11. NEED FOR A SEPARATE TECHNOLOGICAL UNIVERSITY

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Degree level Technical Educational Institutions have been growing up on a large scale since independence. These Institutions have been increasing like mushrooms all over the country during the past two decades. The number has gone up from a megre 46 in the pre-independence period to nearly 3000 AICTE approved engineering degree level Institutes as on today.

It has been categorically stated that today, out of the nearly 8,00,000 students leaving the portals of these Institutions annually, only about 25% are employable. This is a formidable situation which requires a rethinking on our present concepts of engineering educational system in the country. The feed back received from the employers in the past five years, highlight several deficiencies in our out going students, namely, they have poor fundamentals of the technical subjects, they lack in analytical skills and creativity, they have no confidence to accept challenges of advancing technology, they have inadequate level of personal effectiveness in soft skills and life skills and they have negligible exposure to R & D. This demands our focus on development of a modern curriculum to make our outgoing graduates to be industry-ready, improved concepts of teaching - learning processes, emphasis on more effective practical training, exposure to R&D and live problems of industries through project work and a satisfactory system of continuous monitoring and assessment of theoretical knowledge and practical skills of the student. In short, the outgoing student should acquire qualities compatible with the global standards, if we have to survive amidst the possible invasion of foreign universities and institutions into our country under our Liberalization and Globalization policies.

Manufacturing 'quality students' from a technical Institution, is a challenging task in view of the fact that the raw material can differ widely due to different regional, ethnical, linguistic and academic back grounds. The concept of quality referred to the output product from a technical Institution encompasses not only scientific and technical skills, but also the ethical and human values acquired and fostered during the learning and training programme. It is stressed that in the present context, a continuous march towards excellence using all possible creative processes, control tools, is imperative in order to produce world class engineers needed to face global competition and meet the challenges of advancing technology. Our technical education system has the additional responsibility of accepting these diverse children and forming them into productive youth power of the world's largest market and one of the fastest growing economies in Asia

The 19th century witnessed the Industrial revolution in the entire Europe, and in India, it occurred during the mid 20th century. Closely following it, we also witnessed the green revolution in the 1970s which has made us self

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sufficient in our food supply, today. Then came up the IT revolution in India towards the end of the 20th and the beginning of the 21st century. All these revolutions and innovations came up due to effective transfer of technology to the core rural mass of our society which has increased our GDP and GNP. Technology is advancing exponentially with inventions and innovations adding to one another on the knowledge base and the society today is educating itself into a knowledge society. "Industrialize or perish" was the slogan of the last century. In this new millennium, this slogan has given way to a new slogan "Innovate or perish" in view of the global competition for market penetration. It is in this context that a substantial exposure to R & D and exercises on creative innovations and patenting would be very relevant in the new curriculum. "Knowing is not enough, we must apply; willing is not enough, we must do" are the wise slogans which is highly meaningful in technology education. Technology transfer to the society is an important attribute to a technical institution, since it enables enhancement of national economy and productivity.

Since the industry is undergoing radical changes with improved management and manufacturing techniques, the educational institutes also have to be tuned with practices followed in the industry. It is, therefore, necessary that the curriculum of various engineering courses be designed in line with the direct needs of the fast evolving industrial scenario. One of the basic steps to be adopted is to meticulously design the curriculum jointly by institute and industry collaboration. Universities and technical institutions in developed countries like USA and Europe are primarily research institutes and so they enjoy revenue generation through industrial consultancy from faculty expertise involving students in their research activities. This enables outgoing students of the institutes to acquire confidence and competence to take up the challenges world wide.

Some of the major issues to be addressed by educational institutions therefore will be-

- Satisfactory accreditation process for technical institutions,
- Regular mechanism to obtain customer (industry, parents and alumni) feed back,
- Encouragement to R&D, Consultancy, Innovations and Patents from faculty,
- Stronger Industry-Academia interaction,
- Curriculum revision to suit industrial requirements with adequate choice of electives,
- Introduction of more flexible interdisciplinary programmes,
- Continuous assessment of analytical and practical skills of students,
- Faculty empowerment programmes on specialized subjects and management skills,
- Faculty training in methodologies of effective pedagogy,
- Introduction of mandatory programmes for soft skill development and individual personal grooming of students,
- Imbibing research culture and entrepreneurial skills in students.

From the above said discussions, it is clear that the administrative mechanism required for technology programmes, is more crucial, than general programmes, as the outgoing technical man power has a direct impact on community development and national economy. In order to address the above issues in technical Institutions, it becomes imperative to have a separate Technological University, which will have its own various bodies to look after each and every aspect of the above. It is ideal to have a separate University, whenever, the number of affiliated institutions exceed 100. This will ensure proper administration, effective

enforcement of quality standards and equitable distribution of research grants for various institutions. As mentioned above, since the quality standards required of professional engineering courses are more critical than other general courses, it becomes cumbersome to differentially govern professional programmes in a more general multidiscipline type of University without sacrificing on quality standards.

Technological University will have several other advantages. Innovative administrative reforms will be possible in regard to admission procedure, methods to attract and retain qualified staff, flexible need based curriculum, formation of special bridge courses for students coming with poor academic back ground, student as well as teacher assessment and performance monitoring systems, on-line examinations and grading system and such others. Internationalization of education becomes much easier by signing MOUs for collaborative teaching and research as well as twinning programmes for student exchange with foreign Universities. Implementation of the concept of life long learning or continuing education with e-learning and e-journals can be extended to all the graduates of the University to keep themselves abreast of rapidly advancing technology and market trends. It also becomes easier for the University to obtain quality improvement funds and research grants from UGC and MHRD for the benefit of all affiliated institutions. Finally, the University will be able to enforce strict vigilance on the quality standards and process documentation of each institution in its ambit and the University, in turn, can obtain a meticulous accreditation and an ISO certification to establish its credibility.