

Engineers and Soft Skills

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Abstract: The aim of this paper is to highlight and discuss the importance of Soft Skills in ensuring the success of careers in Engineering. Apart from having technical background required for the job, they also need non technical skills and corporate dynamics. The requirement of having soft skills at various stages of an engineer's career is also discussed in this paper. The citing of various Engineers about global soft skills is also mentioned in this paper. This paper throws a light on how soft skills are directly proportional to one's personality. Experiences of what a company looks for in new engineers is also discussed. How an engineer interacts with a global clientele is also discussed. Soft Skill advantage is also mentioned. To prove this an example of interview handling is also given.

Keywords: Career, Corporate Dynamics, Engineers, Non Technical Aspects, Soft Skills.

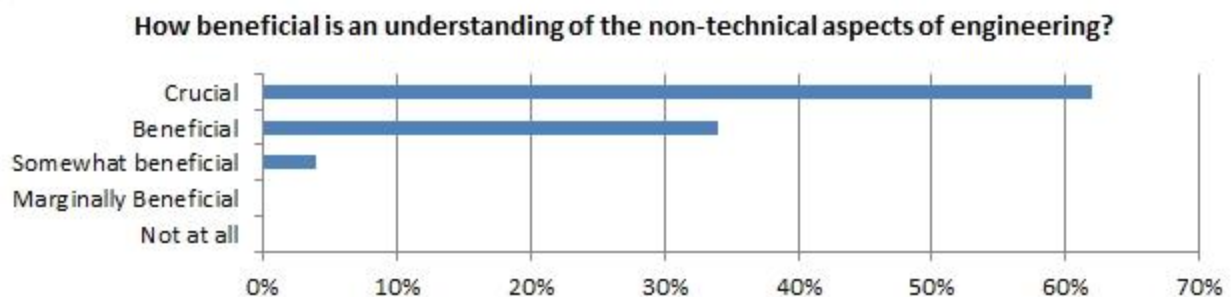
I. INTRODUCTION

The most common question for engineering students is: Beyond technical skills, experience and knowledge, what added value do you bring to the organization? Of course, it is the soft skills that ensure success in your career.

In India, engineering as a career has always attracted the student community in a big way. Testimony to this fact is an ever-increasing number of aspirants taking various entrance exams to qualify and enroll for their choice of engineering branch. Throughout the course, one learns and specializes in a particular branch of engineering theoretically and practically. However, just technical skills are not enough. Therefore soft skills are critical to make them employable.

They have the technical background required for your job; to succeed they also must understand the non-technical skills and corporate dynamics that are essential to success. It's the non-technical aspects – communications, relationships, your temperament (Myers-Briggs and Gallup Strengths), emotional intelligence, risk management – of engineering that is the difference between success and failure. The importance of soft skills to engineering career is best shown in the chart below which shows responses to the soft skills survey question: *How beneficial is an understanding of the non-technical aspects of engineering?*

Benefits Of non Technical Aspects



“It [non-technical skills] has allowed me to advance my career from being a technical contributor, to a technical leader, into technical management. I still heavily rely on my technical skills, but the non-technical skills have allowed me to guide my career into areas that interest me” said a respondent.

At various stages of the career, the soft-skills requirements keep varying. The scope and impact of roles keep increasing as careers progress and therefore the specific interventions and methods to augment soft-skills need to be carefully planned. Recent challenges of globalization are proving that the weightage for technical excellence towards overall effectiveness has reduced making way for newer skills like knowledge of interacting with trans-national cultures, business etiquette, expected and acceptable behavior in new geographies, handling telecoms, graphic communication including use of annotations with pictures.

According to a recent report by employability assessment company “Aspiring Minds,” 56 per cent engineering graduates in India lack soft skills and cognitive skills. Non-technical aspects of engineering such as communications, relationships, temperament, emotional intelligence and risk management make a difference

between success and failure. Understanding and adapting to the working environment is just as crucial as getting the job itself.

Prohodsky says, “Engineering is the application of hard sciences to solve real problems but what they rarely teach in colleges is that engineering, in addition to being a technical activity, is an economic activity and, most importantly, a human activity.”

According to him, the ability to understand company and work team culture is the most under-appreciated soft skill.

Bhagat says, “As companies become more global, soft skills are highly desirable and required in more positions now than ten or even five years ago. You may have an excellent knowledge base in engineering or technology, perhaps even a PhD, and maybe bilingual but if you have not developed good skills in communicating, interacting and people resource management, you have already limited your opportunities and chance of success.”

Vas adds, “Networking is also important; engineers need to keep in touch with alumni as well as industry experts via various interactive forums to understand the ground realities better.”

Traditional soft-skills continue to be relevant and these include adaptability, open-mindedness, problem solving, decision making, communication skills, self learning and knowledge discovery, empathy and team work, motivation, attitude and a spirit of enquiry. “Attitude” is a word encompassing several factors, need for taking initiative, perseverance in adversity and motivating others. The thinking faculty is something that will really help create a world-class work-force. The thinking workforce continuously tries to explore the “why”, not just “what”. Going beyond “why”, the doors of innovation are opened up through imagination and asking the question “what if” and then following it through in a structured way.

As an illustration, the changing business scenario today has resulted in specific soft-skills assuming importance as shown below

Services Skills Linkage:

BUSINESS PARADIGMS IN ENGINEERING SERVICES	SOFT-SKILLS DEMANDED BY THESE PARADIGMS
Project management	Team work
Knowledge management	Written English, writing skills
Integrated product teams (IPT), Concurrent engineering	Spoken English, verbal communication
Quality systems and processes	Mindset, attitude, attention to details, assertiveness, integrity
Global project teams	Business etiquettes, cultural sensitivity
Rapid changes in business and technology	Stress (self) management Innovation / Productivity improvement Open, inquisitive mind, creativity

Naresh Narasimhan, country marketing manager, Tektronix, says, “In the 21st century and going forward, three things are important—ability to communicate an idea visually, ability to have a balanced point-of-view on key issues and ability to convert ideas to results.”

The concept of soft skills is not limited to just plain communication skills but it also includes aspects such as people skills.

Dr Pallab Bandyopadhyay, director-HR, Citrix India, explains: “In the broader context, soft skills would also include negotiation, decision making, reasoning and problem solving, and conflict-resolution skills required in today’s work environment.”

When evaluating a candidate on soft skills, HR professionals look at not only his ability to communicate his thoughts clearly and concisely but also his personality and problem-solving skills.

Defining soft skills, John Prohod-sky, founder and principal consultant, Future Envisioned, says, “Soft skills are non-technical, interpersonal and communication skills required by an engineer to successfully solve problems and apply his technical skills.”

Throwing light on how soft skills are directly proportional to one’s personality, Rajesh Choudhary, HR head, Xilinx India, says, “Personality traits such as common sense, optimism, responsibility, integrity, attitude and behavioural competencies that include analytical thinking, result orientation and achievement,

communication, teamwork, conflict management, customer orientation and attention to details come under soft skills.”

As soft skills cover all the aspects related to human behaviour, Zubin Rashid, managing partner and head of training, ZRINDIA, believes that “Just as hard skills teach us about domain-specific skills like technology, products and processes, soft skills are about interacting with people with whom you work.”

Every company looks for a different mix of skills and experience and it is not enough just to be a subject matter expert. Communication is an integral part of soft skills.

Surinder Bhagat, country HR head, Freescale Semiconductor, India, says, “Soft skills can also refer to a set of skills that determine how one interacts with others in a way that the company as such gets represented well. These skills are applicable to all internal as well as external forums where employees are making key interactions.”

Tina Vas, vice president-global HR, Collabera, says “Simply put, soft skills have more to do with who we are than what we know.”

Soft skills critically impact the way an individual translates his expertise across to his team and further to the whole organization.

Ramana Vemuri, VP-process and operations, Cigniti Technologies, believes that soft skills enhance an individual’s interactions, job performance and career prospects. According to him, emotional intelligence is the critical element that defines the core of soft skills a person is equipped with.

Technical abilities may be important to get good assignments in the initial years of one’s career, but when it comes to growing in an organization it is one’s personality that counts, especially on a large platform where people with similar technical expertise, proficiency and competitiveness are vying for promotions. In a country like India, ‘soft skills’ training becomes even more important since the education system does not include personality development anywhere in its stream of academic curricula. Companies are forced to invest more and more on soft skills training in order to groom their employees to present themselves in a better manner and improve their performance.

Today’s software engineer in India is no longer restricted to his own area of work, but has to interact with various kinds of clients, locally as well as globally. More and more employees are going abroad on projects and assignments. Tele-conferencing and video conferencing has become the most common mode of communication. Webex is the most convenient way to communicate across places even within the country.

Software professionals interacting with international clients must possess good communication and negotiation skills, team working skills for having healthy working relationships, time management skills when it comes to meeting deadlines, leadership and multi tasking skills when it comes to heading a team, business etiquette for adapting to various business cultures, and so on.

In the IT sector, almost every software engineer dreams of getting an opportunity to work onsite on a live project. Any newly recruited software engineer dreams of climbing up his career ladder; from a team member to a team leader and upward to a project manager and so on and so forth. For this growth, both within an organization as well as through one’s entire career, merely being tech savvy is not enough. One also needs to have an ‘all-round personality’ which is nothing but a synonym for ‘good soft skills’.

To gain an understanding of soft skills, their importance and how they benefit one’s career, it is important to understand some foundational skills – listening, writing and verbal communications and, more importantly understanding and adapting to your employer’s culture. Specifically, learning: How to adapt to the new environment through understanding of the corporate hierarchy, history, and culture What it means to be a part of a team and how to get results Understanding who they are and recognizing their non-technical abilities How to manage the time, tasks, and priorities How emotions influence interactions with others The importance of listening and the elements of effective verbal communications The consequences of decisions and what influences decision making Leadership – what it involves and how leaders adapt How to contribute through innovation and entrepreneurship. What You Need To Get Is The Soft Skills Advantage .

Imagine the freedom of never again having to worry about...

Wasting time in unproductive meetings.

Getting the full support of your team in moving a project forward.

Whether or not your project will be sabotaged by someone else.

Dealing with difficult people.

Presenting and getting buy-in in-house for a new project proposal .

Dealing with people outside of your profession.

Losing your star performer because of inability to handle the people side of their new position.

Losing a contract or a customer because you couldn't get them to understand the value of your proposal.

Missed deadlines and budget over-runs because of miscommunication.

Losing your job because you couldn't handle the people-side of things!

Interview Handling

They are excited, nervous and slightly afraid — afraid they will not get the job, but even more afraid they will make a fool of yourself.

I know the feeling and, though it will lessen with every interview, it will never totally go away. So what do they do?

Cram up on everything they should have read, but haven't?

Try to predict what the interviewer will ask and then mug up the answers?

Consult their horoscope to help decide whether they are really destined for the job?

Make a pact with God to pray more if they get the job?

Well, there are ways to beat the stress to a certain extent, by preparing both subject-wise and personally for what is going to be an experience of a lifetime.

After all, they may go through the interview process many times but the first interview is always unforgettable.

It's OKAY to be nervous.

They are not alone — most people find the event stressful.

The secret lies in getting over that feeling or, at least, not letting it overcome them.

Just remember, feeling nervous is natural — acknowledge it, accept it and move on. Doing this is not easy, but it is not impossible either.

Be prepared

The first three rules of doing well are:

i. Know your subject.

ii. Know your subject.

iii. Know your subject.

Quick tips

~ Mock interviews

A mock interview is a great way to anticipate questions as well your own responses to them.

~ Make a note of where you falter.

~ Get a friend to play the interviewer or rehearse in front of the mirror.

~ What if an interviewer is extra nasty to you? Or asks you particularly contorted questions?

Take it in your stride. There are times when people try and stress you out to see how you manage under stress.

In most cases, how you answer a question is more important than the answer itself.

The important thing is to keep your calm and answer in a matter-of-fact tone.

~ What if you do not know an answer?

If you have absolutely no clue, it is better to say so than give a really farfetched answer and look foolish. Be sure not to do this with every second question though or you will certainly look ignorant. On the other hand, if you are reasonably (but not 100 percent) sure or you know at least some information and can make a knowledgeable guess, go for it. You could always preface your answer with a comment indicating you are not an expert or that you know a little but not everything about the subject.

Last but not the least — to minimise this situation, try and know most of what you need to know about the interview, your job profile and the company. Don't believe rumours

When people come out of the interview, they share their experience with you. Don't get carried away by everything they say.

Your experience is going to be different and, though you can learn a few pointers, don't take what they say as the gospel truth. Each interview is unique.

“Good communication skill is a must for engineers”

This line is usually seen in every job requirements especially openings in QA and testing field. As testers require communicating with different project team members including clients, communication skill plays important role. If they want to win the arguments (I mean arguments that are right) and find the common solution for their problems with their subordinates then they should be able to express their views effectively.

Keep in mind these simple rules for effective communication:

Listen carefully when others are clarifying their thoughts. Don't interrupt others in-between.

Do speak up. Don't fumble.

Be brief. Don't talk on and on about your points.

Do not speak too fast. Slow down while speaking.

Speak clearly. Your pronunciation should be loud and clear.

Do use natural gestures. Don't be stiff.

Do vary your volume pitch and tone. Don't talk without showing emotions or expressions

Make eye contact with whom you are speaking. This increases chances of mutual agreement.

Read, read and read. For better communication and effective words in your speech your vocabulary should be very strong. Reading more and more will increase your vocabulary.

Some important secrets of Soft Skills

Intuition: A good Engineer understands that technology can snowball small errors into disasters. They can check their designs and calculations by hands whenever necessary.

Interpersonal Skills: Engineering and science projects are a collaborative process. It is important for engineers to be able to work with people from different backgrounds in order to solve problems.

Listening: Good listeners usually make great leaders. Engineering is solving problems by listening to inputs from others.

Design Skills: Those who cannot perform basic calculations and skills, their discipline are vulnerable to layoff. Make sure you keep your basic skills sharp throughout the year.

Presentation Skills: Engineers deal with people on a daily basis and should be adept in presenting their ideas to technical and non technical audiences.

Creative/ Innovative Thinking: Out of the box thinking is a skill that engineers should cultivate early and use often as many complex problems require creative ideas and tools to solve.

Writing: Believe it or not writing is still a major form of communication. Those who cannot express their ideas on paper are at a disadvantage at their workplace.

II. CONCLUSION

There is no doubt about the fact that the hard skills are an absolute essential for an engineer to perform his job diligently and efficiently. The fact that the second skill set, that is, the soft skills along with the hard skills are an absolute essential for growth of an engineer in the organization. A blend of both is what determines your level of success as a professional. Soft Skills are what are termed as people skills or interpersonal skills. These determine an engineer's attitude towards his work, organization, clients and colleagues. Soft skills are not just limited to the workplace of a professional but extends to other spheres of his life too for example social and family. Soft skills is not just about communicating, but includes ability to manage stress, ability to organize, ability to provide solutions. Most of the times the importance of soft skills is ignored and not given adequate attention for engineers. The education that goes in to make an engineer does not concentrate on the people skills. The curriculum tends to ignore the fact that at the end of the day an engineer would be working in a team, reporting to someone, taking reports, dealing with work pressures, giving presentations, attending phone calls, sending mails just to specify a few. In all such situations along with technical skills, experience and physiological maturity of an individual is going to play an important role.

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