Sub theme: Innovations in Technical Education for Modern Industrial Scenario

Innovation in Technical Education through Research Based Entrepreneurship

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ABSTRACT : *The technical education system in the country has grown into a fairly large system in the last decade, offering opportunities to the aspiring students in a wide variety of trades and disciplines at various levels. Quality is a dynamic concept that needs to be reviewed and redefined from time to time. Globalization has intensified competition amongst industrial and business sector. We need to achieve global standards that are of great relevance today, since India has a demographic advantage in its favour.We need to nurture and carefully strategize to reap the benefits of human resource.*

NASSCOM predicts that India could face employee shortage. A survey by McKinsey global report in 2006 indicated that industries find only 25% of Indian engineers employable. The knowledge paper by FICCI on "Skill Development in India" indicates that employers are facing difficulty in filling up jobs. "Employability" is about making connections between study, personal development, skills, entrepreneurial ability and other activities that influence individual's ability to be successful in their chosen occupation. An employable student from the industry's perspective should have the ability to think critically, to communicate precisely and develop collaborations with others. Technical Knowledge, General Knowledge, awareness and exposure to industrial environment, communication skills and self-confidence are some parameters that can determine employability.

Today, the industry is expanding and has the potential of absorbing skilled engineers is tremendous. The number of engineers from technical universities is also huge in number. Hence many students do not get the right job for which they have aspired and developed the requisite skill sets. In order to overcome this problem of underemployment; students should be well equipped with the entrepreneurial skills also.
The paper discusses an innovative and enterprising business model in technical education that can inculcate a research culture in engineering education system.

Keywords-*Employability, Entrepreneurial skills, Globalization, Innovative practices, Quality Engineers.*

I. INTRODUCTION

The wealth and prosperity of a nation depends on the effective utilization of its human and material resource through industrialization. The use of human for industrialization, demands its education in science and training in technical skills. Higher technical education has been a key factor for its ability to change and to induce progress in the society. In today's globalized economy, it is the globalization of knowledge that will enable us to deal with the present and future challenges that is confronting us in every sphere of life.

Today, India and china are in advantageous position with the demographic profile as they would provide the bulk of the skilled workforce in the near future [1]. In India, technical education is confronted with formidable challenges and must proceed to the most radical change so that we transcend the economic considerations and also incorporate deeper socio – cultural dimensions that will enable a sustainable world.

II. CHALLENGES

The major issues in the technical education in India are

- Multiple control mechanisms and controlling regulations have stifled innovative initiatives in recruitment of faculty, admission of students, curricula revision & up -gradation and financial management in most institutions.

- Resource constraints, low efficiency of utilization of available resources and lack of mechanism for sharing physical and human resources. This has led to large scale obsolescence of physical resource deterioration of quality teaching / learning process and lowering the competence of the teachers

- There is a huge drop out and failure rates in the technical institutes.

- Rapid obsolescence of curricula and course contents due to infrequent revision and a delayed response to technological advances and consequent market demands.

- Failure to attract and retain high quality faculty due to archaic recruitment and promotion procedures, absence of incentives for quality performance and non- existent staff development policies in most institutes.

III. INNOVATIVE MEASURES

Technical education should introduce competency based programs, infrastructure development as per market demand and customer focus attitude. We need to have the concept of mentoring being introduced. The present model of education and examination system focuses on marks and less on actual understanding of the subject. This needs to change fast. In this world of internet and connected society, definition of intelligence is changing. Intelligence in today's context is linked to practical application of knowledge in real life and not memorizing essential matters.

We need to create a robust technical research ecosystem that feeds into and off industry. Some of the good institutes of current generation are globally networked, focused on research, looking to solve industry problems and also patenting. They drive a deep transformation within our technical education system, which could take some time to show impact. We need to have more and more institutions of this type. Policies, guidelines and procedures need to focus on preparation, validation and evaluation of skill based curriculum, promotion of vocational education and delivery of quality contents for preparedness of the graduates for the practice of the profession. The serious shortage of qualified faculty in the institutes has also been an impediment in our quest to offer education of global standards. We need to identify and map the required skills and competencies bridging supply and demand in our human resource[1].

To make Indian technical education ready for future, there should be financial innovation, innovation in use of information and communication technologies (ICT), reinvigorating research and regulatory reforms. For achieving financial innovation, we need to encourage private sector investment in education. Performance based funding by government will motivate more institutes to perform. We need to build an enabling environment to generate alternate sources of revenue. The ICT infrastructure needs to be improved. We should develop mechanisms for development and free distribution of high quality content across languages. It is also necessary to improve connectivity across technical education institute and create a national repository of digital content.

Very little research goes on in most of our technical institutes. There is no research culture in technical education. Neither the management, nor the faculty considers R & D academicor sponsored as one of their important activities. In order to have more research activities, we need to incentivize research and create an enabling environment in terms of lesser teaching hours for researchers. They should have greater budgets and better access to available infrastructure. The number of doctoral students may be increased through launch of innovative programs, providing attractive fellowships and enhanced industry collaboration[2].

The regulatory frame work should be simple there should be a single independent regulatory agency for regulating technical education.

IV. RESEARCH BASED ENTREPRENEURIAL MODEL

Industry based courses need to be included in the curriculum by providing some autonomy to the institutes. A new model of research based entrepreneurial skills may be developed. A research cum entrepreneurial model may be introduced in technical education. Learning starts as research project and ends as an enterprise.

In this scheme, individual teachers can be encouraged to identify their projects and work in small team (2 or 3) from concept till completion. They select the technology partner along with external guides. Individualteachers with a group of students develop highly learning enabling research solutions and works closely with external labs in arriving at the solution. All the individuals of the team acquire the application knowledge while developing solution and impart the operational knowledge / skills while installing the system. They constantly upgrade software for user friendliness and seek external guides' feedbacks for improvement. Individual teachers along with their team ensure commercial viability for the seller, buyer and the user departments. This will create research oriented specialized libraries and laboratories and create peer reviewed research papers. Such kind of activities will prepare the technical students to the industrial scenario.

It is thus necessary for us as educators to bring drastic changes in the teaching learning process so that development of the teacher and the student takes place.

REFERENCES

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