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Soft Skills: A Professional Development Curriculum to Enhance the Employability of Engineering Students

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Abstract: The issue of employability of engineering students has become very serious in many countries including India. Employers are demanding employees that are able to transform knowledge and skills learnt in successful workplace and they are concerned about soft skills. Though the standard of academia has been steadily moving ahead, the updating process of curriculum with respect to soft skills is not as fast as expected by the industries. The authors survey the essential features of soft skills that need to be modified in the curricula of engineering, pedagogy, role of the teachers and evaluation with the perspective of the industries.
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1. Introduction

In many countries including India, the issue of incorporating soft skills into the curriculum taught to engineering students in technical institutions has gained momentum in recent years. An opportunity to work in the industry is a starting point for each student to contribute towards the larger cause. Acquiring employability skills besides academic achievements is necessary for the recruiters to launch their careers and help organizations rapid begin their initiatives. Currently, employability is the buzzword among the engineering students. During the last decade, the opportunities for engineering students in various sectors have increased multifold globally.

Current technological and economic changes have created a challenging context for engineering students. The real key to the effectiveness of engineering students is their ability to put their domain knowledge into effective practice and soft skills have a crucial role to play for the effectiveness. The challenge for technical institutions is to work out a healthy balance between wholeness of knowledge and skill sets that cater to current technological demand. The various studies and reports insisted that the current curriculum should be modified to provide flexibility, interdisciplinary and choice of electives. A flavor of these basic soft skills needs to be included in the first semester itself. At least one of the humanities courses needs to concentrate on developing oral and written communication skills (Ananth 2008).

Curriculum development is one of the key factors related to meaningful and successful program improvement. Curriculum development can be defined as the systematic planning of what is taught and learned in university as reflected in courses of study and university programmes. These curricula are embodied in official documents (typically curriculum "guides" for professors) and diligently being implemented by each academic discipline. Some Universities have initiated soft skills as part of their curriculum, for instance, Anna University, India introduced the courses, HS1301- Communication and Soft skills laboratory for third B.E / B. Tech students and 'Communication Skills Lab' (GE1352) for the pre-final year students. Most of the B Schools introduced soft skills curriculum in India and the arts and science colleges have introduced as one of the core papers.

Hence educating engineering students with the comprehensive soft skills would be of great importance for the employability and for the country's development. Large economic sectors, such as Information Technology, Infrastructure, Manufacturing, Automobile, Power, Water, Pharmaceutical etc. rely critically upon technical skills as well as soft skills. This paper provides important new sight on developing a professional

curriculum for the soft skills training programme, strategies including methodology, role of the teachers and evaluation with the perspective of the employers. Distinctively, the survey seeks answers for the following three questions.

1. Which skills do employers consider important when recruiting new graduates?
2. What would be for relevant soft skills curriculum in order to develop the employability of engineering students?
3. What are the pedagogies of soft skills, role of the teachers and how the students need to be evaluated for the professional development?

The paper is structured as follows. The second section briefly summarizes similar studies. Section 3 describes the methodology of the data collection. Section 4 shows descriptive statistics of survey respondents. Section 5 presents major findings with analysis of the collected data. Finally, section 6 summarizes and discusses implications for soft skills curriculum in order to develop the employability of engineering students.

2. Survey of Literature

Soft skills are essentially professional skills and it's also known as the non-technical, intangible, people, corporate, emotional intelligence, employability, life, generic, key, essential, transferable skills. Perreault (2004) defines soft skills as personal qualities, attributes, or the level of commitment of a person that set him or her apart from other individuals who may have similar skills and experience. Soft skills are those crucial to an employees' ability to work smarter. The soft skills deal with people at the emotional level. They build and sustain effective relationships that will result in mutual gain.

The online Encyclopedia Wikipedia (2007) gives a very broad definition of soft skills; skills refer to the cluster of personality traits, social graces, and facility with language, personal habits, friendliness, and optimism that mark people to varying degrees. Soft skills complement hard skills, which are the technical requirements of a job. Weber (2009) revealed that soft skills as interpersonal, human, people or behavioral skills needed to apply technical skills and knowledge in the workplace.

The origin of soft skills referred by various authors and employers (Malgorzata Pinkowska 2011): Critical skills (Lee et al, 1995), Soft factors (Caupin et al, 1999), Personal skills (Murch, 2001), Interpersonal skills (PMI, 2004), People skills (Flannes, 2004), Soft factors (Wohlin, 2005), Key skills (Simpson, 2006), Human skills (Pant & Baroudi, 2008) and Social skills (Alam et al, 2010) These terms of soft skills meant as non-technical skills by the authors and employers initially. They used the terms to describe the personality traits of the individuals subsequently. Soft skills as those skills-over and above the technical knowledge and expertise in the chosen field required for an individual to relate to and survive and succeed in his or her environment (Gopalswamy Ramesh and Mahadevan Ramesh 2011).

Soft skills play an essential role for professional success; they help the professionals to excel in the workplace. Soft skills can be incorporated all aspects of generic skills that include the cognitive elements with non-academic skills. Soft skills are identified to be the most critical skills in the current global job market especially in a fast moved era of technology. Audibert and Jones (2002) stated that the importance of soft skills for employees to retain in their positions as soft skills as leadership, communication, team building and entrepreneurial interest have become critical for hiring and promoting employees to keep positions.

Muir (2004) finds that soft skills are the essential tools enabling employees to contribute to their fullest potential. Engineers need to be refined the skill sets time to time. Otherwise the industries downsize their employees. Over the past decade the importance of soft skills such as communication, presentation and negotiation for engineering students has been emphasized by engineering departments in developed countries and organizations. Soft skills are those crucial to an employee's ability to work smarter. According to Alex (2010) soft skills are essentially people skills-the non-technical, intangible, personality-specific skills that determine one's strengths as a leader, listener, negotiator and conflict mediator.

While hard skills refer to technical and academic skills, soft skills refer to wide-ranging personal and interpersonal skills (Usha Menon 2009). The significance of employability is industry readiness. After achieving academic qualifications, one has to ready to work for the employer without any experience or additional training and direct entry into the firm. Hillage and Pollard's (1998) widely cited definition of employability as an individual's ability to gain initial employment, move between roles within the same organization, obtain new employment if required and (ideally) secure suitable and sufficiently fulfilling work. Employability not only depends on whether one is able to fulfill the requirements of specific jobs, but also on how one stands relative to others within a hierarchy of job seekers (Brown and Hesketh 2004). Employability skills to be mastered by employable graduates and fresher include communication, team working, leadership, initiative, problem solving, flexibility and

enthusiasm. Yorke and Knight (2004) suggest that it is a set of achievements- skills, understandings and personal attributes that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the community and economy.

Most students are not 'Industry ready' because they lack communication skills and other skill sets. The survey of Agarwal (2011) reveals that even though India produces more than 0.5 million engineers annually, only 17.45 percent of them are employable for the IT services sector. The research shows that approximately 54 percent engineers are rejected because they are not soft-skill trainable in a short period of time. The issue is that post-secondary education today focuses on syllabi alone and industries seek beyond what a syllabus is capable of teaching like communication and creative skills, and team spirit (Anandakrishnan 2012).

The present system concentrates only on transfer of knowledge and not on developing skills. According to Narayanan (2007), the current situation is that, in terms of availability of talent, the numbers are good. The problem lies in the suitability of people. The industry has moved forward rapidly and technology also has changed but the educational institutions and the curriculum have not changed as rapidly as expected. The need to revise or eliminate outdated curriculum and develop new programmes to meet emerging work trends is a seemingly endless occurrence (Shetty 2010). Reform curricula to increase the share of tasks where the student or a team of students lead their own problem identification, experimenting, and solving using engineering knowledge and methodologies (Andreas Blom and Hiroshi 2011).

Richa Tewari (2012) states that a change is required in designing the curriculum, which should be oriented more towards equipping the student to mange and excel at the work place. The Chairman of NASSCOM, Narayanan, (2007) implies that the teachers of English at professional colleges should undergo paradigm shift and cease to be mere teachers of grammar and structure; they are expected to play the role of communication and soft skills trainers. Instead of outsourcing the soft skills training it is recommended to bring soft skills within the curriculum.

The present English course in the engineering colleges develops communication skills alone. The other aspects of soft skills can be brought in the curriculum irrespective of the subject (Goeran, Nieragden Cologne 2000). The Workforce Profile defines about 60 soft skills (Chella Ram Phani 2007) and includes some of the important skills: adaptability, team skills, attitude, integrity, positive work ethics, interpersonal ethics etc. and 60th one is communication skills. Hiroshi Saeki and Andreas Blom (2011) in their report of World Bank mention the important skills which employers consider when hiring new engineering graduates: integrity, reliability, team skills, and willingness to learn, flexibility, empathy, problem solving, communication etc. 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 are (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 professionals today are required to be prepared to carry the weight of the past, face the pressures of the present success and manage the crisis of the future (Pushpa Lata and Sanjay kumar 2010). Oral communication and presentation skills are considered to be the best career enhancers and to be the single biggest factor in determining a student's career or failure (Rochford, K., Baxen, J. and Inal, A. 2004). Sujith kumar (2011) lists out, a positive attitude, analytical and logical reasoning skills, good communication skills, interpersonal skills and a flexible approach and a global mindset are the basics that organization look for in new recruits. Basic interpersonal skills such as self-awareness, social awareness, relationship management, conflict management, diversity management, leadership and teamwork, empowering others, emotional intelligence, negotiation skills, change management and team problem solving are outstanding complements to soft skills (Richa Tewari 2012). Dhanavel (2010) in his course book, 'English and Soft Skills' presented the topics on listening skills, teamwork skills, emotional intelligence skills, assertive skills, learning skills, problem –solving skills, interview skills, adaptability, non- verbal communication skills, and written communication skills.

Jane Andrews and Helen Higson (2008) identify key 'transferable' soft skills and competencies integral to graduate employability: Professionalism; reliability; the ability to cope with uncertainty; the ability to work under pressure; the ability to plan and think strategically; the capability to communicate and interact with others, either in

teams or through networking; good written and verbal communication skills; information and communication technology skills; creativity and self-confidence; good self-management and time-management skills; a willingness to learn and accept responsibility (Adapted from: McLarty,1998; Tucker et al., 2000; Nabi, 2003; Elias and Purcell, 2004).

3. Survey Methodology

The main objectives of the study is to identify relevant soft skills and explore the possibilities of incorporating some essential skills which engineering students need at the workplace, to find out what competencies set soft skills teachers need in order to facilitate the course and evaluate effectively. With these objectives various techniques and methodological approaches are used to gather and analyze information on soft skills curriculum and to gain realistic insights into learner needs and industry expectations. The following research tools were used for analysis.

1. Questionnaires 2.Interviews and 3. Researcher's analysis of Job Advertisements

The authors conducted recruiters' importance level of soft skills survey from October 2012 to January 2013 during 'On Campus' and 'Common Placements Drives'. Eighty seven out of 112 recruiters across the regions in Tamil Nadu, India fully completed the questionnaire. The recruiters represented the various firms like information technology (23), automobile (13), electrical and electronics (14), infrastructure (18) and others (11). More than 60% of the responding employers were from Tamil Nadu and 40% were from other southern states.

The questionnaire 1 (Annexure A) has a list of soft skills that engineering students are typically expected to possess at graduation. Recruiters requested to rate on a scale from 1 (not at all) to 5 (extremely) how important each skill is for an engineering graduate to be an effective employee, (Importance Level). The authors conducted training methods survey (Annexure B) with soft skills trainers of various training organizations and industries located in India and collected the details about the training methods adopted. The researcher observed over 100 job advertisements of newspapers and job websites on job opportunities and listed out the key skills required by the employers. The data was analysed qualitatively and quantitatively.

4. Results

4.1 Survey report of the recruiters

The researcher had a series of interviews with the recruiters during 'campus drives'. The recruiters presented different sectors like software, electronics, electrical, automobile, infra-structure, business and BPO companies. The recruiters had been given details about prevailing curriculum of communication skills Laboratory with the list of soft skills, definition and objective of the programme offered by the Technical Varsities. By using factor analysis, 30 variables (skills) were reduced to three major factors, namely personal skills, core soft skills and professional skills).

The authors conduct a factor analysis of the 30 individual skills to group the individual skills into a small number of skill groups (factors). We group the skills because it is reasonable that a common latent factor (skill/ability) partially drives the importance and satisfaction ratings of a group of individual abilities. For instance, employers and recruiters often talk about the importance of ―soft skills. There is hence a notion that a set of interpersonal skills are related into one group and that this group of skills is important. However, ―soft skills are often neither well defined nor backed-up by empirical evidence that the individual skills referred to as soft skills form one group. Factor analysis is one of the ways to test this notion of soft skills and empirically define the individual skills that make up ―soft skill. Further, the identification of a small number of factors allow us to identify commonalities in demand and supply for skills, and structures the findings and provides a limit set of overall findings. Factor analysis fits exactly the above goal of reducing the number of variables into overall groups. It is a statistical procedure to find the latent variables that explain attributes of common variables in the observed variables.

Factor analysis is widely used in social science, especially in psychological researches and business surveys. Psychologists, for instance, conduct empirical researches on the relationship between personality traits and job performance. They examine numerous personal traits and categorize them into five representative personal traits by using factor analysis. Those five personal traits are called ―Big five that represents an overall pattern of all personality traits and recent papers have examined the link between these traits and income, (Borghans, Lex, Duckworth and Heckman 2008). By using factor analysis, 30 skills listed in the questionnaire were grouped into three factors using the importance ratings. Table 1 below presents the resulting groups

(factors) of skills generated by factor analysis.

Table 1. Survey report of the recruiters

	Mean	II Core Soft skills	Mean	III Professional skills	Mean
1. Desires to learn	3.47	1. Problem solving/critical thinking skills.	4.24	1. Entrepreneurship skills.	4.49
2. Setting goals.	3.45	2. Communication skills (Oral, written and nonverbal).	4.22	2. Flexibility/adaptability.	4.46
3. Positive attitude.	3.41	3. EQ (Emotional Intelligence Quotient), Psychometric Test.	4.20	3. Creativity/innovation.	4.44
4. Integrity/ honesty.	3.37	4. Leadership / team management.	4.19	4. Persuasive skills.	4.40
5. Interpersonal abilities.	3.31	5. Job preparedness (Resume preparation, grooming, interviews and group discussions).	4.18	5. Change management.	4.38
6. Assertiveness.	3.25	6. Verbal and logical reasoning.	4.16	6. Professional ethics, values and attitude.	4.36
7. Persistence and perseverance.	3.22	7. Essentials of English (Grammar, pronunciation, exposures into IELTS, TOEFL and BEC (Business English Certificate) TEST).	4.15	7. Corporate etiquette	4.30
8. Time management.	3.18	8. Etiquettes (Email, telephone).	4.10	8. Multicultural sensitivity awareness (Body language, and cross – cultural communication).	4.32
9. Self-discipline	3.12	9. Seminar presentation.	4.02	9. Decision making.	4.28
10. Self-motivated	3.02	10. Effective public speaking skills.	4.00	10. Empathy	4.24
Average:	**3.28**	**Average:**	**4.14**	**Average:**	**4.36**

4.2 Survey report of the trainers of corporate and training organizations

The survey has been conducted with the trainers of corporate and training organizations who are associating with the industries as well as institutions and conducting soft skills training programmes. The corporate like 'Infosys', 'WIPRO' and 'CISCO' are conducting training programmes to the engineering colleges. The questionnaire 2 (Annexure B) has been given to the trainers to mention about soft skills modules, methodologies and role of the teachers. Thirty four out of 52 trainers responded the questionnaire. Ranking of importance of soft skills (Table 2) is given as below:

Table 2 Survey report of the trainers

S.NO.	SKILLS	RANKING
1	Communication skills (Oral, written and non- verbal).	4.68
2	Problem solving/Critical thinking skills.	4.57
3	Job preparedness (Resume preparation, grooming, interviews and group discussions).	4.44
4	Verbal and logical reasoning.	4.36
5	Essentials of English (Grammar, pronunciation, exposures into IELTS, TOEFL and BEC (Business English Certificate) TEST).	4.25
6	Leadership / team management.	4.11
7	Interpersonal skills	4.04
8	Seminar presentation	3.98
9	Professional writing skills like memo, report, letters etc.	3.81
10	Positive attitude.	3.78
11	Time management.	3.72
12	Setting goals	3.69
13	Etiquettes (Email, telephone).	3.67
14	Personal grooming	3.50
16	Effective public speaking skills.	3.24
17	Professional ethics.	3.12
18	Corporate ethics.	3.07
19	Multicultural communication and body language.	3.02

Over 80 percent of trainers of corporate and training organizations are focusing the modules related to selection criteria of employers and especially on communication skills, interview skills, group discussions, presentation techniques, resume building, telephonic interview and personal grooming. In addition to these modules, they prefer to train the employees on professional speaking and writing skills, problem solving skills, reasoning (verbal), positive work ethics, inter-personal skills, and team building skills for better employability.

4.3 Survey report of the job advertisements and job websites

Job advertisements play an important role in helping job seekers to apply for right jobs. A typical job advertisement has these main sections: company details, position advertised, job responsibilities, required skills and remuneration. A hundred job advertisements (posted on the internet and appeared in different newspapers in India and abroad) are analysed. The advertisements are selected based on the criteria that the advertisements are addressed to engineering graduates and they should state clearly what they expect of the candidate: qualifications, experience, job responsibilities and especially skill sets required, etc. The Table 3 below shows the required top 10 skills for engineering students. The analysis of job advertisements helped the researcher gain an insight into the target needs of engineering students. The skills sets specified for various job positions should be incorporated into the soft skills curriculum in order to develop engineering students' employability skills.

Table 3. Top 10 skills specified in the job advertisements

S.NO	SKILLS	% of employers responding- very or extremely important
1	Ability to communicate	95.72
2	Problem solving skills	92.14
3	Interpersonal skills	89.88
4	Innovation/creativity	83.56
5	Leadership / team building skills	81.00
6	Negotiation / persuasion skills	75.21
7	Listening and desire to learn	72.49
8	Grooming and multi culture awareness	68.90
9	Self motivation and discipline	65.73
10	Ethics/ values	64.23

4.4. Main outcomes

4.4.1 A Professional development curriculum

Based on the above survey reports (Questionnaires 1, 2 and observation of job description), the authors have identified the topmost 25 soft skills and classified into three broad categories: I Communication skills, II Professional skills, and III Soft skills for Employability.

The authors conducted a factor analysis of the 25 individual skills to group the individual skills into a small number of skill groups (factors). The authors grouped the skills because it is reasonable that a common latent factor (skill/ability) partially drives the importance and selection criteria ratings of a group of individual abilities. For instance, employers and recruiters often speak about the importance of soft skills. There is hence an opinion that a set of interpersonal skills are related into one group and that this group of skills is important. However, soft skills are often neither well defined nor backed-up by observed evidence that the individual skills referred to as soft skills form one group.

Factor analysis is one of the ways to test this notion of soft skills and experimentally define the individual skills that make up soft skills. Further, the identification of a small number of factors allow us to identify commonalities in demand and supply for skills, and structures the findings and provides a limit set of overall findings.

By using factor analysis, 25 skills listed in the questionnaire were grouped into three factors using the importance ratings. The level of importance attached to each skill reveals employers' valuation of, and demand for, that skill. Table 4 below summarizes the importance level of each skill under the three factors as perceived by the employers. All skills are on average rated from 3.5 (half way between ―Somewhat important and ―very important) to 4.5 (half way between ―very important and ―extremely important). Hence, all skills in the questionnaire are rated as important.

Soft skills for employability show the highest level of importance on average.

The high importance level of integrity and problem solving skills is consistent with the qualitative feedback from recruiters received during the on campus drives. Many recruiters specifically look for engineering students who are reliable and can effectively work with team members. Table 4 below presents the resulting groups (factors) of skills generated by factor analysis.

Table 4. Summary report groups (factors) of skills generated by factor analysis

Soft skills for Employability	**Professional Skills**	**Communication Skills**
1. Honesty/integrity	1. Self management	1. Listening skills
2. Problem solving skills	2. Essentials of language	2. Reading skills
3. Leadership and team building skills	3. Goal settings- professional objectives	3. Professionally speaking skills
4. Willingness to learn	4. Time management	4. Professional writing skills
5. Assertiveness	5. Inter-personal relationship skills	5. Seminar presentation
6. Adaptability	6. Critical thinking skills	6. Group discussions
7. Change management	7. Positive attitude	7. Interview skills
8. Diversity management	8. Persistence and perseverance	8. Job readiness
9. Professional ethics		

Recruiters rated *Communication skills* the lowest on average among the three factor skills. This may be partly because recruiters think that engineering related skills can be partly remedied through in-house training even after graduation while *Professional Skills* would require longer timeframe to be acquired.

1. *Soft skills for Employability Skills* (which cover generic attitudinal and affective skills, such as reliability and team-work.

2. *Communication Skills* (such as language skills, written and verbal communication), and 3. *Professional Skills* (which generally covers cognitive skills related to the engineering professions, such as ability to apply engineering knowledge; as well as design and conduct experiments and related data analyze and interpretation). Analysis of the importance of skill sets of employers of industriessurvey responses, summarised in Tables 5A, 5B and 5C reveal description of main skills and their sub skills, topics and activities

Table 5. A I Communication Skills- Description of sub-skills, topics and activities

Description of sub skills	Details of Topics	Activities
1. Listening skills. To understand the process of listening, differentiate between hearing and listening, analyse the differences between effective and ineffective listening, know the differences between active and passive listening, identify barriers to listening and understand listening comprehension skills in the work environment	**The listening process** - Hearing and listening - Types of listening - Listening with a purpose - Barriers of listening **Improving listening comprehension** - Listening comprehension - Effective listening strategies - Team listening - Listening and note taking	• ***Listening*** to the radio (FM) for 30 minutes • Listening to a panel discussion on television • Listening to a specific dialogue in a television/ movie//video clipping • Listening to any lecture in the college • Listening to a group discussion in the college • Listening to the telephone conversation
2. Reading skills To understand the reading process, identify the purposes of reading, know to differentiate between efficient and inefficient reading and grasp techniques to improve reading speed and update the current technology for professional development.	**The reading process** - Reading- a communicative process - Reading with a purpose - Active and passive reading - Reading a speed **Reading strategies** -Reading skills - Scanning and skimming skills	• ***Reading comprehension*** • Reading and marking true or false • Reading the passage and noting down reading speed • Scanning the passage and answering within 30 seconds • Skimming and finding the central idea of the passage • Reading flow chart, pie chart and table and answering the questions

3. Professionally speaking a) Ability to understand the speech process realises the importance of conversation skills, improve fluency and self-expression and learn the use of body language. b) Ability to communicate effectively include public speaking, negotiation, knowledge-sharing; understand non-verbal behaviours, communicate on the telephone, teleconferences and video conferences and master four channels of communication: downward, upward, horizontal and diagonal communication.	**The speaking strategies** - The speech processor - Conversation and oral skills - Improving fluency and self-expression - Body language **Phonetics and spoken English** - Basics in phonetics - Pronunciation guidelines **Speaking techniques** - Developing word accent and stress - Voice quality - Developing correct tone	• ***Speaking practice*** exercises with communicative functions • Making an oral presentation in English • Preparing the check list on body language • Pronunciation exercises using audio/video clippings • Using language lab software and improving pronunciation
4. Professional writing Ability to understand corporate writing skills for preparing reports, proposals, instructional manuals, writing memos, notices, official correspondence email etiquettes and communicating grammatically	**Business and official letter writing** Sales letters Resumes and job application writing Business memos E-mail message writing Reports writing , proposals and technical articles	• ***Writing practice of different letters*** • Studying the layout of a business and official letter • Writing sales letters • Resume design and styles • Writing practice of effective job application and Job application • Writing e-mail • Learning of memos, reports, proposals and technical articles
5. Seminar presentations To overcome stage fear, the ability to analyze audience needs, structure powerful presentations, develop effective presentations, body language, use audio-visual aids and power point presentations.	**Presentation skills** - Difference between oral presentation and seminar presentation (Power Point presentation) - Planning and presentation - Structure of presentation - Checklist for presentation	• ***Preparing and presenting power point presentations*** • Paper in preparation • Practice sessions • Observing and reporting presentations • Mock presentations
6. Group discussions To know the nature and the importance of group discussion, understand the characteristics, learn to identify areas of evaluation in the selection, know how to participate, chalk out strategies for making individual contributions know how to exchange opinions and suggestions.	**The difference between group discussion and debate** Characteristics of Group discussion strategies Group interaction strategies Dos' and Don'ts Group discussion topics Evaluation	• ***Brain storming sessions*** • Mock sessions group discussion • Discussing problems among the small group members • Giving opinions on the topics • Studying case studies and discussions • Preparing the checklist before group discussion • Preparing the list of topics • Self evaluation

7. Interview skills To understand the nature of the interviewing process, know the characteristics of job interviews, identify pre-interview preparation techniques, know the different types of interview questions and how to answer frequently asked questions, understand how to project a positive image during a job interview and know alternative interview formats	**The Interview process** - Characteristics of the job interview - pre-interview preparation techniques - Interview questions - Stage fright elimination - Identifying job openings	• ***Mock interview sessions*** • Self analysis • Analyzing skill sets • Research the organization and submitting as an assignment • Preparing frequently asked interview questions • Self evaluation • Check list
8. Job readiness To build resumes and job applications, interview questionnaire and image conscious.	Preparing resumes and curriculum vitae - Cover letter - Grooming	• ***Developing the interview file*** and submitting • ***Visuals on body language*** • Viewing the mirror-appearance and dress code

Table 5. B II Professional Skills - *D*escription of sub-skills, topics and activities

Description of sub skills	**Details of Topics**	**Activities**
1. Self Management Ability to balance the work and life. To develop the personality, personal attitude, capability and personal objectives towards success.	**Self assessment** Self- awareness, Self-motivation, Self-discipline Self-direction and Self-confidence	• ***Real life examples*** • ***Preparing questionnaire*** and checking
2. Essentials of Language Recap- Vocabulary, word parts, confused words, homophones fluency building, grammar for communication and letter writing. Overview of Parts of Speech	Business vocabulary based word formation with prefixes and suffixes, Synonyms and antonyms. Verb patterns, subject-verb agreement and tenses. Voices, 'What/how' questions and question tags British and American vocabulary, Editing (Punctuation, spelling and grammar)	• ***Practicing a variety of sentences.*** • Forming words using prefixes and suffixes and finding the meanings and opposites. • Finding verb patterns of the sentences. • Changing sentences from the active voice to passive voice and vice versa. • Preparing work sheet of 'What /How' questions and responses. • Preparing tables and studying British and American vocabulary • Editing features
3. Goal Setting- Professional objectives To learn SMART, groups and personal goals, priorities , professional goals-short term and long term, action plan and achieve for success	Immediate, short time, long term SMART goals Strategies to achieve goals	• ***Preparing personal goals*** • Preparing professional goals • Discussion on goals with the friends circle
4. Time Management Ability to prioritize assignments and mange time effectively	Types of time Identifying of time wasters Time management skills	• ***Real life /professional situations*** • Preparing the schedule for weekdays/ weekend days • Preparing schedule for 24 hours with priorities • Reviewing and reporting

5. Inter-personal relationship skills Ability to build cordial relationships and develop dynamic interaction among team members and clients.	Focusing the message Magnifying the listener's attention Penetrating barriers Listening actively.	• ***Audio and video listening***
6. Critical thinking skills Ability to expand and improve thinking skills such as explanation, analysis and evaluate discussion and to think beyond	What is creative thinking? How creative thinking is useful in industries?	• ***Project report*** • Asking the students to write a paragraph on both good and bad of the themes. e. g • Computers, global warming
7. Positive attitude Ability to recognize the value of a positive attitude, understand how to maintain a positive attitude, cooperate with coworkers to create positive experiences for customers and demonstrate a positive attitude	Difference between attitude and behaviour Relationship of thinking, behaviour and attitude. How to change attitude and behaviour	• ***Discussion*** on difference between attitude and behavior • Role plays showcasing on different personalities and their attitude and behaviour.
8. Persistence and perseverance Ability to overcome challenging situations and obstacles and maintain the same energy	Studying on determination	• Asking the students to prepare and submit ***an essay*** on their professional determination.

Table 5. C III Soft skills for employability- *D*escription of sub-skills, topics and activities

Description of sub skills	**Details of Topics**	**Activities**
1. Honesty/integrity To understand that integrity is a concept of consistency of actions, values, methods, measures, principles, expectations, and outcomes and in ethics, this is honesty and truthfulness or accuracy of one's actions and develop all these concepts in the workplace.	The values of honesty and integrity. How integrity helps one to climb the ladder?	• ***Stories*** • Asking the students to remember and talk on an occasion where they showcased honesty and integrity.
2. Problem solving skills Ability to make decisions; develop creative, innovative, and practical solutions, showing independence and initiative in identifying problems and solving them within stipulated time.	What qualities should one possess in order to solve problems? What are some of the steps involved in problem solving? What are the characteristics of an effective solution?	• ***Quiz/puzzles*** • Working for some ***case studies*** • Working in groups and discussing the situations
3. Leadership and Team building Ability to understand group dynamics and work effectively within a team and work together to reach common goals, define leadership, recognize styles, personalities and internalize	Qualities of a good leader. Leadership styles, decision making, negotiation skills What is a team? What are the skills required to work in a team? How will you develop these skills in yourself?	• ***Discussing*** on the roles of the leaders and team players. • Forming the groups and assigning some tasks like creating a group e- mail id, preparing power point presentations and so on. • organizing various group discussions

4. Willingness to learn To understand that learning is probably the most important part of managing one's career and as one keeps climbing the ladder, the breadth of the profession; domain; technical experience; managerial capability; and leadership direction abilities matter significantly and learn consistently and constantly and update the current technologies to survive and sustain and achieve top position and without any external force and thirst from the inner heart.	Updating knowledge and skills Accessing different sources Motivation towards learning Upgrading skills Visiting industries and learning Accessing websites and equipping	• ***Action learning*** • ***Role play***- working in pairs and enacting the situation • Sharing the experiences in the social networks
5. Assertiveness Ability to express opinions or desires strongly and with confidence, know the techniques for assertiveness, learn to become more assertive and improve assertive behaviour.	What is assertiveness? How is assertiveness different from aggression? What are the characteristics of an assertive person? Why do employers prefer assertive candidates?	• ***Role plays*** – situations of personal and professional life on assertiveness.
6. Adaptability To understand the contemporary organizations and rapid changes and willing to work accordingly and possess the flexibility and ability to respond to rapid changes.	What is adaptability? How adaptability is a survival skill in an organization? Who needs this skill most in an organization/? How is knowledge of human relations an important dimension of adaptability? How do you maintain your self-respect and yet adjust with others?	• Studying ***case studies***. e. g • With the advancements in personal computers and the widespread use of computers and laptops for office purpose, the job of the typist has become a thing of the past. Find out from some middle level and senior level managers how the change has affected their companies. Have typists been forced out of jobs or have they upgraded their skills?
7. Change management To understand that change management is a structured approach to shifting/transitioning individuals, teams, and organizations to accept and embrace changes to a desired future state.	Mission change, Strategic changes, operational changes, technological changes and changing the attitudes and behaviors of personnel.	• ***Quiz/puzzles*** • Studying and taking notes on change management. • Preparing ***work sheets*** for change Management.
8. Diversity management Getting along with others in a multi-cultural work environment, respect for others' faith and belief systems and avoiding racial/cultural discrimination at the workplace.	Learning on multi-cultural environment. Learning about Multi National Companies	• ***Action learning*** • Preparing the list of dos' and Don'ts of diversity management.
9. Professional ethics Ability to build trust; to internalize honesty and integrity	Understanding the economy crisis, the environment and social cultural aspects professionally.	• Assigning the students to present oral presentations on professional ethics

4.4 Survey report of training methods

Soft skills are personality traits and non academic skills and these skills cannot be taught or learnt like academic subjects. Soft skills are acquired and experienced and cannot be developed by merely reading books on soft skills. But one can develop the skills through consistent observation, constant practice. The academia follows mostly transaction method for the training. The finishing schools follow the blend of training methods with more of real time practices. They prepare the trainees to open and speak, interact, view, present their ideas orally. They expect the trainees to speak and write grammatically. Most of the finishing schools stick on methods like role play, group discussion, seminar, presentation, questioning, brain storming, book reviews, interaction etc.

Cologne (2002) states, we (English teachers) should try to do our best in achieving two results simultaneously that are vital in view of the ever-changing face of English: to enhance our students' linguistic competence; and to prepare them for handling the extra-linguistic demands via soft skills. A soft skill trainer therefore before organising any group activity can always think of preparing and encouraging constructive controversy in a class room which will initially make sure about the participation of the students in the class and by accepting each other's opinion. Students will gradually learn the value of group work. It will reduce the individualistic approach of the students and will make them fit for teamwork (Nirmala Bhattacharya 2010).

There are two different models that facilitate learning related to soft skills. First one is stand alone subject model which offers specific courses and elective courses to develop soft skills. Second one is the embedded model which incorporates soft skills in the teaching and learning activities across the curriculum. This model includes activities like questioning, class discussion, brain storming, team work, presentation, role play, project, field work and site visits. Moreover, this model is based on student centered learning and it focuses an experimental learning, problem-based learning. Besides, it gives students the practical experience. Most employers say that soft skills cannot be imparted unlike hard skills that can be imbibed over a period of time. Teachers are considered facilitators and mainly act as guides for their students. The training strategies need to be provided opportunities for self- development and to be integrated in the curriculum.

More thrust has to be given for role play, group discussion, seminar, presentation, questioning, brain storming, book reviews, interaction etc. This will initially be more challenging i.e. bringing a thorough change in teaching methodology in the existing system but if we bring this sort of change in the existing curriculum. This will result in enhancing the skills set of the students and their personality as a professional (Albert P'Rayan, 2011). Active learning environment provides an active participation and positive consequences and Chynette Nearly (2005) insists, 'Instructors should explore opportunities to integrate active learning into course activities using the voice of customers'.

Uniform activities give more opportunities for students to develop their talents and skills through efficient networking with outside organizations. These activities also encourage students to lead a more active lifestyle through teamwork activities. In addition, uniform activities inculcate responsibility and leadership qualities in students with the intended outcome of producing citizens that are mature, patriotic and rationale (Sulaiman Yassin, 2008). The survey report of the recruiters, training organizations and job analysis of advertisements and their training methods of soft skills (See Table 6) are as given below.

Table 6 Survey report of training methods:

Pedagogies of soft skills	Learning activities
Brain storming	Brain storming is a group or individual creativity techniques by which efforts are made to find a conclusion for a specific problem by gathering a list of ideas spontaneously by its members. The current issues like arranged marriages versus love marriage, women empowerment, e. g: Is Social Network a boon or bane?
Visuals	The visuals are an effective training tool. Visuals creates interest, make things simple, useful, retain the students and apply concepts, e. g: The visuals of body language.
Stories	Leaders narrate the stories to influence and motivate their teams to new heights. Using this method, the trainers to break down barriers and turn a bad situation into a good one. Stories can capture the imagination. Storytelling is an effective method to communicate important messages to graduates as they can be fun and interesting, e. G: Tree cutter and ax.
Role plays	The main objective of role-playing activities is to help students practice certain language functions and learn speaking skills in an environment of fun. Top Business School conduct role-play activities to develop interpersonal and group skills. Role play activities help the students develop the confidence level, stimulated interest and involvement. Role play develops active listening skills and promoted team spirit. E.g. Interviewer and interviewee.
Mock interviews	The mock interview is one of the very best ways to prepare for an actual employment interview. The mock sessions of interviews and group discussions are helpful the students learn what is expected in a real interview; how they can improve the way they present themselves. The video interview is recorded and reviewed.
Power Point presentations	Power point presentations on the topics are displayed on a large screen and simultaneously points are explained. This includes oral presentations, interaction, questioning, listening, convincing skills etc. e. G: nonverbal skills
Real life examples	Real life examples give the immediate understanding the concepts, ideas and thoughts. The extracts of the stories, fictions, movies and sports events are effective, e. g: The success stories of great industrialists.
Action learning	Action learning is an educational process whereby the participant studies their own actions and experience in order to improve performance. Students acquire knowledge through actual actions and practices rather than through traditional instruction, e. g: The job interview process.
Seminar skills	Seminar is a method of instruction in which trainers as facilitators make an oral presentation followed by discussion on a specific topic. Seminars are more interactive than lectures. A group of people presents the topic as listeners and presenters, e. g: The relationship between employer and employee.
Games	Playing games is an activity that allows learners to participate and finally discover outcomes by giving a meaning to their discover experience. All this happens in a playful environment, e. g: Language games
Puzzles	During the lengthy training session, to have a short break, puzzles like crossword, maze, and jigsaw are allowing the candidates to think and keep the session alive. It involves serious mathematical or logical problems. Both inductive and deductive reasoning skills are required for solving.
Debate	Debate or stressing is a method of interactive and representational argument. Debate is a broader form of argument. Two teams involve in the argument.
Active summaries	This is creating small groups and asking the members and their leader to summarize the major points during the training.
Interactive learning	Interactive learning is a pedagogical approach that incorporates social networking and urban computing into course design and delivery. The socialisation of education is evolving in the form of personalized digital media sources. Weblogs, or blogs, enable candidates to express thoughts and ideas individually.
Team Based Learning (TBL)	TBL is generally regarded as a student-centered novelty, which encompasses the grouping of students into teams who work collaboratively to solve different issues and receive quick feedback on learning gaps, aided by various technologies, e. G: The water resource enhancement project on the institution's premises.
Quiz/puzzles	The quiz is a type questioning technique. A short oral or written examination to test knowledge. For long, complicated training, to stop periodically administering brief quizzes on the information presented to that point. A puzzle is a problem that challenges ingenuity. It involves language or logical problems, e. g: The profiles of Multi National Companies.
Video/audio	The trainees' presentations are video graphed and recorded and displayed. The candidates are asked to assess themselves followed by the trainer. For viewing the video/audio clippings, their language, body language, content and presentation style are discussed for the further development.

Activity based learning	Instead of making the candidates sit and listen for a long time, the small or big activities are designed and assigned them to work with the activity. The role of the teacher is to facilitate as facilitator. This is learner based. The learning outcomes are measured. B-schools implement the Activity based learning (ABL) often to create leadership and selling skill sets.
Group discussion	Group discussion is a formal discussion or verbal exchange of ideas and opinions on a specific subject with a group consisting of 5 to 8 members.
Case study	A case study is an intensive analysis of an individual unit. E. g: person, group, or event. Case study develops analytic and problem solving skills. It allows for exploration of solutions for complex issues. Case study allows students to apply new knowledge and skills. The case study should be context-based, relevant relatively realistic scenario or situation or problem.
Projects	A project in business and science is typically defined as a collaborative enterprise, frequently involving research or design that is carefully planned to achieve a particular aim. The project means to throw something forward. E. g: Success of the interview.

4.5 The role of teachers

It's a well known fact that no teachers can teach soft skills but they can develop, inculcate and display as soft skills practitioner in their day today transactions. Andrew Button (2012) insists, 'To teach soft skills, the teacher must have an abundance of soft skills to begin with, because teaching itself is a soft skill. However, with some practice and patience, a teacher can easily teach soft skills to their students or employees'. Teachers should react to the changing scenario and equip themselves to meet the need of the hour. Especially, the English teachers, at this crucial juncture, should play a vital role in bridging the gap between what is now available in the form of curriculum and demands of the industry. The present day teachers need to concentrate on improving language efficiency and soft skills by making use of real life situations as teaching material. For this, a more creative, analytical, logic –oriented and interactive method of teaching need to be adopted. It's needed to place more prominence on the training and development of teachers in technical institutions. There is a wide gap between the existing system of language teaching and the desired language and soft skills of the engineering students. The students need better language skills to understand their subjects and for their greater employability. The teachers who are working in the technical institutions with more of literature oriented than language components. Further, there are no industrial exposures to these teachers.

In the age of globalisation, teachers are expected to play different roles: diagnosticians, counselors, communication skills consultants and soft skills trainers. As diagnosticians they diagnose the communication problems of learners and as communication skills consultants they devise strategies to develop individual learner's communication skills and as soft skills trainers they train the target group and empower them (Albert P'Rayan, 2011).

4.6 Evaluation

Pulko, Susan H, (2010) a diverse array of tools and activities is available for developing and assessing the knowledge and skills of the students, including their soft skills. Some assessment tools and activities available include: comprehensive exit, examinations or exit interviews; class projects; portfolios, surveys of students alumni, and employers; pre-test/post tests; pass rates on professional certification examinations and standardized tests, scores on locally developed achievements tests; and career placement rates.

Reshape assessment methods, especially exams at the large affiliating universities, to assess higher-order thinking skills and not measure memorized knowledge. This would require institutions to focus on learning rather than memorization and mere understanding. In order to do so, curricula should be designed in a way where students learn how to abstract out complex and practical issues within limited time (Andreas Blom and Hiroshi Saeki, 2011). Peers' evaluation is one of the best methods to assess the candidates' strengths and Ross Geraghty (2005) stresses, 'Get specific feedback from colleges and peers on the role-consider ways of capitalizing on your strengths as well as focusing on areas that need development'.

Learning outcomes of soft skills need to be assessed through interactive evaluations. It is pointless to assess the following conventional methods because the skills themselves cannot be contained in simple answers. To properly evaluate soft skills, the teachers must assign evaluations that demand real-world demonstrations of learning: debates, oral presentations, persuasive essays, etc.

4.6.1 The teachers need to be well thought-out the following things during evaluation:

1. Interest, attitude and assertiveness. 2. Active participation and team spirit. 3. Leadership skills. 4. Problem- solving competence. 5. Presentation and group communication skills. 6. Interpersonal skills. 7. Team skills. 8. Personal grooming and body language. 9. Sociability and 10. English language skills.

4.6.2 How the evaluations need to be carried out?

1. Evaluation should be a systematic, consistent for continuous improvement. 2. Evaluation should ensure intellectual, professional, personal, and cultural values of candidates. 3. Assessment outcomes should be used in planning, budgeting, and allocating resources. 4. There should be flexibility in the choice of assessment

procedures. 5. Assessment should be based on objective type, both quantitative and qualitative. 6. The learning outcomes should be verified with the objectives. 7. Assessment should be cost-effective. 8. Assessment procedures should be regularly interfering on candidates and teachers. 9. There should be regular comprehensive reviews after assessment and 10. There should be remedial sessions after identifying the weaknesses of the candidates and teachers.

4. 7 Major findings with analysis of the collected data

Equipping and working out engineering students with a comprehensive and deep set of skills that are in demand would be of great importance for the employability for the nation's development. Large economic sectors, such as IT, infrastructure, power and automobile, water, rely critically upon soft skills. Only through these skills, one can explore and excel technologies. This employer survey provides important new insight on which specific skills are important for employers and where the engineering students currently fall short.

The following findings are important to keep three requirements in mind:

1. The curricula of academia focus mostly language and grammar in the first year of engineering education. Technical English is more of examination based rather than application oriented. There is no opportunity of providing oral presentations, interactions and small group discussions in the language class rooms. The third year students should have exposure of seminar skills, group discussions and interviewing skills. These skill sets need to be provided to compete in the competitive world.

2. The employers expect end products directly from the academia. Recruiting as mediocre candidates and train those for three to six months would be a tedious and economically not feasible for most of the industries.

3. To match with the requirement of the industries and to make more number of employable candidates, an exclusive curriculum of soft skills need to be introduced. The articulation should be followed like corporate. The evaluation system needs to be revamped to have more exposure and practice rather than written examination oriented.

5. Implication for soft skills curriculum

Several implications flow from these results

- Experiential learning opportunities involving collaborative projects with the industries need to be provided
- Blogs need to be used to enhance written communication.
- Multi-disciplinary competency development is needed.
- Opportunities have to be given to relate to real-world problems and ability to see the larger picture.
- In the age of globalisation Language teachers need to undergo a paradigm shift and change their teaching methodology that will suit the needs of candidates.
- The teachers should be willing to come down to the level of students and instill confidence in the latter.
- They should assess the present and future language needs.
- They are expected to play the role of soft skill trainers as facilitators.
- The soft skills training programme need to be introduced right from first year.
- The ratio between technical skills and soft skills can be 80 % and 20 % respectively.

This is possible only if curriculum designers become aware of the real needs of the future professionals of the world. There should be more representation of the industries, finishing schools and soft skills trainers during curriculum frame work. The curriculum has to be updated at least once in three years.

6. Conclusion

In this paper the authors have conducted two surveys on professional development curriculum design and methods of teaching of modules. In a survey format and interviews, a sample of employers, recruiters and soft skills trainers of the corporate and training institutions were asked to reflect on the curriculum framework and pedagogical approaches with the perspective of the industries and businesses. Research results indicate that soft skills curriculum has to be modified and the priorities of certain modules need to be incorporated. The teaching methods are also need to be shifted to training especially in face to face practice sessions rather than delivery or any other conventional methods. Teachers have a crucial role in efforts to enact the new curricula that are being developed. Therefore, it is most important for the engineering colleges to have teachers with up-to-date knowledge and skills to design, implement and deliver new curricula. The needs of the engineering students for industry are continuously changing. Every industry is looking for the students a blend of soft as well as hard skills is considered a supreme essential to develop and succeed. In order to meet the requisites of the industries, the teachers need to be trained and update their industrial exposures and settings. Identifying the soft skills, articulating and assessing time to time are essential to providing curricula and pedagogy that promotes continuous improvement and demonstrates accountability.

Annexure A Recruiters' importance level of soft skills survey

1. Which of the following soft skills do you consider important when hiring new engineering graduates? Please rate on a

scale as

1. Extremely important, 2. Very important, 3. Important, 4. Somewhat important and 5. Not important.

Questionnaire 1 for soft skills trainers

S.NO.	SKILLS	SCALE 1 to 5	S.NO	SKILLS	SCALE 1 to 5
1	Communication skills (Oral, written and non- verbal)		16	Multicultural sensitivity awareness , Body language, and cross - cultural Communication)	
2	Interpersonal abilities		17	Assertiveness	
3	Problem solving/critical thinking skills		18	Decision making	
4	Seminar Presentation		19	Integrity/honesty	
5	Leadership / Team Management		20	Persuasive skills	
6	Etiquettes (Email, Telephone)		21	Entrepreneurship skills	
7	EQ (Emotional Intelligence Quotient)- Psychometric Test		22	Persistence and perseverance	
8	Time management		23	Setting goals	
9	Desires to learn		24	Job preparedness (Resume preparation, grooming, interviews and group discussions)	
10	Corporate etiquette		25	Creativity/innovation	
11	Positive attitude		26	Change Management	
12	Verbal and logical reasoning		27	Professional ethics, values and attitude	
13	Effective public speaking skills			Any other skills:	
14	Essentials of English, Grammar, Pronunciation, Exposures into IELTS, TOEFL and BEC (Business English Certificate) TEST)		28		
15	Flexibility/adaptability		29		

Annexure B Recruiters' importance level of pedagogies of soft skills survey

1. Which of the following soft skills do you consider important when hiring new engineering graduates?

Please rate on a scale as **1. Extremely important, 2. Very important, 3. Important, 4. Somewhat important and 5. Not important.**

Questionnaire 2 for Trainers

S. NO.	**Pedagogies of soft skills**	SCALE 1 to 5	S.NO	**Pedagogies of soft skills**	SCALE To 5
1	Brain storming		14	Quiz/puzzles	
2	Stories		15	Video/audio	
3	Role plays		16	Activity based learning	
4	Mock Interviews		17	Group discussion	
5	Power Point Presentations		18	Case study	
6	Real life examples		19	Projects	
7	Action learning		20	Visuals	
8	Seminar skills		21	Team projects	
9	Games		22	Student collaboration	
10	Puzzles			Any other pedagogies:	
11	Debate		23		
12	Active summaries		24		
13	Interactive learning		25		

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