

IMPACT OF GLOBALIZATION & IT REVOLUTION ON TECHNICAL EDUCATION

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Our nation has made remarkable progress in engineering and technical education in last two decades. This paper focuses on present scenario of engineering education, its shortcomings and challenges & opportunities.

Due to rapid industrialization & economic growth, engineering and technical education in India have been developing faster than any where in the world. Recent Indian scientific, technological development, particularly in Space, nuclear technology, computer field & information science has earned India world recognition as an emerging global power.

Since technical education determines the development & socio economic condition of a nation, there is greater need for high quality technical education to produce technically skilled manpower in India.

Technical education is imparted at three different levels in India.

- i) Industrial training institutes (ITI), which runs trade courses for skilled workers.
- ii) Polytechnics, they run diplomas to produce middle level (supervisory level) technicians.
- iii) Engineering colleges, which conduct under graduate programme.

The number of private engineering colleges & institutes is increasing rapidly. The government expenditure in technical education has increased many fold. Some of the industrially developed states such as Karnataka, Tamilnadu, Maharashtra, & AP experienced phenomenal growth both in number of students & engineering & technical institutes over last two decades.

In today's information age, information is a crucial resource for education. It's effective & efficient use is a key for good education system. The availability of information in general is virtually infinite. To meet the requirements of information age present engineering system lacks in many areas such as,

- The recruitment procedure of teachers in technical education (degree and diploma engineering) needs a change. In the present scenario, job as lecturer in technical education is being taken as the stepping-stone. The survey conducted has shown 2 to 3% of teaching community has real interest & urge in teaching. Many go for teaching field since they are not absorbed by industries. Due to this quality of education has declined. Getting a job in degree or diploma institute has become easier since there is no system or training like primary or secondary education where D.Ed, B.Ed is a must before entering. Such type of

system or training must be made mandatory before entering technical institute. To stop the decline in quality of education this type of filter is required. The other side of the coin is intellectuals who are interested in teaching field do not turn to this field since facilities provided by industries are far better than teaching line.

- Curriculum in technical education especially in computer field cannot keep pace with technological innovations. Industry demands are not met by curriculum as expected. After completing the curriculum of 3 years or 4 years (diploma or degree) students opt jobs in industry. Industries have to give training before putting them on actual work. It indicates technical course provided is not adequate. Hence there is wastage of time and money on both sides. The gap between curriculum and industry needs should be minimized. They should go hand in hand. Technology is changing fast. To cope up with it curriculum must be flexible. Universities, technical boards, institutes should adopt more job and object oriented engineering education. Curricula should be linked with industries and future challenge of rapid technological change.
- Industry institute interaction cell in every institute must be strengthened. It must be very active. The suggestion of the cell must be addressed immediately by curriculum design committee. Industrial visits of students must become knowledge tour and not a picnic.
- As technology is changing rapidly new technologies, new softwares are coming to technical education. Teachers have to update their knowledge so as to inculcate these changes. Upgradation of teachers, training programmes, seminars should be conducted frequently. These programmes must be taken by teachers seriously. They should not be attended for the sake of getting promotion or salary hike. Teachers should use audio visual aids more frequently in teaching learning process. Except some institutes, all other institutes have one or two classrooms or halls fully equipped with audiovisual aids. This is not at all sufficient. The teaching learning process, which in present situation, is highly theoretical & bookish. It can be made interesting & indepth by these aids. Teaching learning process should aim at shift from teaching to learning. Teacher should take keen interest in interdisciplinary knowledge. No teaching can be good unless the teacher is a good researcher.
- Funds should be made available as it is essential to facilitate the procurement of many other essential productive resources.

Our engineering system has to go through a reengineering process to justify its existence & pursue the goals & objectives it has set out to achieve. In today's system the prime focus 'student' has become secondary.

Higher education and technological innovation.

Higher education and technological innovation are closely related. There is now new wave of economic and social activities associated with technological change. Industrial age is replaced by this wave. Information and communication technologies are key to bringing in new flexible working practices. The impact is that it will move towards highly expanded opportunities for accessing and exchanging information.

On the other hand evidence for the emergence of new social division i.e information rich and information poor. No doubt, the combination of computers & telecommunication has brought about new and different ways of organizing work.

The phenomena of virtual universities is appearing fast on the scene. The several advantages the virtual universities have over traditional one

- Encourages collaboration between universities and staff at distant location.
- Ready availability of library to students in varied institutions.
- Cost reduces.

Challenges and opportunities for higher education

- The challenge to universities, corporations to recognize the opportunities & seek to develop them globally.
- The challenges to government to encourage their higher education institutes to set up international alliance.
- The opportunity to establish worldwide common interest network lies within our immediate grasp.
- The delivery of courses globally offers a great opportunity for those developing and underdeveloped countries who seek for higher education.
- The major challenge is quality of course. Courses should be worldwide accepted.
- Low standard courses which are run solely for profit over the web must be avoided at all costs.
- Widening gap between haves & have nots.

Still in our country over a third population is not connected to net. E-mail is available in restricted service. Telephone is primary source and even that is not easily accessed everywhere.

The demand for higher education in the underdeveloped areas will continue to grow. The challenge to higher education in developed areas (cities) to meet demand by preparing good quality on line courses for students in underdeveloped states. Particularly women who can be uneasy about the physical classroom, appreciate the opportunities offered by immediate access to online courses & virtual classroom discussion with other students & teachers. This may be more interactive & indepth than level achieved in physical classroom.

The major challenge for governments & for higher education is to develop a new mindset.

Higher educations must not merely teach new technology but must develop human resources who can evaluate the need for these technologies & apply them.

Universities, technical boards should not be ivory towers. They should respond to social needs.

Engineering education :- challenges & opportunities

India's technical education has changed with rapid change in technology & due to globalisation. The change is slow as compared to other countries. The 50% of engineering colleges & polytechnics are situated in developed states like AP, Maharashtra, Tamilnadu etc. Hence near about 50% of technical manpower is being

developed by these states. This non-uniformity in distribution of technical education causing regional imbalance.

The challenges in engineering education are

- 1) Engineering institutes (mainly private) are becoming profit-making bodies. Technical education is perceived as business opportunity.
- 2) Diverting youth to technical education. The seats in engineering institutes & polytechnics are remaining vacant. This situation is worst in rural area. Engineering education has become expensive.
- 3) Severe shortage of qualified & competent faculty especially in IT field.
- 4) Due to IT revolution, there is increase in capacity of IT related branches & hence other disciplines are being suffered.
- 5) Lack of interest among graduating engineers to persue teaching career.
- 6) In present scenario, quality of education need to be addressed urgently.
- 7) Competitions from foreign universities.
- 8) Tendency of research scholars to prefer computer based research over experiment research.
- 9) Quality of software and its security problem.
- 10) Promotion of Industry-Institute Interaction.

Challenges create opportunities

- 1) Due to technological revolutions, IT tools are becoming available.
- 2) Distance learning has become possible.
- 3) For knowledge sharing, technical institutes networking is being done.

Engineering education is creating analytical & logical thinking, designing skill, decision-making, discipline in students but this education is lacking in following areas.

- 1) Oral & written communication skill.
- 2) Inter disciplinary knowledge.
- 3) Practical & commercial orientation.
- 4) Creativity & innovation.
- 5) Learning to learn.
- 6) Interpersonal skill.
- 7) Introspective nature.

Conclusion

To conclude with I would like to mention that some of the engineering institutes have adopted research oriented and object oriented engineering study programmes. These programmes offer benefits to student, universities and institutes. Other institutes should also adopt application-oriented programmes linked with industries to meet challenges of rapid technological changes.