

ENTREPRENEURSHIP DEVELOPMENT FOR ENGINEERING AND MANAGEMENT TEACHERS

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1. The new millennium, the world over, has three main challenges to face; Intellectual, technological and ethical. The coming age is not only information age but the age of knowledge explosion & therefore of knowledge management. Privatization & globalization / rationalization movement demand growth with stability which can be achieved only on the basis of Intellectual supremacy, technological advancement and ethical soundness. The role for teachers in general, and for management and technology teachers in particular, becomes vital for total quality and excellence through human resource development and management.
2. Technological education encompasses Engineering, Technology and Management education as well as Computer education training programmes. It will, therefore, be appropriate to consider challenges of Technology management, challenges of Management of knowledge and challenges of

Technical education programme as also Management education programme for the new millennium, by developing a New Dynamic Integrative Synergic Personality of a Teacher for engineering and management profession.
3. In his address before the World Science Congress Dr. Mashelkar provided a 5 point programme for the new millennium for the Indian Economy; Child centered education / Women Centered Family / Human Centered Enterprises / Knowledge centered Society and Innovation Centered Indian Economy. This means, it is necessary to "Create a learning Society, with innovative mind so as to have performing institutions on the basis of reorienting the personality of a teacher as a professional expert, counsellor and a parent; we have also to remember that – doing with loving, blending modernity with traditionality and guiding the group for world-class performance, is the need of the present."

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4. I had an opportunity to address the world Council of Curriculum Development in Tasmania which was the World Assembly of Educationists and Teachers on the theme "Creating a Better World through Education" for 21st Century. I stated that "These challenges of management in 21st Century, as mentioned above, can be met through empowerment of human resource, particularly in the teaching field and, more particularly, in the field of engineering and management teaching so that the challenges of I. T. Invasion as also challenges of management education in the next millennium can be properly met."
5. "One of the greatest challenges of Information technology invasion will be to see as to how we create equity between Information rich and the Information poor... Furthermore, while we appreciate the inroads that modern I.T. will make in education, we must recognize that there is an important place for the traditional classroom teaching. Such teaching involves most vital, social and interactive context i.e. human interaction. Therefore teaching and learning in cyber space can never substitute learning in physical space. We must therefore, while forming the best use of new technology blend the two i.e. old and new judiciously, so that we can prepare the minds of our own people in the right way".
6. In the post independent India, we have had several gains of which we should be justifiably proud. India is the only country in the world, which shows "Unity in diversity and diversity in unity". India has functioned in the last 58 years as a single nation in spite of cultural, social, political, economic and religious diversity, while all around us we see anarchy, dichotomy, dictatorship, authoritarianism and military rule. Amidst such volatile and turbulent environment, India has remained and will remain as the largest vibrant democracy and will provide an example for making significant contribution for quality life and living, through proper insight, to be provided through science, technology and management. It is true that exploding population, widespread poverty and illiteracy, urban congestion, wounded ecosystem and cleavages based on regional and linguistic differences and gender, threaten our social fabric.
7. India has a great future mainly because there will be emergence of young India in the coming 3 decades. By 2030 over half of our population will be less than 25 years old. This part of our population is either just born or is about to be born. What it means therefore, is that we have tremendous opportunity to focus on these young people who are going to decide the destiny of the nation in the 2nd quarter of 21st century. Youth represent the national strength, vitality and vigour and therefore this young India will play a crucial role in the

development and upliftment of the nation, if properly moulded through education, more particularly engineering and management education. This youth can become the champion of our culture, custodian of our national pride and trustee of the freedom of the country. This process of moulding and development calls for right type of education, education which is child centered and based on quality & performance oriented. Learning by self-observation, through field-studies, experiments and project work will provide not only communication and creative skill but it will make student's individuality, versatile and value-oriented, fearless and eco-friendly, disciplined and dynamic.

8. Education must become an enterprise. Entrepreneurship and management must provide educational institutions empowerment for self-improvement. Pandit Javaharlal Nehru, our first Prime Minister, while addressing the graduates in 1947 at Allahabad has stated that "University stands for humanism, for tolerance, for the adventure of ideas and for the search for truth. It stands for the onward-march of the human-race towards higher objectives. Universities are places of ideal or idealism. If the Universities discharge their duty adequately, then it is well with the whole nation and people". Therefore Innovation in curriculum is important but reorientation of the outlook of teachers and their meaningful involvement for the

integrated development of student-personality is the need of the time. Overhauling the examination system is important but building linkages and creating new institutional ethos is more important. The school and the college must become knowledge-centered, skill-centered and centres of collaboration of academics with business must be created in each college in a meaningful way for building up skill-oriented and value-bound as well as integrative and innovative personality of the student. This is the need of the time.

9. Our educational system today is only providing information. What is required is emergence of knowledge and wisdom. While updated information is necessary, teachers have to provide Vision and Insight. It is the insight, which is more important. Creativity and confidence, fearlessness and faith are to be generated by teachers through environment and through knowledge-power and wisdom. Education has to provide Vision and Versatility, Perspective and Philosophy, Sensitivity and Synergic Mind. Hence we need innovative ways to blend modernity with traditionality and to provide pragmatism with professionalism. Thus the "new-knowledge system" must have a beautiful confluence of the three knowledge areas- Ancient Heritage, Technology and Management (ATM). We have to make India a superpower on the basis of technology on one hand

and oriental culture and spiritual practices and experiences on the other. Therefore India has to lead in interpreting, and synergising these knowledge systems and must evolve innovative way by which learners achieve integral personality. In other words, preserving the traditional knowledge system and enriching the vision with information technology through centres of collaboration of academics with business and the process of continuous learning with the new system of continuous evaluation will provide a right solution.

10. As stated above, one of the great challenges of information technology is to see as to how we create equity between the "Information rich and information poor". It is the Gurukul system of education where education of the student takes place in a smaller group and in the presence of teachers right from 6.00 a.m. to 6.00 p.m. for five days a week for 200 days in a year. It is necessary to have through small group activity, variety of useful subjects introduced in school education. The sound health, intellectual attainment, emotional maturity, aesthetic sensitivity, socially desirable values and spiritual living are to be achieved as by-products of our education system. It is therefore the blending of yoga, Udyog and Sahayoga in education, that cognitive learning, practical work and spiritual vision will be attained to provide the sound foundation for new educational endeavour.
11. This century is the century of mind. The mindset will have to be moulded for developing analytical, global reflective, integrative and synergic capabilities of the mind. Products of the mind will dominate this century. Therefore creating the right type of mind and right mind-set to build up a tension-free society through the right process of education is the need of hour. We must build and create self-reliant and strong Indian polity to lead and achieve this supreme goal.
12. It is in this context that Technical and management education is to be revitalized. Today there are in our country 662 institutions offering degree level technical education with an enrolment of about 1.60 lakhs students annually. In addition we have 1,171 polytechnics having a total annual intake of just over 2 lakhs, in various diploma courses. Similarly there are in our country 304 institutions offering management education for over 10,000 students annually. In addition there are about 200 autonomous or university based or corporate based postgraduate programmes with a total annual intake of over 5000. The quality of all these will depend upon the quality of full time faculty and the involvement of such faculty for Institutional Commitment. One of the main strength of our engineering and management education is that it has retained its bias for merit based admission. thus encouraging competitiveness.

Again engineering and technology education in India has constantly nurtured the science base of engineering alongwith core engineering courses. This has equipped our studentswith necessary tool over meaningful integration of science with engineering and technology. A strong component of industrial training and project work forms an integral part of engineering curriculum in addition to the well co-ordinated laboratory exercise. This has promoted problem solving capabilities of our students and therefore engineering management education in India has received wide-spread recognition from the advanced nations. In fact such education in the IITs & IIM's and some selected Universities in India is considered superior to many well know universities in the foreign countries. This superiority is primarily because of the focus on quality and strict adherence to merit in admission. The quality of knowledge and skills imparted to the school leavers in the country could be significantly improved so as to provide the quality human resource in engineering and technology and management science for building up a prosperous India in the next millennium with the integration of science and technology in engineering education and corporate and business pragmatism in Management education.

13. The full time teacher in higher – education, more particularly in engineering and management institutes has to play a triple role : role of an outstanding teacher, role of a professional expert and role of expert Councillor scientist (practicing technologist or management consultant) simultaneously. The human capital of tomorrow in the education enterprises is to be nurtured and developed so as to create teaching and learning, teaching and extension work, as well as research and training more effective and impact making. There is a need to create synergetic partnership between academics and business providing institution industry-linkages for making education and training more pragmatic and professional. Memorandum of understanding will have to be arrived at and present technical and management education system must be developed and oriented for making it innovative, integrative and international.

Teachers in technical and management institutes have to look beyond, beyond their teaching and play a triple role of teacher, of a scientist and of a practicing technological / managerial expert. There is need for productive utilization of infrastructure and total quality management to make teaching resource not only competitive and capable, confident and conscious, creative and committed but highly achievementoriented for building up the new Society.

