



## **Project Completion Report On**

**File Number: DST/NSTMIS/2019/354/2020-21**  
**Study for Meeting the Demand and Supply of**  
**Quality Electronic Engineers in Technical Field**

**Submitted to**



**NATIONAL SCIENCE & TECHNOLOGY**  
**MANAGEMENT INFORMATION SYSTEM (NSTMIS)**

Department of Science & Technology, Government of India

**Division : CHORD(NSTMIS)**

**Programme or Scheme :National Science and**  
**Technology Management Information**

**Submitted By**

**Project Investigator:**

**Dr Sankara Malliga G**

Professor & Head / ECE



**ANAND INSTITTUE OF HIGHER TECHNOLOGY,**

**Kazhipathur, Chennai 603103**

## **Preface**

Professional education is pursued by students for a number of reasons, one of which is to secure employment. As per ASSOCHAM report published in 2016, the education quality is deteriorating and the number of un-employed graduates is increasing. The market requirement does not meet graduate competency. The industry academia gap refers to the mismatch between industry demands and graduate competency. Engineering is the core of innovation and knowledge-based economy, processing the next generation of talent engineers with the required set of skills is essential. The main objective of this paper is to identify the reasons for degradation of quality among electronic engineering graduates. The study explores interaction of the professional education system with regard to industry-related factors and industry-academic gap representing as the principle component. Literature survey performed in order to analyse the gap between demand and supply of electronic engineers. The survey was performed in two perspective 1. Academia and 2. Industry. The survey utilized google form for collecting both quantitative and qualitative data among academicians, engineering students and industry persons. The collected data was clustered and analysed using data visualization tool. The study's findings show that there is a mismatch between graduate skills and industry competencies. The findings are remarkable because they have practical implications for both employers and academia in bridging the skill gap.

## **Acknowledgement**

The project team at AIHT would like to thank NSTMIS, DST for generous support and encouragement in addition to knowledge support for carrying out this important study. The team also would like to acknowledge the administrative and infrastructure support provided by AIHT.

We express our sincere thanks to **AIHT Principal, all department HODs , faculty and staff members** for their valuable support. We are benefited from the many useful comments and suggestions provided to us.

We are extremely thankful to Industry person for successful completion of task and thanking to all those people who made it possible with their guidance and constant words of encouragement. We also thankful for the people who are very supportive on filling the survey form for data collection.

I extend my sincere thanks to one and all who helped for this project work with their valuable advices and constant inspiration which enabled to complete this project successfully in time.

## Table of Contents

Description	Page No.
Preface	2
Acknowledgement	3
Executive Summary	5
Chapter 1: Introduction, Objectives, Limitations	11
Chapter 2: Review of Literature	18
Chapter 3:Methodology–Sampling Design, Data Sources, etc.	28
Chapter 4:Detailed analysis of the Data	48
Chapter 5 :Result and Discussions	69
Chapter 6:Findings/Summary and recommendations	78
Research Summary	82
End project deliverables	83
Key Outcomes of the project	85
References	86
Annexures	88

## **EXECUTIVE SUMMARY**

### **IMPORTANCE OF THIS STUDY**

The correlation between the academia and industry is like donor and recipient. The academia and industry interaction are viewed as a system. The need of academia-industry interaction is massive. All the collaborators such as students, society, institutions and industry are mutually benefitted. The academician's knowledge can also be used for industries in order to enhance industry's cost, quality, etc. Industries can acquire knowledge from domain experts based on development programs which are designed by the academic persons. There is a significant gap between the types of skills and competencies required by industry and those provided by higher education institutions. The engineers who are technically qualified is found out to be excess and they don't have enough job opportunities in the engineering industries. The technically qualified engineers are not feeling comfortable to work with the small and medium scale industries. The presence of conflicts is not allowing to sync between the aspirations of the job seeker and aspirations of the job provider. Therefore, the curriculum in the engineering institutions should be fine-tuned to enhance the skill-set of graduates. Engineering institution should ensure that their curriculum is up to date and that they attract the majority of students who want to work in small and medium-scale industries.

### **OBJECTIVES**

- To identify the reasons for degradation of quality among engineering graduates.
- Providing solutions to reduce the gap between getting of talented engineers and unemployment.
- To mitigate the Lack of knowledge to meet the demand in technical field.
- To create, test, and regulate a questionnaire to assess the gap between academic production and industry need.

- To identify fundamental causes of the mismatch between academic production and industry demand.
- To see whether there are any disparities in the relevance of certain marketable skills as evaluated by industry partners and students.
- To make suggestions for possible remedies to bridge the gap in quality.
- To open up new avenues for future investigation.

## **METHODOLOGY**

### **Demand and Supply Gap of Quality Electronic Engineers**

#### **i) Supply Side:**

Engineering as a professional path is increasingly diverse, with a wide range of career options and technological professions available. Engineers are professionals who use scientific knowledge, mathematics, and invention to address technological, social, and commercial problems. Now-a-days, engineers are lacking in skills and morality. Engineers who are strong in academics but weak in skills are rejected in placement interviews. Fresh Graduates choose branded companies over start-ups. Fresher get far more experience at start-ups than large branded firms, start-up demand more originality from graduates. The procedure of assessing an engineer in academic is based on marks achieved in exams, while in corporate, assessments are based on the engineer's performance as per the sort of tasks he has managed and problems conquered.

In India, Engineering education institutes are divided into Central, State, and Deemed universities. Engineers are generated in large numbers due to the availability of opportunities in private universities. University curricula are more theoretical than practical. Some university courses are out of date. The fundamental goal of short-term training programs, which are part of many higher education institutions' curricula, is to provide students with significant practical competence.

Faculties fail to inform students about the real-world applicability of certain topics. The professors are more focused on research and they are unsure how to turn their findings into a product. The outcome is engineering educators are challenged to educate their students for such a wide range of competency standards. As a result, there is a goal conflict between general education and training for particular job requirements, which may be analysed in a multiple way.

Students are lacking in either technical or soft abilities, or both. As a result, universities are deprived of sophisticated and up-to-date information in a variety of subjects. In terms of money, position, and timeliness, students have high expectations from industry. Furthermore, students believe that obtaining a degree is sufficient to land a job.

**ii) Demand Side:**

Employers choose engineers based on their academics and talents. Employers are very busy achieving their own deadlines for various initiatives in the organisation, therefore they don't have enough time to invest in upgrading the academic curriculum.

**iii) Industry-Academia Gap:**

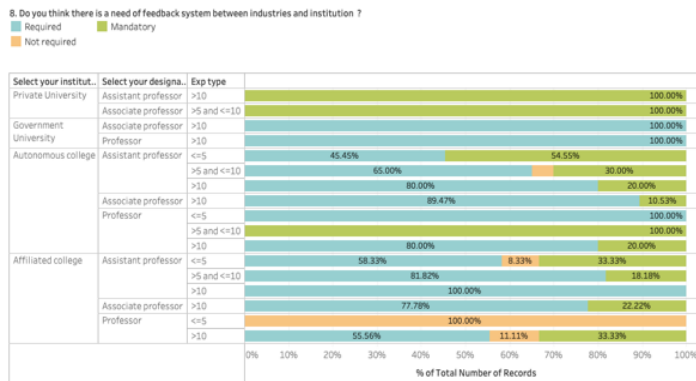
The students are aware of academic syllabus whereas industry requires skill set for particular job roles such as circuit engineer, layout engineer and application engineer etc. There are several vacancies in many companies each year, but companies do not receive job-ready professionals or students who can meet industry standards. Students are interested in understanding industrial requirement and minimum skill requirement from employer.

Industry and academia must have a mutually beneficial relationship because they are inextricably linked with each other. Industry expert's states curriculum used in various universities is outdated. Besides that, faculty members lack industry exposure which is essential to develop the

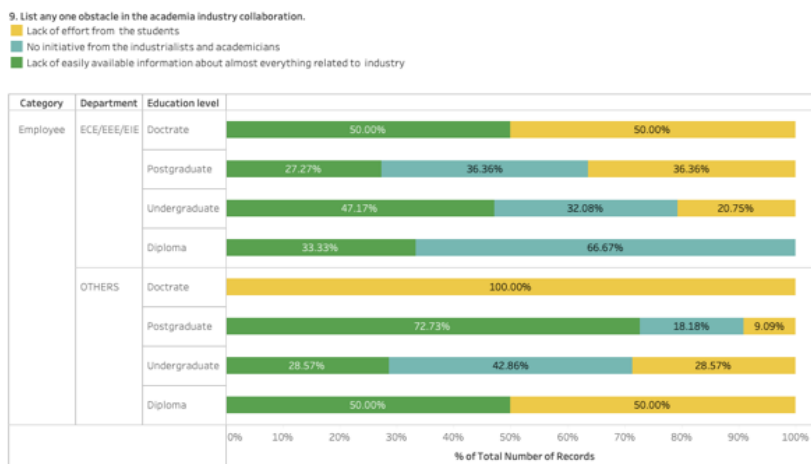
necessary skills in students. Industry and academia should have a symbiotic relationship so that both benefit from one another and have a win-win situation.

## RESULTS & DISCUSSION

The survey was carried out on students, job seekers, professors, employer and employees. The data collection was done through online questionnaire. It consists of both open ended and closed ended questions. The closed ended questions are used to analyze the responses easily. The closed ended questions are for unlimited and impulsive perspectives. We have received a total of 533 responses, in which 108 responses from industry professionals, 125 responses from professors, 43 responses from jobseekers and 257 responses from students.



### Faculties response on need of feedback between industries and educational institutes



### Employee response on obstacle in industry academic collaboration



## **KEY OUTCOMES OF THE PROJECT**

1. Education of high quality should be prioritized.
2. Every engineering student should be offered a job guarantee.
3. Engineering graduates who are unemployed should be compensated monetarily.
4. Those seeking admission to engineering programs should be instilled with confidence.
5. Encouragement of the professional job in the appropriate branch, so that they would be delighted since they have chosen the right group.
6. Encourage new engineers to conduct research so that they could progress in career.

## **POLICY IMPLICATION**

The survey findings should be studied not only to obtain ratings and rankings, but also to learn about, appraise, and evaluate the current situation. If we account for these characteristics, the gap between engineering education and industry will diminish. The corporate environment is extremely competitive, unpredictable, and unclear in multiple ways. The requirement of adaptation to globalization and vertical development, engineering institutions should reach out to the world by providing high-quality technical education. Keeping engineering students unemployed is unhealthy for their families and bad for the economy. Essentially, no country will progress without the assistance of engineers. The procedures that follow will assist to alleviate this awful predicament to a considerable extent.

## **SUGGESTIONS**

1. Class room learning would be an engaging part if theoretical and practical learning were given equal weightage.
2. Internships should not be done for the purpose of documentary work; rather, they should be used to gain experience with real projects.

3. Faculties, who play an important role in encouraging students, should have industrial experience to help students understand way things are done in organizations. Furthermore, the staff must be trained on a regular basis by visiting industries to stay up to date on the recent developments.
4. In colleges, grades and marks determine a student's performance; nevertheless, in industry, a candidate's performance in handling a project and how candidate overcomes is evaluated.
5. Industry academic partnership is essential for institutions to stay current with recent demands for the advancement of student's future.
6. At the entry level, student's mindset is a degree is sufficient to acquire a job must be modified.
7. Making it mandatory for students to be a part of several cells such as NSS, AICUF, and CSI will help them overcome stage fright and inspire them to improve professionally.
8. Alumni associations play an important function; holding frequent alumni meetings would assist students in developing current needs.

#### **RECOMMENDATION:**

Majority of professor response states, there is a lack of interaction between industry and academic institution. Students' feedback states that academic education is not sufficient to survive in industrial environment. Industry experts have highlighted a number of factors where academics is falling short. It is observed that, there is gap between demand and Supply of graduates as well as there is degradation in quality among graduates. The participants presented ideas and suggestions for best practices and noted how best has to be done to connect students for more opportunities to gain strong technical knowledge. The suggestions include formal relation between the employer and the university. After reviewing several papers and interviewing individuals, we found that the primary lag is in the educational system. Students are racing for grades, yet they lack skills since the curriculum is outdated. As a result, it is the role of universities to overcome educational problems and devise innovative approaches to bridge such gaps. The educational institutes and industries should take appropriate steps for the happening of interaction between industry experts and faculty members. A regulatory body comprised of experts from industry and academia can be created to continually monitor and identify gaps, as well as to make ongoing attempts to bridge those gaps.

# **Chapter 1**

## **Introduction, Objectives, Limitations**

## **Introduction**

According to recent reports, the education sector in India is poised for significant growth in the coming years, as the country will have the world's largest tertiary-age population and the second largest graduate talent pipeline by the end of 2020. The Indian economy is expected to expand rapidly; rapid industrialization will necessitate a gross incremental workforce of 250 million by 2030; and India may potentially emerge as a global source of skilled labour. Despite these encouraging statistics, a substantial number of graduates are still unemployed. According to the 2016 'National Employability Report,' which is based on a study of more than 1,50,000 engineering students who graduated in 2015 from over 650 colleges, 80 percent were unemployed and only 3 percent possessed appropriate skills. According to the statistics, there is a substantial gap between the institute's perception of industry requirements and the consequence of educational quality as assessed by the graduate's professional ability. Regardless of degree, fresh graduates lack the requisite abilities to execute the job.

Graduated engineers in India today have a lot of expectations. Today's university education is primarily concerned with shaping and empowering students to meet the challenges and responsibilities in future. As a result, education must be value-based and capable of incorporating the morals of each individual. It has become increasingly important for the educational system to provide high-quality education that meets international standards. Indian universities lack in advanced teaching, learning process and involvement in research. Employer like to hire young, active engineers with the potential to become future leaders.

The correlation between the academia and industry is like donor and recipient. The academia and industry interaction are viewed as a system. The need of academia-industry interaction is massive. All the collaborators such as students, society, institutions and industry are mutually benefitted. The

academician's knowledge can also be used for industries in order to enhance industry's cost, quality, etc. Industries can acquire knowledge from domain experts based on development programs which are designed by the academic persons. There is a significant gap between the types of skills and competencies required by industry and those provided by higher education institutions. The engineers who are technically qualified is found out to be excess and they don't have enough job opportunities in the engineering industries. The technically qualified engineers are not feeling comfortable to work with the small and medium scale industries. The presence of conflicts is not allowing to sync between the aspirations of the job seeker and aspirations of the job provider. Therefore, the curriculum in the engineering institutions should be fine-tuned to enhance the skill-set of graduates. Engineering institution should ensure that their curriculum is up to date and that they attract the majority of students who want to work in small and medium-scale industries.

Reducing the industry-academia gap means increasing the employability among graduates. The Industry Academia system is divided into three major categories:

- 1. Industry Academia Gap:** The Industry Academia Gap will assess the primary factors affecting the interaction of Industry and Academia.
- 2. Supply side:** The Supply side analyses the system from an academic standpoint, as the university provides candidates to the sector.
- 3. Demand side:** The Demand side would focus on what drives demand for the candidates in the industry.

There is a wide gap between industry and academic because educational institute's curriculum is static and industry application is dynamic. They have a different mindset and goals. Industry prefers proven solutions with low risk. Academic prefers new solutions with greater innovation rate. Academic

institutes lack in understanding industry challenges and pains. There is a gap between skill required by the industry and the current skill level of graduates. Our goal is to identify and bridge the skill gap.

**Skill:** The ability to perform something good because of practice and training is known as skill.

**Types of skills:**

Skills can be classified into hard skills and soft skills.

**Hard skills & Technical skills:**

Hard skills are concrete skills for job. Technical skills are defined as hard skills. They are necessary to perform the job role. Hard skills are learned through school, training or previous work experience. They are easier to evaluate. Technical skills are mandatory but other skills are required along with hard skills in industry for better work environment.

**Soft skills:**

They are interpersonal or people skills. They can be used in any job role. Few examples are Communication, teamwork and adaptability. Soft skills need practice in real time. They are hard to evaluate. They are key in building relationship and reputation.

**Team work:**

Team work plays an important role in career. The leader must be capable of taking responsibility for his/her actions.

**Communication:**

Both verbal and written communications are important in a work place because they help in creating a positive image and building a relationship. Nonverbal communication too plays a major role. Communication helps to boost individual performance.

**Adaptability:**

The industry is dynamic. It is looking for people who are adaptive to new job roles and environment. People who are willing to learn and adapt to the current industry needs.

**Problem solving:**

Industry is facing new challenges everyday in dynamic market. Industry is looking for problem solvers who can take actions and come up with feasible solutions.

**Critical thinking:**

Industries look for new ideas and innovation . Critical thinking is essential for new ideas and innovation in work environment. Critical thinking emerges from learning.

**Skill gap:**

The difference between job requirement and the skills that a worker possesses is known as skill gap. The shortage in performance is known as skill gap. It is the difference between expectation and outcome. It can be described as the required performance minus the present performance hence it is also called the performance gap .The respective field of work could be any. The identification of gaps need to be done before training, moving a person to other position or hiring. There are few controversies for the reason of present gaps in worker skills. The first theory states schools and universities are not preparing the workforce to meet new job requirements. The second theory purports that organizations are not willing to train their present workforce, not willing to pay fair wages for the skills they require, need to move to position themselves in a better area to obtain a proper workforce, or are just not effective at identifying requirements and matching personnel skills.

## **Reason for skill gap**

### **1) University curriculum does not meet industry standard:**

The curriculums provided by few universities are outdated, Most of the curriculums provided by universities are theory based rather than based on application.

### **2) Lack of industrial exposure to faculties**

Faculties are research oriented, Faculties are not aware of marketing their product and making money out of it. Academic institutes are poor in marketing their product.

### **3) Absence of industry university interaction cell**

The university and industry interaction is not frequent. This makes university deprived of up to date knowledge in concerned domain.

### **4) Industry people are not seriously involved in updating the academic curriculum.**

Industry experts are busy in meeting their project deadlines. They don't have sufficient time to invest on updating the academic curriculum.

## **Objectives**

- To identify the reasons for degradation of quality among engineering graduates.
- Providing solutions to reduce the gap between getting of talented engineers and unemployment.
- To mitigate the Lack of knowledge to meet the demand in technical field.
- To create, test, and regulate a questionnaire to assess the gap between academic production and industry need.
- To identify fundamental causes of the mismatch between academic production and industry demand.



- To see whether there are any disparities in the relevance of certain marketable skills as evaluated by industry partners and students.
- To make suggestions for possible remedies to bridge the gap in quality.
- To open up new avenues for future investigation.

### **Limitations**

- The main reason for degradation of the quality is increase in “Quantity”.
- Being an Engineer, one must have the ability to communicate with logic on various issues and also helping everyone to make and build team.
- Engineering graduates have fallen in the trap of getting used to easy way of life.

# **Chapter 2**

## **Review of Literature**

### **National and International survey**

According to the National Employability Report 2016, about 80 % of the engineers are unemployed. Actually, we lack quality education and for this, we need to amend our education system. The quality of engineering has declined and if the UGC, AICTE ,HRD Ministry and other concerned bodies doesn't take action over this, then there will be serious consequences and soon a situation of over-qualification will arise e.g. an engineer is applying for a post of Peon (for which only a 12th pass is the required qualification).

According to media reports, about 50% of the total engineering seats available in India remained vacant last year. Out of the total 16.99 lakh seats approved by AICTE, only about half of the total capacity could be filled. Many government and private colleges, especially from the states of Tamil Nadu and Andhra Pradesh have shown their concern over the matter. According to AICTE sources, as many as 1,422 applications have been submitted to AICTE seeking closure of engineering departments or courses across the country in 2014.

Notably, while engineering seats have mushroomed rapidly from 659,717 in 2006 to 1.22 million in 2010, and 1.67 million in 2015, the quality of education has degraded. This increased number of engineering colleges and seats has also created a huge demand-supply imbalance, believes AICTE. The same has been also reflected in different industry surveys.

As per a survey conducted by NASSCOM in 2011, only 17.5% engineering graduates were considered as employable. A similar report from education Assessment Company Aspiring Minds suggests that the employability of engineering graduates lies between 12% and 42% for different states of India.

In my assessment, about 50 per cent of the students in a batch are not interested in a career in engineering after graduation. Another 30 per cent are not sure what they want, or are struggling through their program owing to handicaps they have brought with them, or because they are burnt out. So, only 20 per cent of the students are “good”. N R Narayana Murthy has come up with a similar figure.

## **Literature Survey**

**Huzaif Khan (2015)** states according to TOI, 18% of engineering graduates are employable. Delhi, the state with the greatest employable rate, is 13%. Bangalore, India's so-called "Silicon Valley," has a stunning 3.2 percent. 91.82% of the 1.2 lakh applicants polled across several states lacked programming and domain abilities, 73.63% lacked English speaking and comprehension skills, and 57.96% lacked analytical and mathematical skills. Engineering graduates' low employability is a result of weak education standards and a growing need for competent jobs. Most engineering colleges' course content is mostly theoretical in nature, and students are not made aware of the uses of theories in industry to improve engineers' abilities. The Embedded Model integrates soft skills into all aspects of teaching and learning across the curriculum. This methodology does not need students to take additional courses because soft skills are integrated into the learning goals of the courses. It consists of activities such as questioning, class discussion, brainstorming, teamwork, presentation, role play, project, field work, and site visits. Classes teach a restricted number of problems, a handful of which are asked in tests. The class teaches exam-beating strategies. The class promotes marks-based study. Our educational system is responsible since it bases student's rankings on the brilliance of his score. In comparison to theoretical, practical tests are given a low weightage. The increased teaching load on all academics has limited their ability to do research or produce technical papers, resulting in further improvement of their knowledge. There is widespread concern in the engineering profession, increasing proportion of higher-education, faculty teaching engineering, lack industry expertise and experience. Classes allow students to be spoon-fed and taught methods to pass tests, resulting in a lack of needed abilities in students. Our engineering students are unable to make a research-oriented decision after four years of education. Engineering graduates' low employability is a result of weak

education standards and an increasing need for competent jobs. Professors should be expected to publish and actively participate in research.

**Lennart Büth A et al., (2017)** concluded that work attempts to eradicate complementary training provided for fresh graduates which saves cost and time for industry. A Learning factory test bed was implemented in university to bridge the gap between academic and industry. The newly created infrastructure will be integrated with the curriculum of university. This provides the students an exposure to industrial environment. The put forward learning factories will make students ready for the job at university level. This provides road an initiative for using learning factories as an integral part of Indian education system.

**Mohd Shamsuri et al., (2013)** focussed that the work attempted to understand the employer perception of hard skills and soft skills expectations from fresh engineering graduates. This work provided information for employers for employability skills needed while hiring employees. The skills employers expect while hiring engineering graduates. Providing equal importance to hard skills and soft skills during recruitment process. Frequent interaction between industries and educational institute keeps academic institutes updated with latest industry needs.

**Azeez Nureni Ayofe et al., (2009)** says this work looked for probable solution to bridge the gap between academic and industry. It looks for causes and probable options to bridge gap. It suggests plans to eliminate the misalignment between university and the industry. The goal is to blend rigidity of academic with relevance of industry. The challenges faced by universities and reason for skill gap are analysed. It provided suggestion to bridge the gap between industry and educational institutes.

**Natalia Shmatko et al., (2020)** concluded that this research seeks to bridge the global and national skill gap in robotics. Information is gathered from text mining of job openings for robotics and interview with industry experts. It was identified both hard skills and soft skills are equally important.

The findings emphasised the importance of furthering government programmes targeted at removing the skills gap in upcoming science and technology. The gathered information regarding skills can be used to update robotics teaching programmes. Working professionals in the domain can benefit from information on the needed skill set. This helps them to acquire new skills during additional education and training.

**Murali S et al., (2015)** focussed that this paper attempts to understand the expectations of corporate while hiring fresh engineering graduates. A survey was conducted from students in Bangalore and most of the colleges are under Visvesvaraya Technological University. A questionnaire (paper based) was conducted which consist of both open ended and close ended questions. The results of the survey depict soft skills are equally important as hard skills (technical skills) in 21st century. Students feel technical skills are essential for job role. The response from corporate states that soft skills are equally important.

According to **Deniz Akdur et al. (2019)**, graduates from non-computing disciplines experience several challenges while starting their professions due to a mismatch of abilities taught in university curriculum and skills necessary in the software sector. Companies invest much in employee training. Companies spent a lot of money and effort on this. A survey explores the gap between industry requirement and academic was designed. During the survey various opinions from field experts were taken. The results of the survey help academic institutions to adapt their program to effective curriculum for different software engineering roles and sectors. This helps non computing discipline graduates to get easily incorporated into software industry.

**Sudhania Vasudevan et al. (2018)** determined that the market is stable and in demand of workers. The industry academia gap refers to the discrepancy between industry requirements and graduate competency. The project aims to bridge the industry-academia gap. The paper investigates the

behaviour of the professional education system in relation to industry-related parameters, with the industry academic gap serving as the primary variable. The industry-academic system is studied using dynamic modelling. Casual loop diagrams are used to put a conceptual model into action.

**J Walther et al., (2007)** provide work that explores the basic assumptions behind outcomes-based education in ways that previous adjustments to programme certification does not consider. It also looks closely at the nature of the perceived gap between the Graduate Attributes that institutions attempt to establish in their graduates and the competencies necessary in reality to function well in industry. This necessitates combining the students' attitudes and self-image into the concept of professional capability. This exploration of the competency challenge gives a more complete understanding of competence formation. On this premise, the article provides the outcomes of an exploratory research aiming at investigating alternative strategies of producing and influencing students' educational competency.

According to **S Zeidan et al. (2020)**, the study bridges the gap by bringing together the viewpoints of industry leaders/advisers, academic professors, alumni, and undergraduate students. A triangle design approach is used to increase the validity of the outputs by taking into account the viewpoints of all parties involved. It also gives a more comprehensive perspective of what might be improved in terms of university competencies. The outcomes of the study demonstrated a gap between graduates' abilities and the competencies required by the sector. The findings are significant because they have practical implications for both industry and academics in terms of bridging the skills gap. The study's main shortcoming is that data was acquired from only one university, making it difficult to generalise the findings. To expand the scope of this study, future research should duplicate this study by collecting data from a range of universities in the region. Furthermore, while the sample size was greater than

one hundred participants, future research should strive for a larger sample size across a variety of majors.

**Sandeep Dahiya et al., (2015)** says that article sheds light on professional options, which will help to ensure effective career planning and placement opportunities. The study discusses employment opportunities in the larger subject of electronics engineering and other related fields. The goal of this paper is to identify methods for ensuring employment and employability for engineering graduates and young technocrats in the broad domains of ICT, electronics engineering, computer science engineering, and other disciplines in order to prepare a workforce of highly skilled, self-assured, and motivated graduates for the twenty-first century. A key focus is to address the problems and challenges of offering quality education in order to secure jobs and employability.

**Ugarthi Shankalia et al., (2018)** says that a survey was conducted among 150 students in engineering colleges the teaching methods the different set of skills acquired while studying the course and the steps taken to enhance the skills in the students were discussed. The average quality of colleges and graduates is a source of concern. With the proliferation of private engineering colleges, the quality of engineering graduates continues to deteriorate. As a result, educational quality is crucial in this case. The flaws with the current way of teaching engineers may not be fixed overnight, and it will take years to solve this situation. This research concludes that college education quality should be increased, resulting in a supply of talented and skilled graduates in the near future.

According to **PrachiKapil (2014)**, the purpose of this paper is to illustrate a number of ongoing and prospective programs targeted at getting ready and advancing interdependence between academic and industrial prospects in India, with a particular emphasis on research and development initiatives, governance of Indian management schools, building centres of excellence, and appealing competent faculty. Companies have tried a range of various methods and techniques to obtain the best and most



unrivalled human resources in order to economically survive and grow in a highly competitive market. These strategies range from talent identification to skill gaps, crucial skill transfer, and adjusting present abilities to new demands. As the difference between academia and industry grows wider, the government, academic institutions, and business must devise new and research-based techniques to bridge the gap. However, we cannot deny that only a country's holistic expansion across all sectors will help it beat its competitors and succeed in its quest to become a globally empowered economy.

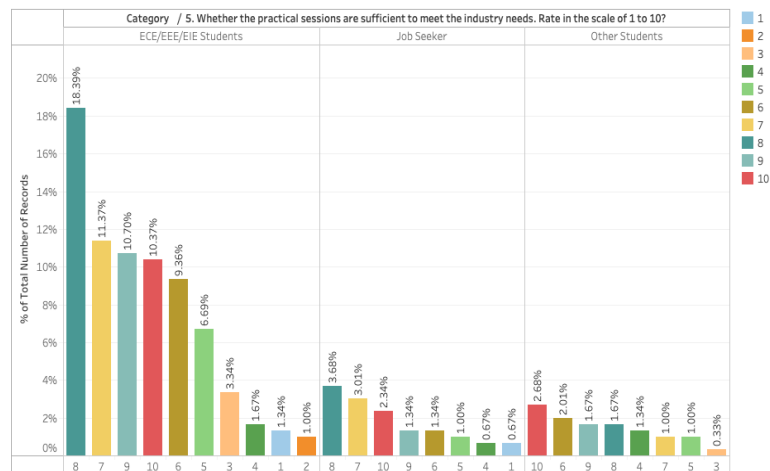
**Table 1: Existing research methods and results**

Journal title	Research method	Respondents	Result
1. Bridging the qualification gap between academia and industry in india.	Data collection from report submitted by Federation of Indian Chambers and Central statistical organization data book and interaction with industry experts	Employers and Employees	A Learning test bench industrial infrastructure was implemented at BITS university campus in collaboration with German university.
2. Employers' perception on engineering, information and communication technology (ICT) students' employability skill	Data collection from engineering accreditation manual (EAC)and future of engineering education Report 2007 and interaction with industry experts.	Employers	The study provided information about employability skills required by employer. Need for universities to adapt rapidly according to industry needs.
3. Exploration of the Gap Between Computer Science Curriculum and Industrial I.T Skills Requirements.	Data collection from journals,books , websites and seminars	No direct respondents	A fifteen step resolution was provided. The resolution emphasizes on conducting industrial interaction programs such as workshops, update of curriculum in according to industry requirement. Training for faculties in new technologies.
4. Bridging the Skill Gap in Robotics: Global and National Environment	Data collection from journals and websites	Interview with CEOs. Researchers and faculties from universities.	The acquired list of skills can be utilized as basis for upgrading educational program in robotics. The information about required skills provide guidance for workers to obtain knowledge via training as a life long learning approach.

5. A Study on the Corporate Expectations from Engineering Graduates in India – Bangalore	Data collection from and survey from students of Visvesvaraya Technological University in Bangalore region .	Students	The study identified the soft skills play a major role in today job market. Students response states communication skill and positive attitude plays a vital role in job placement. Domain knowledge got highest votes more than 50 percentage where soft skills got less than 2 percentage votes which is one of the major requirement by industry.
6. The Design of a Survey on Bridging the Gap between Software Industry Expectations and Academia.	Data collection was done through online questionnaire. The online questionnaire was circulated through social networking sites	Software developers, Software testers, System Engineers and Managers	Different expert opinion from field were taken to analyze industrial requirement and perception regarding academic activities. Suggestions were provided to academic to adapt an effective curriculum for different Software engineering roles and sectors.
7. A study of the industry academia gap in professional education system using system dynamic modeling.	Data collection from reported submitted by ASSOCHAM	No direct and indirect respondents	A Casual loop diagram technique was utilized. It consist of 21 variables a few of which are exogenous. The Industry Academia system was classified into three main category called the Industry Academia Gap, Supply Side Behavior and Demand Side Behavior. Utilizing this model we will be able to identify the critical areas required to be reviewed and altered so that stakeholders such as students would acquire better employment opportunities and industries will get proficient graduates.

The Literature work of this project is explained as follows: Majority of professor and industry expert response states, there is a lack of interaction between industry and academic institution. The educational institutes and industries should take appropriate steps for the happening of interaction between industry experts and faculty

members. Students feedback states that academic education is not sufficient to survive in industrial environment. So, frequent training on technical skills and soft skills needs to be provided in academic institutes in appropriate time. The suggestions include formal relation between the employer and the university. The participants presented ideas and suggestions for best practices and noted how best has to be done to connect students for more opportunities to gain strong technical knowledge. It is observed that, there is gap between demand and Supply of graduates as well as there is degradation in quality among graduates. Due to pandemic, minimum samples of data only collected and which was enlarged to large dataset for the data analytics. The below figure 2.1. is the sample work of our forth going research project.



**Figure 2.1: Students response for adequacy of practical sessions in academic institutes**

**Chapter 3**  
**Methodology-Sampling Design, Data**  
**Sources, etc.,**

## METHODOLOGY

### **DEMAND AND SUPPLY GAP OF QUALITY ELECTRONIC ENGINEERS**

#### **i) Supply Side**

Engineering as a professional path is increasingly diverse, with a wide range of career options and technological professions available. Engineers are professionals who use scientific knowledge, mathematics, and invention to address technological, social, and commercial problems. Now-a-days, engineers are lacking in skills and morality. Engineers who are strong in academics but weak in skills are rejected in placement interviews. Fresh Graduates choose branded companies over start-ups. Freshers get far more experience at start-ups than large branded firms, start-up demand more originality from graduates. The procedure of assessing an engineer in academic is based on marks achieved in exams, while in corporate, assessments are based on the engineer's performance as per the sort of tasks he has managed and problems conquered.

In India, Engineering education institutes are divided into Central, State, and Deemed universities. Engineers are generated in large numbers due to the availability of opportunities in private universities. University curricula are more theoretical than practical. Some university courses are out of date. The fundamental goal of short-term training programmes, which are part of many higher education institutions' curricula, is to provide students with significant practical competence.

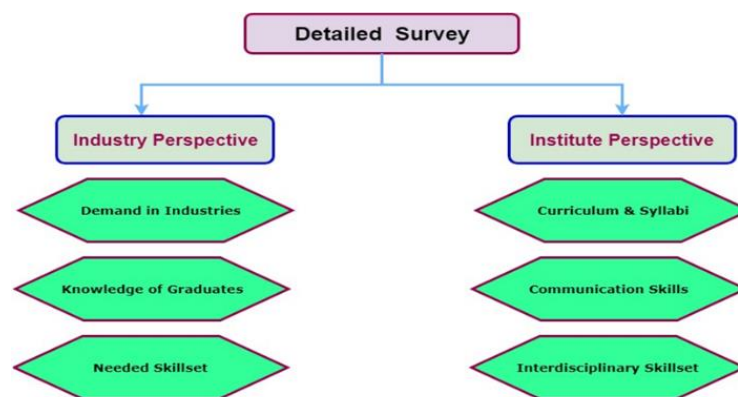
Faculties fail to inform students about the real-world applicability of certain topics. The professors are more focused on research and they are unsure how to turn their findings into a product. The outcome is engineering educators are challenged to educate their students for such a wide range of competency standards. As a result, there is a goal conflict between general education and training for

particular job requirements, which may be analysed in a multiple way.

Students are lacking in either technical or soft abilities, or both. As a result, universities are deprived of sophisticated and up-to-date information in a variety of subjects. In terms of money, position, and timeliness, students have high expectations from industry. Furthermore, students believe that obtaining a degree is sufficient to land a job.

### ii) Demand Side:

Employers choose engineers based on their academics and talents. Employers are very busy achieving their own deadlines for various initiatives in the organisation, therefore they don't have enough time to invest in upgrading the academic curriculum. The Figure 3.1. shows the methodology of taking detailed survey.

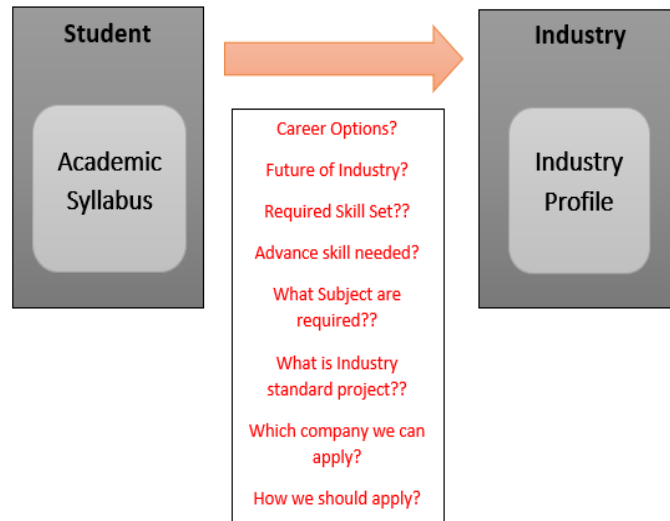


**Figure 3.1: COMPONENTS OF STUDY**

### iii) Industry-Academia Gap:

The **Figure1** describes the gap between industry and academia. The **Figure1** depicts student is aware of academic syllabus whereas industry requires skill set for particular job roles such as circuit engineer, layout engineer and application engineer etc. There are several vacancies in many

companies each year, but companies do not receive job-ready professionals or students who can meet industry standards. Students are interested in understanding industrial requirement and minimum skill requirement from employer, but **Figure 3.2.** represents students are still unaware of the skillset required by the employer.



**Figure 3.2. Gap between Industry and Academia**

Industry and academia must have a mutually beneficial relationship because they are inextricably linked with each other. Industry expert's states curriculum used in various universities is outdated. Besides that, faculty members lack industry exposure which is essential to develop the necessary skills in students. Industry and academia should have a symbiotic relationship so that both benefit from one another and have a win-win situation.

The obstacles faced by industry are: The firm must invest time and money in staff training, shortage of competent resources and a lack of ready-to-use supplies, a time-consuming screening procedure, a long hiring and training model, a scarcity of internal training resources and student's

basic principles is lacking. The difficulties encountered while employing new employees include a lack of fundamentals and needed skills.

The problems faced by students include a lack of guidance and difficulties in choosing a field of interest. Students in their first year believe they have what it takes to be an electronics engineer. Students begin building circuits in the third semester and decide they want to be circuit designers. In the fourth semester, they believe that they can accomplish anything as an automation engineer. Students learn controllers and DSP in the fifth semester. As a result, they can work as an embedded engineer. In sixth semester, they want to be VLSI engineers. As a result, students begin asking questions to mentors about how to become a VLSI engineer. Mentors advise students to study subjects such as digital electronics, analogue electronics, CMOS, Verilog/VHDL, VLSI design, circuit design, VLSI fabrication, Scripting language etc... Out of this some of the subjects would be studied in previous semesters. Because of societal pressure, students in their fourth year consider working in the core industry as an electronics engineer. The problem here is students were more focused only on marks. Here, main challenge is students does not understand to prepare themselves as per industry requirements.

## **STAKEHOLDERS FOR STUDY**

1. Target population and sample size to be covered
  - ✓ Management and HR team of Industries – Minimum 25 companies
  - ✓ Fresh and Experienced employees – Minimum 200 persons
  - ✓ Recruiting agencies – Minimum 25 numbers
  - ✓ Academicians – Minimum 100 persons
  - ✓ Engineering Graduates - Minimum 250 graduates
  - ✓ College Students – Minimum 250 engineering students



## 2. Methods of data collection

- HR/Industry Survey
- Google sheet
- Mobile Application
- Discussion forum
- Use of questioners

## 3. Sources of the data

### Industry perspective

- Understanding the demand in industries
- Knowledge of engineering graduates
- Skill set needed in various types of industries

### Institute Perspective

- Curriculum of academic institutions
- Way of developing communication
- Need of Interdisciplinary Skill sets

## **RESEARCH METHODOLOGIES**

### **Collection and consolidation of Data**

The questionnaire was prepared individually for students, job seekers, employer and employee (both for academicians and industry persons) based on their role. We received responses from industry professionals, professors, jobseekers and students. Data collection was done through online questionnaire. The questionnaire covered among the following categories:

- Causes of gaps between academia and industry

- Effects of these gaps
- Strategies for analysing the demand and supply of electronic engineers

Students are given a questionnaire about how the quality of education is regarded at their colleges. Students from various educational establishments shared their perspectives on how their colleges increase educational quality and focus on generating better possibilities for their students. The questionnaire includes questions about the sort of teaching used in their colleges, the training provided to help students achieve better placements, and other issues concerning the quality of engineering education. The responders also provided proposals for improving the quality of engineering education. Google Form is prepared to collect qualitative and quantitative data among academicians, engineering students and industry persons. Also, the Google form questionnaire was discussed with our college team members by conducting audit meeting. Data analysis was performed and various problems has been identified. Consolidation of data had done. Using Data optimization tools, the collected data was clustered as per the ideas for effective representation and analysed. Based on the answers to questionnaire received from the various category of people, different remedies have been discussed in detail. Hence, gap between industry and institute was plugged in a systematic manner.

# Breaking the barrier between Academics and Industry

This form is circulated for DST NSTMIS project by Anand Institute of Higher Technology, Chennai

\* Required

## 1. Email address \*



## 2. Name of the candidate \*

## 3. Age \*

## 4. Gender \*

Mark only one oval.

- Male
- Female

## 5. Education level \*

Mark only one oval.

- Diploma
- Undergraduate
- Postgraduate
- Doctrate

## 6. Name of the Organization/Institute \*

## 7. Department \*

Mark only one oval.

- ECE/EEE/EIE
- CSE/IT
- MECHANICAL
- CIVIL
- OTHERS

## 8. Mobile number \*

## 9. Category \*

Mark only one oval.

- Electronics/Electrical/EIE Students *Skip to question 58*
- Professor *Skip to question 10*
- Employer *Skip to question 41*
- Employee *Skip to question 29*
- Job Seeker *Skip to question 58*
- Other Students *Skip to question 58*

Sl No	Name	Age	Gender	Education level	Organization/Institute	Department	Mobile number	Category
280	2020W arshitha Raju	21	Male	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
281	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
282	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
283	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
284	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
285	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
286	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
287	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
288	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
289	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
290	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
291	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
292	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
293	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
294	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
295	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
296	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
297	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
298	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
299	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students
300	2020W arshitha Subbar	21	Female	Undergr	Kongu E CEEER	EEE	88100100	Electronics/Electrical/EIE Students

### Figure 3.3. Questionnaire Form and Responses for Data Collection

4/15/2021 Breaking the barrier between Academics and Industry

## Professor

10. Select your designation \*  
Mark only one oval.

Assistant professor  
 Associate professor  
 Professor

11. Select your institute type \*  
Mark only one oval.

Autonomous college  
 Affiliated college  
 Government University  
 Private University

12. Your total work experience in years \*  
\_\_\_\_\_

13. Does the university syllabus meets the industry requirement? \*  
Mark only one oval.

Yes  
 No

14. Select the awareness level of student about industrial requirement. \*  
Mark only one oval.

Less than 25%  
 Greater than 50%  
 75%

15. Prioritize the skills or abilities that students lack to gain employment during their career in industry. \*  
Mark only one oval per row.

[https://docs.google.com/forms/d/18H\\_u8Y2Tj20iP2b66FFCa4-JLwV5qYTOHwee/d1?hl=401a36444gids=7628](https://docs.google.com/forms/d/18H_u8Y2Tj20iP2b66FFCa4-JLwV5qYTOHwee/d1?hl=401a36444gids=7628) 3/21

4/15/2021 Breaking the barrier between Academics and Industry

Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Problem solving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	1st priority	2nd priority	3rd priority	4th priority

16. Does industrial interaction programs are sufficient for students and faculties to understand the industry needs. Rate in the scale of 1 to 10. \*  
Mark only one oval.

1 2 3 4 5 6 7 8 9 10  
Low           High

17. How often industry related workshop and knowledge gaining workshop are conducted in your college? \*  
Mark only one oval per row.

	Frequently	Rarely	Sometimes
Industry related workshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge gaining workshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Do you think there must be an update of syllabus and curriculum for a tenure of 4 years to meet the industrial requirement? \*  
Mark only one oval.

Required  
 Not required  
 Mandatory

19. Do you think that students equipped with technical and soft skills to meet industry standard rate in the scale of 1 to 5. \*  
Mark only one oval.

1 2 3 4 5  
Low     High

[https://docs.google.com/forms/d/18H\\_u8Y2Tj20iP2b66FFCa4-JLwV5qYTOHwee/d1?hl=401a36444gids=7628](https://docs.google.com/forms/d/18H_u8Y2Tj20iP2b66FFCa4-JLwV5qYTOHwee/d1?hl=401a36444gids=7628) 4/21

4/15/2021 Breaking the barrier between Academics and Industry

20. Do you think there is a need of feedback system between industries and institution? \*  
Mark only one oval.

Required  
 Not required  
 Mandatory

21. Select the qualities prioritized by industry while hiring freshers. \*  
Mark only one oval per row.

	1st Priority	2nd Priority	3rd Priority	4th priority
Problem solving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teamwork	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leadership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Select the possible factors attributable to unemployment based on priority. \*  
Mark only one oval per row.

	1st priority	2nd priority	3rd priority	4th priority	5th priority
Population	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low Institution/University Standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of technical skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of communication skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Job opportunity & qualification mismatch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Mention the reason corporate leaders and industrialist are not satisfied with recent graduates? \*  
\_\_\_\_\_  
\_\_\_\_\_

[https://docs.google.com/forms/d/18H\\_u8Y2Tj20iP2b66FFCa4-JLwV5qYTOHwee/d1?hl=401a36444gids=7628](https://docs.google.com/forms/d/18H_u8Y2Tj20iP2b66FFCa4-JLwV5qYTOHwee/d1?hl=401a36444gids=7628) 5/21

4/15/2021 Breaking the barrier between Academics and Industry

24. Rate the importance of practice school (internship > 6 months) in the scale of 1 to 10. \*  
Mark only one oval.

1 2 3 4 5 6 7 8 9 10  
Low          High

25. How is college education or internship were useful for graduates to perform better in their job roles? \*  
Mark only one oval.

Has remarkable effect on performance at job  
 No effect on performance at job

26. List any one obstacle in the academia industry collaboration. \*  
Mark only one oval.

Outdated Syllabus  
 Lack of proper infrastructure  
 More importance given to marks  
 No direct interaction between industry experts and academicians

27. What do you think is the most important factor to support such a collaboration? \*  
Mark only one oval.

Institutional support  
 Adequate funding  
 Regular revision of syllabus  
 Increase in interaction between two entities

28. Please provide your valuable suggestions about the survey. \*  
Mark only one oval.

Excellent  
 Good  
 Satisfactory

[https://docs.google.com/forms/d/18H\\_u8Y2Tj20iP2b66FFCa4-JLwV5qYTOHwee/d1?hl=401a36444gids=7628](https://docs.google.com/forms/d/18H_u8Y2Tj20iP2b66FFCa4-JLwV5qYTOHwee/d1?hl=401a36444gids=7628) 6/21

Time	Usem	Name	Age	Gen	Edu	Depa	MobNo	Category	Selected	Worked	Year	Doc	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
21	2020W	zabian	34	Female	Postgraduate	Department of Computer Science	9876543210	Assistant Professor	Yes	Yes	2018	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	

Figure 3.4. Google Form and Faculty Responses of Professor

4/15/2021

Breaking the barrier between Academics and Industry

**Employee**

29. Job description \*

---

30. Were the abilities of graduates meet expectation by employer? \*

Mark only one oval.

Yes

No

31. What according to you is the most important skill required to function effectively in industry? \*

Mark only one oval.

The ability to learn and adapt to the everchanging industry

Communication skills along with a well rounded personality

Professional knowledge and ability to deliver within stipulated time frames.

32. Select the challenges faced by hiring managers while hiring students. Please provide the details based on priority. \*

Mark only one oval per row.

	1st Priority	2nd Priority	3rd Priority	4th Priority
Selecting the right candidate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building a strong employer brand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensuring a good interview experience for candidates	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pressure to fill open positions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

33. Mention the awareness of industrial requirement by the student. \*

Mark only one oval.

4/15/2021

Breaking the barrier between Academics and Industry

Less than 25%

Greater than 50%

75%

34. Is there an update required for syllabus and curriculum for a tenure of 4 years to meet the industrial requirement? \*

Mark only one oval.

Required

Not required

Mandatory

35. Is there a need of feedback system between industries and institution? \*

Mark only one oval.

Required

Not required

Mandatory

36. Are students equipped with technical and soft skills to meet industry standard rate in the scale of 1 to 5. \*

Mark only one oval.

1   2   3   4   5

1    2    3    4    5

37. What changes would you suggest that will further facilitate/improve Academic-Industry collaboration? \*

Check all that apply.

Industrial Visit

Workshops by working professional

Long term Internship

In-plant training

Grooming and orientation programs

https://docs.google.com/forms/d/18U.../edit?usp=sharing

721

https://docs.google.com/forms/d/18U.../edit?usp=sharing

821

38. List any one obstacle in the academia industry collaboration. \*

Mark only one oval.

- Lack of easily available information about almost everything related to industry
- Lack of effort from the students
- No initiative from the industrialists and academicians

39. Prioritize the factors required for industry and academic collaboration. \*

Mark only one oval per row.

	1st Priority	2nd Priority	3rd Priority
Efforts from both sides to bridge the gap.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
College should promote better work culture and provide them a practical picture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Syllabus should be more practical oriented as per industry requirements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

40. Please provide your valuable suggestions about the survey. \*

Mark only one oval.

- Excellent
- Good
- Satisfactory

### Employer / HR / Recruiter

41. Job description \*

---



---



---

42. Mention the qualities prioritized while hiring a new college graduate. \*

Mark only one oval per row.

	1st Priority	2nd Priority	3rd Priority	4th Priority
Problem solving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teamwork	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Leadership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

43. Does the abilities of graduates meet employer expectations? \*

Mark only one oval.

- Yes
- No

44. Is there any mismatch in the demand and supply of skills in the electronic sector professionals in India? \*

Mark only one oval.

- Yes
- No

45. How satisfied the employers with the skills of engineering graduates? \*

Mark only one oval.

- Satisfied
- Not much satisfied
- Somewhat satisfied
- Not at all satisfied with quality of engineering graduate skills

46. Prioritize the skills important for students to get hired. \*

Mark only one oval per row.

	1st priority	2nd priority	3rd priority
Core employability skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

47. Select the challenges faced by hiring managers while hiring students. Please provide the details based on priority. \*

Mark only one oval per row.

	1st Priority	2nd Priority	3rd Priority	4th Priority
Selecting the right candidate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building a strong employer brand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensuring a good interview experience for candidate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pressure to fill open positions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

48. Mention the reason corporate leaders and industrialist are not satisfied with recent graduates? \*

---



---

49. Do you feel sufficient practical / workshop input is necessary in the institute before the students are appointed for training in industries. \*

Mark only one oval.

- Yes
- No

50. How is college education/internship useful for graduates to perform better in their job roles? \*

Mark only one oval.

- Has remarkable effect on performance at job
- No effect on job performance

51. If answer to 9 is yes, please specify the % of practical / workshop exposure required in relation to class room training.

Mark only one oval.

- Theory 50% , Practical 50 %
- Theory 70% , Practical 30 %
- Theory 60% , Practical 40%
- Theory 80% , Practical 20%
- Theory 90% , Practical 10%
- Any others ( Please specify ) \_\_\_\_\_

52. Rate the importance of practice school (internship > 6 months) in the scale of 1 to 10. \*

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10
Low	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High										

4/15/2021 Breaking the barrier between Academia and Industry

53. Select the suitable option to reduce the engineering skill gap. \*

Mark only one oval per row.

	1st Priority	2nd Priority	3rd Priority	4th Priority	5th Priority
Hiring a Skilled work force	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hire a workforce with mixed skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhance your employee value proposition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lookout for valuable softskills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work with specialist recruiters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

54. What changes would you suggest that will further facilitate/improve Academic-Industry collaboration? \*

Check all that apply.

- Industrial visit
- Workshops by working professional
- Long Term Internship
- In Plant Training
- Grooming and Orientation Program

55. List any one obstacle in the academia industry collaboration. \*

Mark only one oval.

- Lack of easily available information about almost everything related to industry
- Lack of effort from the students
- No initiative from the industrialists and academicians

4/15/2021 Breaking the barrier between Academia and Industry

56. Prioritize the factors required for industry and academic collaboration. \*

Mark only one oval per row.

	1st Priority	2nd Priority	3rd Priority
Efforts from both sides to bridge the gap.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
College should promote better work culture and provide them a practical picture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Syllabus should be more practical oriented as per industry requirement.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

57. Please provide your valuable suggestions about the survey. \*

Mark only one oval.

Excellent

Good

Satisfactory

123456789101112131415161718192021222324252627282930313233343536373839404142434445464748495051525354555657585960616263646566676869707172737475767778798081828384858687888990919293949596979899100

Figure 3.5. Google Form and Faculty Responses of Employee and Employer

### Student/Job Seeker

58. Select your institute type \*

Mark only one oval.

- Affiliated college  
 Autonomous college  
 Government university  
 Private university

59. Are you interested to settle in your core field? \*

Mark only one oval.

- Yes  
 No

60. If Yes, please mention few core company names.

---



---



---



---

61. Rate your awareness of industry requirement in the scale of 1 to 5. \*

Mark only one oval.

- |          |                       |                       |                       |                       |                       |       |
|----------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------|
|          | 1                     | 2                     | 3                     | 4                     | 5                     |       |
| Disagree | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Agree |

62. Mention the skill level accomplished for entry level positions through your academic syllabus. \*

Mark only one oval per row.

	Less than 25%	50% to 75%	75%
Basic skills(Speaking/Listening/Writing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Higher order Thinking skills(Decision making/Innovation)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Affective employability skills(positive attitude/Flexibility/Responsibility)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

63. Whether the practical sessions are sufficient to meet the industry needs. Rate in the scale of 1 to 10? \*

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Agree

64. Do you feel that knowledge gained from your academic education is sufficient to perform well in the corporate world? \*

Mark only one oval.

- Sufficient  
 Not sufficient

65. Does your academic project provides good learning experience? \*

Mark only one oval.

- Yes  
 No

66. Does the industrial interaction programs are sufficient for students to understand the industry needs. \*

Mark only one oval.

- Sufficient  
 Insufficient

67. Rate the education quality and its application to industry in the scale of 1 to 5. \*

Mark only one oval.

- |     |                       |                       |                       |                       |                       |      |
|-----|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------|
|     | 1                     | 2                     | 3                     | 4                     | 5                     |      |
| Low | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | High |

68. How often Workshop/Industrial Visit/Technical Seminar/Innovative Ideas are conducted in your college? \*

Mark only one oval per row.

	Frequently	Rarely	Sometimes
Workshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Industrial Visit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical Seminar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Innovative Ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

69. Select the appropriate semester internship program should be incorporated to make it more effective. \*

Mark only one oval.

- Eighth  
 Seventh  
 Sixth  
 Any other (please specify) \_\_\_\_\_

70. Prioritize the benefit of practice school (internship &gt; 6 months). \*

Mark only one oval per row.

	1st Priority	2nd Priority	3rd Priority
Real Time Industry Experience and Exposure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helps to Make Professional Network	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Add Values, Skills, and Experience to the CV	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



71. Does hackathon/Seminar/Workshop/Internship/Project plays a prominent role to get recruited in industry. Select the appropriate choice. \*

Mark only one oval per row.

Table with 5 columns: 1st priority, 2nd priority, 3rd priority, 4th priority, 5th priority. Rows include Hackathon, Industrial workshop, Internship, Project, and Seminar.

72. Choose the possible factors attributable to unemployment based on priority. \*

Mark only one oval per row.

Table with 5 columns: 1st priority, 2nd priority, 3rd priority, 4th priority, 5th priority. Rows include Population, Low Institution/University Standard, Lack of technical skills, Lack of communication skills, and Job opportunity & qualification mismatch.

73. Mention the skill you feel need to be enhanced to get a job? \*

74. What changes would you like to see in our education system? \*

Check all that apply.

- More emphasis on practical knowledge
Importance should be given to skill development

75. Please provide your valuable suggestions about the survey. \*

Mark only one oval.

- Excellent
Good
Satisfactory

This content is neither created nor endorsed by Google.



Large table containing student and job seeker responses, including columns for demographic information and survey results.

Figure 3.6. Google Form and Faculty Responses of Student and Job Seeker

11/30/21, 1:40 PM Bridging the gap between academic and industry

### Bridging the gap between academic and industry

This form is circulated for DST NSTMIS project by Anand Institute of Higher Technology, Chennai

\* Required

1. Email \*  
\_\_\_\_\_

2. Name of the candidate \*  
\_\_\_\_\_

3. Age \*  
\_\_\_\_\_

4. Gender \*  
Mark only one oval.  
 Male  
 Female

5. Education level \*  
Mark only one oval.  
 Diploma  
 Undergraduate  
 PostGraduate  
 Doctrate

https://docs.google.com/forms/d/11607JF\_QA9yGAQmH5GSAq/mBwzFKU12He-u7xc2wedd 1/11

11/30/21, 1:40 PM Bridging the gap between academic and industry

6. Name of the Organization/Institute \*  
\_\_\_\_\_

7. Department \*  
Mark only one oval.  
 ECE/EEE/EIE  
 CSE/IT  
 MECHANICAL  
 CIVIL  
 OTHERS

8. Mobile number \*  
\_\_\_\_\_

9. Category \*  
Mark only one oval.  
 Employer  
 Employee

10. Domain \*  
Mark only one oval.  
 EMBEDDED AND ROBOTICS Skip to question 11  
 VLSI Skip to question 29  
 PLC & SCADA Skip to question 36

EMBEDDED AND ROBOTICS

https://docs.google.com/forms/d/11607JF\_QA9yGAQmH5GSAq/mBwzFKU12He-u7xc2wedd 2/11

11/30/21, 1:40 PM Bridging the gap between academic and industry

11. 1. Describe the employee hiring process you use for college recruiting ? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

12. 2. Do fresh electronic graduates prefer IT sector because of high pay scale? \*

Mark only one oval.

Yes  
 No

13. 3. Whether stability an issue with fresh electronic graduates? \*

Mark only one oval.

Yes  
 No

14. 4. Is 'quality talent' a challenge that Electronics Design players are facing/going to face in India? \*

Mark only one oval.

Yes  
 No

https://docs.google.com/forms/d/11607JF\_QA9yGAQmH5GSAq/mBwzFKU12He-u7xc2wedd 3/11

11/30/21, 1:40 PM Bridging the gap between academic and industry

15. 5. What is the trend in the hiring process you see in the electronics design industry today? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

16. 6. What is the key technology skill sets that are in demand in the industry today? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

17. 7. How would you advise an aspirant on the right steps to follow while applying for a job in electronics design sector? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

18. 8. When you hire what are the key basic skills that you look for? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

https://docs.google.com/forms/d/11607JF\_QA9yGAQmH5GSAq/mBwzFKU12He-u7xc2wedd 4/11

11/30/21, 1:40 PM Bringing the gap between academic and industry

19. 9. With smart cities in the picture, what are the talent requirements and in which all sectors? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

20. 10. a. What are the skill sets required for someone looking to work in electric vehicle sector? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

21. 10. b. What are the challenges faced in hiring candidate for electric vehicle sector? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

22. 11. What would be your advice to the academia—how should they reinvent their curriculum to create techies suitable for the industry? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

[https://docs.google.com/forms/d/11607JF\\_QAlyDAGH5SQAQvMbwZfKu12H4-u7xc0w/edit](https://docs.google.com/forms/d/11607JF_QAlyDAGH5SQAQvMbwZfKu12H4-u7xc0w/edit) 5/11

11/30/21, 1:40 PM Bringing the gap between academic and industry

23. 12. What steps can academic institutions take to bridge the industry-academia gap for the electronics design sector? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

24. 13. What are the right steps to follow to become a successful design engineer? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

25. 14. Whether fresh engineering graduates are aware of skills required for pcb design entry level positions? \*

Mark only one oval.

Yes

No

26. 15. Whether fresh engineering graduates are equipped with skills required for pcb design entry level positions? \*

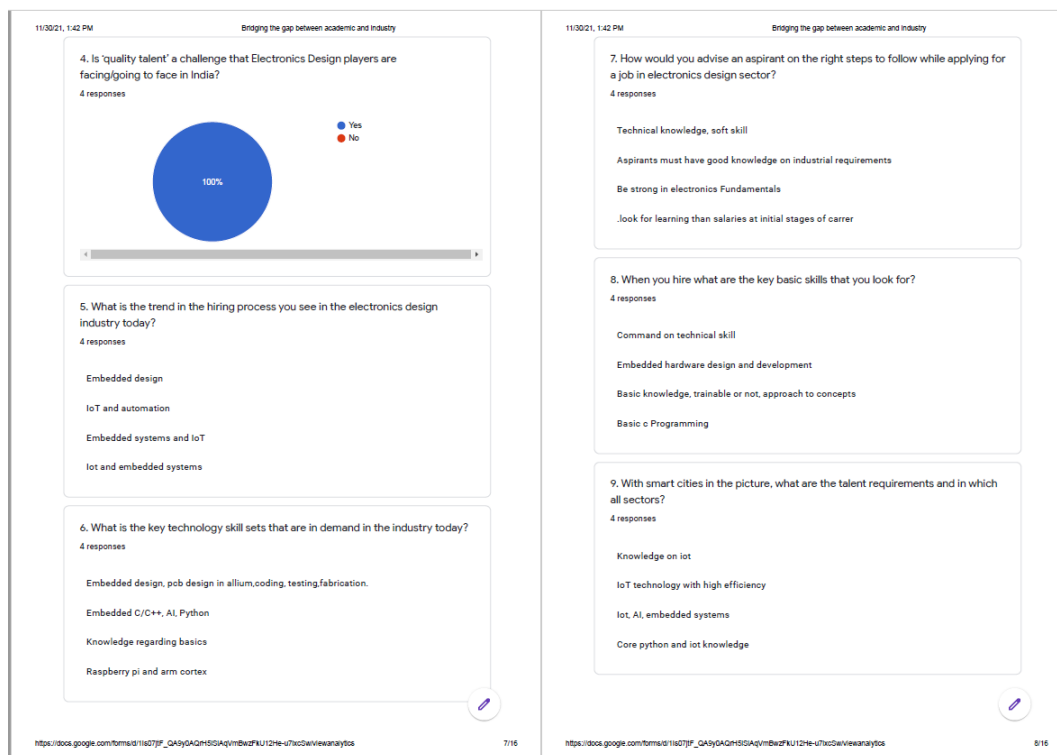
Mark only one oval.

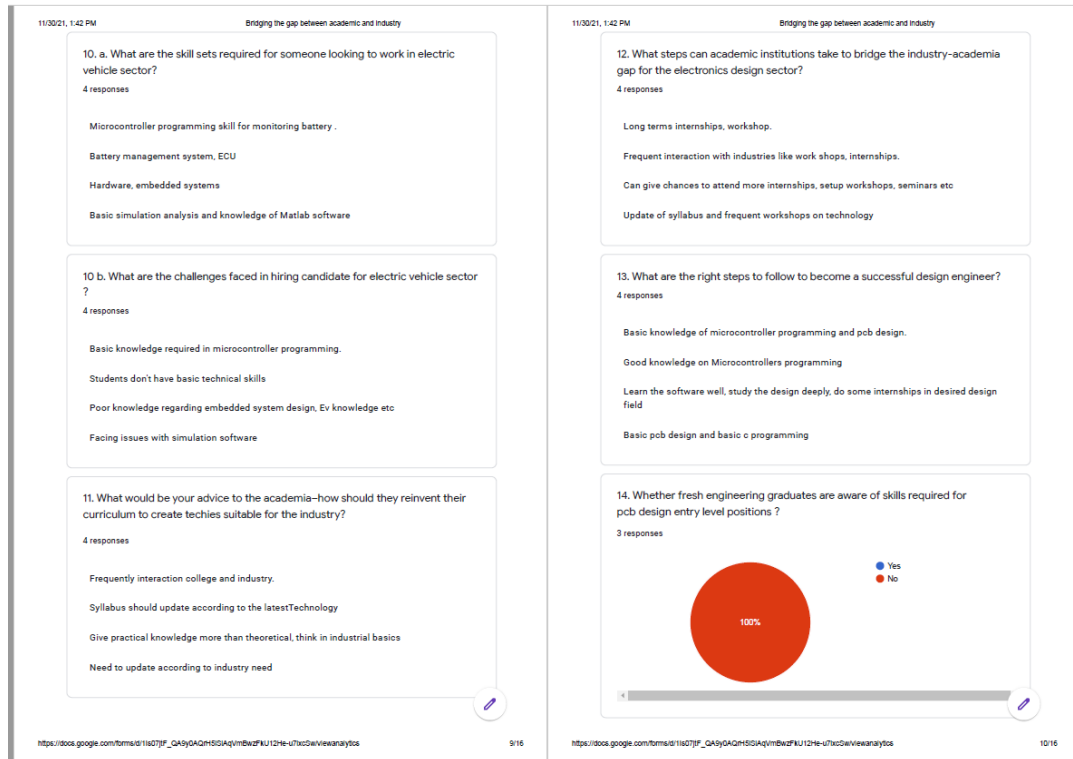
Yes

No

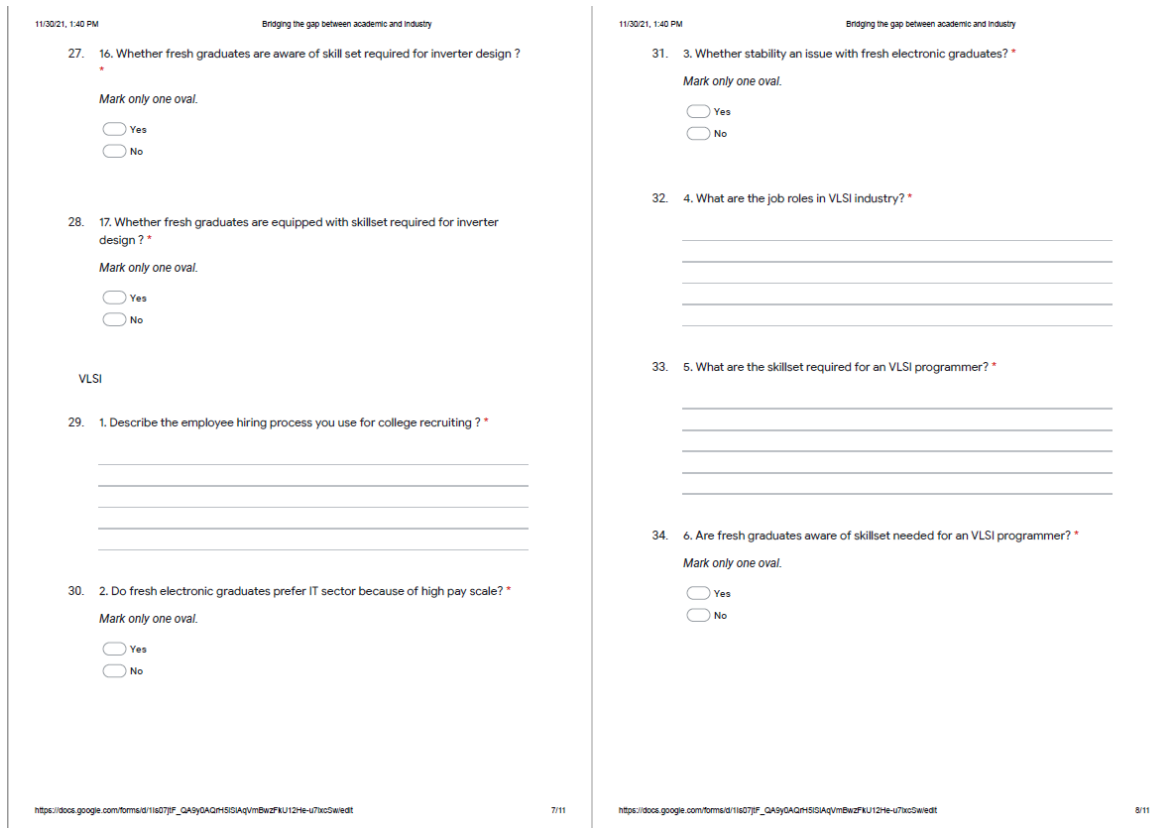
[https://docs.google.com/forms/d/11607JF\\_QAlyDAGH5SQAQvMbwZfKu12H4-u7xc0w/edit](https://docs.google.com/forms/d/11607JF_QAlyDAGH5SQAQvMbwZfKu12H4-u7xc0w/edit) 6/11

**Figure 3.7. Questionnaire for Employer (Embedded Responses)**





**Figure 3.8. Responses for Employer (Embedded Responses)**



# VLSI

11/30/21, 1:42 PM Bridging the gap between academic and industry

3. Whether stability an issue with fresh electronic graduates?  
1 response

100%

Yes  
 No

---

4. What are the job roles in VLSI industry?  
1 response

ASIC engineer soc engineer

---

5. What are the skillset required for an VLSI programmer?  
1 response

Vhdl verilog and controller basics

---

6. Are fresh graduates aware of skillset needed for an VLSI programmer?  
1 response

100%

Yes  
 No

[https://docs.google.com/forms/d/1s07JF\\_QAlyAQzH55AQymBwFku12He-u7n3c/viewanalytics](https://docs.google.com/forms/d/1s07JF_QAlyAQzH55AQymBwFku12He-u7n3c/viewanalytics)
13/16

11/30/21, 1:42 PM Bridging the gap between academic and industry

7. Why VLSI industry is reluctant to hire fresh graduates?  
1 response

Gap between academic syllabus and industry requirement

---

PLC & SCADA

1. Describe the employee hiring process you use for college recruiting ?  
1 response

Basic plc skills

---

2. Do fresh electronic graduates prefer IT sector because of high pay scale?  
1 response

100%

Yes  
 No

[https://docs.google.com/forms/d/1s07JF\\_QAlyAQzH55AQymBwFku12He-u7n3c/viewanalytics](https://docs.google.com/forms/d/1s07JF_QAlyAQzH55AQymBwFku12He-u7n3c/viewanalytics)
14/16

# VLSI Response

11/30/21, 1:40 PM Bridging the gap between academic and industry

35. 7. Why VLSI industry is reluctant to hire fresh graduates? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

PLC & SCADA

36. 1. Describe the employee hiring process you use for college recruiting? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

37. 2. Do fresh electronic graduates prefer IT sector because of high pay scale? \*

Mark only one oval.

Yes

No

38. 3. Whether stability an issue with fresh electronic graduates? \*

Mark only one oval.

Yes

No

[https://docs.google.com/forms/d/1s07JF\\_QAlyAQzH55AQymBwFku12He-u7n3c/edit](https://docs.google.com/forms/d/1s07JF_QAlyAQzH55AQymBwFku12He-u7n3c/edit)
9/11

11/30/21, 1:40 PM Bridging the gap between academic and industry

39. 4. What are the skills required for an PLC programmer? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

40. 5. What are the skills required for SCADA technician? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

41. 6. Are fresh graduates aware of the needed skillset for PLC programmers? \*

Mark only one oval.

Yes

No

42. 7. Are fresh graduates aware of the needed skillset for SCADA technicians? \*

Mark only one oval.

Yes

No

[https://docs.google.com/forms/d/1s07JF\\_QAlyAQzH55AQymBwFku12He-u7n3c/edit](https://docs.google.com/forms/d/1s07JF_QAlyAQzH55AQymBwFku12He-u7n3c/edit)
10/11

## PLC and SCADA

11/30/21, 1:42 PM Entering the gap between academic and industry

3. Whether stability an issue with fresh electronic graduates?  
1 response

4. What are the skills required for an PLC programmer?  
1 response

Siemens delta abb basic knowledge of kits tia porta/Lroswell  
Codesys

5. What are the skills required for SCADA technician?  
1 response

Wincco scada,complicity.

[https://docs.google.com/forms/d/1a027JF\\_QA9yGAGH5GAGvmbzFku12He-U7nc2avvee/analytics](https://docs.google.com/forms/d/1a027JF_QA9yGAGH5GAGvmbzFku12He-U7nc2avvee/analytics) 15/16

11/30/21, 1:42 PM Entering the gap between academic and industry

6. Are fresh graduates aware of the needed skillset for PLC programmers  
1 response

7. Are fresh graduates aware of the needed skillset for SCADA technicians  
1 response

8. What are the job roles in an automation industry ?  
1 response

Plc engineer

This content is neither created nor endorsed by Google. [Report Abuse](#) - [Terms of Service](#) - [Privacy Policy](#)

Google Forms

[https://docs.google.com/forms/d/1a027JF\\_QA9yGAGH5GAGvmbzFku12He-U7nc2avvee/analytics](https://docs.google.com/forms/d/1a027JF_QA9yGAGH5GAGvmbzFku12He-U7nc2avvee/analytics) 15/16

## PLC and SCADA Response

11/30/21, 2:19 PM Breaking the barrier between Academia and Industry

### Breaking the barrier between Academics and Industry

This form is circulated for DST NSTMS project by Anand Institute of Higher Technology,  
Chennai.

**\* Required**

1. Email \*

2. Name of the candidate \*

3. Age \*

4. Gender \*

Mark only one oval.

Male  
 Female

5. Education level \*

Mark only one oval.

Diploma  
 Undergraduate  
 PostGraduate  
 Doctrate

[https://docs.google.com/forms/d/12uJwRfncFh0vix2U\\_CLVf5EBmgL43rhvU5zvV/edit](https://docs.google.com/forms/d/12uJwRfncFh0vix2U_CLVf5EBmgL43rhvU5zvV/edit) 1/3

11/30/21, 2:19 PM Breaking the barrier between Academia and Industry

6. Name of the Organization/Institute \*

7. Department \*

Mark only one oval.

ECE/EEE/EIE  
 CSE/IT  
 MECHANICAL  
 CIVIL  
 OTHERS

8. Mobile number \*

9. Category \*

Mark only one oval.

Employer  
 Employee

10. 1. Describe the employee hiring process you use for college recruiting ? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

[https://docs.google.com/forms/d/12uJwRfncFh0vix2U\\_CLVf5EBmgL43rhvU5zvV/edit](https://docs.google.com/forms/d/12uJwRfncFh0vix2U_CLVf5EBmgL43rhvU5zvV/edit) 2/3

11/30/21, 2:19 PM Breaking the barrier between Academics and Industry

11. 2. What skills are required for a fresh electronic graduate to get recruited in original equipment manufacturer for medical equipment ? \*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

12. 3. Does the current skill of electronic engineers meet the requirement for entry level positions in medical electronics? \*

Mark only one oval.

Yes

No

13. 4. Do fresh electronic graduates prefer IT sector because of high pay scale? \*

Mark only one oval.

Yes

No

14. 5. Whether stability an issue with fresh electronic graduates? \*

Mark only one oval.

Yes

No

\_\_\_\_\_

This content is neither created nor endorsed by Google.

Google Forms

[https://docs.google.com/forms/d/112uJwRhoqfRHoskxSU\\_CLVf5B8mgL439hvUSzsvD/edit](https://docs.google.com/forms/d/112uJwRhoqfRHoskxSU_CLVf5B8mgL439hvUSzsvD/edit)

11/30/21, 2:20 PM Breaking the barrier between Academics and Industry

Mobile number

2 responses

9962523941

9940370372

Category

2 responses

Category	Percentage
Employer	50%
Employee	50%

1. Describe the employee hiring process you use for college recruiting ?

2 responses

We look mainly for the involvement and commitment in the candidate

There will be both written and oral test particularly on basic electronics

2. What skills are required for a fresh electronic graduate to get recruited in original equipment manufacturer for medical equipment ?

2 responses

Based on the above qualities we decide and then train them to our requirements

Basic knowledge in medical electronics subjects and also adequate knowledge in electronics

[https://docs.google.com/forms/d/112uJwRhoqfRHoskxSU\\_CLVf5B8mgL439hvUSzsvD/viewanalytics](https://docs.google.com/forms/d/112uJwRhoqfRHoskxSU_CLVf5B8mgL439hvUSzsvD/viewanalytics)

3/5

11/30/21, 2:20 PM Breaking the barrier between Academics and Industry

3. Does the current skill of electronic engineers meet the requirement for entry level positions in medical electronics?

2 responses

Response	Percentage
Yes	100%
No	0%

4. Do fresh electronic graduates prefer IT sector because of high pay scale?

2 responses

Response	Percentage
Yes	50%
No	50%

[https://docs.google.com/forms/d/112uJwRhoqfRHoskxSU\\_CLVf5B8mgL439hvUSzsvD/viewanalytics](https://docs.google.com/forms/d/112uJwRhoqfRHoskxSU_CLVf5B8mgL439hvUSzsvD/viewanalytics)

4/5

# **Chapter 4**

## **Detailed analysis of the data**



On collection of data, the detailed analysis and which were depicted in the following tables.

SYLLABUS UPDATE										
PROFESSOR			STUDENT		EMPLOYEE			INFERENCE	SOLUTION	
<b>P1:</b> Does the university syllabus meet the industry requirement?			<b>S9:</b> Rate the education quality and its application to industry in the scale of 1 to 5.					The response from student's state that the syllabus should more emphasis on practical knowledge. Hence, we suggest syllabus update is required.	<ul style="list-style-type: none"> <li>• Special focus must be given to updating the syllabus as per industry standards and requirements for engineers.</li> <li>• Lab experiment curriculum along with the equipment's/software needs to be change to meet the industry standards. The laboratory experiments should be given more weight age.</li> <li>• The number of credits required for theory has to be reduced. For summer internships, credits have to be made mandatory.</li> <li>• Make it a point to set a specific time frame to review and revise this syllabus, every 2-3 years.</li> <li>• Besides creating more industry-specific learning centres of excellence, make minimum 3-4 months of on-job industry training mandatory in all graduate courses.</li> <li>• Asking practical based questions, conducting regular seminars on difficult topics, by involving students in more number of presentations and conducting extra hours of classes when the particular topic is not clear for the students.</li> </ul>	
Yes	No		More than 85% people rated 3 and greater than 3.	Less than 15 % people rated less than 3.						
62.2%	37.8%									
<b>P6:</b> Do you think there must be an update of syllabus and curriculum for a tenure of 4 years to meet the industrial requirement?			<b>S16:</b> What changes would you like to see in our education system?		<b>EE5:</b> Is there an update required for syllabus and curriculum for tenure of 4 years to meet the industrial requirement?					
Required	Mandatory	Not Required	More emphasis on practical knowledge	Importance should be given to skill development	Required	Mandatory	Not Required			
60.6%	35.4%	3.9%	78.5%	60.6%	55.6%	42.4%	2%			

### INDUSTRY REQUIREMENT (STUDENTS AND FACULTY)

PROFESSOR			STUDENT		EMPLOYEE			INFERENCE	SOLUTION
<b>P2:</b> Select the awareness level of student about industrial requirement.			<b>S3:</b> Rate your awareness of industry requirement in the scale of 1 to 5.		<b>EE4:</b> Mention the awareness of industrial requirement by the student.			Majority of employee rated industry awareness of student less than 25%. Students stated knowledge gained from academic education is not sufficient for performance in corporate world. Hence, we conclude industrial requirement of student was not met.	<b><u>STUDENTS</u></b>
Greater than 50 %	Less than 25 %	75%	92% students rated industry awareness 3 and Greater than 3	8% students rated awareness less than 3	Less than 25 %	Greater than 50 %	75 %		
49.6 %	29.9%	20.5%			45.5%	42.4%	12.1 %		
<b>P4:</b> Does industrial interaction programs are sufficient for faculties and students to understand the industry needs. Rate in the scale of 1 to 10.			<b>S8:</b> Does the industrial interaction programs are sufficient for students to understand the industry needs.		<b>EE1:</b> Were the abilities of graduates meet expectation by employer?				
Greater than 60 % respondents rated 5 and greater than 5	Less than 40 % respondents rated less than 5		Sufficient	Not Sufficient	Yes	No		<b><u>FACULTY</u></b>	
			61.6%	38.4%	76.8%	23.2%			
			<b>S5:</b> Whether the practical sessions are sufficient to meet the industry needs. Rate in the scale of 1 to 10.						
			Greater than	Less than 40					

- Establishment of Industry-Institute Partnership /Incubation Centre
- Encouraging experts from industry to visit Technical Institution to deliver lectures.
- R&D Laboratories sponsored by industries at the Institute.
- Apprenticeship/Scholarships/ Fellowships instituted by industries at the Institute for students.
- Practical training of students in industries.
- Institutes faculty may take up projects in industry and students should be involved to execute these projects.
- Industry owners/experts may be invited for lectures/interaction with the students in institutions.

On collection of data, the detailed analysis and which were depicted in the following tables.

	60 % Respondents rated greater than 8	% Respondents rated less than 8			
	<b>S6: Do you feel that knowledge gained from your academic education is sufficient to perform well in the corporate world?</b>				
	<b>Not Sufficient</b>	<b>Sufficient</b>			
	59.2%	42.8%			<ul style="list-style-type: none"> <li>• Encouraging experts from industry to visit Technical Institution to deliver lectures.</li> <li>• Arranging visits of staff members to various industries.</li> <li>• Industrial testing by faculty &amp; technicians at site or in laboratory.</li> <li>• Joint research programs and field studies by faculty and people from industries.</li> <li>• Visits of faculty to industry for study and discussions or delivering lectures on subjects of mutual interest.</li> <li>• Short-term assignment to faculty members in industries.</li> <li>• Making relative industrial experience as one of the essential requirement for appointing faculty in institutions.</li> <li>• Faculty Involvement in Designing Skill Development Programs as per Industry Standards.</li> <li>• Faculty Participations in Industry Conferences on similar Projects.</li> <li>• Regular FDP Programs with Industry.</li> <li>• Faculty to Monitor the Progress of Live Projects with Industry.</li> </ul>

On collection of data, the detailed analysis and which were depicted in the following tables.

INTERNSHIP										
PROFESSOR		STUDENT				EMPLOYER		INFERENCE	SOLUTION	
<b>P12:</b> Rate the importance of practice school (internship > 6 months) in the scale of 1 to 10.		<b>S12:</b> Prioritize the benefit of practice school (internship > 6 months).				<b>ER11:</b> Rate the importance of practice school (internship > 6 months) in the scale of 1 to 10.		Employers and Professors stated internship has remarkable effect on performance and Students stated it provides real time experience and exposure. Hence, we conclude the internship must be made mandatory for students.	<ul style="list-style-type: none"> <li>• Courses should be interdisciplinary in nature and requires the knowledge of multiple domains; they need to be included in the curriculum of multiple disciplines.</li> <li>• Engineering colleges need to introduce courses on creativity and innovation to stimulate problem-solving skills in future engineers.</li> <li>• Student must also be introduced to the industry-initiated courses by entering into MoUs with relevant industries.</li> <li>• Compulsory industry internships will be helpful to the students to get to know the industry work culture and help them to prepare themselves in that direction.</li> </ul>	
Percentage of respondents rated greater than 5 80%	Percentage of respondents rated less than 5 20 %	Real Time Industry Experience and Exposure	Helps to Make Professional Network	Add Values, Skills, and Experience to the CV	Employer rated importance of internship greater than 5	Employer rated importance of internship less than 5				
		1 <sup>st</sup> Priority	2 <sup>nd</sup> Priority	3 <sup>rd</sup> Priority						
<b>P13:</b> How is college education or internship were useful for graduates to perform better in their job roles?		<b>S11:</b> Select the appropriate semester internship program should be incorporated to make it more effective.				<b>ER8:</b> How is college education/internship useful for graduates to perform better in their job roles?				
Has remarkable effect on performance at job	No effect on performance at job	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	Any other	Has remarkable effect on performance at job	No effect on job performance			
		57.2 %	24.2 %	10.1 %	8.4%					
87.4%	12.6%					88.9%	11.1%			

HACKATHON/SEMINAR/WORKSHOP/PROJECT												
PROFESSOR		STUDENT				EMPLOYER		INFERENCE	SOLUTION			
<b>P5:</b> How often industry related workshop and knowledge gaining workshop are conducted in your college?		<b>S7:</b> Does your academic project provides good learning experience?				<b>ER9:</b> Do you feel sufficient practical / workshop input is necessary in the institute before the students are appointed for training in industries.		Employer stated sufficient practical training is required before entering industrial environment and there must be equal training on theory and practical. Hence we conclude seminars and workshops must be increased.	<ul style="list-style-type: none"> <li>• Incorporating student exchange programs as a part of internship and conducting various activities like seminars and workshops to improve the skills of the students.</li> <li>• structured team projects promotes both teamwork and communication skills</li> <li>• testing a prototype at a competition develops problem solving and creative thinking skills</li> <li>• Include an external competitive to expose students to a wider context.</li> <li>• Arrange alumni reviews and industry visits to help to contextualise the value of the projects to their own future</li> </ul>			
Knowledge Gaining workshop conducted more frequently than Industry related workshop		Yes		No		Yes					No	
		83.5%		16.5%		88.9%					11.1%	
		<b>S10:</b> How often Workshop/ Industrial Visit / Technical Seminar/Innovative Ideas are conducted in your college?				<b>ER10:</b> If answer to 9 is yes, please specify the % of practical / workshop exposure required in relation to class room training.						
		Tech. seminar	Innovative ideas	Workshop	IV	Theory 50% , Practical 50%	Theory 60% , Practical 40%					
		Frequently	Rarely		Sometimes	87.5%	12.5%					
		<b>S13:</b> Does hackathon / Seminar / Workshop / Internship / Project plays a prominent role to get recruited in industry. Select the appropriate choice.										
		Internship	Hackathon	Industrial work	Project	Seminar						

On collection of data, the detailed analysis and which were depicted in the following tables.

				shop						
		1 <sup>st</sup> Prio r	2 <sup>nd</sup> Prio r	3 <sup>rd</sup> Prior	4 <sup>th</sup> Prio r	5 <sup>th</sup> Prio r				
										<p>careers.</p> <ul style="list-style-type: none"> <li>• Students will experience significant improvement in communication skill, team working skill, critical thinking and problem-solving skill, moral and professional ethics skills after their industrial training</li> <li>• Giving live projects to Academia by Industry to bring New Innovative Academic Ideas in Existing Products/Services.</li> <li>• Long-Term Projects where Academia can effectively contribute in Years.</li> </ul>

On collection of data, the detailed analysis and which were depicted in the following tables.

REDUCTION OF SKILL GAP								
STUDENT		EMPLOYER					INFERENCE	SOLUTION
<b>S1: Are you interested to settle in your core field?</b>		<b>ER12: Select the suitable option to reduce the engineering skill gap.</b>					Majority of employer stated hiring a workforce with mixed skills is a challenge. Hence we conclude new courses must be included which has interdisciplinary skill set.	<ul style="list-style-type: none"> <li>• Students should be encouraged to visit companies frequently along with faculties in a semester. This would help students to get awareness about Industry working environment.</li> <li>• Industry people should be involved in designing the curriculums of the university and reviewed frequently so that the curriculum can meet the expectations of Industry standard.</li> <li>• Faculty should bridge the gap between theory and application by bringing into colleges live projects from Industry.</li> </ul>
Yes	No	Hiring a skilled force	Hire a work force with mixed skills	Enhance your employee value proposition	Look out for valuable soft skills	Work with specialist recruiters		
73.1%	26.9%	3 <sup>rd</sup> Prior	2 <sup>nd</sup> Prior	1 <sup>st</sup> Prior	2 <sup>nd</sup> Prior	3 <sup>rd</sup> Prior		

On collection of data, the detailed analysis and which were depicted in the following tables.

### CHALLENGES FACED BY HIRING MANAGERS

CHALLENGES FACED BY HIRING MANAGERS									
EMPLOYEE				EMPLOYER				INFERENCE	SOLUTION
EE3: Select the challenges faced by hiring managers while hiring students. Please provide the details based on priority.				ER3: Select the challenges faced by hiring managers while hiring students. Please provide the details based on priority.					<ul style="list-style-type: none"> <li>Exposure to skills that grow the ability to build a good rapport, work efficiently and interact with others effectively.</li> <li>Skills that expand their ability, thinking skills such as analysis and evaluation of discussions.</li> <li>Training to improve recognition and respect for others beliefs behavior and attitude.</li> <li>Exposure so as to improve the ability to identify and analyze difficult problems under pressure and make reliable evaluation.</li> </ul>
Selectin g the right candida te	Building a strong employe rbrand	Ensuring a good interview experienc e for candidate	Pressur e to fill open position s	Selectin g the right candida te	Buildin g a strong employ erbrand	Ensuring a good interview experienc e for candidate	Pressur e to fill open positions		
1 <sup>st</sup> Prior	2 <sup>nd</sup> Prior	3 <sup>rd</sup> Prior	4 <sup>th</sup> Prior	1 <sup>st</sup> Prior	2 <sup>nd</sup> Prior	3 <sup>rd</sup> Prior	4 <sup>th</sup> Prior		



## FEEDBACK SYSTEM BETWEEN INDUSTRIES AND INSTITUTION

PROFESSOR			EMPLOYEE			INFERENCE	SOLUTION
<b>P8: Do you think there is a need of feedback system between industries and institution?</b>			<b>EE6: Is there a need of feedback system between industries and institution?</b>			Majority of employee and professor stated there is a need of feedback system between industries and educational institutes hence industrial workshops /Seminars must be increased	<ul style="list-style-type: none"> <li>• Visits of industry executives and practicing engineers to the Institute for seeing research work and laboratories, discussions and delivering lectures on industrial practices, trends and experiences.</li> <li>• MoU between the Institute and industries to bring the two sides emotionally and strategically closer.</li> <li>• Having a close interaction in place, industries are able to participate in technical and vocational education programs, with the goal of cross-fertilizing ideas for systems improvement</li> <li>• Ideally the exchange of industry and institute experts is required i.e. the academia should work in industry for a fixed term intermittently and industry experts should work in institutions</li> <li>• Access to libraries in institutions if provided to industry, will help both the industry and institutions ( for a certain fee for such access) Similarly, institutions may have access to the resources available in industry, Apart from Industry Associations; the Institutions should also establish linkages with Govt. agencies which are engaged in Industrial development activities.</li> <li>• Online Groups between Industry &amp; Academia to discuss Common Parameters.</li> </ul>
Required	Mandatory	Not Required	Required	Mandatory	Not Required		
70.9%	26%	3.1%	53.5%	41.4%	5.1%		

INDUSTRY/ACADEMIC COLLABORATION															
PROFESSOR				EMPLOYEE					EMPLOYER					INFERENCE	SOLUTION
<b>P14:</b> List any one obstacle in the academia industry collaboration.				<b>EE8:</b> What changes would you suggest that will further facilitate/improve Academic-Industry collaboration?					<b>ER13:</b> What changes would you suggest that will further facilitate/improve Academic-Industry collaboration?					Employee and Employer stated Long term internship and Workshops will improve academic industry collaboration. Hence long term internships must be made mandatory.	<ul style="list-style-type: none"> <li>• Students should be encouraged to visit companies frequently along with faculties in a semester. This would help students to get awareness about Industry working environment.</li> <li>• Industry people should be involved in designing the curriculums of the university and reviewed frequently so that the curriculum can meet the expectations of Industry standard.</li> <li>• Faculty should bridge the gap between theory and application by bringing into colleges live projects from Industry.</li> <li>• We must develop infrastructure and curriculum for creating and promoting entrepreneurs and self-financing businesses for students.</li> <li>• Government should encourage and</li> </ul>
Out date Syllabus	Lack of proper infrastructure	More importance given to marks	No direct interaction between industry experts and academicians	Industrial Visit	Workshops by working professional	Long term Internship	In-plant training and Grooming and orientation programs	Grooming and orientation programs	Industrial Visit	Workshops by working professional	Long term Internship	In-plant training and Grooming and orientation programs	Grooming and orientation programs		
11%	3.9%	41.7%	43.3%	48.5%	72.7%	76.8%	48.5%	42.4%	25%	62.5%	50%	12.5%	50%		
<b>P15:</b> What do you think is the most important factor to support such a collaboration?				<b>EE9:</b> List any one obstacle in the academia industry collaboration.					<b>ER14:</b> List any one obstacle in the academia industry collaboration.						
Institutional support	Adequate funding	Regular revision of syllabus	Increase in interaction between two entities	Lack of easily available information about almost everything related to	Lack of effort from the	No initiative from the industrialists and academicians	Lack of easily available information about almost everything related to	Lack of effort from the	No initiative from the industrialists and academicians						

On collection of data, the detailed analysis and which were depicted in the following tables.

				industry	stud ents		industry	stud ents		
12.6 %	11 %	14.2%	62.2%	44.4%	24. 2%	31.3%	37.5%	25 %	37.5%	
				<b>EE10:</b> Prioritize the factors required for industry and academic collaboration.			<b>ER15:</b> Prioritize the factors required for industry and academic collaboration.			
				Efforts from both sides to bridge the gap	College should promote better work culture and provide them a practical picture.	Syllabus should be more practical oriented as per industry require ment.	Efforts from both sides to bridge the gap	College should promote better work culture and provide them a practical picture.	Syllabus should be more practical oriented as per industry require ment.0	
				1 <sup>st</sup> Prior	2 <sup>nd</sup> Prior	2 <sup>nd</sup> Prior	1 <sup>st</sup> Prior	3 <sup>rd</sup> Prior	2 <sup>nd</sup> Prior	

incentivize innovative thoughts of students or faculties.

- Collaboration with the industry will allow undergraduates to be exposed to real case studies and latest industry insight, attend lectures and get training assistance for educational purposes, as well as internship opportunities
- Dedicated training and experience on machinery equipments and methods in industry through properly planned industrial training.

PROBLEM SOLVING/COMMUNICATION/TECHNICAL SKILLS									
SKILLS	PROFESSOR	STUDENT	EMPLOYER		EMPLOYEE			INFERENCE	SOLUTION
			<b>ER2: Does the abilities of graduates meet employer expectations?</b>		<b>EE1: Were the abilities of graduates meet expectation by employer?</b>			Employer and Professor stated problem solving skill as important requirement. Hence co-curricular activities must be included in curriculum to enhance problem solving skills	<b>PROBLEM SOLVING</b> <ul style="list-style-type: none"> <li>The course should improve students' ability to understand problems. Therefore, training should focus on strategies and tools that assist with problem analysis.</li> <li>Courses need to be designed to develop the habit of evaluation and reflection.</li> <li>The course should address misconceptions such as quickness in problem solving and the focus on solutions.</li> </ul>
			No	Yes	Yes	No			
			66.7%	33.3%	76.8%	23.2%			
			<b>ER3: Is there any mismatch in the demand and supply of skills in the electronic sector professionals in India?</b>		<b>EE2: What according to you is the most important skill required to function effectively in industry?</b>				
			Yes	No	The ability to learn and adapt to the ever changing industry	Communication skills along with a well rounded personality	Professional knowledge and ability to deliver within stipulated time frames		
			77.8%	22.2%	63.6	15.2	21.2%		

On collection of data, the detailed analysis and which were depicted in the following tables.

							%	%		
			<b>ER4:</b> How satisfied the employers with the skills of engineering graduates?							
			Satisfied	Not much satisfied	Some what satisfied	Not at all satisfied				
			11.1%	22.2%	33.3%	33.3%				
<b>Problem Solving Skills</b>	<b>P3:</b> Prioritize the skills or abilities that students lack to gain employment during their career in industry.	<b>S4:</b> Mention the skill level accomplished for entry level positions through your academic syllabus.	<b>ER1:</b> Mention the qualities prioritized while hiring a new college graduate.							

### TECHNICAL SKILLS

- Colleges and the industry need to interact with each other more, pursue an aggressive policy of internship. This will give students an idea of how the corporate life is different from the academic life.
- Examination / Evaluation tactics should change. Emphasize on inference type questions, rather than fact-based questions.
- Encourage fresh engineers to research work, so that they can have bright future.
- In order to respond to the globalisation, the engineering studies should touch the global boundaries and should not confine to national boundaries only.
- Give importance to

On collection of data, the detailed analysis and which were depicted in the following tables.

	Problem Solving	Technical	Communication	Listening	Basic skill (Speaking/Listening/Writing)	Higher order Thinking skills (Decision making /Innovation)	Affective employability skills (positive attitude/ Flexibility/ Responsibility)	Problem Solving	Communication	Team Work	Leadership			practical field of engineering, so that the fresh graduates may get employment easily or they themselves take self-employment.
	1 <sup>st</sup> Prior	2 <sup>nd</sup> Prior	3 <sup>rd</sup> Prior	4 <sup>th</sup> prior	50 - 70% 2 <sup>nd</sup> Prior	50 - 70% 1 <sup>st</sup> Prior	50 - 70% 3 <sup>rd</sup> Prior	1 <sup>st</sup> Prior	3 <sup>rd</sup> Prior	2 <sup>nd</sup> Prior	4 <sup>th</sup> prior			
	<b>P9:</b> Select the qualities prioritized by industry while hiring freshers.							<b>ER5:</b> Prioritize the skills important for students to get hired.						
	Problem Solving	Communication	Team Work	Leadership				Core employability skills	Professional skills	Communication skills				<p><b>COMMUNICATION SKILLS</b></p> <ul style="list-style-type: none"> <li>Colleges should focus on the soft skills or interview skills followed by Personality development programs.</li> <li>Need to include practical dimensions of evaluation in the forms of Self-introduction, group discussions, oral exams, presentations, quizzes and personal interviews to improve student's verbal communication.</li> <li>There is a need to conduct bridge courses in the beginning of the term</li> </ul>

On collection of data, the detailed analysis and which were depicted in the following tables.

	1 <sup>st</sup> Prior	2 <sup>nd</sup> Pr ior	3 <sup>rd</sup> Prior	4 <sup>th</sup> pri or							Frequently				to level the gap between high- and low-proficiency learners.
										1. Knowledge gaining workshop					
										2. Industry related workshop					
<b>Technical Skills</b>	<b>P10:</b> Select the possible factors attributable to unemployment based on priority.					<b>S14:</b> Choose the possible factors attributable to unemployment based on priority.									
	La ck of tec hni cal ski lls	P o p ul at io n	Lo w Ins titu tio n/ Un ive rsit ySt an dar d	La ck of com mu nic ati on ski lls	Jo b op por tun ity &q ual ific ati on mi sm atc h	La ck of tec hni cal ski lls	Po pul ati on	Lo w Ins titu tio n/ Un ive rsit ySt an dar d	La ck of com mu nic ati on ski lls	Jo b op por tun ity &q ual ific ati on mi sm atc h					

On collection of data, the detailed analysis and which were depicted in the following tables.

1 <sup>st</sup> Pri or		3 <sup>rd</sup> Pri or	2 <sup>nd</sup> Pri or	4 <sup>th</sup> Pri or	1 <sup>st</sup> Pri or	5 <sup>th</sup> Pri or	3 <sup>rd</sup> Pri or	2 <sup>nd</sup> Pri or				
		5 <sup>th</sup> Pri or					4 <sup>th</sup> Pri or					
<b>P7:</b> Do you think that students equipped with technical and soft skills to meet industry standard rate in the scale of 1 to 5.										<b>EE7:</b> Are students equipped with technical and soft skills to meet industry standard rate in the scale of 1 to 5.		
89 % respondents rated 3 and greater than 3			12% respondents rated less than 3							Responde nts rated 3 and greater than 3	Responde nts rated less than 3	




Based on the analysis done on the previous tables, the questionnaire was prepared as shown below.

5/9/23, 11:47 AM Solution for bridging the gap between Academia and Industry

## Solution for bridging the gap between Academia and Industry

This form is circulated for DST NSTMIS project by Anand Institute of Higher Technology, Chennai

\* Indicates required question



- Name of the candidate  
\_\_\_\_\_
- Age  
\_\_\_\_\_

<https://docs.google.com/forms/d/1JjAyRy1UNLexpmXmT2z1pkmWsqQGaR2zIGpBY/edit?pli=1> 1/12

5/9/23, 11:47 AM Solution for bridging the gap between Academia and Industry

- Gender  
Mark only one oval.  
 Male  
 Female
- Education level \*  
Mark only one oval.  
 Diploma  
 Undergraduate  
 Postgraduate  
 Doctrate
- Name of the Organization/Institute  
\_\_\_\_\_
- Department \*  
Mark only one oval.  
 ECE/EEE/EIE  
 CSE/IT  
 MECHANICAL  
 CIVIL  
 OTHERS
- Mobile number  
\_\_\_\_\_

<https://docs.google.com/forms/d/1JjAyRy1UNLexpmXmT2z1pkmWsqQGaR2zIGpBY/edit?pli=1> 2/12

5/9/23, 11:47 AM Solution for bridging the gap between Academia and Industry

- Category \*  
Mark only one oval.  
 Electronics/Electrical/EIE Students Skip to question 22  
 Professor Skip to question 9  
 Employer Skip to question 9  
 Employee Skip to question 9  
 Job Seeker Skip to question 22  
 Other Students Skip to question 22  
  
Employer/Employee/Professor
- Select the appropriate changes need to be made in syllabus. \*  
Mark only one oval.  
 Special focus must be provided for updating the syllabus as per industrial standard and set a specific time frame to review and revise the syllabus every 2-3 years.  
 Number of credits required for theory has to be reduced. Credits must be made mandatory for summer internships and laboratory experiments should be given more weightage.  
 Minimum 3-4 months of on-job industry training is mandatory for all graduate courses besides creating more industry-specific learning centers of excellence.  
 Every student, on admission, would be put through a mandatory induction training to reinforce the fundamental concepts and the required language skills for technical education.

<https://docs.google.com/forms/d/1JjAyRy1UNLexpmXmT2z1pkmWsqQGaR2zIGpBY/edit?pli=1> 3/12

5/9/23, 11:47 AM Solution for bridging the gap between Academia and Industry

2. Choose the appropriate choice that makes the student industry ready. \*  
Mark only one oval.  
 Establishment of Industry-Institute Partnership /Incubation Centre.  
 Apprenticeship/Scholarships/ Fellowships instituted by industries for students.  
 Faculty must procure projects in association with industry and students should be involved to execute them.  
 Regular interaction of SMEs (subject matter experts) with students through guest lectures, workshops, symposiums etc.
3. Choose an appropriate option that faculty should infer/contribute from industry - institute collaboration. \*  
Mark only one oval.  
 Organize research programs, Workshops, conferences and symposia with joint participation of the faculty with industries.  
 Faculty visits to industry for study and discussions or delivering lectures on subjects of mutual interest.  
 Implement Industry best practices in lab sessions or project execution.  
 Faculty should involve in designing skill development programs as per industry standards via regular FDP.
4. Select the appropriate option that insists the importance of internships. \*  
Mark only one oval.  
 Internships provide exposure to the real world.  
 Internships provide students a great opportunity to establish critical networking connections.  
 Internships equip student with more than just technical skills.  
 Internships allows students to gain a competitive edge.

<https://docs.google.com/forms/d/1JjAyRy1UNLexpmXmT2z1pkmWsqQGaR2zIGpBY/edit?pli=1> 4/12

13. 5. Choose the appropriate choice to reduce the skill gap among students with that of industry expectations. \*

Mark only one oval.

- To experience the industry working standards, Students must be encouraged to visit companies along with faculties every semester.
- In order to meet the industry expectations, curriculum needs to designed in collaboration with industry SMEs.
- Faculty should bridge the gap between theory and application by working on live industry projects.
- All the above

14. 6. Pick out the appropriate option that insist importance of communication skill \* in employment.

Mark only one oval.

- Colleges should focus on soft skills and personality development programs.
- There is a need to include practical dimensions of evaluation in the form of Self-introduction, group discussions, and personal interviews to improve student's verbal communication.
- There is a need to conduct bridge courses in the beginning of the term to level the gap between high- and low-proficiency learners.
- All the above.

<https://docs.google.com/forms/d/1JjAjrYr1UNLexpmwxmT2z1pKwWsqQ5eaR2zG0p8Yieet?pi=1>

5/12

18. 10. Select the type of collaboration required between institutes and industries. \*

Mark only one oval.

- We must develop infrastructure and curriculum for promoting entrepreneurship among students.
- Industries should provide fund for innovative thoughts of students.
- Collaboration with the industry will allow undergraduates exposed to real case studies and get training assistance for educational purposes.
- Dedicated training on machinery equipment's and methods through properly planned industrial training.

19. 11. Pick out the appropriate requirement in technical skill for students. \*

Mark only one oval.

- Colleges and the industry need to interact with each other, pursue a mandatory policy of internship. This provides an idea of difference between corporate and academic life.
- Examination / Evaluation tactics should emphasize on inference type questions, rather than fact-based questions.
- Engineering studies should touch the global boundaries and should not confine to national boundaries.
- The focus must be given for practical knowledge, so fresh graduates can easily be employed or can become potential entrepreneurs.

20. 12. Choose the appropriate choice to enhance problem solving skill for students. \*

Mark only one oval.

- The course should improve students' ability to understand problems. Therefore, training should focus on strategies and tools that assist with problem analysis.
- Courses need to be designed to develop the habit of evaluation and reflection.
- The course should address misconceptions such as quickness in problem solving and focus on solutions.
- All the above.

<https://docs.google.com/forms/d/1JjAjrYr1UNLexpmwxmT2z1pKwWsqQ5eaR2zG0p8Yieet?pi=1>

7/12

15. 7. Select the best option that insist the importance of Workshops/Seminars/Hackathon/Project. \*

Mark only one oval.

- Structured team projects promotes both teamwork and communication skills.
- Prototype testing at a competition develops problem solving and creative thinking skills.
- There is a need to include an external competitive to expose students to a wider context.
- Live projects from industry for educational institutions to bring new innovative academic ideas in existing products/Services.

16. 8. Choose the appropriate challenge faced by managers while hiring students. \*

Mark only one oval.

- Lack of inter-personal communication skills among students.
- Lack of learning ability, rationale thinking, analytical thinking etc among students.
- Lack of respect towards other opinions among students.
- Lack of exposure to identify and analyze difficult problems under pressure among students.

17. 9. Pick out the appropriate feedback system required between industries and institutes. \*

Mark only one oval.

- Visits of experts and practicing engineers from industry for providing suggestions on research work.
- Online Groups between Industry & Academia to discuss Common Parameters.
- Academia should work in industry for a fixed term intermittently and industry experts should work in institutions.
- Mutual review of academic curriculum, lab infrastructure facilities by the industry experts and innovative, cross functional ideas by faculty members.

<https://docs.google.com/forms/d/1JjAjrYr1UNLexpmwxmT2z1pKwWsqQ5eaR2zG0p8Yieet?pi=1>

6/12

21. Please provide your valuable suggestions about the survey. \*

Mark only one oval.

- Excellent
- Good
- Satisfactory

Student/Job Seeker

22. 1. Select the appropriate changes need to be made in syllabus. \*

Mark only one oval.

- Special focus must be provided for updating the syllabus as per industrial standard and set a specific time frame to review and revise the syllabus every 2-3 years.
- Number of credits required for theory has to be reduced. Credits must be made mandatory for summer internships and laboratory experiments should be given more weightage.
- Minimum 3-4 months of on-job industry training is mandatory for all graduate courses besides creating more industry-specific learning centers of excellence.
- Every student, on admission, would be put through a mandatory induction training to reinforce the fundamental concepts and the required language skills for technical education.

23. 2. Choose the appropriate choice that makes the student industry ready.

Mark only one oval.

- Establishment of Industry-Institute Partnership /Incubation Centre.
- Apprenticeship/Scholarships/ Fellowships instituted by industries for students.
- Faculty must procure projects in association with industry and students should be involved to execute them.
- Regular interaction of SMEs (subject matter experts) with students through guest lectures, workshops, symposiums etc.

<https://docs.google.com/forms/d/1JjAjrYr1UNLexpmwxmT2z1pKwWsqQ5eaR2zG0p8Yieet?pi=1>

8/12

24. 3. Select the appropriate option that insists the importance of internships. \*

Mark only one oval.

- Internships provide exposure to the real world.
- Internships provide students a great opportunity to establish critical networking connections.
- Internships equip student with more than just technical skills.
- Internships allows students to gain a competitive edge.

25. 4. Choose the appropriate choice to reduce the skill gap among students with that of industry expectations. \*

Mark only one oval.

- To experience the industry working standards, Students must be encouraged to visit companies along with faculties every semester.
- In order to meet the industry expectations, curriculum needs to designed in collaboration with industry SMEs.
- Faculty should bridge the gap between theory and application by working on live industry projects.
- All the above

26. 5. Pick out the appropriate option that insist importance of communication skill in employment. \*

Mark only one oval.

- Colleges should focus on soft skills and personality development programs.
- There is a need to include practical dimensions of evaluation in the form of Self-introduction, group discussions, and personal interviews to improve student's verbal communication.
- There is a need to conduct bridge courses in the beginning of the term to level the gap between high- and low-proficiency learners.
- All the above.

27. 6. Select the best option that insist the importance of Workshops/Seminars/Hackathon/Project. \*

Mark only one oval.

- Structured team projects promotes both teamwork and communication skills.
- Prototype testing at a competition develops problem solving and creative thinking skills.
- There is a need to include an external competitive to expose students to a wider context.
- Live projects from industry for educational institutions to bring new innovative academic ideas in existing products/Services.

28. 7. Choose the appropriate challenge faced by managers while hiring students. \*

Mark only one oval.

- Lack of inter-personal communication skills among students.
- Lack of learning ability, rationale thinking, analytical thinking etc among students.
- Lack of respect towards other opinions among students.
- Lack of exposure to identify and analyze difficult problems under pressure among students.

29. 8. Pick out the appropriate feedback system required between industries and institutes. \*

Mark only one oval.

- Visits of experts and practicing engineers from industry for providing suggestions on research work.
- Online Groups between Industry & Academia to discuss Common Parameters.
- Academia should work in industry for a fixed term intermittently and industry experts should work in institutions.
- Mutual review of academic curriculum, lab infrastructure facilities by the industry experts and innovative, cross functional ideas by faculty members.

30. 9. Select the type of collaboration required between institutes and industries. \*

Mark only one oval.

- We must develop infrastructure and curriculum for promoting entrepreneurship among students.
- Industries should provide fund for innovative thoughts of students.
- Collaboration with the industry will allow undergraduates exposed to real case studies and get training assistance for educational purposes.
- Dedicated training on machinery equipment's and methods through property planned industrial training.

31. 10. Pick out the appropriate requirement in technical skill for students. \*

Mark only one oval.

- Colleges and the industry need to interact with each other, pursue a mandatory policy of internship. This provides an idea of difference between corporate and academic life.
- Examination / Evaluation tactics should emphasize on inference type questions, rather than fact-based questions.
- Engineering studies should touch the global boundaries and should not confine to national boundaries.
- The focus must be given for practical knowledge, so fresh graduates can easily be employed or can become potential entrepreneurs.

32. 11. Choose the appropriate choice to enhance problem solving skill for students. \*

Mark only one oval.

- The course should improve students' ability to understand problems. Therefore, training should focus on strategies and tools that assist with problem analysis.
- Courses need to be designed to develop the habit of evaluation and reflection.
- The course should address misconceptions such as quickness in problem solving and focus on solutions.
- All the above.

33. Please provide your valuable suggestions about the survey. \*

Mark only one oval.

- Excellent
- Good
- Satisfactory

This content is neither created nor endorsed by Google.

Google Forms

# Employee and Employer

ID	Employee	Employer	Address	Phone	City	State	Zip	County	Education	Major	Department	Position	Start Date	End Date	Notes
1	1-20-2022-12345	John Doe	123 Main St	555-123-4567	Springfield	IL	62760	Madison	B.S. Computer Science	Computer Science	Department of Computer Science	Software Engineer	2022-01-15	2022-03-31	Completed project X
2	1-20-2022-12346	Jane Smith	456 Oak Ave	555-987-6543	Springfield	IL	62760	Madison	B.S. Business Administration	Business Administration	Department of Business Administration	Marketing Specialist	2022-02-01	2022-04-15	Completed project Y

# Students and Job Seeker

ID	Student/Job Seeker	Address	Phone	City	State	Zip	County	Education	Major	Department	Position	Start Date	End Date	Notes
1	1-20-2022-12347	123 Main St	555-123-4567	Springfield	IL	62760	Madison	B.S. Computer Science	Computer Science	Department of Computer Science	Software Engineer	2022-01-15	2022-03-31	Completed project X
2	1-20-2022-12348	456 Oak Ave	555-987-6543	Springfield	IL	62760	Madison	B.S. Business Administration	Business Administration	Department of Business Administration	Marketing Specialist	2022-02-01	2022-04-15	Completed project Y

# Professor

ID	Professor	Address	Phone	City	State	Zip	County	Education	Major	Department	Position	Start Date	End Date	Notes
1	1-20-2022-12349	123 Main St	555-123-4567	Springfield	IL	62760	Madison	B.S. Computer Science	Computer Science	Department of Computer Science	Software Engineer	2022-01-15	2022-03-31	Completed project X
2	1-20-2022-12350	456 Oak Ave	555-987-6543	Springfield	IL	62760	Madison	B.S. Business Administration	Business Administration	Department of Business Administration	Marketing Specialist	2022-02-01	2022-04-15	Completed project Y

# **Chapter 5**

## **Result and Discussion**

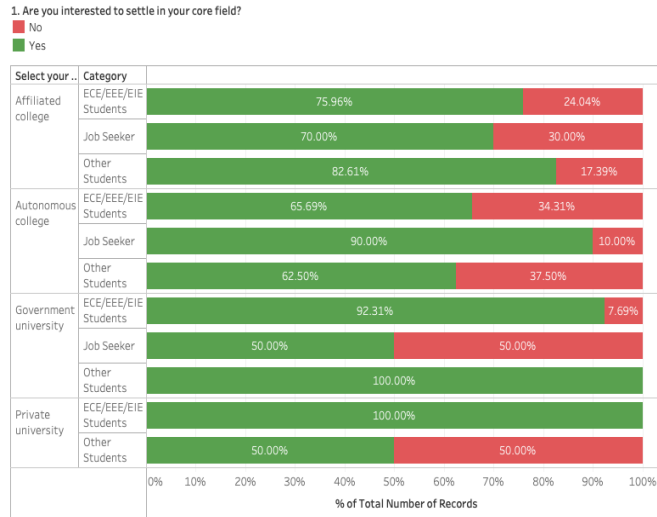
The survey was carried out on students, job seekers, professors, employer and employees. The data collection was done through online questionnaire. It consists of both open ended and closed ended questions. The closed ended questions are used to analyze the responses easily. The closed ended questions are for unlimited and impulsive perspectives. We have received a total of 533 responses as shown in **Table 1**. We have received 108 responses from industry professionals, 125 responses from professors, 43 responses from jobseekers and 257 responses from students. The classification of respondents based on educational qualification is depicted in **Table 2**. The following are the research findings.

**Table 5.1. Classification of respondents based on Gender**

<b>Gender</b>	<b>Total no of Respondents</b>	<b>Percentage</b>
Male	280	52.5
Female	253	47.5
Total Respondents	533	100.0

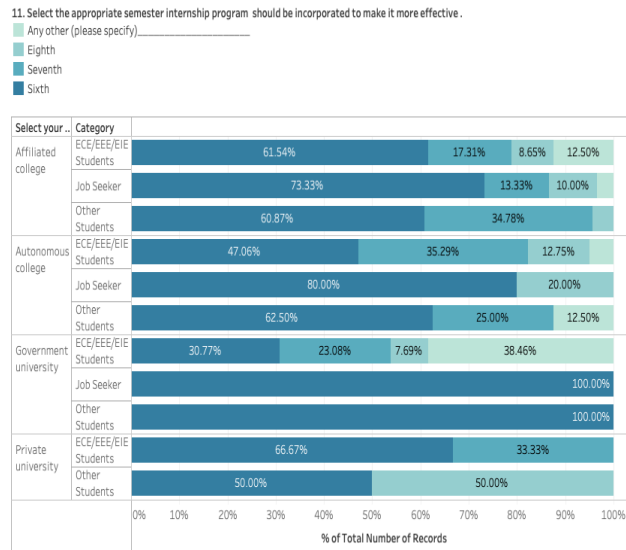
**Table 5.2. Classification of respondents based on Education Qualification**

	<b>Respondents</b>		<b>Percentage</b>
Education	Diploma	6	1.1
	Undergraduate	348	65.3
	Postgraduate	113	21.2
	Doctorate	66	12.4
Total Respondents		533	100.0

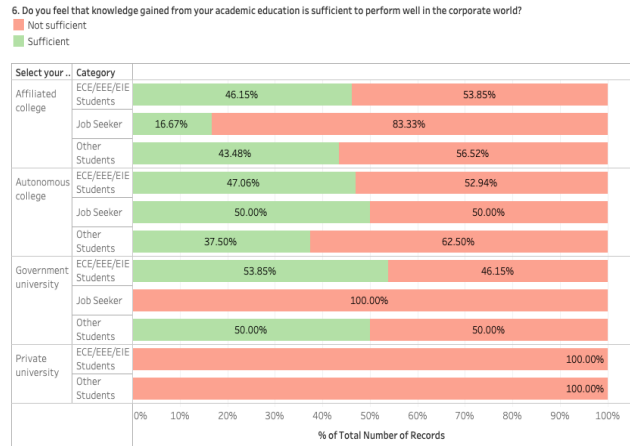


**Figure 5.1. Students career interest in core sector**

The **Figure 5.1.** states large number of students responded they are interested to work in core sector. From **Figure 5.1.** it is observed 75.9% of students and Job seekers responded to settle in core sector. But there is a wide gap between demand and supply of quality electronic engineers. This is due to lack of training on appropriate skillset required for industry. The **Figure 5.2.** depicts 53.1% of students and job seekers from government and private universities stated the internship must be incorporated in sixth semester for better outcome. The **Figure 5.3.** shows 56.6% students stated academic education is not sufficient to survive in industrial environment. So frequent training on technical skills and soft skills needs to be provided in academic institutes in appropriate time.

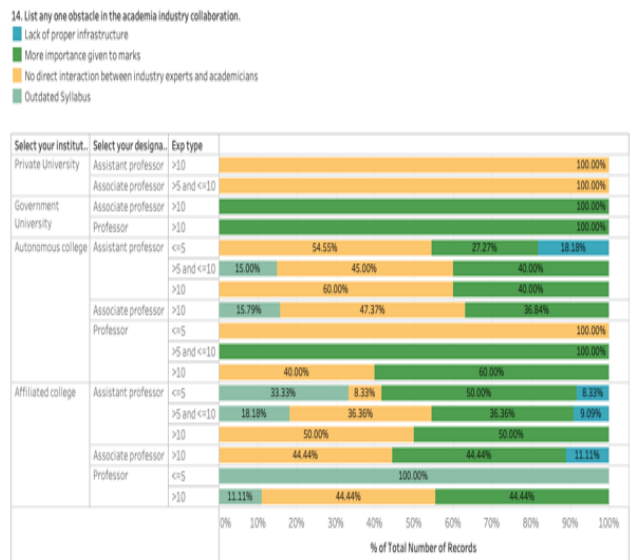


**Figure 5.2. Students response for incorporation of internship programs**



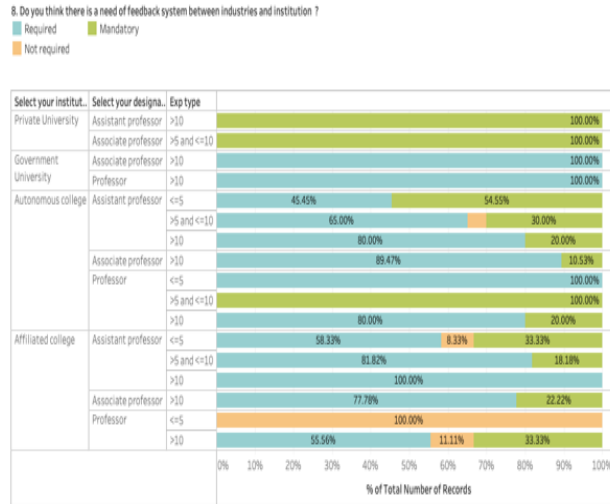
**Figure 5.3. Student's response on meeting corporate expectation**

The **Figure 5.4.** shows 41.4% academicians responded more importance is given to marks and 43% academicians responded there is no direct interaction between industry experts and academicians. The **Figure 5.5.** depicts 71.1% academicians responded there is a need of feedback system between institute and industry. The solution for **Figure 5.4. and 5.5.** can be achieved by increasing the interaction between industry experts and academicians via industrial visits, workshops and seminars.



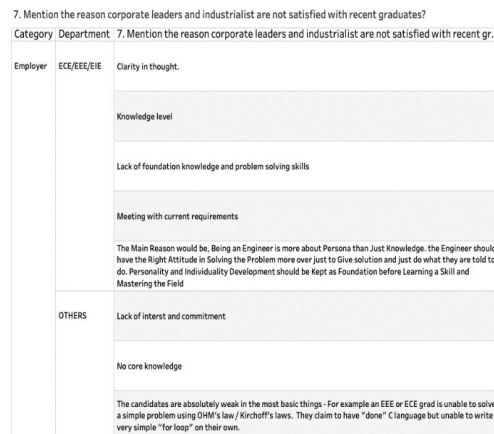
**Figure 5.4. Academician response for obstacle in academic and industry collaboration**



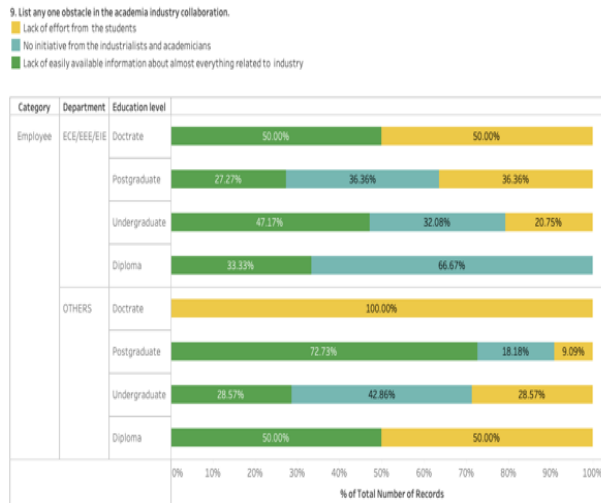


**Figure 5.5. Faculties response on need of feedback between industries and educational institutes**

Employer response for question in **Figure 5.6.** states industries are not satisfied with fresh graduates. Students lack in fundamentals, and problem-solving skills in their specialization. Industrialist states that students lack interest and commitment. Job stability is the major concern with fresh graduates. Quality talent is a major challenge that Electronics Design players are facing in outside world. Students are expected to have good knowledge on industrial requirements and strong in electronic fundamentals. The **Figure 5.7.** depicts 44.4% response from employee states that the major obstacle in industry and academic collaboration is lack of available resources related to industry, 31.3% employees responded there is no initiative from the industrialist and academicians and 24.2% employees stated lack of effort from students. There must be platform for faculties and students to access resources related to industry such as information on website and online forums.



**Figure 5.6. Industry experts' response on expectation level from graduates**



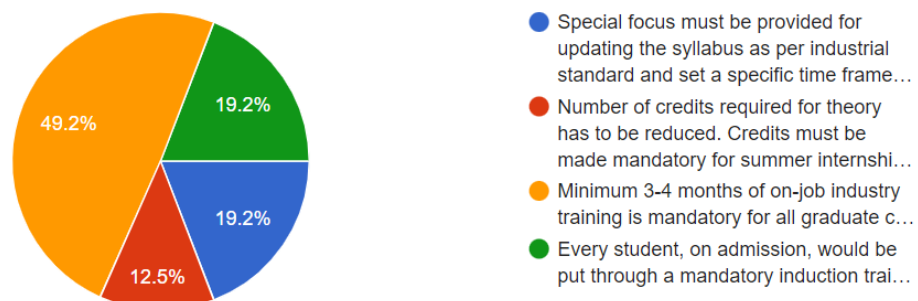
**Figure 5.7. Employee response on obstacle in industry academic collaboration**

Survey method was used with the help of a questionnaire to build Solution for bridging the gap between Academia and Industry. The questionnaire covered 1. Causes of gaps between academia and industry 2. Effects of these gaps. 3. Remedies and Actions for filling these gaps. Based on the answers to questionnaire received from the students, job seekers, professors, employer and employees various remedies are discussed detail to fill the gap between industry and institute.

1. Select the appropriate changes need to be made in syllabus.



120 responses



**Figure 5.8. Professor/Employer/Employee responded on changes need to be made in syllabus.**

From Figure 5.8. majority of academicians and industry people has suggested Minimum 3-4 months of on-job industry training is mandatory for all graduate courses besides creating more industry-

specific learning centers of excellence.

3. Select the appropriate option that insists the importance of internships.



206 responses



**Figure 5.9. Students/Job seeker responded importance of internship.**

- From above Figure 5.9. majority of students suggested that Internships provide exposure to the real world and provide students a great opportunity to establish critical networking connections.

**Discussion:**

**Table 5.3. Industry & Academia Collaboration**

1	Organizing Industry-Academia Interfaces i.e.HR Meets, HR Summit etc
2	Faculty Development Programs by Industry.
3	Online Groups between Industry & Academia to discuss Common Parameters.

**Table 5.4. Industry-Institute linkage**

1	Frequent visits and interaction by faculty and students to the related industries.
2	Guest lecturers from experts in the industry
3	Dedicated training and experience on machinery equipment and methods in industry through properly planned industrial training.
4	Making relative industrial experience as one of the essential requirement for appointing faculty in institutions.

**Table 5.5. live projects to Academia by Industry**

1	To Judge the Skill Level of Students before Placing them in Industries.
2	To bring New Innovative Academic Ideas in Existing Products/Services.
3	When Outsourcing Work of an Industry requires Research.
4	Long-Term Projects where Academia can effectively contribute in Years.

**Table 5.6. Academia to equip faculty for latest industry ready skills**

1	Faculty Involvement in Designing Skill Development Programs as per Industry Standards.
2	Faculty Participations in Industry Conferences on similar Projects.
3	Regular FDP Programs with Industry.
4	Faculty to Monitor the Progress of Live Projects with Industry.

**Table 5.7. Planning internship programmes to meet industry requirement**

1	By Studying New Innovative Products/Services Possible to Industry & then Plan Internship.
2	By Fusion of Internship Programs with Outsourcing Projects of Industry.
3	Long-Term Projects to be taken & to be passed on to various Batches for Execution purpose.
4	Projects with Value Additions to Industries has Better Approval Prospects.

**Table 5.8. Steps by Universities to involve industry experts in internship**

1	Online Interfaces to be planned i.e. through Skype, Video Conferencing etc
2	By planning Weekend Interfaces after approvals from Industry.
3	Flexible Interfaces to be planned as per Feasibility of Industry Experts.
4	By planning FDP's at Industry only based upon suitability.

**Table 5.9. Curriculum design to meet practical requirement of industry**

1	Having workshops of industrial representatives and faculties on syllabus preparation
2	Sending syllabus to experts in industry before adopting in institutions
3	Evaluating the requirements of industry and adding required knowledge in syllabus.
4	Having representatives from related industry while preparing syllabus.

**Table 5.10. Strategies for future of Industry –Academia for designing collaborative Models**

1	By Involving Students in Live Projects with Industries.
2	By Continuously upgrading the Skill Levels of Students.
3	By Designing Internships with Pre-defined Deliverables.
4	Through Regular Interaction with Industries.

**Table 5.11. Strategic Planning requirements by universities to bridge industry-Institute Gap**

1	Regular Updation in Academia Curriculum as per Market.
2	Design Events to inculcate Critical, Systematic Thinking to address Changes.
3	By adopting Industry-Centric Strategic Planning in Academia.
4	Regular Up gradation of Academia Infrastructure.

**Table 5.12. Strategies by universities for obtaining industry inputs for curriculum design**

1	Inviting Industry Experts for Discussions on Latest Developments in Industry.
2	Asking Suggestions from Industries regarding Updations required in Curriculum.
3	Incorporation of Industry's View of Competency Based Approach to Curriculum.
4	By Involving Industry Mentors in Regular Studies

# **Chapter 6**

## **Findings/Summary and Recommendations**

## **ENGINEERING EDUCATION FUTURE**

The survey findings should be studied not only to obtain ratings and rankings, but also to learn about, appraise, and evaluate the current situation. If we account for these characteristics, the gap between engineering education and industry will diminish. The corporate environment is extremely competitive, unpredictable, and unclear in multiple ways. The requirement of adaptation to globalization and vertical development, engineering institutions should reach out to the world by providing high-quality technical education. Keeping engineering students unemployed is unhealthy for their families and bad for the economy. Essentially, no country will progress without the assistance of engineers. The procedures that follow will assist to alleviate this awful predicament to a considerable extent.

1. Education of high quality should be prioritized.
2. Every engineering student should be offered a job guarantee.
3. Engineering graduates who are unemployed should be compensated monetarily.
4. Those seeking admission to engineering programs should be instilled with confidence.
5. Encouragement of the professional job in the appropriate branch, so that they would be delighted since they have chosen the right group.
6. Encourage new engineers to conduct research so that they could progress in career.

## **SUGGESTIONS**

1. Class room learning would be an engaging part if theoretical and practical learning were given equal weightage.
2. Internships should not be done for the purpose of documentary work; rather, they should be used to gain experience with real projects.

3. Faculties, who play an important role in encouraging students, should have industrial experience to help students understand way things are done in organizations. Furthermore, the staff must be trained on a regular basis by visiting industries to stay up to date on the recent developments.
4. In colleges, grades and marks determine a student's performance; nevertheless, in industry, a candidate's performance in handling a project and how candidate overcomes is evaluated.
5. Industry academic partnership is essential for institutions to stay current with recent demands for the advancement of student's future.
6. At the entry level, student's mindset is a degree is sufficient to acquire a job must be modified.
7. Making it mandatory for students to be a part of several cells such as NSS, AICUF, and CSI will help them overcome stage fright and inspire them to improve professionally.
8. Alumni associations play an important function; holding frequent alumni meetings would assist students in developing current needs.

## **CONCLUSION**

Majority of professor response states, there is a lack of interaction between industry and academic institution. Students feedback states that academic education is not sufficient to survive in industrial environment. Industry experts have highlighted a number of factors where academics is falling short. It is observed that, there is gap between demand and Supply of graduates as well as there is degradation in quality among graduates. The participants presented ideas and suggestions for best practices and noted how best has to be done to connect students for more opportunities to gain strong technical knowledge. The suggestions include formal relation between the employer and the university. After reviewing several papers and interviewing individuals, we found that the primary lag is in the educational system. Students are racing for grades, yet they lack skills since the curriculum is outdated. As a result, it is the role of universities to overcome educational problems and devise innovative



approaches to bridge such gaps. The educational institutes and industries should take appropriate steps for the happening of interaction between industry experts and faculty members. A regulatory body comprised of experts from industry and academia can be created to continually monitor and identify gaps, as well as to make ongoing attempts to bridge those gaps.

## RESEARCH SUMMARY

**National Science and Technology Management Information Output: Study for Meeting the Demand and Supply of Quality Electronic Engineers in Technical Field (2020-2022)** by Dr. Sankara Malliga G, Professor and Head & R.Logeshwaran, Assistant Professor, Anand Institute of Higher Technology, Kazhipathur, Chennai 603103

Professional education is pursued by students for a number of reasons, one of which is to secure employment. As per ASSOCHAM report published in 2016, the education quality is deteriorating and the number of un-employed graduates is increasing. The market requirement does not meet graduate competency. The industry academia gap refers to the mismatch between industry demands and graduate competency. Engineering is the core of innovation and knowledge-based economy, processing the next generation of talent engineers with the required set of skills is essential. The main objective of this paper is to identify the reasons for degradation of quality among electronic engineering graduates. The study explores interaction of the professional education system with regard to industry-related factors and industry-academic gap representing as the principle component. Literature survey performed in order to analyse the gap between demand and supply of electronic engineers. The survey was performed in two perspective 1. Academia and 2. Industry. The survey utilized google form for collecting both quantitative and qualitative data among academicians, engineering students and industry persons. The collected data was clustered and analysed using data visualization tool. The study's findings show that there is a mismatch between graduate skills and industry competencies. The findings are remarkable because they have practical implications for both employers and academia in bridging the skill gap.

## End Project Deliverables:

### Discussion

**Table 1 Industry & Academia Collaboration**

1	Organizing Industry-Academia Interfaces i.e.HR Meets, HR Summit etc
2	Faculty Development Programs by Industry.
3	Online Groups between Industry & Academia to discuss Common Parameters.

**Table 2 Industry-Institute linkage**

1	Frequent visits and interaction by faculty and students to the related industries.
2	Guest lecturers from experts in the industry
3	Dedicated training and experience on machinery equipment and methods in industry through properly planned industrial training.
4	Making relative industrial experience as one of the essential requirement for appointing faculty in institutions.

**Table 3 live projects to Academia by Industry**

1	To Judge the Skill Level of Students before Placing them in Industries.
2	To bring New Innovative Academic Ideas in Existing Products/Services.
3	When Outsourcing Work of an Industry requires Research.
4	Long-Term Projects where Academia can effectively contribute in Years.

**Table 4 Academia to equip faculty for latest industry ready skills**

1	Faculty Involvement in Designing Skill Development Programs as per Industry Standards.
2	Faculty Participations in Industry Conferences on similar Projects.
3	Regular FDP Programs with Industry.
4	Faculty to Monitor the Progress of Live Projects with Industry.

**Table 5 Planning internship programmes to meet industry requirement**

1	By Studying New Innovative Products/Services Possible to Industry & then Plan Internship.
2	By Fusion of Internship Programs with Outsourcing Projects of Industry.
3	Long-Term Projects to be taken & to be passed on to various Batches for Execution purpose.
4	Projects with Value Additions to Industries has Better Approval Prospects.

**Table 6 Steps by Universities to involve industry experts in internship**

1	Online Interfaces to be planned i.e. through Skype, Video Conferencing etc
2	By planning Weekend Interfaces after approvals from Industry.
3	Flexible Interfaces to be planned as per Feasibility of Industry Experts.
4	By planning FDP's at Industry only based upon suitability.

**Table 7 Curriculum design to meet practical requirement of industry**

1	Having workshops of industrial representatives and faculties on syllabus preparation
2	Sending syllabus to experts in industry before adopting in institutions
3	Evaluating the requirements of industry and adding required knowledge in syllabus.
4	Having representatives from related industry while preparing syllabus.

**Table 8 Strategies for future of Industry –Academia for designing collaborative Models**

1	By Involving Students in Live Projects with Industries.
2	By Continuously upgrading the Skill Levels of Students.
3	By Designing Internships with Pre-defined Deliverables.
4	Through Regular Interaction with Industries.

**Table 9 Strategic Planning requirements by universities to bridge industry-Institute Gap**

1	Regular Updation in Academia Curriculum as per Market.
2	Design Events to inculcate Critical, Systematic Thinking to address Changes.
3	By adopting Industry-Centric Strategic Planning in Academia.
4	Regular Up gradation of Academia Infrastructure.

**Table 10 Strategies by universities for obtaining industry inputs for curriculum design**

1	Inviting Industry Experts for Discussions on Latest Developments in Industry.
2	Asking Suggestions from Industries regarding Updations required in Curriculum.
3	Incorporation of Industry's View of Competency Based Approach to Curriculum.
4	By Involving Industry Mentors in Regular Studies

## **KEY OUTCOMES OF THE PROJECT**

1. Education of high quality should be prioritized.
2. Every engineering student should be offered a job guarantee.
3. Engineering graduates who are unemployed should be compensated monetarily.
4. Those seeking admission to engineering programs should be instilled with confidence.
5. Encouragement of the professional job in the appropriate branch, so that they would be delighted since they have chosen the right group.
6. Encourage new engineers to conduct research so that they could progress in career.

## References:

1. Huzair Khan, —Quality of engineering education, DOI:10.13140/RG.2.1.1576.2169, OCTOBER,2015.
2. Lennart Büth A, Vikrant Bhakar B, Nitesh Sihag B, Gerrit Posselt A, Stefan Böhme A, Kuldip Singh Angwan B, Christoph Herrmann A.. Bridging the qualification gap between academia and industry in India. 7th Conference on Learning Factories doi: 10.1016/j.promfg.2017.04.009.
3. Mohd Shamsuri, Md Saad, Anidah Robani, Zanariah Jano & Izaidin Ab. Majid. Employers' perception on engineering, information and communication technology (ICT) students' employability skills. Global Journal of Engineering Education. Volume 15, Number 1, 2013.
4. Azeez Nureni Ayofe, Azeez Raheem Ajetola. Exploration of the Gap Between Computer Science Curriculum and Industrial I.T Skills Requirements. International Journal of Computer Science and Information Security, Vol. 4, No. 1 & 2, 2009.
5. Natalia Shmatko, Galina Volkova. Bridging the Skill Gap in Robotics: Global and National Environment. SAGE Open July-September 2020: 1–13. DOI: 10.1177/2158244020958736.
6. Murali S, Dr. Y Rajaram. A Study on the Corporate Expectations from Engineering Graduates in India – Bangalore IOSR Journal of Business and Management e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 17, Issue 6. Ver. III (June. 2015).
7. Deniz Akdur, ASELSAN Inc., Ankara, The Design of a Survey on Bridging the Gap between Software Industry Expectations and Academia. 2019 8th Mediterranean conference on embedded computing (MECO), 10-14 June 2019.
8. Sudhania Vasudevan, Hemamala K. A Study of the industry academia gap in professional education. International Journal of Pure and Applied Mathematics. Volume 118 No. 22 2018, 1011-1019 ISSN: 1314-3395.
9. J Walther and DF Radcliffe. The competence dilemma in engineering education: Moving beyond simple graduate attribute mapping. Australasian Journal of Engineering Education Vol 13 No1.

10. S. Zeidan and M.M. Bishnoi. An Effective Framework for Bridging the Gap between Industry and Academia. *International Journal on Emerging Technologies* 11(3): 454-461 (2020).
11. Sandeep Dahiya and Vijay Nehra. Ensuring Employment and Employability through Electronics Engineering Education: A Case Study of BPS Women University. *I.J. Modern Education and Computer Science*, 2015, 11, 35-52. DOI: 10.5815/ijmeecs.2015.11.05.
12. Ugarthi Shankalia and K.S. Shoba Jasmin. Quality of Education in Engineering Colleges in Tamilnadu. *International Journal of Pure and Applied Mathematics*, Volume 119 Volume 119 No. 17 2018, 227-235.
13. PrachiKapil. Bridging the Industry- Academia skill gap. A conceptual investigation with special emphasis on the management education in India *IOSR Journal of Business and Management (IOSR-JBM)* e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 16, Issue 3. Ver. III (Feb. 2014), PP 08-13.

# Annexure

## Questionnaire

### Breaking the barrier between Academics and Industry

This form is circulated for DST NSTMIS project by Anand Institute of Higher Technology,  
Chennai

\* Required

1. Email address \*

---



2. Name of the candidate \*

---

3. Age \*

---

4. Gender \*

*Mark only one oval.*

Male

Female



## 5. Education level \*

*Mark only one oval.*

- Diploma
- Undergraduate
- Postgraduate
- Doctrate

## 6. Name of the Organization/Institute \*

---

## 7. Department \*

*Mark only one oval.*

- ECE/EEE/EIE
- CSE/IT
- MECHANICAL
- CIVIL
- OTHERS

## 8. Mobile number \*

---

## 9. Category \*

*Mark only one oval.*

- Electronics/Electrical/EIE Students *Skip to question 58*
- Professor *Skip to question 10*
- Employer *Skip to question 41*
- Employee *Skip to question 29*
- Job Seeker *Skip to question 58*
- Other Students *Skip to question 58*

# Professor

10. Select your designation \*

*Mark only one oval.*

- Assistant professor
- Associate professor
- Professor

11. Select your institute type \*

*Mark only one oval.*

- Autonomous college
- Affiliated college
- Government University
- Private University

12. Your total work experience in years \*

---

13. Does the university syllabus meets the industry requirement? \*

*Mark only one oval.*

- Yes
- No

14. Select the awareness level of student about industrial requirement. \*

*Mark only one oval.*

- Less than 25%
- Greater than 50%
- 75%

15. Prioritize the skills or abilities that students lack to gain employment during their career in industry. \*

Mark only one oval per row.

Communiicattiion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Liistteniing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Techniicall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prroblem sollviing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	1st priority	2nd priority	3rd priority	4th priority

16. Does industrial interaction programs are sufficient for students and faculties to understand the industry needs. Rate in the scale of 1 to 10. \*

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Low	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	High

17. How often industry related workshop and knowledge gaining workshop are conducted in your college? \*

Mark only one oval per row.

	Frequently	Rarely	Sometimes
Industry rrelatted worrkshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge gaiiniing worrkshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Do you think there must be an update of syllabus and curriculum for a tenure of 4 years to meet the industrial requirement? \*

Mark only one oval.

Required

Not required

Mandatory

19. Do you think that students equipped with technical and soft skills to meet industry standard rate in the scale of 1 to 5. \*

Mark only one oval.

	1	2	3	4	5	
Low	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	High

20. Do you think there is a need of feedback system between industries and institution ? \*

Mark only one oval.

- Required
- Not required
- Mandatory

21. Select the qualities prioritized by industry while hiring freshers. \*

Mark only one oval per row.

	1st Priority	2nd Priority	3rd Priority	4th priority
Prroblem sollviing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communiicattiion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teamworrk	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Leaderrship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Select the possible factors attributable to unemployment based on priority. \*

Mark only one oval per row.

	1st priority	2nd priority	3rd priority	4th priority	5th priority
Popullattiion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low lnstiittuttiion/Uniivrrsitty Standarrd	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack off ttechniicall skillllls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack off communiicattiion skillllls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jjob oppoortunity & qualiffication miismattch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Mention the reason corporate leaders and industrialist are not satisfied with

recent graduates? \*

---

---

---

---

---

24. Rate the importance of practice school (internship > 6 months) in the scale of 1 to 10. \*

*Mark only one oval.*

	1	2	3	4	5	6	7	8	9	10	
Low	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	High

25. How is college education or internship were useful for graduates to perform better in their job roles? \*

*Mark only one oval.*

- Has remarkable effect on performance at job
- No effect on performance at job

26. List any one obstacle in the academia industry collaboration. \*

*Mark only one oval.*

- Outdated Syllabus
- Lack of proper infrastructure
- More importance given to marks
- No direct interaction between industry experts and academicians

27. What do you think is the most important factor to support such a collaboration ? \*

*Mark only one oval.*

- Institutional support
- Adequate funding
- Regular revision of syllabus
- Increase in interaction between two entities

28. Please provide your valuable suggestions about the survey. \*

*Mark only one oval.*

- Excellent
- Good
- Satisfactory

# Employee

29. Job description \*

---



---



---

30. Were the abilities of graduates meet expectation by employer? \*

Mark only one oval.

- Yes
- No

31. What according to you is the most important skill required to function effectively in industry ? \*

Mark only one oval.

- The ability to learn and adapt to the everchanging industry
- Communication skills along with a well rounded personality
- Professional knowledge and ability to deliver within stipulated time frames.

32. Select the challenges faced by hiring managers while hiring students. Please provide the details based on priority. \*

Mark only one oval per row.

	1st Priority	2nd Priority	3rd Priority	4th Priority
Selecttiing tthe rriightt candiidatte	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Buiillldiing a sttrrong employerr brrand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensurrriing a good iintterrviiiew experrrience fforr candiidatte	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prrressurre tto ffiillll open posiitttiions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

33. Mention the awareness of industrial requirement by the student. \*

Mark only one oval.

- Less than 25%
- Greater than 50%
- 75%

34. Is there an update required for syllabus and curriculum for a tenure of 4 yearsto meet the industrial requirement ? \*

*Mark only one oval.*

- Required
- Not required
- Mandatory

35. Is there a need of feedback system between industries and institution ? \*

*Mark only one oval.*

- Required
- Not required
- Mandatory

36. Are students equipped with technical and soft skills to meet industry standard rate in the scale of 1 to 5. \*

*Mark only one oval.*

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

37. What changes would you suggest that will further facilitate/improve Academic-Industry collaboration? \*

*Check all that apply.*

- Industrial Visit
- Workshops by working professional
- Long term Internship
- In-plant training
- Grooming and orientation programs



38. List any one obstacle in the academia industry collaboration. \*

*Mark only one oval.*

- Lack of easily available information about almost everything related to industry
- Lack of effort from the students
- No initiative from the industrialists and academicians

39. Prioritize the factors required for industry and academic collaboration. \*

*Mark only one oval per row.*

	Ist Priority	2nd Priority	3rd Priority
Efforts from both sides to bridge the gap..	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
College should promote better work culture and provide them a practical picture..	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Syllabus should be more practical oriented as per industry requirement.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

40. Please provide your valuable suggestions about the survey. \*

*Mark only one oval.*

- Excellent
- Good
- Satisfactory

# Employer / HR / Recruiter

41. Job description \*

---



---



---

42. Mention the qualities prioritized while hiring a new college graduate. \*

*Mark only one oval per row.*

	Ist Priority	2nd Priority	3rd Priority	4th Priority
Prroblem sollviing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communiicattion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teamworrk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leaderrshiip	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

43. Does the abilities of graduates meet employer expectations? \*

*Mark only one oval.*

Yes

No

44. Is there any mismatch in the demand and supply of skills in the electronic sector professionals in India ? \*

*Mark only one oval.*

Yes

No

45. How satisfied the employers with the skills of engineering graduates? \*

*Mark only one oval.*

Satisfied

Not much satisfied

Somewhat satisfied

Not at all satisfied with quality of engineering graduate skills

46. Prioritize the skills important for students to get hired. \*

Mark only one oval per row.

	1st priority	2nd priority	3rd priority
Core employability skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

47. Select the challenges faced by hiring managers while hiring students. Please provide the details based on priority. \*

Mark only one oval per row.

	1st Priority	2nd Priority	3rd Priority	4th Priority
Selecting the right candidate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building a strong employer brand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensuring a good interview experience for candidate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pressure to fill open positions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

48. Mention the reason corporate leaders and industrialist are not satisfied with recent graduates? \*

---



---

49. Do you feel sufficient practical / workshop input is necessary in the institute before the students are appointed for training in industries. \*

Mark only one oval.

Yes

No

50. How is college education/internship useful for graduates to perform better in their job roles? \*

Mark only one oval.

- Has remarkable effect on performance at job
- No effect on job performance

51. If answer to 9 is yes, please specify the % of practical / workshop exposure required in relation to class room training.

Mark only one oval.

- Theory 50% , Practical 50 %
- Theory 70% , Practical 30 %
- Theory 60% , Practical 40%
- Theory 80% , Practical 20%
- Theory 90% , Practical 10%
- Any others ( Please specify ) \_\_\_\_\_

52. Rate the importance of practice school (internship > 6 months) in the scale of 1 to 10. \*

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Low	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	High

## 53. Select the suitable option to reduce the engineering skill gap. \*

Mark only one oval per row.

	1st Priority	2nd Priority	3rd Priority	4th Priority	5th Priority
Hiring a Skilled workforce	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hire a workforce with mixed skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhance your employee value proposition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lookout for valuable softskills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work with specialist recruiters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 54. What changes would you suggest that will further facilitate/improve Academic-Industry collaboration? \*

Check all that apply.

- Industrial visit
- Workshops by working professional
- Long Term Internship
- In Plant Training
- Grooming and Orientation Program

## 55. List any one obstacle in the academia industry collaboration. \*

Mark only one oval.

- Lack of easily available information about almost everything related to industry
- Lack of effort from the students
- No initiative from the industrialists and academicians

## 56. Prioritize the factors required for industry and academic collaboration. \*

Mark only one oval per row.

	Ist Priority	2nd Priority	3rd Priority
Efforts from both sides to bridge the gap..	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
College should promote better work culture and provide them a practical picture..	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Syllabus should be more practically oriented as per industry requirement.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 57. Please provide your valuable suggestions about the survey. \*

Mark only one oval.

- Excellent
- Good
- Satisfactory

# Student/Job Seeker

58. Select your institute type \*

*Mark only one oval.*

- Affiliated college
- Autonomous college
- Government university
- Private university

59. Are you interested to settle in your core field? \*

*Mark only one oval.*

- Yes
- No

60. If Yes, please mention few core company names.

---

---

---

---

---

61. Rate your awareness of industry requirement in the scale of 1 to 5. \*

*Mark only one oval.*

	1	2	3	4	5	
Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Agree

62. Mention the skill level accomplished for entry level positions through your academic syllabus. \*

Mark only one oval per row.

	Less than 25%	50% to 75%	75%
Basic skills((Speaking/Listening/Writing))	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Higher order Thinking skills((Decision making/Innovation))	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Affective employability skills((positive attitude/Flexibility/Responsibility))	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

63. Whether the practical sessions are sufficient to meet the industry needs. Rate in the scale of 1 to 10? \*

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Agree



64. Do you feel that knowledge gained from your academic education is sufficient to perform well in the corporate world? \*

Mark only one oval.

- Sufficient Not
- sufficient

65. Does your academic project provides good learning experience ? \*

Mark only one oval.

- Yes
- No

66. Does the industrial interaction programs are sufficient for students to understand the industry needs. \*

Mark only one oval.

- Sufficient
- Insufficient

67. Rate the education quality and its application to industry in the scale of 1 to 5. \*

Mark only one oval.

	1	2	3	4	5	
Low	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	High

68. How often Workshop/Industrial Visit/Technical Seminar/Innovative Ideas are conducted in your college? \*

Mark only one oval per row.

	Frequently	Rarely	Sometimes
Worrkshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
lndustrriial Visiitt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Techniicall Semiinarr	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
lInnovattiive lIdeas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

69. Select the appropriate semester internship program should be incorporated to make it more effective . \*

Mark only one oval.

- Eighth
- Seventh
- Sixth
- Any other (please specify)\_\_\_\_\_

70. Prioritize the benefit of practice school (internship > 6 months). \*

Mark only one oval per row.

	Ist Priority	2nd Priority	3rd Priority
Reall Tiime lndustrtry Experrience and Exposurre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hellps tto Make Prroffessiionall Nettworrrk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Add Vallues,, Skiilllls,, and Experrience tto tthe CV	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

71. Does hackathon/Seminar/Workshop/Internship/Project plays a prominent role to get recruited in industry. Select the appropriate choice. \*

Mark only one oval per row.

	Ist priority	2nd priority	3rd priority	4th priority	5th priority
Hackatthon	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IIndusttrriiall worrkshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IInttternshiip	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prrojjectt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Semiinarr	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

72. Choose the possible factors attributable to unemployment based on priority.

\*

Mark only one oval per row.

	Ist priority	2nd priority	3rd Priority	4th priority	5th priority
Popullattiion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low IInsttiittuttiion/Uniiverrsiitty Sttandardd	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack off ttechniicall skiilllls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack off communiicattiion skiilllls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>J</b> ob opportunity & qual <b>l</b> ification miismattch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

73. Mention the skill you feel need to be enhanced to get a job? \*

\_\_\_\_\_

74. What changes would you like to see in our education system? \*

*Check all that apply.*

- More emphasis on practical knowledge
- Importance should be given to skill development

75. Please provide your valuable suggestions about the survey. \*

*Mark only one oval.*

- Excellent
- Good
- Satisfactory

---

This content is neither created nor endorsed by Google.

Google Forms

# Bridging the gap between academic and industry

This form is circulated for DST NSTMIS project by Anand Institute of Higher Technology, Chennai

---

\* Required

1. Email \*

---

2. Name of the candidate \*

---

3. Age \*

---

4. Gender \*

*Mark only one oval.*

Male

Female

5. Education level \*

*Mark only one oval.*

Diploma

Undergraduate

PostGraduate

Doctrate

6. Name of the Organization/Institute \*

---

7. Department \*

*Mark only one oval.*

- ECE/EEE/EIE
- CSE/IT
- MECHANICAL
- CIVIL
- OTHERS

8. Mobile number \*

---

9. Category \*

*Mark only one oval.*

- Employer
- Employee

10. Domain \*

*Mark only one oval.*

- EMBEDDED AND ROBOTICS      *Skip to question 11*
- VLSI      *Skip to question 29*
- PLC & SCADA      *Skip to question 36*

EMBEDDED AND ROBOTICS

11. 1. Describe the employee hiring process you use for college recruiting ? \*

---

---

---

---

---

12. 2. Do fresh electronic graduates prefer IT sector because of high pay scale? \*

*Mark only one oval.*

Yes

No

13. 3. Whether stability an issue with fresh electronic graduates? \*

*Mark only one oval.*

Yes

No

14. 4. Is 'quality talent' a challenge that Electronics Design players are facing/going to face in India? \*

*Mark only one oval.*

Yes

No

15. 5. What is the trend in the hiring process you see in the electronics design industry today? \*

---

---

---

---

---

16. 6. What is the key technology skill sets that are in demand in the industry today? \*

---

---

---

---

---

17. 7. How would you advise an aspirant on the right steps to follow while applying for a job in electronics design sector? \*

---

---

---

---

---

18. 8. When you hire what are the key basic skills that you look for? \*

---

---

---

---

---



19. 9. With smart cities in the picture, what are the talent requirements and in which all sectors? \*

---

---

---

---

---

20. 10. a. What are the skill sets required for someone looking to work in electric vehicle sector? \*

---

---

---

---

---

21. 10 b. What are the challenges faced in hiring candidate for electric vehicle sector? \*

---

---

---

---

---

22. 11. What would be your advice to the academia–how should they reinvent their curriculum to create techies suitable for the industry? \*

---

---

---

---

---

23. 12. What steps can academic institutions take to bridge the industry-academia gap for the electronics design sector? \*

---

---

---

---

---

24. 13. What are the right steps to follow to become a successful design engineer? \*

---

---

---

---

---

25. 14. Whether fresh engineering graduates are aware of skills required for pcb design entry level positions? \*

*Mark only one oval.*

Yes

No

26. 15. Whether fresh engineering graduates are equipped with skills required for pcb design entry level positions? \*

*Mark only one oval.*

Yes

No

27. 16. Whether fresh graduates are aware of skill set required for inverter design ?

\*

*Mark only one oval.*

Yes

No

28. 17. Whether fresh graduates are equipped with skillset required for inverter design ? \*

*Mark only one oval.*

Yes

No

VLSI

29. 1. Describe the employee hiring process you use for college recruiting ? \*

---

---

---

---

---

30. 2. Do fresh electronic graduates prefer IT sector because of high pay scale? \*

*Mark only one oval.*

Yes

No

31. 3. Whether stability an issue with fresh electronic graduates? \*

Mark only one oval.

Yes

No

32. 4. What are the job roles in VLSI industry? \*

---

---

---

---

---

33. 5. What are the skillset required for an VLSI programmer? \*

---

---

---

---

---

34. 6. Are fresh graduates aware of skillset needed for an VLSI programmer? \*

Mark only one oval.

Yes

No

35. 7. Why VLSI industry is reculant to hire fresh graduates? \*

---

---

---

---

---

## PLC & SCADA

36. 1. Describe the employee hiring process you use for college recruiting ? \*

---

---

---

---

---

37. 2. Do fresh electronic graduates prefer IT sector because of high pay scale? \*

*Mark only one oval.*

Yes

No

38. 3. Whether stability an issue with fresh electronic graduates? \*

*Mark only one oval.*

Yes

No

39. 4. What are the skills required for an PLC programmer? \*

---

---

---

---

---

40. 5. What are the skills required for SCADA technician? \*

---

---

---

---

---

41. 6. Are fresh graduates aware of the needed skillset for PLC programmers? \*

*Mark only one oval.*

Yes

No

42. 7. Are fresh graduates aware of the needed skillset for SCADA technicians? \*

*Mark only one oval.*

Yes

No

43. 8. What are the job roles in an automation industry ? \*

---

---

---

---

---

---

This content is neither created nor endorsed by Google.

Google Forms

# Breaking the barrier between Academics and Industry

This form is circulated for DST NSTMIS project by Anand Institute of Higher Technology,  
Chennai

---

\* Required

1. Email \*

---

2. Name of the candidate \*

---

3. Age \*

---

4. Gender \*

*Mark only one oval.*

Male

Female

5. Education level \*

*Mark only one oval.*

Diploma

Undergraduate

PostGraduate

Doctrate



6. Name of the Organization/Institute \*

---

7. Department \*

*Mark only one oval.*

- ECE/EEE/EIE
- CSE/IT
- MECHANICAL
- CIVIL
- OTHERS

8. Mobile number \*

---

9. Category \*

*Mark only one oval.*

- Employer
- Employee

10. 1. Describe the employee hiring process you use for college recruiting ? \*

---

---

---

---

---

11. 2. What skills are required for a fresh electronic graduate to get recruited in original equipment manufacturer for medical equipment ? \*

---

---

---

---

---

12. 3. Does the current skill of electronic engineers meet the requirement for entry level positions in medical electronics? \*

*Mark only one oval.*

Yes

No

13. 4. Do fresh electronic graduates prefer IT sector because of high pay scale? \*

*Mark only one oval.*

Yes

No

14. 5. Whether stability an issue with fresh electronic graduates? \*

*Mark only one oval.*

Yes

No

---

This content is neither created nor endorsed by Google.

Google Forms

# Solution for bridging the gap between Academia and Industry

This form is circulated for DST NSTMIS project by Anand Institute of Higher Technology, Chennai

\* Indicates required question

---



1. Name of the candidate

---

2. Age

---

## 3. Gender

*Mark only one oval.*

Male

Female

## 4. Education level \*

*Mark only one oval.*

Diploma

Undergraduate

Postgraduate

Doctrate

## 5. Name of the Organization/Institute

---

## 6. Department \*

*Mark only one oval.*

ECE/EEE/EIE

CSE/IT

MECHANICAL

CIVIL

OTHERS

## 7. Mobile number

---

## 8. Category \*

Mark only one oval.

- Electronics/Electrical/EIE Students      *Skip to question 22*
- Professor      *Skip to question 9*
- Employer      *Skip to question 9*
- Employee      *Skip to question 9*
- Job Seeker      *Skip to question 22*
- Other Students      *Skip to question 22*

Employer/Employee/Professor

## 9. 1. Select the appropriate changes need to be made in syllabus. \*

Mark only one oval.

- Special focus must be provided for updating the syllabus as per industrial standard and set a specific time frame to review and revise the syllabus every 2-3 years.
- Number of credits required for theory has to be reduced. Credits must be made mandatory for summer internships and laboratory experiments should be given more weightage.
- Minimum 3-4 months of on-job industry training is mandatory for all graduate courses besides creating more industry-specific learning centers of excellence.
- Every student, on admission, would be put through a mandatory induction training to reinforce the fundamental concepts and the required language skills for technical education.

10. 2. Choose the appropriate choice that makes the student industry ready. \*

*Mark only one oval.*

- Establishment of Industry-Institute Partnership /Incubation Centre.
- Apprenticeship/Scholarships/ Fellowships instituted by industries for students.
- Faculty must procure projects in association with industry and students should be involved to execute them.
- Regular interaction of SMEs (subject matter experts) with students through guest lectures, workshops, symposiums etc.

11. 3. Choose an appropriate option that faculty should infer/contribute from industry - institute collaboration. \*

*Mark only one oval.*

- Organize research programs, Workshops, conferences and symposia with joint participation of the faculty with industries.
- Faculty visits to industry for study and discussions or delivering lectures on subjects of mutual interest.
- Implement Industry best practices in lab sessions or project execution.
- Faculty should involve in designing skill development programs as per industry standards via regular FDP.

12. 4. Select the appropriate option that insists the importance of internships. \*

*Mark only one oval.*

- Internships provide exposure to the real world.
- Internships provide students a great opportunity to establish critical networking connections.
- Internships equip student with more than just technical skills.
- Internships allows students to gain a competitive edge.

13. 5. Choose the appropriate choice to reduce the skill gap among students with that of industry expectations. \*

*Mark only one oval.*

- To experience the industry working standards, Students must be encouraged to visit companies along with faculties every semester.
- In order to meet the industry expectations, curriculum needs to designed in collaboration with industry SMEs.
- Faculty should bridge the gap between theory and application by working on live industry projects.
- All the above

14. 6. Pick out the appropriate option that insist importance of communication skill in employment. \*

*Mark only one oval.*

- Colleges should focus on soft skills and personality development programs.
- There is a need to include practical dimensions of evaluation in the form of Self-introduction, group discussions, and personal interviews to improve student's verbal communication.
- There is a need to conduct bridge courses in the beginning of the term to level the gap between high- and low-proficiency learners.
- All the above.

15. 7. Select the best option that insist the importance of Workshops/Seminars/Hackathon/Project. \*

*Mark only one oval.*

- Structured team projects promotes both teamwork and communication skills.
- Prototype testing at a competition develops problem solving and creative thinking skills.
- There is a need to include an external competitive to expose students to a wider context.
- Live projects from industry for educational institutions to bring new innovative academic ideas in existing products/Services.

16. 8. Choose the appropriate challenge faced by managers while hiring students. \*

*Mark only one oval.*

- Lack of inter-personal communication skills among students.
- Lack of learning ability, rationale thinking, analytical thinking etc among students.
- Lack of respect towards other opinions among students.
- Lack of exposure to identify and analyze difficult problems under pressure among students.

17. 9. Pick out the appropriate feedback system required between industries and institutes. \*

*Mark only one oval.*

- Visits of experts and practicing engineers from industry for providing suggestions on research work.
- Online Groups between Industry & Academia to discuss Common Parameters.
- Academia should work in industry for a fixed term intermittently and industry experts should work in institutions.
- Mutual review of academic curriculum, lab infrastructure facilities by the industry experts and innovative, cross functional ideas by faculty members.



18. 10. Select the type of collaboration required between institutes and industries. \*

*Mark only one oval.*

- We must develop infrastructure and curriculum for promoting entrepreneurship among students.
- Industries should provide fund for innovative thoughts of students.
- Collaboration with the industry will allow undergraduates exposed to real case studies and get training assistance for educational purposes.
- Dedicated training on machinery equipment's and methods through properly planned industrial training.

19. 11. Pick out the appropriate requirement in technical skill for students. \*

*Mark only one oval.*

- Colleges and the industry need to interact with each other, pursue a mandatory policy of internship. This provides an idea of difference between corporate and academic life.
- Examination / Evaluation tactics should emphasize on inference type questions, rather than fact-based questions.
- Engineering studies should touch the global boundaries and should not confine to national boundaries.
- The focus must be given for practical knowledge, so fresh graduates can easily be employed or can become potential entrepreneurs.

20. 12. Choose the appropriate choice to enhance problem solving skill for students. \*

*Mark only one oval.*

- The course should improve students' ability to understand problems. Therefore, training should focus on strategies and tools that assist with problem analysis.
- Courses need to be designed to develop the habit of evaluation and reflection.
- The course should address misconceptions such as quickness in problem solving and focus on solutions.
- All the above.

21. Please provide your valuable suggestions about the survey. \*

*Mark only one oval.*

- Excellent
- Good
- Satisfactory

Student/Job Seeker

22. 1. Select the appropriate changes need to be made in syllabus. \*

*Mark only one oval.*

- Special focus must be provided for updating the syllabus as per industrial standard and set a specific time frame to review and revise the syllabus every 2-3 years.
- Number of credits required for theory has to be reduced. Credits must be made mandatory for summer internships and laboratory experiments should be given more weightage.
- Minimum 3-4 months of on-job industry training is mandatory for all graduate courses besides creating more industry-specific learning centers of excellence.
- Every student, on admission, would be put through a mandatory induction training to reinforce the fundamental concepts and the required language skills for technical education.

23. 2. Choose the appropriate choice that makes the student industry ready.

*Mark only one oval.*

- Establishment of Industry-Institute Partnership /Incubation Centre.
- Apprenticeship/Scholarships/ Fellowships instituted by industries for students.
- Faculty must procure projects in association with industry and students should be involved to execute them.
- Regular interaction of SMEs (subject matter experts) with students through guest lectures, workshops, symposiums etc.

24. 3. Select the appropriate option that insists the importance of internships. \*

*Mark only one oval.*

- Internships provide exposure to the real world.
- Internships provide students a great opportunity to establish critical networking connections.
- Internships equip student with more than just technical skills.
- Internships allows students to gain a competitive edge.

25. 4. Choose the appropriate choice to reduce the skill gap among students with that of industry expectations. \*

*Mark only one oval.*

- To experience the industry working standards, Students must be encouraged to visit companies along with faculties every semester.
- In order to meet the industry expectations, curriculum needs to designed in collaboration with industry SMEs.
- Faculty should bridge the gap between theory and application by working on live industry projects.
- All the above

26. 5. Pick out the appropriate option that insist importance of communication skill in employment. \*

*Mark only one oval.*

- Colleges should focus on soft skills and personality development programs.
- There is a need to include practical dimensions of evaluation in the form of Self-introduction, group discussions, and personal interviews to improve student's verbal communication.
- There is a need to conduct bridge courses in the beginning of the term to level the gap between high- and low-proficiency learners.
- All the above.

27. 6. Select the best option that insist the importance of Workshops/Seminars/Hackathon/Project. \*

*Mark only one oval.*

- Structured team projects promotes both teamwork and communication skills.
- Prototype testing at a competition develops problem solving and creative thinking skills.
- There is a need to include an external competitive to expose students to a wider context.
- Live projects from industry for educational institutions to bring new innovative academic ideas in existing products/Services.

28. 7. Choose the appropriate challenge faced by managers while hiring students. \*

*Mark only one oval.*

- Lack of inter-personal communication skills among students.
- Lack of learning ability, rationale thinking, analytical thinking etc among students.
- Lack of respect towards other opinions among students.
- Lack of exposure to identify and analyze difficult problems under pressure among students.

29. 8. Pick out the appropriate feedback system required between industries and institutes. \*

*Mark only one oval.*

- Visits of experts and practicing engineers from industry for providing suggestions on research work.
- Online Groups between Industry & Academia to discuss Common Parameters.
- Academia should work in industry for a fixed term intermittently and industry experts should work in institutions.
- Mutual review of academic curriculum, lab infrastructure facilities by the industry experts and innovative, cross functional ideas by faculty members.

30. 9. Select the type of collaboration required between institutes and industries. \*

*Mark only one oval.*

- We must develop infrastructure and curriculum for promoting entrepreneurship among students.
- Industries should provide fund for innovative thoughts of students.
- Collaboration with the industry will allow undergraduates exposed to real case studies and get training assistance for educational purposes.
- Dedicated training on machinery equipment's and methods through properly planned industrial training.

31. 10. Pick out the appropriate requirement in technical skill for students. \*

*Mark only one oval.*

- Colleges and the industry need to interact with each other, pursue a mandatory policy of internship. This provides an idea of difference between corporate and academic life.
- Examination / Evaluation tactics should emphasize on inference type questions, rather than fact-based questions.
- Engineering studies should touch the global boundaries and should not confine to national boundaries.
- The focus must be given for practical knowledge, so fresh graduates can easily be employed or can become potential entrepreneurs.

32. 11. Choose the appropriate choice to enhance problem solving skill for students. \*

*Mark only one oval.*

- The course should improve students' ability to understand problems. Therefore, training should focus on strategies and tools that assist with problem analysis.
- Courses need to be designed to develop the habit of evaluation and reflection.
- The course should address misconceptions such as quickness in problem solving and focus on solutions.
- All the above.

33. Please provide your valuable suggestions about the survey. \*

*Mark only one oval.*

- Excellent
- Good
- Satisfactory

---

This content is neither created nor endorsed by Google.

Google Forms

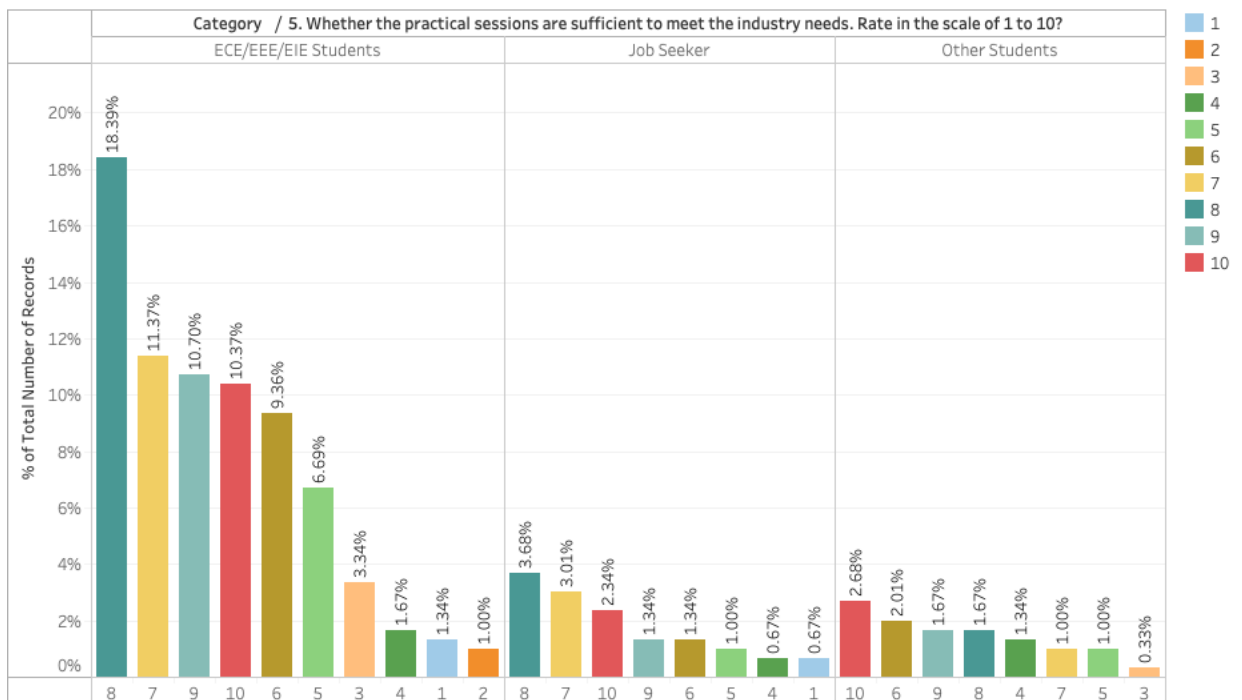
**File Number** : DST/NSTMIS/2019/354/2020-21  
**Topic** : Study for Meeting the Demand and Supply of Quality Electronic Engineers in Technical Field  
**Project Investigator** : Dr Sankara Malliga G, Professor & Head / ECE, ANAND INSTITUTE OF HIGHER TECHNOLOGY, Kazhipathur, Chennai 603103

## QUERY NO. 1

**Include only the findings of the present study as per the approved objectives – 5 nos**

**Objective 1:** To identify the reasons for degradation of quality among engineering graduates

Majority of professor and industry expert response states, there is a lack of interaction between industry and academic institution. The educational institutes and industries should take appropriate steps for the happening of interaction between industry experts and faculty members. The student’s feedback states that academic education is not sufficient to survive in industrial environment.



**Figure: Students response for adequacy of practical sessions in academic institutes**

**Objective 2:** Providing solutions to reduce the gap between getting of talented engineers and unemployment

Frequent training on technical skills and soft skills needs to be provided in academic institutes in appropriate time. The participants presented ideas and suggestions for best practices and noted how best has to be done to connect students for more opportunities to gain strong technical knowledge.

## REDUCTION OF SKILL GAP

REDUCTION OF SKILL GAP								
STUDENT		EMPLOYER					INFERENCE	SOLUTION
<b>S1:</b> Are you interested to settle in your core field?		<b>ER12:</b> Select the suitable option to reduce the engineering skill gap.					Majority of employer stated hiring a workforce with mixed skills is a challenge. Hence we conclude new courses must be included which has interdisciplinary skill set.	<ul style="list-style-type: none"> <li>Students should be encouraged to visit companies frequently along with faculties in a semester. This would help students to get awareness about Industry working environment.</li> <li>Industry people should be involved in designing the curriculums of the university and reviewed frequently so that the curriculum can meet the expectations of Industry standard.</li> </ul>
Yes	No	Hiring a skilled force	Hire a work force with mixed skills	Enhance your employee value proposition	Look out for valuable soft skills	Work with specialist recruiters		
73.1%	26.9%	3 <sup>rd</sup> Prior	2 <sup>nd</sup> Prior	1 <sup>st</sup> Prior	2 <sup>nd</sup> Prior	3 <sup>rd</sup> Prior		



								<ul style="list-style-type: none"><li>• Faculty should bridge the gap between theory and application by bringing into colleges live projects from Industry.</li></ul>
--	--	--	--	--	--	--	--	---

**Objective 3:** To mitigate the Lack of knowledge to meet the demand in technical field

INTERNSHIP										
PROFESSOR		STUDENT				EMPLOYER		INFERENCE	SOLUTION	
<b>P12:</b> Rate the importance of practice school (internship > 6 months) in the scale of 1 to 10.		<b>S12:</b> Prioritize the benefit of practice school (internship > 6 months).				<b>ER11:</b> Rate the importance of practice school (internship > 6 months) in the scale of 1 to 10.		Employers and Professors stated internship has remarkable effect on performance and Students stated it provides real time experience and exposure. Hence, we conclude the internship must be made mandatory for students.	<ul style="list-style-type: none"> <li>• Courses should be interdisciplinary in nature and requires the knowledge of multiple domains; they need to be included in the curriculum of multiple disciplines.</li> <li>• Engineering colleges need to introduce courses on creativity and innovation to stimulate problem-solving skills in future engineers.</li> <li>• Student must also be introduced to the industry-initiated courses by entering</li> </ul>	
Percentage of respondents rated greater than 5 80%	Percentage of respondents rated less than 5 20 %	Real Time Industry Experience and Exposure	Helps to Make Professional Network	Add Values, Skills, and Experience to the CV		Employer rated importance of internship greater than 5	Employer rated importance of internship less than 5			
		1 <sup>st</sup> Priority	2 <sup>nd</sup> Priority	3 <sup>rd</sup> Priority						
<b>P13:</b> How is college education or internship were useful for graduates to perform better in their job roles?		<b>S11:</b> Select the appropriate semester internship program should be incorporated to make it more effective.				<b>ER8:</b> How is college education/internship useful for graduates to perform better in their job roles?				
Has remarkable effect on performance at job	No effect on performance at job	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	Any other	Has remarkable effect on performance at job	No effect on job performance			
		57.2%	24.2%	10.1%	8.4%					
87.4%	12.6%					88.9%	11.1%			

									<p>into MoUs with relevant industries.</p> <ul style="list-style-type: none"> <li>• Compulsory industry internships will be helpful to the students to get to know the industry work culture and help them to prepare themselves in that direction.</li> </ul>
--	--	--	--	--	--	--	--	--	--

HACKATHON/SEMINAR/WORKSHOP/PROJECT						
PROFESSOR	STUDENT		EMPLOYER		INFERENCE	SOLUTION
<b>P5:</b> How often industry related workshop and knowledge gaining workshop are conducted in your college?	<b>S7:</b> Does your academic project provides good learning experience?		<b>ER9:</b> Do you feel sufficient practical / workshop input is necessary in the institute before the students are appointed for training in industries.		Employer stated sufficient practical training is required before entering industrial environment and there must be equal training on theory and practical.	<ul style="list-style-type: none"> <li>• Incorporating student exchange programs as a part of internship and conducting various activities like seminars and workshops to improve the skills of the students.</li> <li>• structured team projects promotes both teamwork and communication skills</li> </ul>
Knowledge Gaining workshop conducted more	Yes	No	Yes	No		
	83.5%	16.5%	88.9%	11.1%		

frequently than Industry related workshop									Hence we conclude seminars and workshops must be increased.	<ul style="list-style-type: none"> <li>• testing a prototype at a competition develops problem solving and creative thinking skills</li> <li>• Include an external competitive to expose students to a wider context.</li> <li>• Arrange alumni reviews and industry visits to help to contextualise the value of the projects to their own future careers.</li> <li>• Students will experience significant improvement in communication skill, team working skill, critical thinking and problem-solving skill, moral and professional ethics skills after their industrial training</li> <li>• Giving live projects to Academia by Industry to bring New Innovative Academic Ideas in Existing Products/Services.</li> <li>• Long-Term Projects where Academia can effectively contribute in Years.</li> </ul>	
		<b>S10: How often Workshop/ Industrial Visit / Technical Seminar/Innovative Ideas are conducted in your college?</b>				<b>ER10: If answer to 9 is yes, please specify the % of practical / workshop exposure required in relation to class room training.</b>					
		Tech. seminar	Innovtive ideas	Workshop	IV	Theory 50% , Practical 50 %	Theory 60% , Practical 40%				
		Frequently	Rarely		Sometimes	87.5%	12.5%				
		<b>S13: Does hackathon / Semina r / Workshop / Internship / Project plays a prominent role to get recruited in industry. Select the appropriate choice.</b>									
		Internship	Hackathon	Industrial workshop	Project	Seminar					
		1 <sup>st</sup> Prior	2 <sup>nd</sup> Prior	3 <sup>rd</sup> Prior	4 <sup>th</sup> Prior	5 <sup>th</sup> Prior					

**Objective 4:** To create, test, and regulate a questionnaire to assess the gap between academic production and industry need

**Enclosed in Annexure I**

**Objective 5:** To identify fundamental causes of the mismatch between academic production and industry demand

INDUSTRY REQUIREMENT (STUDENTS AND FACULTY)									
PROFESSOR			STUDENT		EMPLOYEE			INFERENCE	SOLUTION
<b>P2:</b> Select the awareness level of student about industrial requirement.			<b>S3:</b> Rate your awareness of industry requirement in the scale of 1 to 5.		<b>EE4:</b> Mention the awareness of industrial requirement by the student.			Majority of employee rated industry awareness of student less than 25%. Students stated knowledge gained from academic education is not sufficient for performance in corporate world. Hence, we conclude industrial requirement of student was not met.	<p style="text-align: center;"><b><u>STUDENTS</u></b></p> <ul style="list-style-type: none"> <li>• Establishment of Industry-Institute Partnership /Incubation Centre</li> <li>• Encouraging experts from industry to visit Technical Institution to deliver lectures.</li> <li>• R&amp;D Laboratories sponsored by industries at the Institute.</li> <li>• Apprenticeship/Scholarships/ Fellowships instituted by industries at the Institute for students.</li> <li>• Practical training of students in industries.</li> <li>• Institutes faculty may take up projects in industry and students should be involved to execute these projects.</li> <li>• Industry owners/experts may be invited for lectures/interaction with the students in institutions.</li> </ul>
Greater than 50 %	Less than 25 %	75%	92% students rated industry awareness 3 and Greater than 3	8% students rated awareness less than 3	Less than 25 %	Greater than 50 %	75 %		
49.6 %	29.9%	20.5%			45.5%	42.4%	12.1 %		
<b>P4:</b> Does industrial interaction programs are sufficient for faculties and students to understand the industry needs. Rate in the scale of 1 to 10.			<b>S8:</b> Does the industrial interaction programs are sufficient for students to understand the industry needs.		<b>EE1:</b> Were the abilities of graduates meet expectation by employer?				
Greater than 60 % respondents rated 5 and greater than 5	Less than 40 % respondents rated less than 5	Sufficient	Not Sufficient	Yes	No				
		61.6%	38.4%	76.8%	23.2%				
			<b>S5:</b> Whether the practical sessions are sufficient to meet						<b><u>FACULTY</u></b>

	the industry needs. Rate in the scale of 1 to 10.				<ul style="list-style-type: none"> <li>• Organizing Workshops, conferences and symposia with joint participation of the faculty and the industries.</li> <li>• Encouraging experts from industry to visit Technical Institution to deliver lectures.</li> <li>• Arranging visits of staff members to various industries.</li> <li>• Industrial testing by faculty &amp; technicians at site or in laboratory.</li> <li>• Joint research programs and field studies by faculty and people from industries.</li> <li>• Visits of faculty to industry for study and discussions or delivering lectures on subjects of mutual interest.</li> <li>• Short-term assignment to faculty members in industries.</li> <li>• Making relative industrial experience as one of the essential requirement for appointing faculty in institutions.</li> <li>• Faculty Involvement in Designing Skill Development Programs as per Industry Standards.</li> <li>• Faculty Participations in Industry Conferences on similar Projects.</li> </ul>
	Greater than 60 %	Less than 40 %			
	Respondents rated greater than 8	Respondents rated less than 8			
	<b>S6: Do you feel that knowledge gained from your academic education is sufficient to perform well in the corporate world?</b>				
	<b>Not Sufficient</b>	<b>Sufficient</b>			
	59.2%	42.8%			

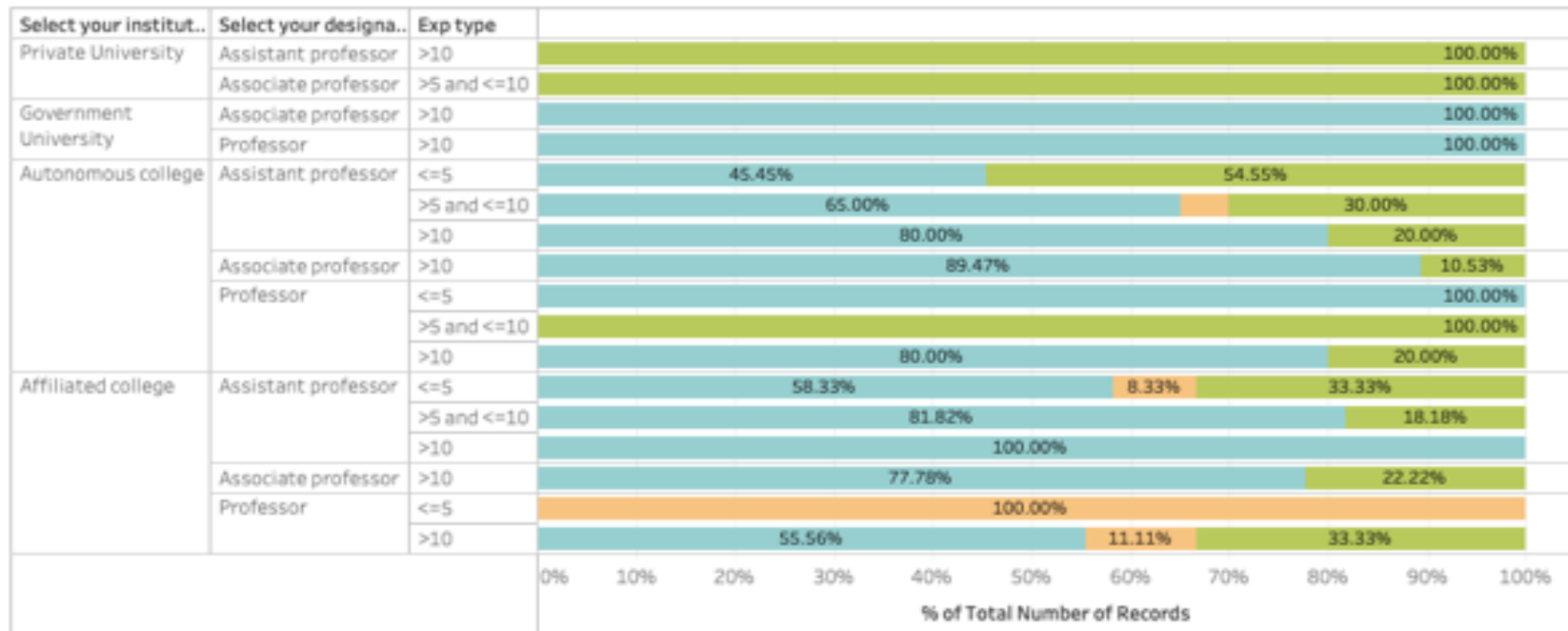
						<ul style="list-style-type: none"> <li>Regular FDP Programs with Industry.</li> <li>Faculty to Monitor the Progress of Live Projects with Industry.</li> </ul>
--	--	--	--	--	--	--

## QUERY NO. 2

**Comparison of problems/issues related to Electronic Engineers and non-Electronic Engineers may be included in the revised PCR**

8. Do you think there is a need of feedback system between industries and institution ?

■ Required    ■ Mandatory  
■ Not required



### **Faculty Members' response on need of feedback between industries and educational institutes**

The survey was carried out on students, job seekers, professors, employer and employees. The data collection was done through online questionnaire. It consists of both open ended and closed ended questions. The closed ended questions are used to analyze the responses easily. The closed ended questions are for unlimited and impulsive perspectives. We have received a total of 533 responses, in which 108 responses from industry professionals, 125 responses from professors, 43 responses from jobseekers and 257 responses from students.

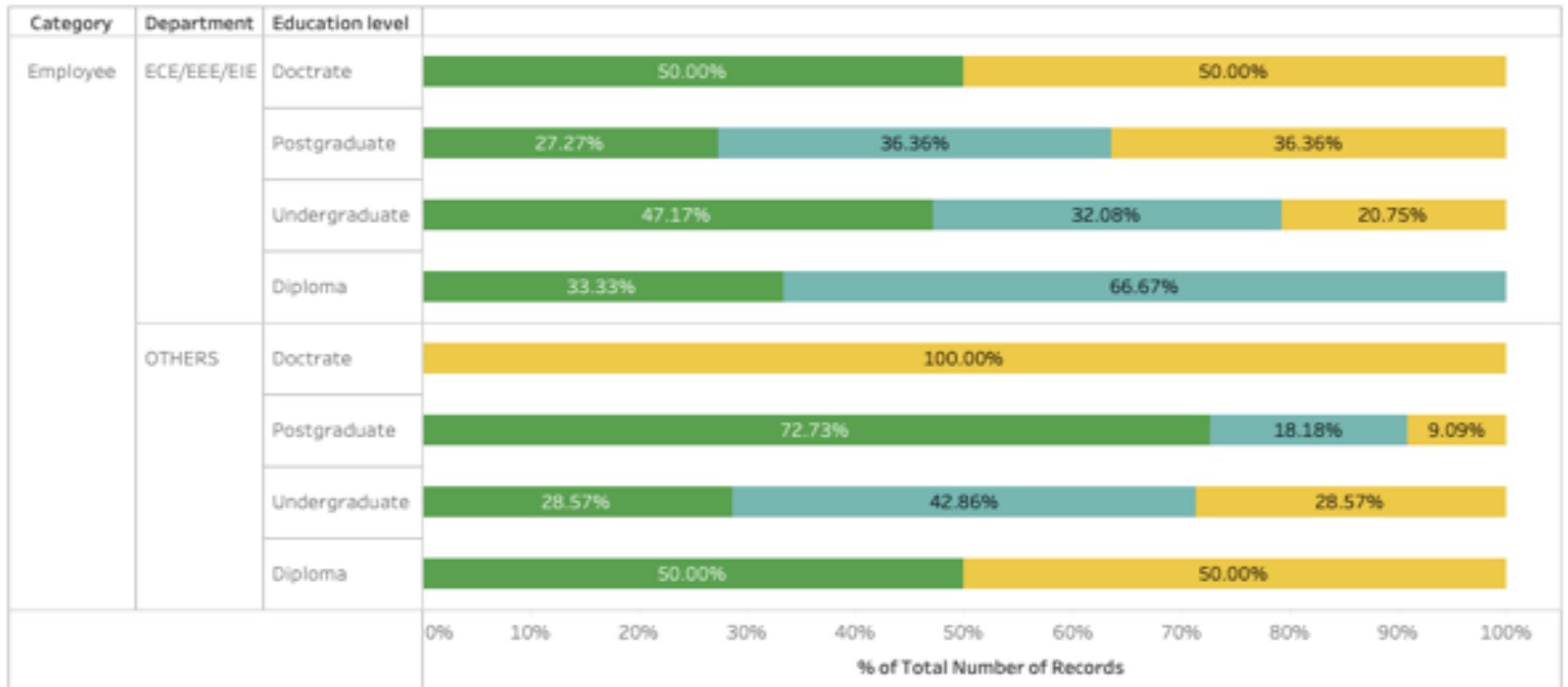
The problems faced by students include a lack of guidance and difficulties in choosing a field of interest. Students in their first year believe they have what it takes to be an electronics engineer. Students begin building circuits in the third semester and decide they want to be circuit designers. In the fourth semester, they believe that they can accomplish anything as an automation engineer. Students learn controllers and DSP in the fifth semester. As a result, they can work as an embedded engineer. In sixth semester, they want to be VLSI engineers. As a result, students begin asking questions to mentors about how to become a VLSI engineer. Mentors advise students to study subjects such as digital electronics, analogue electronics, CMOS, Verilog/VHDL, VLSI design, circuit design, VLSI fabrication, Scripting language etc... Out of this some of the subjects would be studied in previous semesters. Because of societal pressure, students in their fourth year consider working in the core industry as an electronics engineer. The problem here is students were more focused only on marks. Here, main challenge is students does not understand to prepare themselves as per industry requirements.

The blow figure states large number of students responded they are interested to work in core sector. From the figure. it is observed 75.9% of students and Job seekers responded to settle in core sector. But there is a wide gap between demand and supply of quality electronic engineers. This is due to lack of training on appropriate skillset required for industry.



9. List any one obstacle in the academia industry collaboration.

- Lack of effort from the students
- No initiative from the industrialists and academicians
- Lack of easily available information about almost everything related to industry



**Employee response on obstacle in industry academic collaboration**

### **QUERY NO. 3**

**Highlight the unique problems faced by Electronic Engineers. List of Questionnaire and reposes may be included in report**

Enclosed in Annexure 2

## Questionnaire:

## Annexure 1

5/9/23, 11:47 AM

Solution for bridging the gap between Academia and Industry

### Solution for bridging the gap between Academia and Industry

This form is circulated for DST NSTMIS project by Anand Institute of Higher Technology, Chennai

\* Indicates required question



1. Name of the candidate

\_\_\_\_\_

2. Age

\_\_\_\_\_

<https://docs.google.com/forms/d/1JjAyRy1UNL0xpMxwT21pKwWsqG5eR2dG2p8Yiedt?pli=1>

1/12

5/9/23, 11:47 AM

Solution for bridging the gap between Academia and Industry

3. Gender

Mark only one oval.

- Male  
 Female

4. Education level \*

Mark only one oval.

- Diploma  
 Undergraduate  
 Postgraduate  
 Doctrate

5. Name of the Organization/Institute

\_\_\_\_\_

6. Department \*

Mark only one oval.

- ECE/EEE/EIE  
 CSE/IT  
 MECHANICAL  
 CIVIL  
 OTHERS

7. Mobile number

\_\_\_\_\_

<https://docs.google.com/forms/d/1JjAyRy1UNL0xpMxwT21pKwWsqG5eR2dG2p8Yiedt?pli=1>

2/12

5/9/23, 11:47 AM

Solution for bridging the gap between Academia and Industry

8. Category \*

Mark only one oval.

- Electronics/Electrical/EIE Students Skip to question 22  
 Professor Skip to question 9  
 Employer Skip to question 9  
 Employee Skip to question 9  
 Job Seeker Skip to question 22  
 Other Students Skip to question 22

Employer/Employee/Professor

9. 1. Select the appropriate changes need to be made in syllabus. \*

Mark only one oval.

- Special focus must be provided for updating the syllabus as per industrial standard and set a specific time frame to review and revise the syllabus every 2-3 years.  
 Number of credits required for theory has to be reduced. Credits must be made mandatory for summer internships and laboratory experiments should be given more weightage.  
 Minimum 3-4 months of on-job industry training is mandatory for all graduate courses besides creating more industry-specific learning centers of excellence.  
 Every student, on admission, would be put through a mandatory induction training to reinforce the fundamental concepts and the required language skills for technical education.

<https://docs.google.com/forms/d/1JjAyRy1UNL0xpMxwT21pKwWsqG5eR2dG2p8Yiedt?pli=1>

3/12

5/9/23, 11:47 AM

Solution for bridging the gap between Academia and Industry

10. 2. Choose the appropriate choice that makes the student industry ready. \*

Mark only one oval.

- Establishment of Industry-Institute Partnership /Incubation Centre.  
 Apprenticeship/Scholarships/ Fellowships instituted by industries for students.  
 Faculty must procure projects in association with industry and students should be involved to execute them.  
 Regular interaction of SMEs (subject matter experts) with students through guest lectures, workshops, symposiums etc.

11. 3. Choose an appropriate option that faculty should infer/contribute from industry - institute collaboration. \*

Mark only one oval.

- Organize research programs, Workshops, conferences and symposia with joint participation of the faculty with industries.  
 Faculty visits to industry for study and discussions or delivering lectures on subjects of mutual interest.  
 Implement Industry best practices in lab sessions or project execution.  
 Faculty should involve in designing skill development programs as per industry standards via regular FDP.

12. 4. Select the appropriate option that insists the importance of internships. \*

Mark only one oval.

- Internships provide exposure to the real world.  
 Internships provide students a great opportunity to establish critical networking connections.  
 Internships equip student with more than just technical skills.  
 Internships allows students to gain a competitive edge.

<https://docs.google.com/forms/d/1JjAyRy1UNL0xpMxwT21pKwWsqG5eR2dG2p8Yiedt?pli=1>

4/12

13. 5. Choose the appropriate choice to reduce the skill gap among students with that of industry expectations. \*

Mark only one oval.

- To experience the industry working standards, Students must be encouraged to visit companies along with faculties every semester.
- In order to meet the industry expectations, curriculum needs to designed in collaboration with industry SMEs.
- Faculty should bridge the gap between theory and application by working on live industry projects.
- All the above

14. 6. Pick out the appropriate option that insist importance of communication skill \* in employment.

Mark only one oval.

- Colleges should focus on soft skills and personality development programs.
- There is a need to include practical dimensions of evaluation in the form of Self-introduction, group discussions, and personal interviews to improve student's verbal communication.
- There is a need to conduct bridge courses in the beginning of the term to level the gap between high- and low-proficiency learners.
- All the above.

15. 7. Select the best option that insist the importance of Workshops/Seminars/Hackathon/Project. \*

Mark only one oval.

- Structured team projects promotes both teamwork and communication skills.
- Prototype testing at a competition develops problem solving and creative thinking skills.
- There is a need to include an external competitive to expose students to a wider context.
- Live projects from industry for educational institutions to bring new innovative academic ideas in existing products/Services.

16. 8. Choose the appropriate challenge faced by managers while hiring students. \*

Mark only one oval.

- Lack of inter-personal communication skills among students.
- Lack of learning ability, rationale thinking, analytical thinking etc among students.
- Lack of respect towards other opinions among students.
- Lack of exposure to identify and analyze difficult problems under pressure among students.

17. 9. Pick out the appropriate feedback system required between industries and institutes. \*

Mark only one oval.

- Visits of experts and practicing engineers from industry for providing suggestions on research work.
- Online Groups between Industry & Academia to discuss Common Parameters.
- Academia should work in industry for a fixed term intermittently and industry experts should work in institutions.
- Mutual review of academic curriculum, lab infrastructure facilities by the industry experts and innovative, cross functional ideas by faculty members.

18. 10. Select the type of collaboration required between institutes and industries. \*

Mark only one oval.

- We must develop infrastructure and curriculum for promoting entrepreneurship among students.
- Industries should provide fund for innovative thoughts of students.
- Collaboration with the industry will allow undergraduates exposed to real case studies and get training assistance for educational purposes.
- Dedicated training on machinery equipment's and methods through properly planned industrial training.

19. 11. Pick out the appropriate requirement in technical skill for students. \*

Mark only one oval.

- Colleges and the industry need to interact with each other, pursue a mandatory policy of internship. This provides an idea of difference between corporate and academic life.
- Examination / Evaluation tactics should emphasize on inference type questions, rather than fact-based questions.
- Engineering studies should touch the global boundaries and should not confine to national boundaries.
- The focus must be given for practical knowledge, so fresh graduates can easily be employed or can become potential entrepreneurs.

20. 12. Choose the appropriate choice to enhance problem solving skill for students. \*

Mark only one oval.

- The course should improve students' ability to understand problems. Therefore, training should focus on strategies and tools that assist with problem analysis.
- Courses need to be designed to develop the habit of evaluation and reflection.
- The course should address misconceptions such as quickness in problem solving and focus on solutions.
- All the above.

21. Please provide your valuable suggestions about the survey. \*

Mark only one oval.

- Excellent
- Good
- Satisfactory

Student/Job Seeker

22. 1. Select the appropriate changes need to be made in syllabus. \*

Mark only one oval.

- Special focus must be provided for updating the syllabus as per industrial standard and set a specific time frame to review and revise the syllabus every 2-3 years.
- Number of credits required for theory has to be reduced. Credits must be made mandatory for summer internships and laboratory experiments should be given more weightage.
- Minimum 3-4 months of on-job industry training is mandatory for all graduate courses besides creating more industry-specific learning centers of excellence.
- Every student, on admission, would be put through a mandatory induction training to reinforce the fundamental concepts and the required language skills for technical education.

23. 2. Choose the appropriate choice that makes the student industry ready.

Mark only one oval.

- Establishment of Industry-Institute Partnership /Incubation Centre.
- Apprenticeship/Scholarships/ Fellowships instituted by industries for students.
- Faculty must procure projects in association with industry and students should be involved to execute them.
- Regular interaction of SMEs (subject matter experts) with students through guest lectures, workshops, symposiums etc.

24. 3. Select the appropriate option that insists the importance of internships. \*

Mark only one oval.

- Internships provide exposure to the real world.
- Internships provide students a great opportunity to establish critical networking connections.
- Internships equip student with more than just technical skills.
- Internships allows students to gain a competitive edge.

25. 4. Choose the appropriate choice to reduce the skill gap among students with that of industry expectations. \*

Mark only one oval.

- To experience the industry working standards, Students must be encouraged to visit companies along with faculties every semester.
- In order to meet the industry expectations, curriculum needs to designed in collaboration with industry SMEs.
- Faculty should bridge the gap between theory and application by working on live industry projects.
- All the above

26. 5. Pick out the appropriate option that insist importance of communication skill in employment. \*

Mark only one oval.

- Colleges should focus on soft skills and personality development programs.
- There is a need to include practical dimensions of evaluation in the form of Self-introduction, group discussions, and personal interviews to improve student's verbal communication.
- There is a need to conduct bridge courses in the beginning of the term to level the gap between high- and low-proficiency learners.
- All the above.

27. 6. Select the best option that insist the importance of Workshops/Seminars/Hackathon/Project. \*

Mark only one oval.

- Structured team projects promotes both teamwork and communication skills.
- Prototype testing at a competition develops problem solving and creative thinking skills.
- There is a need to include an external competitive to expose students to a wider context.
- Live projects from industry for educational institutions to bring new innovative academic ideas in existing products/Services.

28. 7. Choose the appropriate challenge faced by managers while hiring students. \*

Mark only one oval.

- Lack of inter-personal communication skills among students.
- Lack of learning ability, rationale thinking, analytical thinking etc among students.
- Lack of respect towards other opinions among students.
- Lack of exposure to identify and analyze difficult problems under pressure among students.

29. 8. Pick out the appropriate feedback system required between industries and institutes. \*

Mark only one oval.

- Visits of experts and practicing engineers from industry for providing suggestions on research work.
- Online Groups between Industry & Academia to discuss Common Parameters.
- Academia should work in industry for a fixed term intermittently and industry experts should work in institutions.
- Mutual review of academic curriculum, lab infrastructure facilities by the industry experts and innovative, cross functional ideas by faculty members.

30. 9. Select the type of collaboration required between institutes and industries. \*

Mark only one oval.

- We must develop infrastructure and curriculum for promoting entrepreneurship among students.
- Industries should provide fund for innovative thoughts of students.
- Collaboration with the industry will allow undergraduates exposed to real case studies and get training assistance for educational purposes.
- Dedicated training on machinery equipment's and methods through property planned industrial training.

31. 10. Pick out the appropriate requirement in technical skill for students. \*

Mark only one oval.

- Colleges and the industry need to interact with each other, pursue a mandatory policy of internship. This provides an idea of difference between corporate and academic life.
- Examination / Evaluation tactics should emphasize on inference type questions, rather than fact-based questions.
- Engineering studies should touch the global boundaries and should not confine to national boundaries.
- The focus must be given for practical knowledge, so fresh graduates can easily be employed or can become potential entrepreneurs.

32. 11. Choose the appropriate choice to enhance problem solving skill for students. \*

Mark only one oval.

- The course should improve students' ability to understand problems. Therefore, training should focus on strategies and tools that assist with problem analysis.
- Courses need to be designed to develop the habit of evaluation and reflection.
- The course should address misconceptions such as quickness in problem solving and focus on solutions.
- All the above.

33. Please provide your valuable suggestions about the survey. \*

Mark only one oval.

- Excellent
- Good
- Satisfactory

This content is neither created nor endorsed by Google.

Google Forms



## Annexure 2

# Bridging the gap between academic and industry

This form is circulated for DST NSTMIS project by Anand Institute of Higher Technology, Chennai

---

\* Required

1. Email \*

---

2. Name of the candidate \*

---

3. Age \*

---

4. Gender \*

*Mark only one oval.*

Male

Female

5. Education level \*

*Mark only one oval.*

Diploma

Undergraduate

PostGraduate

Doctrate

6. Name of the Organization/Institute \*

---

7. Department \*

*Mark only one oval.*

- ECE/EEE/EIE
- CSE/IT
- MECHANICAL
- CIVIL
- OTHERS

8. Mobile number \*

---

9. Category \*

*Mark only one oval.*

- Employer
- Employee

10. Domain \*

*Mark only one oval.*

- EMBEDDED AND ROBOTICS      *Skip to question 11*
- VLSI      *Skip to question 29*
- PLC & SCADA      *Skip to question 36*

EMBEDDED AND ROBOTICS

11. 1. Describe the employee hiring process you use for college recruiting ? \*

---

---

---

---

---

12. 2. Do fresh electronic graduates prefer IT sector because of high pay scale? \*

*Mark only one oval.*

Yes

No

13. 3. Whether stability an issue with fresh electronic graduates? \*

*Mark only one oval.*

Yes

No

14. 4. Is 'quality talent' a challenge that Electronics Design players are facing/going to face in India? \*

*Mark only one oval.*

Yes

No



15. 5. What is the trend in the hiring process you see in the electronics design industry today? \*

---

---

---

---

---

16. 6. What is the key technology skill sets that are in demand in the industry today? \*

---

---

---

---

---

17. 7. How would you advise an aspirant on the right steps to follow while applying for a job in electronics design sector? \*

---

---

---

---

---

18. 8. When you hire what are the key basic skills that you look for? \*

---

---

---

---

---

19. 9. With smart cities in the picture, what are the talent requirements and in which all sectors? \*

---

---

---

---

---

20. 10. a. What are the skill sets required for someone looking to work in electric vehicle sector? \*

---

---

---

---

---

21. 10 b. What are the challenges faced in hiring candidate for electric vehicle sector? \*

---

---

---

---

---

22. 11. What would be your advice to the academia–how should they reinvent their curriculum to create techies suitable for the industry? \*

---

---

---

---

---

23. 12. What steps can academic institutions take to bridge the industry-academia gap for the electronics design sector? \*

---

---

---

---

---

24. 13. What are the right steps to follow to become a successful design engineer? \*

---

---

---

---

---

25. 14. Whether fresh engineering graduates are aware of skills required for pcb design entry level positions? \*

*Mark only one oval.*

Yes

No

26. 15. Whether fresh engineering graduates are equipped with skills required for pcb design entry level positions? \*

*Mark only one oval.*

Yes

No

27. 16. Whether fresh graduates are aware of skill set required for inverter design ? \*

\*

*Mark only one oval.*

Yes

No

28. 17. Whether fresh graduates are equipped with skillset required for inverter design ? \*

*Mark only one oval.*

Yes

No

VLSI

29. 1. Describe the employee hiring process you use for college recruiting ? \*

---

---

---

---

---

30. 2. Do fresh electronic graduates prefer IT sector because of high pay scale? \*

*Mark only one oval.*

Yes

No

31. 3. Whether stability an issue with fresh electronic graduates? \*

Mark only one oval.

Yes

No

32. 4. What are the job roles in VLSI industry? \*

---

---

---

---

---

33. 5. What are the skillset required for an VLSI programmer? \*

---

---

---

---

---

34. 6. Are fresh graduates aware of skillset needed for an VLSI programmer? \*

Mark only one oval.

Yes

No

35. 7. Why VLSI industry is reculant to hire fresh graduates? \*

---

---

---

---

---

## PLC & SCADA

36. 1. Describe the employee hiring process you use for college recruiting ? \*

---

---

---

---

---

37. 2. Do fresh electronic graduates prefer IT sector because of high pay scale? \*

*Mark only one oval.*

Yes

No

38. 3. Whether stability an issue with fresh electronic graduates? \*

*Mark only one oval.*

Yes

No

39. 4. What are the skills required for an PLC programmer? \*

---

---

---

---

---

40. 5. What are the skills required for SCADA technician? \*

---

---

---

---

---

41. 6. Are fresh graduates aware of the needed skillset for PLC programmers? \*

*Mark only one oval.*

Yes

No

42. 7. Are fresh graduates aware of the needed skillset for SCADA technicians? \*

*Mark only one oval.*

Yes

No

43. 8. What are the job roles in an automation industry ? \*

---

---

---

---

---

---

This content is neither created nor endorsed by Google.

Google Forms