IDENTIFYING RESEARCH POSSIBILITIES IN TECHNICAL EDUCATION

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Economic liberalisation in the country has forced some important changes in the industrial and business world. Such changes, it has been found, has had its effect on technical education system as well which has been evident by large scale changes in the entire gamut of technical education system. Interestingly, it has been found since early 1990s.(the time the liberalization process started)that such changes have thrown open various research opportunities in technical education. This paper attempts to interpret some of these situations and changes and suggests a few important areas for research.

BACKGROUND

Economic liberalisation has forced the industries to adopt to new technologies, management techniques, retrain personal to enhance overall capability to face new challenges. Consequently, technical education has also taken important initiatives to fine-tune its activities to suit the changing needs of the world of work. Change and quality have become the watchwords in a world shaped by globalisation and information revolution. The features of the changing times in which the industries and the institutions have to function and thrive at present can be expressed in a nutshell by the following: *Globalisation; *Rapidly changing technology; *Less secured economy for domestic monopolies; *Buzz word: Quality Improvement; *Environment: Competitive; and *Under threat: Survival. To survive in such a world, technical institutions need to update themselves rapidly. In other words, the institutions now will have to operate as 'well managed organizations' and as also become 'learning organizations'. This implies throwing away obsolescence in technology, adapting new technologies; enhance competitiveness by acquiring new competencies, improved capabilities of the human resources through high quality dynamic curricula base on the emerging technologies, continuing education and retraining of available technical manpower.

CHANGES

As the domestic industry changes in respect of technology upgradation, it becomes imperative for the technical institution to change accordingly. Sufficient emphasis must be laid on learning to learn skills so that a person has the capacity to update himself partly while in employment. Obsolescence will have to be driven out not only in equipment but also in the knowledge domain. Time also has come for these institutes to help in developing the members of the community through technically oriented vocational programmes.

Changes in Technical Manpower Competency Requirement

There has been wide ranging change in technical manpower skill requirement characteristics. The technical institutions will now have to ensure that the students aspiring for employment should have a combination of the following skills/competencies/aptitudes: *Problem solving skill; *Positive attitude; *Innovative and creative activity; *Concern for quality; *Good communication skill; *Willingness to keep on learning; *Ability to work in team situations; *Decision making capability; *An understanding of global perspective in engineering activities; *Concern for impact of engineering activities on environment; and *Concern for people/community/gender equity, etc.

NEW INITIATIVES

Over the last fifteen years or so millions of rupees have been invested and a plethora of new initiatives have been undertaken in various areas of technical educational system. The focus of such initiatives have resulted in enhanced capability of the institutions in respect of retrained manpower, modernised laboratories and workshops, new buildings and so on. The advent of information technology on the other hand, has opened up new possibilities in teaching learning system. Internet facility has enabled the teachers and the students to access global information base easily. Such access has also opened up the

scope of comparing different aspects of technical educational teaching-learning process followed in our country with those in the advanced nations. For the technical education system, changing market requirements are constantly throwing up new challenges. These challenges are to be addressed promptly and effectively. Thousands of pertinent questions such as, What are the modern frameworks for competency-based curriculum? What should be the framework of the delivery system in the changing scenario?, etc. have become important and demand immediate solutions.

RESEARCH IMPERATIVE
It has been increasingly realised that the time has come not only to take stock of the situation as to what extent the facilities created at institutions have been utilized, impact of the technical educational projects on the society in general and employability of the pass-outs, extent of industry-institute-interface activity and the like but also to develop new ideas and break new grounds in the whole gamut of technical education system to address the emerging needs of the changing scenario. It cannot be overemphasized that to find tangible solutions to all these and similar questions, undertaking research in relevant areas is perhaps the only answer. It has also been stressed in many documents, by many experts that there is genuine need of undertaking research in technical education. Research is important to reorganize the existing knowledge base, to find out various dimensions of excellence in technical educational activities and make it more effective, explore new areas of possible intervention, develop new delivery systems, find out tangible solutions to potential problems encountered, development of a framework for structural adjustments of the technical education system and so on. At the same time it is also important to undertake field based research to make mid project adjustments (e.g. Tracer Study), to study the impact of important projects, utilisation of facilities and equipment, etc.

SUGGESTED LIST OF BORDER AREAS OF POSSIBLE RESEARCH ACTIVITIES
(This list, by no means, is not purported to be an exhaustive one)
Research in academic excellence
Relevance and effectiveness of curricula of various degree and diploma programs;
Employment status of pass-out from degree and diploma engineering institutes;
Effectiveness of instructional processes followed in technical institutions.

Benchmarking Educational Processes and Practices Competencies of Technical Teachers in Changing Scenario
Utilisation of institutional resources Need for granting functional autonomy to technical institutions;
Identification of the components for excellence in technical education;
Quality enhancement in technical education.

Research on various aspects of service to community/rural development activities
Effectiveness of planning for community development based programs;
Tracer study on employment profile of the persons trained through rural development programmes;
Effect of transfer of technology on the quality of life of the people;
Effectiveness f continuing education programs;
Social assessment study in different tribal areas.

Management Development
Comparative study on the functioning of autonomous and non-autonomous institutions (degree and diploma levels);
Study on organisational structure and management style vis-à-vis efficiency of the employees;
Development of suitable Management Information System.

Some other research areas may be: *Development of appropriate delivery system; *Development of model for effective Industry-Institute-Community partnership; *Research in different areas of ICT

*Development and compilation of Appropriate technologies; and *Human Resource Development for the Physically Challenged Persons, etc.

CONCLUSION
It is indeed a fact that liberalization has thrown open huge possibilities of understanding and developing various dimensions of the entire gamut of teaching learning in technical education. A few areas of potential research have been suggested. The list above is only a glimpse of possible researchable problems concerning technical education system in the country. It is hoped that such efforts will open up new possibilities.