



Boosting Communication Skills for Engineering Courses in India through ABET Criteria

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Abstract

In India studying engineering is gaining momentum. Thrust on technological advancement demands competent technologists. The ability of the syllabus through which engineers are made to learn plays a vital role. This ability could be traced by benchmarking against world standards. ABET is a benchmarking tool which outlines competency based guidelines for engineering syllabus could be taught and made to learn. This paper highlights the researches on creating competency based engineering learning. In correlation, a module approach for syllabus of English in engineering courses is been envisaged and its implementation is also discussed.

Keywords: Communication Skills, ABET Criteria, Skills for Engineering Courses

1. Introduction

India has always been a land of opportunities. Be it in its historic period or during the medieval struggle for independence or during the era of economic advancement, India has been exhibiting aspiration to move further. Liberalizing the economy was the starting point of all tales. Real facets of globalization were been witnessed through the scientific and engineering advancements in the country. The state of Tamilnadu which is of high socio-economic profile produces thousands of engineering graduates every year. The employment rate out of placement/recruitment drives in the engineering colleges in the state depends upon highly on the fluctuations of the industries. Apart from it the employability within the students plays an invisible role in the process. This paper deals with the competency based syllabus in English for engineers for bridging the gap of parity with the syllabus and education.

2. Current scenario

2.1. Engineering education & Employment rate

In the state of Tamilnadu, there are nearly 550 Institutions which teaches various engineering course and it churns out of nearly 50,000 engineering graduates every year. Out of it significant proportion of graduates, nearly 47 per cent, were found to be not employable in any sector, given their insufficient English language and cognitive skills ^[1]. Employability figures are based on actual hiring benchmarks based on a standardized aptitude and skill test,



not only does find the employability quotient, but also helps investigate skills that are deficient in particular group of candidates with regard to different sectors. A study has found that Employability with regard to IT product companies is as low as 4.22% (amongst computer/electronics related branches), whereas employability with regard to IT services companies is 17.84% (wherein the company gives 3-6 months of in-house training). To be at the forefront of innovation and achieve higher growth, it is necessary that higher-order work with regard to product development and research grows in India apart from the services industry. To facilitate the same, the product engineering employability needs to be improved from the current figure of 4.22%. This requires greater focus on part of institutions of higher education to impart quality education [2]

2.2 Innovation and Advancement

As per the “India- S&T 2008’ of National Institute of Science, Technology And Development Studies (NISTADS), culled from Scopus data base, reports that there has been a whopping growth rate of 85.24 per cent of Indian science publications between 1997 and 2007 and out of which 0.32 % was published in high impact journals (IF10 to 47.4 citations per journal) [3]. India is ranked 120th out of 145 counties in Knowledge Index (KI) ranking by The World Bank Knowledge for Development (K4D -KAM2012) report [4]. The condition of scientific progression is thrown light with the above statements. Thus the two basic criteria outcomes of engineering and science education in India, Employability and Scientific R&D were not accomplished at the effective possible.

3. ABET as a base of change

The dynamic nature of the working conditions [5] in the engineering industries necessitates the periodic updating with the syllabus and curriculum through which the education is being carried forward. ABET which is a set of standardized accreditation process in engineering learning and teaching worldwide, could be made to serve as a base upon which the required changes could be made. ABET Criterion could serve in guiding directions towards progressing.

3.1. Competency based syllabus in English for engineers

This paper takes it up the role of English language and related skills in making a student employable. The survey and findings of NAASCOM (Trade Association of Indian IT industries) points out that only 25% of engineering students are employable and much of the remaining could be attributed to the lacking of English and communication skills [6]. This clearly demonstrates that despite existing syllabus and thrust on English skills acquisition, employability has not raised up. The mechanistic failure upon analysis reveals that mere academic focus upon the language could not help in achieving the target rather a skill development based approach.



3.2 Skill development model

DIKW frame work model ^[7] of innovation suggests the pathway of developing wisdom from data. The extrapolation of wisdom to skill and then to competency completes the pyramid of skill acquisition and competency development. Any processed information after being properly studied and practiced in a manner it should be will gradually turn out to be a skill. If a skill distinct from another then it has matured as a competency. Thus English for engineer's course should be a skill based rather than a mere academic course.

3.3 ABET Competency criteria

ABET ^[8] has broadly classified the accreditation criteria of *engineering technology program* into two broad categories:

- General Criteria for Basic Level Programs
- General Criteria for Advanced Level Programs

However, the discussion in this paper is with respect to the first one i.e. 'General Criteria for Basic Level Programs' for engineering technology programs is considered here.

- Criterion 1. Program Educational Objectives
- Criterion 2 Program Outcomes
- Criterion 3. Assessment and Evaluation
- Criterion 4. Program Characteristics
- Criterion 5. Faculty
- Criterion 6. Facilities
- Criterion 7. Institutional and External Support
- Criterion 8. Program Criteria.

Out of which criterion 2, 3 and 4 are to be considered and these criteria is to be used to evolve a competency based syllabus for English courses for engineering students of India.

3.4 PEV Competency model

Out of PEV Competency model ^[9], the following desired competencies is to be included in developing a competency based syllabus

Competency 1: Effective communicator

Competency 2: Interpersonally skilled



4. Competency Based syllabus

The effectiveness and efficiency of any educational program is largely dependent on the philosophy of the curriculum design followed. Most of the universities in different countries use their own philosophies in offering engineering education programs to produce engineering technology graduates needed by the industry. ^[10] The author is of the view that standards such as ABET Criterion and PEV competency model shall be hydride to evolve a competency based syllabus.

4.1 . ABET Criterion in the syllabus

ABET Criterion 2, 3 and 4 are to be considered for developing a competency based syllabus. Criterion 2 requires a documented process that is systematically utilized and effective, involving the program's constituents, for periodic review of the objectives so that they remain consistent with the institution's mission, the constituents' needs, and the criteria ^[9]. It is for considering the program outcomes and outcomes of this competency based syllabus is to make the students to be competent enough in English and communication skills to be employable. To achieve this other criterion are to be used.

Criterion 3 of ABET focuses on the assessment and evaluation types. Assessments and evaluation plays an important role in processing the processed information and progressing towards further learning ^[11]. Hence for a competency based syllabus of English for engineering students, rather evaluating the performance of the students for a single time or assessing the progression at the end of the semester, The performance of the students could be evaluated at the end of the modules and after the assessments, scope of improvement shall be briefed and noted for its implementation.

Criterion 4 of ABET focuses on the characteristics of the program and this modules of syllabus should be student friendly and which involves the students to do task in teams for being interpersonally connected, properly assessed and suggestive remarks to be noted and corrected in further progression. This should allow the students to develop the ability of connecting facts and information and converting it to an applicative perspective. Competency based syllabus shall insist much on being proficient in communicating properly and promptly through a looped structure of learning.

4.2. PEV Competency in the syllabus

Competency 1 and 2 will be a minimum competency requirement out of an engineering graduate who should be ready to work in team and groups of heterogenetic mixture of people. Competency based syllabus tests the students in a perspective to know whether the student has acquired proficiency rather crossing a minimum threshold level of language



fluency. The competency development is to be in stages and a few points will be making interpersonal ability to work and to get nourish.

5. Conclusion

Finally, the author is of the view that by amalgamating the principles of ABET based engineering criterion and PEV competency model, a competency based syllabus is to be developed for bridging the gap existing now with following provisions.

- Student centric syllabus - designed from student's requirement of learning
- Teaching oriented syllabus – designed with the resources to be used for facilitating students learning
- Modularized syllabus – Syllabus been divided up in modules with provisions of selection
- Assessments - Periodic evaluations to assess and enable the progression
- Content and language integration in the syllabus

With further commitment on developing employability within the students, further research shall take to the better implementation of the competency based syllabus.

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