
Anomalies in the Engineering Education System in Tamil Nadu and its Impact on Engineering Graduates

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Abstract: *There have been numerous articles in leading newspapers and discussions in the recent years about the need to re-engineer engineering education to facilitate the increase in employability of engineering graduates. The mushrooming of engineering colleges in Tamil Nadu, autonomous engineering colleges and private universities offering engineering courses churning out lakhs of unemployable engineers every year is a major cause of concern. The present education system does not train professionals who are articulate, have creative thinking and problem solving ability. There is a lacuna between what the industry requires and the talent graduates possess, and it is very disheartening that the gap seems to get wider.*

Lack of competent teachers, a minimum pass in Higher Secondary to enter into engineering colleges, the system of education itself are some of the reasons for this dismal scenario. 2017 has seen some credible changes in the Anna University syllabi, revamping of curricula are required in autonomous colleges and private universities as well. While, it is commendable that changes have been made to the syllabi, this alone will not solve the problem, the quality of teaching has to be enhanced. Engineering colleges need good administrators and teachers who can interpret, implement and teach the way it is intended to be taught. Without that, the intention of the changes will be lost and none of the objectives and outcomes would be fulfilled. Moorthy Selvakumar, and independent education consultant, is of the opinion, “NBA should ensure outcome-based education through MHRD. Students should have at least one of three capabilities – employability; ability to pursue higher education; or entrepreneurship skills.” In order to offer the highest-quality engineering education, we must in and create engineers who crave for broad knowledge not only in their chosen field but across disciplines and are competent in both technical and professional acumen throughout their career.

Keywords: *anomalies, unemployability, quality of education, low admission criteria, revamp, syllabi, institute-industry collaboration.*

Content: In most Group Discussions, an oft repeated topic for discussion is: *Increasing number of engineering colleges. Is it a boon or a bane?* Ironically, this topic is discussed in engineering colleges! Rightly so! More than anyone else, those who are pursuing engineering courses are aware of the glaring anomalies in the engineering education system. This is a clear indication of the mushrooming of engineering colleges, most of them of questionable quality and it continues to be a topic of discussion by all the stakeholders involved. The question here is not just the increasing number of self-financing engineering colleges, autonomous engineering colleges, deemed universities offering engineering courses and so on, it is much bigger than that – Are all the engineers employable? As expected the response is not very heartening. This shifts the focus on the quality rather the lack of it, in school and college education

The quality of education in schools is one of the major factors for the lack of quality engineers. Mr.E. Balagurusamy, former Vice-Chancellor of Anna University and a former Member of the Union Public Service Commission (UPSC) blamed the quality of school education in Tamil Nadu for the pathetic plight of young engineering graduates. He said, “The quality of school education is bad. Students from Tamil Nadu do not shine in national level competitive exams. Plus 2 students, who score 100 per cent marks in various subjects, are not knowledgeable. The overall quality of school and college education has come down. It cannot go down

anymore.” Those are very strong words indeed, and paint a very dismal picture and don’t give much hope for higher education in Tamil Nadu.

Engineering is no longer the bedrock of development and an engineering degree is akin to a minimum qualification. The boom in IT sectors and BPOs and other MNCs have resulted in almost a never ending thirst for human labour. But jobs are available only for students who have the requisite skills - good communication skills, soft skills and domain knowledge. . There are job opportunities for those who have the potential and there are plenty of opportunities for self-employment. An employability and evaluation and certification company, Aspiring Minds, released the National Employability Report, 2015-2016. According to the report Tamil Nadu ranked at the bottom in employability. Its Chief Technology Officer, Varun Aggarwal, said, “Poor Unemployability has been a constant trend over five years and the report says 80% of the country’s engineers are unemployable.”

To quote E. Balagurusamy again, “The quality of engineering education in Tamil Nadu is very bad. In the past ten years it has reached rock bottom.” So what ails engineering education? Most engineering colleges offer five core courses – mechanical, civil, electrical and electronics (EEE), computer science (CSE) and electronics and communication (ECE) and more recently Information Technology (IT) which is an offshoot of CSE. PSG College of Technology offers the most number of courses with more than nineteen separate courses in engineering.

Gautam Biswas, Director, IIT, Guwahati, said that the problem could be due to the fact that several colleges and universities have not raised their standards, hence, students do not have access to good curricula or competent teachers, and the laboratory infrastructure is not satisfactory. As a result, only a quarter of India’s engineers are employable. Tamil Nadu’s Education Minister K. Ponmudy, while addressing the legislative assembly said private engineering colleges wanted a mere ‘pass’ as criterion for admission to engineering courses. In the past few years, thousands of engineering seats have been vacant. In 2017, admissions through single-window counselling (TNEA 2017), only 68,735 out of 1,47,744 seats of major branches (46%) were filled in. These numbers further reduced after admissions for MBBS/BDS. The move to reduce the aggregate marks for admission could be to appease the owners of the engineering colleges. If, the government yields to the demands of the engineering colleges, then that would further lower the standard of engineering education in the state and this will eventually lead to more unemployment.

In 2005, Tamil Nadu had 211 colleges affiliated to Anna University, by 2015, it has doubled to 495. In 2017, it is 525 plus colleges!. This astronomical increase in the number of colleges has resulted in producing lakhs of engineers every year. In a recent interview to “The Economic Times,” Indranil Manna, Director, IIT, Kanpur said, “The country is producing as many as ten lakh engineers a year. There needs to be a serious review.” Unemployability of engineers has become a major cause for concern. The Directors of many elite engineering institutions, like IIT, are very much concerned over the employability of millions of engineers. The system of education has worsened the problem.

The Indian apex technical regulator, AICTE, checks only if a new engineering college has the required infrastructure, it does not ensure that quality education is provided. Teaching, is the soul of the education system, if the soul is missing then it has a domino effect. The lack of competent teachers in many self-financing engineering colleges, autonomous engineering colleges and deemed universities has greatly impacted the transfer of knowledge to the students. It is not the infrastructure or the building, but it is the faculty that make the difference. The quality of teaching is deplorable. Type 1 Faculty: “Student yesterday, professor today,” has become the order of the day. Fresh post graduates are recruited as the institution doesn’t have to pay much. They are given the huge responsibility of training next generation of engineers. Low pay results in frequent teacher movement.

Type 2 Faculty: Faculty who fulfil the norms set up by UGC and may even have a doctorate in their field. This does not automatically mean they are good teachers. It is no big secret that Ph.Ds are awarded to anyone who submits the thesis and viva-voce is a mere formality. The cream of engineers are placed in high paying engineering jobs, some in smaller engineering industries, some end up doing business on their own or take over the family business, while those still left take up teaching as the last option. It is a known fact that when

undergraduate students are asked if they are interested in pursuing teaching as a career the answer is a unanimous and emphatic, “No.” Teaching was considered to be a suitable profession for girls, but even girls do not choose teaching as their vocation. The reason given by the students are low pay and teaching is not considered as a status symbol. Teaching is both an art and as science. Most institutions do not take much effort to find out if the teacher has teaching skills, passion for teaching and most importantly good communication skills. Such teachers ‘teach’ only from the prescribed texts where the concepts are explained briefly and in a simplified manner. It is a sad state of affairs where even engineering students are coached just to pass the examinations.

In laboratories too, the focus is on completion of experiments and completing observation books and records. The semester laboratory examinations are also conducted as a mere formality and only in rare cases students get low grades or fail. Hence, both in theory and lab classes nothing much is learnt and acquiring knowledge beyond the syllabus is negligible. The pass percentage in colleges does not reflect the true potential of the students; it is very much similar to 10th and 12th results. More number of students graduates every year, and the evaluation process has been the butt of jokes on the social media by the students. Skill sets quintessential for success in procuring jobs is lacking among lakhs of engineers, hence, the steady increase in unemployability.

The curricula could be framed with the collaborative efforts of the best in the academia and the industry, but the colleges should have faculty with passion, drive and intellectual minds who can interpret the spirit of the syllabus and take great efforts to update themselves and ensure transfer of knowledge efficiently and effectively to the students. Another important disabling factor which is equally an important reason for the unemployability of engineering graduates is the abysmal quality of engineering students. Many engineering colleges (including autonomous and private universities) admit students who have just passed to fill up the vacant seats; as it has become a matter of survival for the colleges. Hence, students do not have the desired skills which the industry demands. Companies look for candidates who can apply the knowledge they have gained in their colleges. Most importantly they seek students who can articulate effectively, and have good problem solving skills. There is a huge gap between what the candidates possess and what the industry demands.

Anil Shahasrabudhe, Chairman of AICTE said, “The overall technical education space is awaiting an overhaul to improve the quality of education.” If this major overhaul could be done taking inputs from both the academia and industry, unemployability of engineers could be reduced. Bringing about a drastic change in the education system, both at the school level and college level has to be done at the earliest. In India, especially in Tamil Nadu, changes are met with scepticism while politics and people’s mindset interplay, thus, making even minor changes a Himalayan task. Anna University has taken a step towards revamping engineering education, by making some changes in the new syllabi this year (2017). New courses are being offered to facilitate institute-industry collaboration, students would have longer summer and winter vacations to enable them to take up internships and other initiatives have been introduced that would enhance the equality of education. While, it is commendable that changes have been made to the syllabi, this alone will not solve the problem, the quality of teaching has to be enhanced. Engineering colleges need good administrators and teachers who can interpret, implement and teach the way it is intended to be taught. Without that, the intention of the changes will be lost and none of the objectives and outcomes would be fulfilled.

Moorthy Selvakumar, and independent education consultant, is of the opinion, “NBA should ensure outcome-based education through MHRD. Students should have at least one of three capabilities – employability; ability to pursue higher education; or entrepreneurship skills.” Any change to improve quality of education should incorporate programmes which are more jobs centric. Industry can help bridge the employability gap by entering into MOUs with colleges to offer courses which are industry related to increase the employability of young engineering graduates. Young graduates lack the finesse and basic etiquette which are essential to be successful in a corporate environment. Hence, the future of the engineering profession depends on a wise investment in holistic approach to engineering education, where students evolve into a wholesome person with sound technical knowledge and good moral values. Engineering education should enable the students to face the complex, social, environmental, economic and technical challenges in the globalized world.

It would be fitting to conclude with the words of Freedom, “When merit as a qualification gets replaced by bribe, caste, and tribe, when competence gets replaced by nepotism, when patriotism gets replaced by personal agenda, when leaders get replaced by demagogues, what results a fast destruction of the great institutions is built by man over centuries.”

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