

INDUSTRY EXPECTATIONS FROM YOUNG ENGINEERS GRADUATES

V.Ajith Kumar¹, H.Ajith Kumar², V.Bharathi³, J.Abdul Aziz Khan⁴

¹UG Scholar- Department of Electrical and Electronics Engineering, V.R.S College of Engineering and Technology, Villupuram District ,Tamil Nadu, India

²UG Scholar- Department of Electrical and Electronics Engineering, V.R.S College of Engineering and Technology, Villupuram District ,Tamil Nadu, India

³UG Scholar- Department of Electrical and Electronics Engineering, V.R.S College of Engineering and Technology, Villupuram District ,Tamil Nadu, India

⁴Assistant Professor- Department of Electrical and Electronics Engineering, V.R.S College of Engineering and Technology, Villupuram District ,Tamil Nadu, India

ABSTRACT:

Population of India has increased drastically, and we need to provide world class education. India has made progress in terms of increasing the primary_education attendance rate and expanding literacy. India's improved education system is often cited as one of the main contributors to its economic development. "The challenge is to impart skills to the large majority of Indian students," and to maintain quality education through assessment and assurance. There's a delicate dance taking place within higher education today. In a bid to bridge the gap between industry and higher education beyond that what industry is expectecting from students? Industry expects "Students will get an opportunity to work on industry projects, thus giving them practical training and improving employability," In this paper we proposed how the education content is enriched with quality assessment and assurance and what are the major skills expected form different industries and seeks to find out the relevant gap between the academic output and industry requirements ,to Execute in Engineering Institutes Today in current scenario.

Keywords: Content enrichment, quality assessment, Assurance, Industry expectations

1. INTRODUCTION:

In context of the changing global economic environment there is a need to assess the relevancy of academic output from higher academic institutions to the industry specially the country like India. Every year approx 2.5 million graduates are being produced by the academic institutions and most of them are being absorbed by the industries at various cadres as rungs to channelize the wheel of our economy. These Recent College Graduates (RCGs) are provided basic training to tune up with the industrial climate. The main purpose of this study is to analyse the be-fittingness of these RCGs to the industries and to assess the gap, if any and this gap can be filled by adopting the suitable measures by academics and industry both. How the academia should design its syllabi and pedagogy so that it can match with the current industrial requirements of this globe. To attain this target, a close collaboration between institutions and industry is very essential in order to minimize the obsolescence of academic output from the institutions. [1]

2. SUSTAINING QUALITY:

Quality has both absolute and relative connotations. The concept of absoluteness in quality props up the morale of the higher education system at the delivery end i.e. institutional, and at the receiving end i.e. students. Quality dimensions seem to have two implications, i.e., functionality of the output and meeting the basic standards. Hence, the quality of a higher education system may be seen from the point of view of norms and standards, which may evolve depending on the need of the hour. In the 21st century, it is crucial to identify the relative norms for different components of a higher education system. The alternative dynamics for teacher preparation and the sustaining quality in teacher input, like: Curriculum design and development; Curricular practices vis-à-vis emerging principles of pedagogy; Evaluation of learners performance and progress vis-à-vis curriculum evaluation; and, Quality management practices become crucial. The quality of these components may also differ from institution to institution. Therefore, sharing of the experiences among institutions on quality issues may generate ideas for evolving norms and strategies for their quality assurance of management processes, curricular inputs and practices and the evaluation system as well.. Of late, various developments have been witnessed relating to quality assurance mainly through the intervention of information and communications technologies (ICT) in education, like networking of the open learning system with traditional Universities, interdisciplinary interactions at intra-institutional and inter-institutional levels, networking of institutions globally, data based management of higher education, changing the orientation of institutions by incorporating self financing in their financial management, assessment and accreditation of higher education institutions and creation of different statutory and regulatory bodies at the national level [2]

2.1 Objectives

1. To Design, develop and standardize a questionnaire to measure the gap between academic output and industrial requirement.
2. To identify the underlying factors for gap between academic output and industrial requirement.
3. To open new vistas for further research.[2]

2.2 Desirable initiatives for export of higher education include:

- Developing educational products of new models based on flexibility and learner's choice;
- Preparing students for the knowledge society;
- Providing methods and styles of working for life-long learning; [2]
- Arranging facilities for E-learning and distance learning;
- Ensuring total quality management in the higher education system;
- Catering to the changing market demands and churns out adaptable work force, instead of providing them scope for narrow specialization

2.3 Universities and employability

Notably, only two Indian institutions featured in the top 100 Global Employability University Ranking 2013 compiled by French human resources consulting group Emerging Associates along with Trendence, a German polling and research institute. The Indian Institute of Science, Bangalore, ranked 23 and the Indian School of Business, or ISB, was at 52. A majority of 'employable' graduates in India come from the country's top 30 institutions. These institutions are also most likely to be collaborating with industry. The ISB holds annual industry events and runs experiential learning

programmes involving collaboration between student teams and industry on real-world business issues. ISB Hyderabad has a student-run professional club sponsored by a corporation that also mentors its members.

3. GAP BETWEEN INDUSTRY AND HIGHER EDUCATION

“The challenge is to impart skills to the large majority of Indian students,” and to maintain quality in more institutions. In a bid to bridge the gap between industry and higher education, FICCI has set up three regional ‘knowledge hubs’ in the north, south and western regions of India to identify institutions and collaborate in improving the curriculum, teacher training and student exchanges as well as facilitating international tie-ups. “Students will get an opportunity to work on industry projects, thus giving them practical training and improving employability CVFBNty,” Universities have faced flak in recent years over inflexible curricula, rote teaching and learning and lack of experiential learning outside the classroom. But academics say industry expectations are often unrealistic and misguided. “While the mismatch issue is valid and important and real, it’s more about expectations on both sides,” said Shanti Jagannathan, senior education specialist at the Asian Development Bank in Manila. Employers “want everyone to come prepared and ready. Employers need to invest in their own employees.” “Industry is expecting a finished product who can be employed and universities cannot provide that. You cannot degenerate universities to training institutions.” “Technology and skill sets are changing quickly and you cannot readjust the university curriculum every time that happens.” India needed to focus on expanding the non-university sector, added Varghese. “Expecting one system to provide everything is unrealistic.” institutions offering technical and professional courses that produce industry-ready graduates; and foundation institutions that offer a wide range of courses providing well-rounded education and skills relevant “Unless you have companies visiting campus to select students, both employers and students have to know where to reach out to each other. At the event in Delhi Dr. Kalam said, “When the students pass out of senior secondary schools, they should have two certificates - of passing 10+2 examination and of a specific skill acquired by him during schooling.” According to him, besides the normal curriculum the children should receive special training towards one skill set which will offer an extra certification which will not only help them get a job after school but also make them aware of the how real world industries function “In the present context, the education system has to be designed in a way that produces large number of employment generators and not just employment seekers. According to him, the introduction of a particular skill set at a younger age will promote entrepreneurship in the country. This kind of education system will generate job creators instead of job seekers.

4. WHAT INDUSTRY EXPECTS FROM FRESH RECRUITERS?

Every year, countless students pass out from engineering colleges in India. The number of students graduating from engineering colleges is much more in India than in countries like China and USA. Yet, only about 30% of the engineering graduates get jobs while the rest either remain unemployed or take up jobs that are not related to their field. What is the reason for this unemployment or underemployment? What could be the industry expectations from an engineering graduate? What are the students lacking that prevent them from getting the right jobs? Is it that the engineering graduates do not cater to the need of this budding industry or is there some other fact to justify this unique tendency? Here we have listed out a few of the major expectations of the industry from engineering graduates.

4.1. Communication Skills: An engineer must possess good communication skills if he expects to be hired into a good firm or organisation. All the complicated theories and laws are of no use if the candidate cannot communicate his thoughts in proper words. Good knowledge of English and the ability to communicate effectively thus play a vital role. Engineers usually hold significant positions

in the firm or organisation they join. They may have to communicate with foreign delegates and important clients. Good grasp on English language and the ability to speak in many different accents are preferred by employers. Engineers need to get trained to communicate well. There are several crash courses that ensure you get a grasp on the right accent. These courses may help engineers evolve into better candidates for global companies.

4.2. Knowledge beyond the Textbooks: Very often, the firms and organisations look for individuals who can go beyond the books and think brightly. You need to be logical and think intellectually. Restricting yourself to bookish knowledge does not make you a good engineer.

To be an ideal candidate for global firms, you should think like an inventor. Opt for projects that bring about a drastic change in the world. Try to innovate and invent in a manner that benefits the world as a whole. Think of the greatest challenges faced by the world, try to deal with problems like energy crisis and limited resources that the world is already tackling. See how your inventions and innovations can alter the situation and bring change. The great companies are always seeking wonder brains who come up with such innovative ideas. You can be their ideal candidate if you prove to them your true worth.

4. 3. Ability to Lead: While there are many engineering graduates who score well in their papers, there are very few who are true leaders. Most of the engineers today just follow the path shown by great minds of the past. The fraternity of engineers still adheres to the obsolete techniques of the bygone era which are really of no use today. If you wish to be hired by one of the leading companies, you must possess the ability to lead.

Even during the interview process, you should be able to reveal your true leadership skills by your college or school event examples. Do not hesitate to tell the interviewers about the different academic or colony events where you lead a group to make the event successful. Leadership skills are sure to be counted as a plus point in engineering job interviews.

4.4. Positive Approach: The job of an engineer is not easy. It is a path full of many challenges and you need to possess the courage to face these challenges. A positive approach is thus a must in the career of an engineering candidate. If you are in the core engineering field like Electrical, Chemical or Mechanical, you may have to work in a site and this can be risky. Most factories and industries often have accidents and people even lose their lives in these accidents. To work in such an environment, you need to possess courage and a strong responsibility sense. This is not everyone's cup of tea. Only individuals who possess a truly strong positive approach can succeed in such kind of jobs and to survive in the engineering industry you need to possess this positive attitude.

4.5. Updated with Latest in Technology: The greatest risk of being in the field of technology is that the technology existing now can become obsolete some day. You must be prepared to upgrade your skills to match the latest in technology. This rule is particularly applicable for IT engineers. The code or language used at present can get replaced with a better and user-friendly version and you need to upgrade yourself accordingly. Individuals who fail to stay updated become jobless.

An engineer is expected to be smart enough to widen his horizon of knowledge as per the latest trends.

In the engineering field you cannot afford to be lazy or lethargic as it may account to you losing the job and your only means of making a livelihood.

4.5. Willingness To Travel: As engineers ascend the success ladder, the expectations from an engineer seem to increase too. An engineer who is at a senior position in his field may be expected to travel places and meet senior level individuals in different countries. They may be expected to share knowledge, ideologies and give presentations in the most effective manner. Most individuals are reticent and unwilling to travel to different countries and places. This is not acceptable from engineers who wish to succeed in their field. They should be always eager to travel places and grasp new opportunities. The firms and organisations are always seeking such smart engineers and you can succeed in your field only if you live upto these expectations.

4.6 Knowledge of Foreign

Languages: Knowledge of foreign languages is always an added plus in the engineering field. If you know languages like French, German, Spanish, Italian and Swedish languages, they can help you deal with senior level executives in international projects. If you wish to strengthen your profile as an engineer, it is a great idea to learn some foreign languages. There are several crash courses and quick courses that help you learn the basics of languages in a small span of time. You may enroll yourself in one such course to improve your scope as an engineer.

4.7. An MBA Degree: An engineer with an MBA degree is in great demand because it is a rare combination. The firms look for engineers with MBA degree to take up managerial positions in technological companies and firms. An MBA degree helps to furnish your management skills and make you a true leader. This helps to improve your scope in multinational firms too. An MBA in marketing or sales are most popular among the young industrialists. Getting this degree can help you improve your career prospects to much greater extent.

4.8. Ability to Multitask: While focus is an important aspect in the engineering career, there is something more important than focus in the engineering career. It is the ability to multitask. An engineer may have to shoulder several responsibilities at the same time. This may not be possible for individuals who focus their complete attention on one thing. That is when the ability to multitask becomes extremely crucial.

An engineer is expected to multitask in his organisation. While he plays the leader to his teammates, he may simultaneously be expected to handle client queries. An ordinary engineer who lacks the ability to handle many tasks at a time may fail to cope with these industry expectations. If you have to survive in the engineering field, hone your multitasking abilities.

4.9. Versatility: A versatile persona is what is most often expected of an engineering graduate. Monotony is the last thing expected of an engineer. You need to be versatile. You can be the strict boss, the helping colleague, the understanding employee and the courageous leader all at the same time. Your flexibility should conceal your true inner self. Your nature should never be predictable. This unpredictability is one key ingredient that helps you survive in the engineering industry.

4.10. Ambitious: The never say never attitude is expected from most engineers. The career has its ups and downs and people who are not willing to take up risks or who give up too easily are never fit to be engineers. Engineers are expected to be ambitious. It is the undying fire of desire that helps them achieve difficult career goals all too easily. You need to be determined and ambitious if you really wish to be a successful engineer.

The above listed common traits are lacking in most of those unemployed engineers. That is the reason for their failure. If you incorporate and inculcate these traits in your engineering psyche, no one can

stop you from being successful. Remember that if you fail, you are the sole reason for your failure. It is probably because you never tried enough. So never give up because that is not something engineers are expected to do.

5. TO EXECUTE IN ENGINEERING INSTITUTES TODAY

5.1 Understand that Training Comes Before Placement: The departments are always named “Training and Placement Department” or “Training and Placement Cell”, however, almost no focus is given on Training. T&P cells need to train students especially in the summer vacations preceding the final year.

5.2 Have Industry Experts as Consultants and Trainers: Many companies tie up with academia so that reputed faculty act as consultants on research projects. Similarly, Academic Institutions should also hire Industry Experts to help frame the syllabus as per requirements of the industry. How can any academic without any prior Industry exposure, produce an Engineer who meets the requirement of the country? I am not saying that they can't, I am just saying that having industry experts as trainers will make the task efficient and fast. Personality development and training from Industry Experts in my opinion should decide 10% of the student's CGPA and ideally 25%.

5.3 Have ‘Latest Trends in Technology’ module in every subject: Let's say that for each subject the syllabus is divided into 7 or 10 modules; in this case the last module, must always be the ‘Latest Trends in Technology’ with no further specifications. Technology is changing every day. For example, today we need to teach Bluetooth 4.0, NFC and 5G In Wireless Networks, where we teach Bluetooth 2.0, WiFi and 3G. In case of operating systems Android and Windows 8.1 should be taught. In case of Strength of Materials – case study of Burj Khalifa, Dubai should take place. And I understand it is difficult for faculty to keep themselves updated, given the administrative responsibilities that they have; that is why we need Industry Experts to do the job. Also in exams at least 10% of questions should be from latest technologies - basic ones, but still there.

5.4 Institute must include 6 months Internship program as a part of Syllabus: Most institutes have a final year or final semester project. However, we all know what kind of projects is done by students. Institutes should have the option that student either does 6 months Internship or the project. This option can be given to the student in the final semester, which is done by most institutes which have 6 months Internship as a part of their curriculum. However, PEC University of Technology, Chandigarh, has 6 months internship in 6th semester for BTech. This has lots of benefits. If the student has done 6 months Internship in 6th semester he has a clear idea of his career interests, his area of interest, different between academia and industry, and whether to get a job or go for MBA or MS or MTech. Even if the institutes may not be able to implement this, final semester internship is always possible. Students who do not get internship can always do projects (preferably research or development or case studies if they are interested in management)

5.5 Inter-disciplinary projects from 1st year: Most Institutes have option of only final year or final semester projects. Instead, there should be one project every semester. If it can't be from 1st year, it can be very well started from 2nd or at least 3rd year. Usually these projects are department specific, while no product is an engineering branch specific product. For example, to make a Mobile Phone, you need a Chemical Engineer, a Mechanical Engineer, an Electrical Engineer, an Electronics Engineer and a Computer Science Engineer. So we must have inter-disciplinary projects.

5.6 Tap the Internal Experts: Students the best resources in any Engineering Institute. You cannot deny the fact that every batch has some really good/bright students. Also, you can also find different

experts - Music, Sports, Presentation, Managerial, Technical etc. Institutes fail to realize that they have the future experts of tomorrow, today! They have so many of the gems available, but they don't realize or value them. They fail to utilize them in a way that institute gets benefited. Such gems must be identified and used as trainers. 4th year students should be teaching 1st to 3rd year students. 3rd year students should be teaching 1st to 2nd year students. This is because the understanding of the students overlaps. They are able to make others understand faster and in a simpler way.

5.7 . Marks for Extra-curricular activities for all-round development should take place: Everyone now knows that technical skills are not the only skills required to grow professionally as well as in personal life. Students should be taught:

- Proper Communication Skills
- Presentation Skills
- Moral and Ethical Values
- Knowledge of Law and day-to-day required knowledge
- Computer Programming and Computer Typing (Most of them use 1/2 fingers and it makes them very in-efficient. Imagine a manager typing with only one finger!)
- Basic People and Inter-personal skills developed through organizing various events/contests etc.
- Games and Sports

These extra-curricular activities should be part of the CGPA system and ideally 25 and at least 10 percent of the marks should consist of these activities. If the CGPA system is relative, this will make the competition better, since the person winning International Contests will raise the level.

Most of the people will say that this is not possible; they will out-rightly reject it. However, many Colleges have already started some of the practices recently, and some have been following at least 1 of the things mentioned above for a long-long time.

6. INSTITUTES SHOULD HAVE INDUSTRY EXPERTS AS CONSULTANTS

As a consultant Industry experts will help you device a syllabus which is better and well suited to the requirements of the Industry. They can deliver interactive sessions on latest technologies; things about working in Corporate Industry etc. Many companies do organize these sessions and lecture series either as a part of their Employer Branding Initiatives or Corporate Social Responsibility or both. Many companies have a policy that forbid dual employment and hence such services are usually free of cost. Though there are many other companies who do not have those boundation and may charge a fee for it. Another alternative is to hire Industry Experts as **Full time Employees as consultants**. They should appoint Industry Experts as Consultants. They can hire people from industry in full time positions or can have contract based appointments. Frankly speaking most private universities are business models. And they get good business. Their main concern is placements as that is what gets them students. Private Universities have sufficient funds to invest in this program. If they do they will surely be benefitted. **Employer Branding** : Every employer wants to establish their brand. With the amount of competition going around in the industry itself, every employer wants the best people.

Tax Saving : It goes without saying that Industry saves a lot of Tax in the name of CSR (Corporate Social Responsibility)

Marketing : Students are not only potential employees but also potential customers.

Savings on Training : Most Industries spend a large amount to train college graduates (who have just joined as freshers). If they get students who are already trained, it will save them a lot of money.

Saving on Recruitment : Though this might not be the case always, but Industry will also be able to save money on recruitment. During these training sessions and interactions, Industry people can also identify potential employees thus saving not only the money but also the time on recruitment.

7. EXPECTATIONS OF SOFTWARE COMPANIES:



Expectation of CTS, TCS, WIPRO and any other software companies you name it, they all just see one thing from us whether we will fit in their work area to finish the work efficiently so as in the process of interview during campus placement they will check 3 important skills from each individuals....

1. **Good aptitude skill** (like analytical reasoning, problem solving, verbal and so on) - (there are various pattern for testing aptitude carried out with different companies)

2. **Good Communication skill** - They will check how well you are able to communicate that is your speaking skills. If you are frequent with English in college then there won't be any problem.

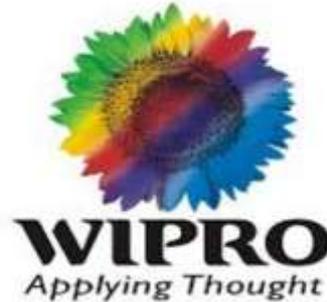
3. **Subject Knowledge skill** - They will check your subjects which you studied in your college that means how well you are doing with the basics which you learnt, for software companies like TCS they will check your basic C and C++ skills, if you know the basic concepts of all the subjects you can easily crack this....

4. **Understanding of hierarchy, work ethics of the organization**

5. **How do they contribute to the company's growth** (which most corporate forget to share with the "employees")

I strongly feel that, instead of investing at "fresher" post recruitment; the industry should collaborate together, to hone the future prospective task force according to their own requirements.

EXAMPE: WIPRO COMPANY EXPECTATIONS:



Based on a good research conducted by World Bank, the skills which Indian employers demand from engineering graduates could be categorized into three factors:

1. Communication Skills
2. Professional Skills
3. Core Employability Skills

Of the 3 above, though Core Employability Skills is the most important, but Communication Skills are the ones which could be measured relatively easier, followed by Professional Skills during an interview.

1. Communication Skills:

These include various shades of soft skills:

1. in English
2. Written Communication
3. Reading
4. Listening
5. Technical Skills
6. Experiments/data analysis
7. Verbal Communication

Unlike country like China, India has been pre-dominantly a service sector industry and it necessitates the importance of good communication with their majority of western customers.

These skills usually get displayed during an interview conversation, but stress stays on gauging how the candidate converses and conveys his views across to the listener.

2. Professional Skills :

These include various shades of Academic skills:

1. Academic Knowledge
2. Use of modern tools
3. Creativity
4. Problem solving
5. Customization
6. Contemporary issues
7. Customer Service

Some of these skills get captured during the written tests, and then during a face to face interview. The project work usually says a lot about the candidate's capability and knowledge on the subject.

Though a good interviewer can always make out if the project work is genuine and there are various ways to find out the level of effort put, creativity, the dealing of issues, designing to the needs and application of the subject.

3. Core Employability Skills:

These include various shades of following factors:

1. Integrity
2. Reliability
3. Teamwork
4. Willingness to learn
5. Entrepreneurship
6. Self-discipline
7. Self-motivated
8. Flexibility
9. Empathy

These skills are not occupation specific, but cuts across occupations. Some studies refer to this set of skills as generic, catalytic, core and/or employability. These skills more define a person rather than their academic knowledge. It is relatively challenging to measure these skills in a candidate with-in a short time, but face to face interview conversations does reveal and help uncover these skills.

8. CONCLUSION

Here I would like to conclude **institution may consider the above top points** to meet the industry expectations and students employability.

REFERENCES:

- 1.http://www.indianmba.com/Faculty_Column/FC1099/fc1099.html (An Empirical Study On Expectations Of Industry From Academia)
- 2.<http://www.ugc.ac.in/oldpdf/pub/he/heindia.pdf>(HIGHER EDUCATION IN INDIA: ISSUES, CONCERNS AND NEW DIRECTIONS)
- 3.<http://content.wisestep.com/industry-expectations-from-engineering-graduates/>(What Industry Expects from Fresh Recruits)
- 4.[HTTP://WWW.AASTHIK.COM/2014/05/FIXING-INDIAN-EDUCATION-SYSTEM-PART-3-7.HTML](http://WWW.AASTHIK.COM/2014/05/FIXING-INDIAN-EDUCATION-SYSTEM-PART-3-7.HTML) (AASTHIK - A BELIEVER BY CHOICE!)
- 5.[HTTP://WWW.AASTHIK.COM/2013/08/FIXING-INDIAN-EDUCATION-SYSTEM-PART-1.HTML](http://WWW.AASTHIK.COM/2013/08/FIXING-INDIAN-EDUCATION-SYSTEM-PART-1.HTML)(AASTHIK - A BELIEVER BY CHOICE!)

6. [HTTP://CONTENT.WISESTEP.COM/INDUSTRY-EXPECTATIONS-FROM-ENGINEERING-GRADUATES/](http://content.wisestep.com/industry-expectations-from-engineering-graduates/)(INDUSTRY EXPECTATIONS FROM ENGINEERING GRADUATES)

7. [HTTP://WWW.WIPROCAMPUSARENA.COM/BLOG/?P=422](http://www.wiprocampusarena.com/blog/?p=422)(EMPLOYER'S EXPECTATIONS FROM A FRESHER)

8. <http://entranceexam.net/forum/general-discussion/expectation-cts-tcs-wipro-companies-candidate-what-type-questions-asked-how-prepare-89179.html#ixzz3szawJAVI>