the content of particular disciplines, occupations and activities. According to Nunan the first step towards learner-centeredness is to make the learners aware of the goals, content, learning program and the pedagogical materials. He states that there is evidence, in fact, that interest and motivation are enhanced when the purpose and rationale of instruction is made explicit to learners (Nunan, 1995, p.136).

In the tree of ELT, Hutchinson & Waters (1987) position ESP as three branches: (a) English for Science and Technology(EST) (b) English for Business and Economics (EBE) and (c) English for Social Studies (ESS). But on closer analysis, much distinction cannot be drawn between these branches and it can be concluded broadly that ESP meets the specific needs of the learners with regard to their disciplines and later on their professions.

2. Needs Analysis in ESP

Needs analysis is defined as a process of determining the needs for which a learner or group of learners require a language and arranging the needs according to their priorities (Richards et al., 242-243). Needs analysis is basic to any program of ESP and hence the learners have to be taken into confidence to assess their learning needs. An appropriate methodology for needs analysis is to be devised to assess the goals of the learners, their preferred learning styles, previous level of English language competence and socio-cultural backgrounds. According to Nunan (1988) techniques and procedures for collecting information to be used in syllabus design are referred to as a needs analysis (Nunan, 1988, p.13).He states that for a needs analysis, information will need to be collected, not only on why learners want to learn the target language, but also about such things as societal expectations and constraints and resources available for implementing the syllabus. Therefore, while designing questionnaires and interviews for needs analysis surveys these factors are also to be taken into account.

Needs analysis is an integral part of ESP. Any ESP program is to be preceded by actual needs   analysis. According to Hutchinson & Waters (1987) learner need is the criterion to teaching/learning process. Needs analysis in ESP context refers to students' study or job requirements as well as to what they like to gain from the language course. The teacher is able to find out the potential knowledge and abilities that the learners possess at entry level and what they do not know and cannot do in English.

The triangulation method of needs assessment advocated by Michael H. Long (2005) appears to be quite appropriate to assess the needs of the students. He remarks that "learners are far more active and cognitively independent participants in the acquisition process than is assumed by the erroneous belief that what you teach is what they learn, and   when you teach, it is that they learn it" (Long, 2005, p.19) It is imperative to carry out needs analysis to determine the specific reasons for learning the language (Hutchinson and Waters, 1987) or to specify exactly, what students need to achieve through the medium of English (Robinson, 1991).In formal terms a need analysis is the process of determining the needs for which a learner or group of learner requires a language and arranging the needs according to priorities (Richards and Platt, 1992:242). Needs analysis is basic to any program of ESP and hence the learners have to be taken into confidence to assess their learning needs. An appropriate methodology for needs analysis is to be devised to assess the goals of the learners, their preferred learning styles, previous level of English language competence and socio-cultural backgrounds.

The engineering colleges of Odisha follow the Communicative English course and Business English or Professional English for enhancing the language skills of engineering students at the undergraduate level. It is introduced in the first or second year of the engineering course. In most cases it is a two/three semester course. The course comprises theory and practical classes.

3. Focused Interview
To conduct a need analysis in ESP curriculum a focused interview among final year students had been conducted in three different engineering colleges of Odisha, India. The research sites had been chosen on the basis of the year of establishment and for easy accessibility by this researcher. These colleges/institutes are located at three different regions of the state of Odisha. The research sites along with their year of establishment are mentioned. The colleges/institutes were National Institute of Technology (NIT), an institute of national importance in Rourkela, established in 1961, and two other colleges under Biju Patnaik University of Technology (BPUT) the only technology university of the state that encompasses constituent and self financed engineering colleges of the state. The engineering colleges chosen were Odisha Engineering College (OEC) established in 1986, Bhubaneswar and Majhighoriani Institute of Technology and Science (MITS) Rayagada established in 1999. They were invited to participate in the discussions in classroom settings arranged by the teachers of English of those colleges. The questions were not thrown at individual respondents but were rather held in the mode of discussions where this researcher, at initial stages, had to initiate the discussion prompting possible answers at times. After two or three respondents actively participated in the discussion, the points of discussion attained a flow with a positive or negative statement at the base and various suggestions or conclusions for the researcher to note.

3.1. Research Participants
The final year students (7th) semester of these colleges voluntarily agreed to participate in the unstructured interview followed by discussion. These students belonged to different branches. Each group consisted of not more than 15-20 members. They felt rather elated when they were told that these suggestions would pave way for modifications of the existing curriculum for the better.

3.2. Report on the focused interview conducted with final year students.
The questions were categorized on the basis of different language learning problems noticed or identified. According to Nunan (1995) it is a fact that many learners are not interested in what the teachers teach and hence the gap between teaching and learning can be reduced if the teaching is reoriented according to the choice and interests of the learners. He argues that the teachers should find out what their students think and feel about what and how they want to learn. In the present context of examination oriented scheme of the engineering education, there is little link between actual learning practices and its outcome. The questions have been broken into several sub-categories to activate discussions. It were based on lab related experiences, teaching methodologies, activities conducted, tests, grading and assessment, technology related assignments, extension of the course etc.

3.2.1. Could you narrate some positive or negative experiences you had in your English lab of engineering course?
- **Positive Experiences-** Improvement in confidence levels, interesting activities, presentation skills, vocabulary training, interpersonal skills, opportunity to participate in group discussions and some training to face interviews was reported by students as positive experiences.
- **Negative experiences -**Weak areas spotted after completion of the course were their inability to pronounce English correctly, failure to grasp lectures due to large-sized theory classrooms, lack of technical writing skills relating to workplaces, absence of real life tasks ,weak grammar etc.

Most students with average/ low communication skills were not confident to get into the stiff & competitive job arena. Only 15% of respondents believed in their proficiency for jobs. They needed more practice in vocabulary and phonetics. More technology and software should be used. Writing activities need to be increased. There was a wide gap in simulating real-life job situations.
No creative or entertaining activities like learning by doing through mini-projects, language games or puzzles were held. Other than grades being assigned students could hardly spot the common mistakes they usually make for rectification. The skills they gained in writing activities could not make any remarkable improvement from their school days rather they felt that the same level continued in contrast to speaking activities where their level of exposure and correction had improved. This shows that constructive feedback had not been provided.

3.2.2. Could you mention any particular teaching methodology that helped you to develop your English language skills?
Activity-oriented learning, wherever conducted, had been the best part. Tasks where they were asked to market a product, mock interviews and meetings conducted were extremely useful. Role plays conducted with active cooperation of the teachers in the lab sessions were recognized to have affected a memorable, positive learning experience.

NOTE: Differences of opinion were noticed on this point. Though the course included lab activities it entirely depended on the teachers' disposition in its planning and execution. Students who had no opportunity to participate in such activities mentioned this fact. Many were asked to prepare dialogues to be written in notebooks to be graded. No feedback came forth.

3.2.3. How were oral tests conducted in your language lab?
The students had many experiences to share regarding oral assessments. It had been conducted with presentation sessions only in some of the colleges. Many students have become familiar with group and pair activities. Initially they were less confident of securing marks in these sessions as they had no idea as to how they were going to be assessed but the positive aspect of group oral assessment had been that the participants overcome stage fear when in a group. Some of the students were assessed in formal situations as making business related presentations and some others in informal activities like role plays.

3.2.4. Please reflect upon the grades scored by you and tell me how far it has resulted in improving your language skills after attending English classes in your college?
The students from deemed universities and those from BPUT had different experiences regarding grade/scores. In the first case, the assessment had been internal whereas in the latter the examination conducted had been centralized. In the previous case the institute is autonomous to conduct both theory and lab sessions. Students seemed satisfied to some extent for the grading patterns as they got immediate response of the marks awarded but never got a chance to overcome or rectify their errors because the lab sessions are conducted only for semester duration (4 months). The time frame seems to be too short for them. Students claimed that the assessment had a set pattern and usually students were invariably graded into a particular set pattern. Students who had ability to exhibit their skills usually scored more. Voluntary participation was being expected. Only a minimal guideline was used to instruct them. Students were more concerned about the feedback than the marks awarded. Usually when the grades were declared at the end of a semester they put themselves into an asset rank. Some of them might have scored a higher grade than what was expected but most of them scored on expected lines.
In the latter cases (i.e, BPUT candidates) they prepare for a theory paper of 100 marks where 70 are for term end examinations and 30 for internal marks. Another 100 marks is for lab sessions where grades are assigned on the marks sent by the teachers to the university. The examination sheets of theory exams are evaluated by external examiners but three unit tests (2x15=30)and the English lab sessions where 10 assignments are conducted each carrying 10 marks each (10x10=100 marks) are conducted internally.
Students could not specifically identify how far their English skills had been improved but those students who had a rich experience in lab activities felt that their oral communication has improved. Some students opined that the evaluations were erratic, and totally unpredictable. The questions set for university examinations had little bearing of the methods of teaching in classroom.
In theory classes importance had been given to the mode of traditional pattern of questions. In some colleges notes are being dictated to students whereas the university questions of theory exams were mostly based on practical usage of communicative English.

3.2.5. Could you please share your views on the humanistic factors in language learning that helped in developing your personality?
The humanistic needs mentioned by students are reported under three different categories of learning experiences of engineering students of Odisha.
- **Learner autonomy:** In English classes learner autonomy was totally under the disposition of the English teacher concerned. In the first few classes they never knew about the activities or assessment patterns to be held and were quite inquisitive to know what session would be held in each class. Since lab classes being attended for the first time students were more bothered about the marks to be scored than acquiring language skills. Thus there was no scope for choosing activities according to their abilities or interests.
- **Constructive feedback:** Feedback (positive or negative) mostly was never given in any other form than awarding grades. But grades do not always reflect the linguistic competence as a top scorer may not be able to speak fluently or write on a topic of general interest correctly. Thus constructive feedback (positive and negative) remained a missing link in the system of assessment in most cases. Self directed learning .Students usually reached this level in the final years. In the urge to attend and qualify job interviews students directed themselves for self learning. They used different study skills like note making, use of dictionary etc to make their language skills perfect. Reading popular literature improved the style of English language and usage.

3.2.6. How far had been technology aided English learning being promoted in your classrooms?
Use of relevant software at introductory sessions had been familiar among students, though how to maximize its use for self development of English language skills had been a challenge for them. They could not make utmost use of these facilities in colleges where technology integrated language lab exists. Non-availability of computers and internet in the language lab had been a handicap though a few could avail it in self study mode. Students were interested to go through the software occasionally, but did not spare time to improve their communication skills. Though students were interested to access the software as no assessment was related to it they did not feel it challenging.

<u>3.2.7. Could you please suggest the contents you would like to include in the course curriculum of a specialized English course?</u>
(English for Specific Purposes (ESP) and English for Occupational Purposes (EOP)

<u>3.2.7.1. Vocabulary</u>
Vocabulary of workplaces, business terms, effective vocabulary for CAT, GRE and GMAT, business jargons etc were chosen by many respondents.

<u>3.2.7.2. Personality development sessions</u>
Group discussions, case studies, tone and accent of differentiating formal and informal discussions, project planning, people management, leadership skills, interview tips, critical reasoning techniques, decision making and negotiation skills, presenting papers and posters, writing reports and criticism, orientation in developing right level of confidence and training in corporate communication and adaptability skills have been mentioned.

<u>3.2.7.3. Executing written documents of workplace</u>
Enriching technical language, corporate written skills (both formal and informal), creative writing, online submission of assignments, web based courses etc. were also mentioned, Reading and discussing workplace related literature enhance language competence and getting practical exposure to work place related tasks as in real life setting could be useful.

3.2.8. What is your opinion on extending the English course throughout your engineering course?
Most of the students felt that the English course should continue throughout the engineering curriculum. They felt the need of such courses in the final year as it is related to both personality development and professional communication skills. But they suggested that they do not like it overloaded with assignments and to be scrutinized   with rigorous assessment schedules but to be connected to the communication regime of real world experiences. The tasks they were assigned in the first year necessarily gave them some ideas as to how different communication skills can be improved but they were not given ample practice to acquire those skills or improve their confidence level to a reasonable extent.

4. Discussion
The research findings along with the suggested measures try to incorporate activities and tasks designed on a learner-centered approach which can be negotiated and implemented as per individual needs. English language learning should not be limited to the prescribed syllabus. It should ultimately help ESP learners develop qualities of confidence, initiative and responsibility in developing their language skills. The learners become better language users in professional contexts too when they work upon real life tasks. Real world tasks as defined by Nunan (1989) "are those which require learners to approximate in class the sorts of behavior required of them in the world beyond the classroom" (p.40). ESP can be delivered in a variety of contexts in academic settings where specific specialization needs to be taught through the medium of English language. In the interactive sessions there needs to be mutual cooperation between student and student and the teacher and the student. There need to be learners' interaction with teachers, peers and the learning materials.
Students, teachers, facilitators and policy makers need to play simultaneous roles to promote life-long learning paradigm of transformation of education. To have positive outcomes careful planning and flexibility through themes selected, structures, vocabulary and other features of language as per the needs of the learners need to have positive outcomes with a qualitative perspective. This can be achieved if students focus on meta-cognition or own thinking.
These types of academic activities offer enough opportunities for the students and challenge their intellectual growth in language learning or else the learning remains stagnated in the prevailing system of teaching, learning, and assessment patterns, students are repeatedly engaged in such activities that promote rote learning and conventionality. Thereby the creative energy of bright students remains untapped and most of the students score an average of 60 -80% of marks without getting right orientation to develop and apply and develop their skills. They should have not only good communication skills in this digital era but acquire intra and extra-organizational communication skills too. Along with the technical content of engineering education, the sets of generic skills that form the basis of the engineering graduates' professional development includes team working ability, effective communication, problem solving approach, critical thinking ability and the awareness of social, cultural, ethical, environmental and a plethora of other issues associated with the practice of engineering profession.

5. Conclusion
ESP concentrates more on language in context than on teaching grammar and language structures; therefore, authentic contexts and language use in typical work situations raise interest in learning ESP (Vaičiūnienė, 2009, Fiorito, 2005).Restructuring curriculum on the basis of these suggestions will produce new engineers for the new generation. In a learner-centered curriculum, key decisions about what, how and when etc. could be decided on consultation with the learner. Learning-centeredness is empowering the learner decide what he wants to learn. Usually a student develops this ability at the end of a course. It does not mean abdicating the responsibility of the teacher to the student. Nunan,(1995) finds that a learner-centered curriculum will encourage learners to move towards autonomy at the end of the pedagogical continuum. This is what ESP/EST curriculum focuses upon.

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