CURRENT STATUS OF TECHNICAL EDUCATION AND SUGGESTIONS FOR RE-ENGINEERING - A STUDY

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ABSTRACT

The paper highlights the present status of technical education and makes suggestions for reengineering technical education based on the views obtained through a structured questionnaire from over 150 professionals and academicians on various aspects of technical education. The study reveals that there has been considerable expansion of technical education at different levels. This large scale expansion has resulted in the deterioration of quality and standards of technical education in the country. This has also greatly affected the employment of degree and diploma holders. Good percentage of students are unable to find gainful employment for years together. The process of teaching-learning focuses great attention on theory rather than developing professional skills like: thinking, independent study, problem solving, creativity, interpersonal and communication skills etc. Majority of students are still not proficient in making use of computers for various engineering applications. There is a marginal linkage of technical institutions with the world of work. The system of examination, by and large, is paper pencil type, stressing on rote learning. There is hardly any effect of recommendations made by various seminars/conferences for improving technical education system in the country due to lack of concern, lethargy, initiative and accountability.

Based on the findings of the study, the paper proposes that the thrust of teaching-learning process should be on "Concept of use" for developing transfer skills in the students so that they are able to apply the knowledge and skills gained in the institutions to solve practical problems or innovate new designs and systems. The paper further proposes that technical education should be offered on "Cooperative Basis" to face the challenges of 21st century. Cooperative Education has been described as a "Strategy of Applied Learning" imbibing the concept of use without increasing the duration of programmes.

The paper finally makes suggestions for improving the management and administration of the system.

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1. INTRODUCTION

There has been considerable expansion at degree and diploma level during the last decade. Though from social point of view, this may be desirable but, by and large, has resulted in mismatch between supply and demand resulting in huge unemployment of technical manpower. Government of India, Ministry of Human Resource Development has been making continuous efforts of its own and through World Bank assisted projects for providing financial assistance to states for improving the quality and standards of technical education. These interventions have brought some improvements, particularly for building good infrastructure but the quality and standards of technical education, by and large, is on the decline. Number of seminars/conferences have been conducted in the recent past for re-engineering the technical education in the country but there is hardly any effect. The AICTE keeps on granting approvals for opening more and more technical institutions without taking care of technical manpower demands; unemployment amongst degree and diploma engineers is increasing day by day; there still exists over thirty percent vacancies at the faculty level; teaching-learning process in majority of technical institutions focuses greater attention on rote learning and passing a paper pencil type examination by the students and it has been experienced that not much attention is being paid for developing professional skills leading to gainful employment of students.

Keeping in view, the declining standards of technical education, the authors undertook a study to ascertain view-points of experienced professionals, administrators, academicians and faculty on various aspects of technical education and determine the gaps in existing system of technical education and come out with concrete suggestions to bridge the gaps.

2. METHODOLOGY :

A structured questionnaire with inbuilt open ended questions was prepared, which was validated by a group of six experienced professionals. The comments received from them were incorporated in the questionnaire.

This questionnaire was mailed to over 250 persons which included all DTEs in the country, reputed engineering colleges and polytechnics and selected professionals in industry. Feedback was received from 152 respondents (DTEs = 9; Engineering College Principals 26; Polytechnic Principals = 5 1; Engineering Colleges and Polytechnic Teachers = 53; Industry 13) Feedback. received from above sources was analysed in terms of percentage responses.

3. FINDINGS :

3.1 Expansion of Technical Education

- 64 percent respondents indicated that expansion of technical education is not based on supply and demand of technical manpower, however 36 percent were in favour of the expansion.

- 52 percent of the respondents revealed that expansion of technical education is primarily to fulfill the social needs of the society
- 61 percent respondents expressed that there is competition between the states to open more and more engineering colleges and polytechnics
- The above feedback indicates that the expansion of technical education is being done on adhoc basis which has, by and large, no linkage with demand and supply

3.2 Unemployment of Technical Manpower

- Over 92 percent respondents are of the opinion that this large scale expansion of technical education has resulted into unemployment of technical manpower at different levels which creates frustration in the youth who ultimately do not take desired interest in their studies
- 83 percent responses indicate that there is general deterioration of quality of technical education, which is, by and large, due to:

* Lack of long range planning at the national and state levels (76 percent)
* Haphazard growth of technical institutions at degree and diploma level (92 percent)
* Lack of vision at State level to manage the system (79 percent)
* Teaching-learning process in majority of technical institutions is bookish, memory oriented and not linked with the requirements of world of work (83 percent)
* Lack of competent faculty for providing appropriate learning experiences to the students (74 percent)
* Lack of linkage between technical institutions and world of work (89 percent)
* Lack of attention towards development of practical skills (89 percent)
* Lack of training and placement support and concern for employment of students (74 percent)
* Lack of informational resources (61 percent)
* Memory oriented examination system (86 percent)

Above analysis reveals that the system of technical education is by and large, functioning in isolation from world of work and the stress of teaching-learning process is on bookish knowledge for qualifying a memory oriented examination system

3.3 Management and Administration

- 48 percent respondents have indicated that transfer of Secretaries and Directors of Technical Education (DTES) is too frequent which creates lot of difficulties in stabilising the system. Though 35 percent do not consider this as an

important aspect whereas 17 percent respondents have indicated that they do not know about the transfers of Secretaries/DTEs

- 74 percent feedback reveals that lack of functional autonomy at different levels hinders quick decision making by the Head of the Institutions
- 85 percent respondents have expressed that there is lack of accountability at different levels and there is overall lethargy in the system to take initiatives of any kind
- 82 percent responses indicate that rigidity in the government procedures is one of the reason which creates hurdles in taking any kind of initiatives, may it be internal resource generation or promoting innovations and developments in the teaching-learning process
- Lack of professional expertise to manage the institutions at different levels have been revealed as one of the important aspect of management and administration (65 percent)

4. SOLUTION ALTERNATIVES :

Based on the findings of this study as reported in section 3, following solutions/ remedial actions are suggested. Majority of these suggestions have come from the respondents in the open ended queries

i) There is a need to consolidate the existing technical education facilities at degree and diploma levels and plan of action should be chalked out to bridge the gaps. AICTE may not approve more technical institutions atleast for next five years.

ii) To solve the problem of mis-match between supply and demand, a study may be conducted to identify programmes which have poor employment potential. Intake to such programmes may be reduced and networking with industrial/field organisation be strengthened for providing appropriate learning experiences to students in these organisations for enhanced employability

iii) Experiences have revealed that offering programmes on cooperative basis i.e. in active collaboration with respective industries can greatly enhance the employability of technical manpower

iv) It will be worthwhile to grant autonomous status in a phased manner, to selected government technical institutions so as to promote quick action taking, innovations and developments and accountability as on the part of each autonomous institute

v) For improving the teaching-learning process the focus should be on developing thinking abilities, learning-to-learn skills, problem-solving skills and introducing "Concept of Use". Concept of use means ability of the students to make use of knowledge and skills gained in the institutions to solve

practical problems of the world of work. Therefore, the entire teaching-learning process should greatly focus on student centred learning i.e. well organised tutorial experiences, laboratories and workshop experiences, industry oriented project work etc. Development of acquisitive, adaptive, operative and innovative skills will make the students competent to face the challenges of 21 st century.

vi) Next millennium will be the age of information technology (IT). Making students computer friendly will be an essential requirement for each technical institute. Establishment of computer facilities and training of teachers in making use of computers for various engineering applications is most essential requirement for training students in making use of IT.

vii) A serious thought has got to be given to change the system of examination. Instead of spending so much time on paper pencil type examination at the end of semesters, more stress has to be given on systematic continuous assessment and project oriented evaluation system.

viii) To streamline the management and administration of technical institutions, it is necessary that Secretaries/DTEs positions may be for a minimum term of three years so that the planning and policy formulation at state level can be looked after on a long term basis.

ix) To overcome lethargy in the system, it is proposed that state level inspectorate (comprising important academicians and professionals from industries) may be constituted to visit sick institutions and suggest remedial measures.

5. CONCLUSION :

The 21st century will offer great challenge for technical manpower development. The system will need proper planning and networking with world of work for sharing physical, human and other resources for mutual benefit and technical manpower development. Teaching-learning process in the technical institutions will have to focus on "Concept of Use" and making use of information technology for various engineering applications. To avoid lethargy in the system, greater autonomy to technical institution is visualised for promoting innovations and developments and internal revenue generation.

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