

Assessment of Soft Skills among Engineering Students - An Analytical Study

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Abstract: This study assesses to investigate the soft skills among engineering students in India. In this assessment we selected 150 final year engineering students to examine the acquisition of soft skills in the engineering education. In particular, 10 common questionnaires were prepared based on Likert Scale format to collect data from 5 different branches of engineering. The questionnaires were prepared based on HRs requirements of their companies. It was founded that the different branches students have chosen various skills. The answers proved that, the 5 branches of students need to acquire and inculcate soft skills to face workplace challenges. The collected data has shown the skills gap, genuine position and need of expertise of the students in skills. The conclusions are demanding that the students are needed to enhance and recognize the importance of soft skills to reach the workplace challenges.

Index Terms: Branches, Engineering Education, Engineering Students, Soft Skills

I. INTRODUCTION

Today in India, universities and colleges are equipping the skill oriented engineering education for the future workplace to develop the economy of the country. To reach the global and local challenges, skilled engineering students are needed. Tremendous changes have been occurred in global workplace and it is changing the roles of employee in organization. Faridah Musa (et al. 2011) discussed the importance of soft skills in project based learning to face workplace challenges [1]. Engineering students have more opportunities to prove themselves in global workplace. Most of the engineering students have good academic skills. These academic skills are not sufficient to fill the global employability requirements. According to Kyle Lagunas, principal analyst at lighthouse research & advisory, discussed most of the colleges aren't bullied out the students need to become value-added employees [2]. It is mandatory for educational institutions to create a competitive global atmosphere to comprehend the abilities and skills. The present global work places require variant skill based employees to develop the organizations. To boost up the S.S in individual is not an easy task, basically soft skills depends on psychology. Psychological balance is also required to process the problem solving, self-motivation, professionalism, adaptability, work ethics and emotional intelligence skills in workplace. Acquisition of these skills begins from primary education level and it may be continued to higher education. It is also

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important that, what kind of skills have been taught in primary level and which skills need to enhanced in engineering education. These modifications may help the universities and autonomous colleges to incorporate skill based curriculum in engineering. The different companies of HRs are prioritizing the soft skills to fill the organizational requirements, based on their requirements it is essential to improve particular skills for the particular branches. The different engineering branches comprise particular set of skills. For example, computer science students represent skills like programming and analytical skills. Even though all branches of students required communicative skills, problem solving techniques, e-mail management skills, inter-personal skills, professional skills, workplace skills and management skills, self-awareness skills, adaptability skills and professional etiquettes for the strong implementation of organizational procedures. In other hand, hard skills are also playing a key role to enhance the specific technical skills to perform the job. For the effective and constant performance of employees need soft skills. Soft skills may help the students to do own research on hiring, develop own company startups and self-promotions in work. Today in India employability in engineering sector is becoming a big question. According to India Skill Report 2017, around 29 states of India, the engineering colleges are producing 5,00,000 technical and engineering students every year [3]. The fast development of globalization, developing country like India started reforming the workplace strategies to match the global challenges. Indian engineering universities and colleges have been established in urban, semi urban and rural areas. Indian rural engineering students are need to exposure to the global platforms. This assessment makes an attempt in semi urban engineering college to analyze the results of a survey conducted to define the skills in which they mostly select and fail to match themselves to workplace. This survey will aid the educators, where the students generally fail in matching the skills and how to make changes or enhancements of skills in the course.

A. Meaning of Soft Skills in brief

It is very difficult to define soft skills, before define soft skills, we need to understand how these skills are playing pivotal role in professional and personal life. The definition is the amalgam of values, culture, belief, attitude, courtesy, traits and empathy. Tim Peterson et.al define that, the skill is the ability to perform some task with specific knowledge, process and behavior. Hurrell et.al defines soft skills as "it is a nontechnical and not reliant on abstract reasoning, involving interpersonal and intrapersonal abilities to facilitate mastered performance in particular contexts" [4]. Soft skills are also called as social or life skills.



II. LITERATURE REVIEW

Soft skills are significant for engineering students to success in campus recruitments and in workplace environment. Many research studies had been conducted by researchers to identify the importance and requirement of S.S for employability. The generic skills also refer the importance of basic skills like problem-solving, technological skills for engineering students [5]. UGC (University Grants Commission) India, established Skill Development Bureau to enhance skills and knowledge in universities and colleges [6]. The aspiring-minds, global job skills credentialing leader, (India) reported in 2017 that, top eight enviable skills and traits include one soft skill, four cognitive skills and three personality traits are also needed for employability [7].

Based on Skills Assessment in India, A Discussion Paper on Policy, Practice and Capacity, British Council, 2014, interviewed and the results revealed that, to focus on current assessment skills gaps [8]. The outcome based education in engineering introduced by National Board of Accreditation (NBA) in India, has become the permanent signatory member of the Washington Accord on 13th June, 2014, the outcome based education required skills like, individual and team work, communication, ethics and lifelong learning skills [9]. UGC established Deen Dayal Upadhyay centers for Knowledge Acquisition and Upgradation of Skilled Human Abilities and Livelihood (KAUSHAL) (2014-2017) [10], these centers providing supplementary modular training programs train his/her work skills like soft skills and ICT skills to fill the communicative gaps.

III. METHODOLOGY

This assessment worked out to identify the soft skills among engineering students. For this study we selected 5 different branches of engineering 1. Mechanical Engineering (ME) 2. Civil Engineering (CE) 3. Electronics and Communication Engineering (ECE) 4. Computer Science Engineering (CSE) and 5. Electrical and Electronic Engineering (EEE), etc. We selected 30 students from each branch and totally 150 students have been participated and 10 survey questionnaire was commonly prepared for 5 branches based on Likert Scale format to collect the data. The main aim of this study was to gather: *How much they acquired and comprehend the soft skills from the engineering education to match the workplace?* The survey consisted of ten soft skills based questionnaire as follows:

Q1. Communicative Skills, Q2. Problem Solving Techniques
Q3. E-mail Management Skills, Q4. Inter-personal Skills
Q5. Professional Skills, Q6. Workplace Skills, Q7. Management Skills, Q8. Self-awareness Skills, Q9. Adaptability Skills, Q10. Professional Etiquettes

IV. FINDINGS & DISCUSSION

In this study we selected 3 points on Likert scale SA, A and ST to assess the skills, because majority of the students chosen these points and remaining points are negligible. Expansion of the Questionnaire: (main reasons for selecting)
Q1. Communicative Skills - listening to others and open-mindedness
Q2. Problem Solving Techniques - identify the problem, evaluating and possibilities of solution
Q3. E-mail Management Skills - responsive nature and emotional writing skills

Q4. Inter-personal Skills - diplomacy and empathy to work
Q5. Professional Skills - leadership quality and collaborative skills
Q6. Workplace Skills - work ethics and time management
Q7. Management Skills - planning and delegation
Q8. Self-awareness Skills - emotional awareness and personal values
Q9. Adaptability Skills - actions and new approaches
Q10. Professional Etiquettes - the meeting and greeting and dining and eating etiquettes

A. Identification of Soft Skills in Civil Engineering Students

This division consists of 10 questionnaires and the analysis of the collected answers from the 30 students.

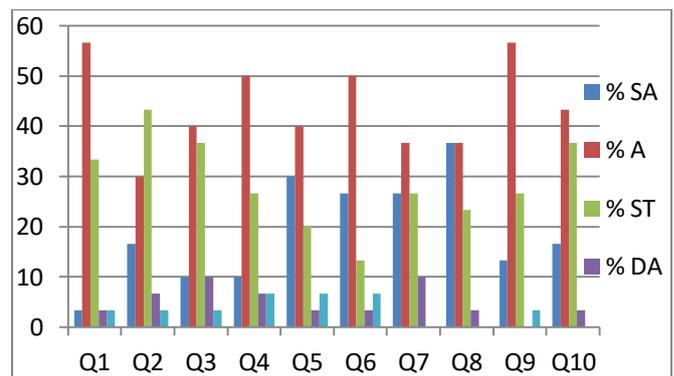


Fig. 1: Skills of CIVIL Engineering students

The Fig. 1 response of Civil engineering students about questionnaire is illustrated in Fig. 1. The Q1 was answered with the 93.32%. The Q2 was totally agreed with 89.9%. The Q3 e-mail management opted with the 86.6%. The Q4 was responded with 86.6%. The Q5 was chosen with the 90%. The Q6 was opted with 89.4%. The Q7 responded with 90.0%. The Q8 is stands with 96.25%. The Q9 responded with 96.55%. Majority of the students responded the Q10 with 96.65%.

B. Identification of Soft Skills in Mechanical Engineering Students

This report consists of 10 questionnaires and the analysis of the collected answers from the 30 students. The response of ME students about questionnaire is illustrated in Fig.2. The Q1 was answered with the 96.66%. The Q2 was totally agreed with 89.09%. The Q3 e-mail management opted with the 90.33%. The Q4 was responded with 96.65%. The Q5 was chosen with the 83.65%. The Q6 was opted with 86.66%. The Q7 responded with 93.32%. The Q8 is stands with 80.00%. The Q9 responded with 86.06%. Majority of the students responded the Q10 with 96.67%.

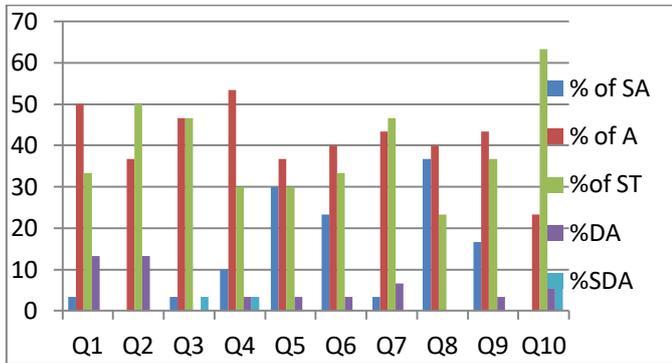


Fig. 2: Skills of Mechanical Engineering students

C. Identification of Soft Skills in Computer Science Engineering Students

This division consists of 10 questionnaires and the analysis of the collected answers from the 30 students.

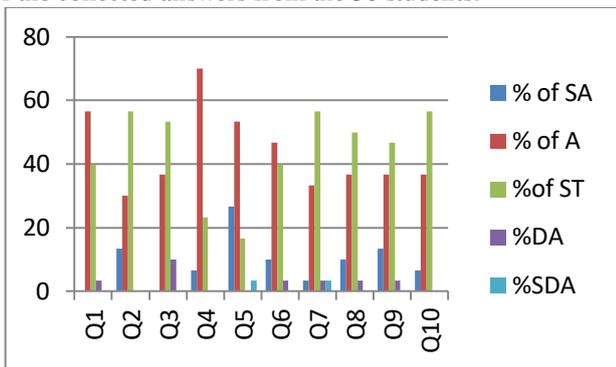


Fig. 3: Skills of Computer Science Engineering students

The response of CSE students about questionnaire is illustrated in Fig. 3. The Q1 was answered with the 96.66%. The Q2 was totally agreed with 96.90%. The Q3 e-mail management opted with 96.05%. The Q4 was responded with 96.66%. The Q5 was chosen with the 96.55%. The Q6 was opted with 96.00%. The Q7 responded with 93.66%. The Q8 was stands with 94.66%. The Q9 responded with 96.65%. The final question Q10 was responded with 96.65%.

D. Identification of Soft Skills in Electronics and Communication Engineering Students

This section consists of 10 questionnaires and the analysis of the collected answers from the 30 students.

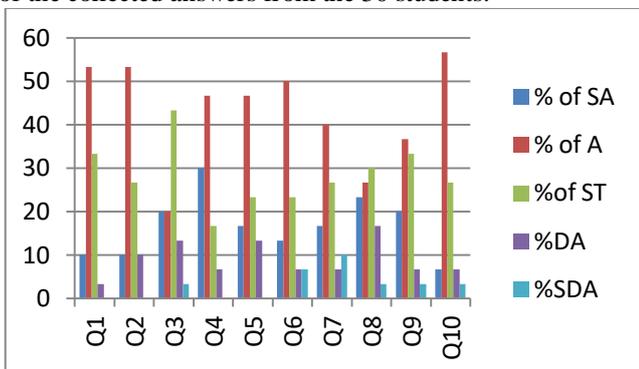


Fig. 4: Skills of Electronics and Communication Engineering students

The response of ECE students about questionnaire is illustrated in Fig. 4. The Q1 was answered with the 96.66%. The Q2 was totally agreed with 90.90%. The Q3 e-mail management opted with the 83.33%. The Q4 was responded with 92.33%. The Q5 was chosen with the 85.66%. The Q6 was opted with 86.66%. The Q7 responded with 83.38%. The

Q8 was stands with 86.66%. The Q9 responded with 90.05%. The question Q10 was responded with 90.66%.

E. Identification of Soft Skills in Electrical and Electronic Engineering Students

This division consists of 10 questionnaires and the analysis of the collected answers from the 30 students.

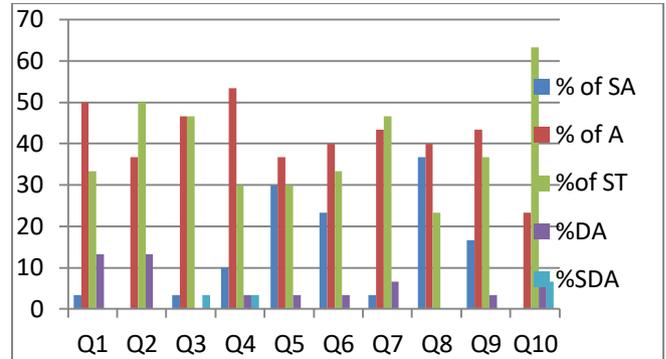


Fig. 5: Skills Electrical and Electronic Engineering of students

The response of EEE students about questionnaire is illustrated in Fig. 5. The Q1 was answered with the 86.30%. The Q2 was totally agreed with 86.06%. The Q3 e-mail management opted with the 95.32%. The Q4 was responded with 93.33%. The Q5 was chosen with the 96.06%. The Q6 was opted with 96.66%. The Q7 responded with 93.00%. The Q8 was stands with 87.00%. The Q9 responded with 83.00%. The question Q10 was responded with 86.66%.

V. CONCLUSION

These findings are revealing that, the student's soft skills are at moderate level and they are enhanced to obtain employability in the global market. The questionnaire from Q1 to Q10 provided practical data of soft skills which they employed. The skills which are learned by the students through the engineering education are significant to become employers and to meet the global challenges. This assessment suggests that, students still need to improve soft skills and explore to the practical experience of employability. The educational institutions should ensure the engineers with skills to fill employability gaps.

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