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Competitiveness through Effective Measures in Getting/Retaining Qualified Faculty and Thereby Enhancing Flexibility and Business Agility of Technical Institutions

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Abstract

In today's scenario of breakthrough global competition and quality of work life is turbulently changed. There is competition at every stage, within and outside i.e. within Universities, States, Countries and globally also. The impact of Technological Innovations governs, pedagogy, in Technical Education. The ultimate goals are prioritizing Time, Energy and Money for achieving excellence in Technical Educational dimensions. According to scientific and clinical research outcome, new dimensions and streams are emerging. Traditional streams obsolesce of stereotype emerging skill sets are declining, resulting in creative and constructive approach. Emphasis is given for resource based, optimum utilization, of infrastructural facilities, catering to diverse societal needs.

The system needs everyday additions to the existing setups, as well as Macro and Micro levels. Transparency in administration, mechanism to deal with unfair practices, perform effectively and respond personally, is also dire essential. One should adhere to set Priorities, Prerana (Motivation), Parishram (Untiring Efforts), Parinam (Tangible Results), Parivartan (Change/Revolution) without Paschatap (Repentance). The faculty, is the heart, of the Innovative Technical Education system and is wholly responsible, for achieving excellence and perfections, with flexibility.

In the present paper the author who has interacted, with the various Best Engineering/ Management Global Institutions, all over and put forth the observations relating to :- The present scenario in India and all over the world. Probable reasons, for acute shortage of Qualified and experienced faculty. Measures to overcome this genuine problem, within the available resources, efficiently, without major monetary implications, to Management/Faculty. This enhances, efficiency and academic business agility, with improved interrelationship between Faculty and Management. It is to be ensured, that, improvement in all core missions such as Teaching Learning Process, Knowledge Transfer, Faculty Development Programmes, Faculty Retention, and Research and Development activities, at National and International levels, with parity to excellence in all areas is also ensured.

To meet challenges, of substantial evolutionary and revolutionary change, with enhanced Global competitiveness, of Higher Technical Education, and to ensure Flexibility and Business Agility, creation of close multilateral strong linkage, of Industry/Corporate, Academia and Government is of utmost priority.

In the present paper, author has discussed various salient points, for eradication of non-creative practices and imparting an upshot in the Technical Education System, through his experiential learning, as Case Studies. Further it is hoped, that the paper

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will evince, keen interest among erudite educationists, as well as readers.

Introduction

From the privatization of Technical Education, the Quality of Engineering Education is a major concern. In India the growth of private Engineering and Management Colleges/Universities is tremendous. Government runs colleges including IITs, IIMs. NITs etc face, the acute shortages of faculty, varying from 30 to 50 %. Whereas, Private run Colleges, face the shortage to the tune of 50 to 70%. Most of the B. Schools have only Skeleton staff and rest of the work load, is managed by visiting staff/faculty. Similar situation, with minor variation exists, all over the globe.

The monitoring of regulatory Bodies/Councils/Universities is not effective and though, they continue affiliation/permissions, on certain conditions. These conditions are never fulfilled, by the respective colleges and situations are carried forward years together. India alone has 3300 Management Institutions with intake of about four lakh twenty thousand, resulting in requirement of about 55000 Teachers. Similar is the condition, of Engineering Institutions, which are around 5200 with total Intake of about 24 lakh including Degree/Diploma programmemes, resulting in requirement of about 3 lakh teachers.

Very few colleges observe the norms laid down by regulatory authorities, fully. It is with various intentions like (i) reducing salary bills (ii) to siphoning money collected and using it for some other purpose (iii) sharing resources for two/three colleges of the same trust. Many colleges do not appoint qualified teachers, in spite of their availability, and readiness to join the Institutions. The Selection Committee Members of University, appointed committees, should point out such cases, to the respective Universities and appropriate actions against such colleges, should be initiated by calling explanations, as to why the recommendations are thoroughly not implemented. The faculty shortage, is more within Computer Engineering, Information Technology Branches.

Status of women education in India and abroad is not encouraging and hence needs to be prioritized by proper motivation at all levels. Faculty Development Programmemes are dire essential, for parity of teaching quality and further achieving excellence, in Technical Education. Due to enormous and un-controllable growth, of technical institutions, exploitation of faculty by giving less salary by the management, faculty keeps on migrating often from one institute to other. Therefore, Faculty Retention has become a major challenge in the present scenario.

It is impossible to predict, accurate growth of emerging Universities Institutes. New pathways for Technical education need to be innovated, to suit societal needs and developments. The teachers have to play a role of facilitators than educators/dictators. They need to be always approachable / available to students. Digitalization, Virtualization, Personalization are going to play vital role in Engineering/Management Education.

In addition to the case studies discussed briefly, the case studies Author has suggested innovative practices for inculcating the effective Teaching Learning Process. (Gosavi- 2012, Pathak et.al.- 2008, 2009). Further it is expressed that the contents of the present work will open up fresh avenues for futuristic research on the topic.

Historical Background of Education in India

Monastic orders of education, under the supervision of a *guru* were a favored form of education, for the nobility in ancient India. The knowledge, in these orders, was often related, to the tasks, a section of the society had to perform. The priest class, the *Brahmins*, were imparted knowledge

of religion, philosophy, and other ancillary branches, while the warrior class, the *Kshatriya,* were trained, in the various aspects of warfare. The business class, the *Vaishya,* were taught, their trade and the lowest class of the *Shudras,* was generally deprived, of educational advantages. The book of laws, the *Manusmriti,* and the treatise on statecraft the *Arthashastra,* were among the influential works of this era, which reflect, the outlook and understanding of the world at the time.

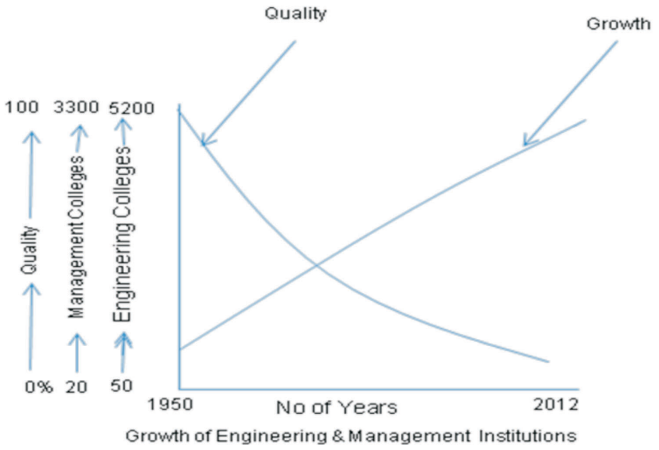
The important urban centers of learning were Takachshila and Nalanda, among others. These institutions, systematically imparted knowledge and attracted, a number of foreign students, to study topics, such as logic, grammar, medicine, metaphysics, arts, Yoga's and crafts.

By the time of the visit of the Islamic scholar Alberuni (973-1048 CE), India already had a sophisticated system, of mathematics and science in place, and had made a number of inventions and discoveries. With the arrival of the British Raj in India a class of Westernized elite was versed in the Western system of education. Following independence in 1947, Maulana Azad, India's first education minister envisaged, strong central government control, over education, throughout the country, with a uniform educational system. The central government of India, formulated the National Policy on Education (NPE) in 1986 and also re-enforced the Programmeme of Action (POA) in 1986. The government initiated several measures including the setting up of *Navodaya Vidyalaya* selective schools in every district, advances in female education, inter-disciplinary research and establishment of open universities. (http://examcrazy.com, www.amaidi.org.)

Present Education Status in India

Education in India has a history stretching back to the ancient urban centers of learning at Taxila and Nalanda. Western education became ingrained into Indian society with the establishment of the British Raj. Education in India falls under the control of both the Union Government and the states, with some responsibilities lying with the Union and the states having autonomy for others. The various articles of the Indian constitution provide for education as a fundamental right. Most universities in India are Union or State Government controlled. Despite growing investment in education, 40% of the population is illiterate and only 15% of the students reach high school. As of 2008, India's post-secondary high schools offer only enough seats for 7% of India's college-age population, 55% of teaching positions nationwide are vacant, and 65% of college professors lack either a master's or PhD degree. (http://examcrazy.com,)

As of 2012 there are 5200 Engineering Colleges, offering degrees and diplomas in India with an annual student's intake of 23,22,000 and 3300 Management Institutes, with 4,17,000 student's intake. However, all these institutions face acute shortage of faculty and many concerns have been raised over the quality of education. (www.aicte.org.in).



Growth of Engineering & Management Institutions

The above graph indicates growth of Engineering and Management Institutes, since privatization and globalizations, indicating continuous deterioration of quality of

Technical Education, which is a major concern in India. Similar is the case all over the world with minor variations.

Three Indian universities were listed, in the Times Higher Education list of the world's top 200 universities which are, Indian Institutes of Technology, Indian Institutes of Management, and Jawaharlal Nehru University in 2005 and 2006. Six Indian Institutes of Technology and the Birla Institute of Technology and Science – Pilani, were listed among the top 20 science and technology schools, in Asia by Asia week. While the National Institute of Information Technologies, has been renowned as the largest provider of Information Technology Education, in Asia and among the top 15 global head of education.

The Indian School of Business, situated in Hyderabad, was ranked number 15, in global MBA rankings by the Financial Times of London in 2009. At the same time All India Institute of Medical Sciences, has been recognized as a global leader in medical research and treatment. All India council of Technical Education is a Regulatory Body formed in 1987 and Monitors and decides policy and Reforms of Technical Education in the country. (Shrivastav et.al. 2001).

Private Education

Because of deprival of education to many deserving students, in 1983 Private Engineering and Management Institutes were started. Since then, there is enormous growth in the Institutes and universities during last three decades. However, the quality of Technical education is a major concern in almost 70 to 80% of the Institutes/Universities, because of inability exercise effectively monitor by Universities, Governments and All India Council of Technical Education for their poor infrastructural facilities, sub-standard staff, un-experienced Managements, resulting in very poor results and placements. Hence, they are denied by all the stake holders i.e. students, parents and Industries.

Rural Education

Engineering Education deals with, application of fundamental laws of science, to fulfill the needs of society and converting it to technology. Management education deals with, the art and science of directing and controlling any organization. The Indian Education is forced to change the operational and business strategies due to Liberalization, Privatization and Globalization, policies initiated by government of India. Today, the academics and industry captions, are transforming various sectors of the economy, due to globalization strategies including the fast developing sector of higher education.

Today the challenge before the Engineering Institutes and Business Schools, as also before the regulatory bodies i.e Universities, AICTE and the State Government is to maintain a delicate balance between the enormity of the task and the constant up gradation of quality of learning with innovations and research. The governments setup an independent planning commission in March 1950 for planned growth. Initially part time courses for practicing executives were started in Calcutta University in 1953, followed by the universities of Delhi, Mumbai and Chennai.

Globalization aimed at, aligning economies of various countries, with Global Economy. Foreign Universities have entered the Indian Market and as a result Education has become an important part of service sector. A large part of the economic growth of advanced industrialized society can be attributed to their capability to choose, acquire, generate and apply technologies to different economic activities. In the era of globalization all the universities are trying to update their curricula to cater the need of the industry. Still these efforts have limitations with lead time of 3 to 5 years.

Students should be given freedom to choose any of the modular courses of his interest, at the same time industry may also select students as per their need and train accordingly. This will help the students for getting better opportunity. University shall give this freedom to the individual institute, to offer wide variety of modular courses and to frame the content of the course. University may not object for this because this course is to be offered after their regular graduation.

In addition to the above, a scheme to exchange the staff may be implemented between industry and institutes, both to the development of nation as continuous measures. Both, the parties will be benefited by doing so, resulting in sharing the talents and strengths.

This tie up, collaboration / MOU amongst the countries will keep the leaders on the toes and vibrant. Today, due to wide and vibrant knowledge workers available all over, in the corporate sectors and otherwise, the management of their knowledge and to bring into synergetic performance is the major challenge. Quality, though it is much talked about is a missing link presently in Indian Technical Education scenario, and not up to the desired level.(Pathak et.al-2009).

Indian Technical Education Scenario

Engineering education deals with, applying fundamental principals to various day to day applications, for the use of society and the changed needs. Management education deals, with the art and science of directing and controlling any organization. Today the academics and industry captions are transforming their strategies of the economy, including the fast developing sector, of higher education, due to globalization.

Management Education is based, upon the premise that events occur as a result of preceding events or processes. A manager must know why a certain thing has happened so that a repetition thereof can be avoided, if it had adverse effects on organizational performance. Management consists of deciding, what is desirable and then managing those elements that can achieve the fruitful results. In Engineering Education, the procedures for manufacturing/ production processes are laid, down aiming at maximum outputs and minimum wastages. Research findings and concepts derived from the experiments, which substitute and stimulate the knowledge based management study. Professionalism assumes high standards of ethics and values. Without Professionalism, no institute can create sustainability and therefore competitiveness. Academic leadership is very significant for any such institute.

Technological advances are such that it has to be innovated, all the time to keep it survived. Speed is the critical hall mark today. Indian mind has to look out of the box. Renaissance, leaders need to be produced winning leaders continuously demonstrating, great vision and purpose to grab the market, maxing profits. It is the great purpose that keeps the leaders active and vibrant. Individuals have high talent and performance but when performing in teams, Group dynamics is different and performances are not up to the desired levels.

Technical Education service providers have the right, to make profits but such profits should be received with very diligent Corporate Governance. There is a great gap between the demand and supply of trained Engineering and Management Graduates. This gap gets widened, day by day, on account of high growth, resulting in enough opportunities, on one hand, and lack of flexibility, competitiveness of skilled manpower on the other hand, resulting in acute shortage of qualified and experienced faculty. In technical education, be there should not be merely an adoption of techniques of cost benefit analysis and marketing strategies, but emphasis on the ethical Values, quality education and priorities of the country.

Like other Industries recent concept is Education Industry. Such a concept is incepted because, the way education providers are growing in number and size in India and all over, a day will come that investment in education sector, shall be greater than investment in Industry. Thus, it is showing all the features of an industry and therefore we should call it as EDUSTRY. Which is the optimum blend of trends of talents of Academicians and practical skills sets, acquired through years of experiences on shop floor. Such united strength will definitely achieve business agility and reduce the acute storage and faculty aspects, within the framework of the development plan, set out clear targets for improving the quality of learning, teaching and attainment. (Pathak et.al- 2008, 2009).

Status of Women Education in India and Abroad

Status of Women Education in India

Women have much lower literacy rate. Compared to boys, far fewer girls are enrolled in the schools, and many of them drop out. According to a 1998 report by U.S. Department of Commerce, the chief barrier to female education in India are inadequate school facilities such as sanitary facilities, shortage of female teachers and gender bias in curriculum. (Majority of the female characters being depicted as weak and helpless).

The number of literate women among the female population of India was between 2-6% from the British Raj onwards to the formation of the Republic of India in 1947. Concentrated efforts, led to improvement from 15.3% in 1961 to 28.5% in 1981. By 2001 the literacy for women had exceeded 50% of the overall female population, though these statistics were still very low compared to world standards and even male literacy within India. Sita Anantha Raman also mentions that, while educated Indian women workforce maintains professionalism, the men outnumber them in most fields and, in some cases, receive higher income for the same positions.

Innovation and continuous and lifework earning has important role to play for development of any technical institutes Management or Engineering. Promoting quality improvement as a value and a process and finding new pathways, to use the technology more effectively is necessary for survival in the market. Learning from personal and organizational experiences and share them globally for betterment of all is need of the hour. System goal is unique and it's multi dimensional development.

India has the distinction of having five universities exclusively for women. All the universities and university level institutions are members of the Association of Indian Universities (AIU). (http://examcrazy.com,) Earlier Education was offered for special sections of society. Women were deprived of educational opportunities. Under Non-Formal Education programme, about 40% of the centers in states and 10% of the centers in UTs are exclusively for girls. As of 2000, about 0.3 million NFE centers were catering to about 7.42 million children, out of which about 0.12 million were exclusively for girls. In engineering, medical and other colleges, 30% of the seats have been reserved for women. (http://www.dtepubjab.gov.in.)

Women education in India, has improved through the ages, and women in India have come a long way since the Purdah system. Women's education in India is one of the foremost concerns of the Government of India. Indian women is at par with men in all kinds of tasks like reaching the moon, conquering Mount Everest, and participating in all the fields, Such as Pilot, Industrialist, Entrepreneurs, Professors, Engineers, Doctors, Advocates, Politicians, Ministers, Presidents, Scientists, Conductors, Auto Drivers etc. (http://www.humanrights.gov, http://www.right-to-education.org.)

In the present times, the government of India takes measures, to provide education ,to all women of the country. Women literacy rate seemingly rose in the modern days. Currently, the Constitution of India guarantees free primary school education for both boys and girls up to age 14. Education in India plays a vital role in the overall development of the country. This proves that educated women promote education in their family. Further, learned women can also help in the lessening of child death rate and expansion of population and proper healthcare of entire family. In the modern era, women education is the replica of a Vedic model for instructive inspiration. Mothers be ignorant, they cannot take proper care of the children and the future citizens of the country. (http://www.indianetzone.com/40/government india.htm)

We had the female philosophers like Gargi, Maritreyi and Vishwambhara in the Vedic age. We had Mirabai, Ahalyabi, Durgabati and Laxmibai in the days of history. They were all learned. Hence, we had a great tradition during the days of our degeneration. Now, we have revived. So, we will certainly revive the female education in India. Also Maharshi (Annasaheb) Dhondo Keshav Karve, Mahatma Jyotirao Phule, Savitribai Phule and many others are pioneers of women's education promotion. (http://www.publishyourarticles.org)

Education helps men and women, claim their rights and realize their potential in the economic, political and social arenas. It is also the single most powerful way to lift people out of poverty. Education plays a particularly important role as a foundation for girls' development towards adult life. It should be an intrinsic part of any strategy, to address the gender-based discrimination against women and girls that remains prevalent in many societies. The measures taken by the Government of India to include women in governance through requirements for one-third representation of women in the legislature and one-half representation in their local governing bodies, panchayats were highly appreciated. Many efforts with numerous women business, state, and local leaders who are empowering women through Self-Help Groups, and using their leadership to highlight women's issues, such as cervical cancer were also appreciated by the U.S legislator and entire world

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In India almost in all states, there are 30 to 35 % reservations for women in all Technical Institutes; however, the candidates are not available in required strength. This results in converting those seats to open category/ male candidates. This indicates that, though enough opportunities are available to women, they are not opting for technical education. This scenario needs to be changed by proper initiatives at all levels.(http://www.right-to-education.org., Government official education website).

Status of Women's Education Abroad

Currently, 12 FORTUNE 500 companies are run by women, which are reduced from 15 in 2010. 72 women hold statewide elective executive offices across the country. That is 22.7% of the 317 available positions, including Attorneys General and State Treasurers and Auditors, for example. These statistics paint a clear picture of the work that remains to empower women to seek leadership positions alongside their fathers, brothers, and sons not only in the United States but also around the world. In 2012, only six U.S. Governors are women; only 11 women hold the position of Lieutenant Governor; and the position of Secretary of State is held by only 11 women. Female education has some disadvantages too. It is found in Europe and America that the educated women do not want to bear children.

Although women account for more than 50 percent of the global population, they hold less than

20 percent of all parliamentary seats. Women hold only 90 of the 535 seats in the 112th U.S. Congress. Similarly, 1,745, or 23.6%, of the 7,382 state legislators in the United States are women. Women's issues are being integrated in Strategic Dialogues with China, India, and Pakistan, and through efforts, such as, the Community of Democracies, the Iraqi Women's Democracy Initiative, and bilateral and multilateral outreach, the United States is working to ensure women's voices are heard in emerging democracies and governments. (www.cblpi.org)

This empowers encouragement for women's education especially in Afghanistan and Iraq.. Education has played an important role in China's long cultural tradition. By 2000, 85 percent of the school-age population was receiving nine years of compulsory education throughout China. The gross enrollment ratio of junior middle schools was 88.6 percent; and the attendance rate of children in primary schools was 99.1 percent, exceeding the average levels of other developing countries during the same period.(http://www.humanrights.gov,) ‘

Reforms, involving increased government financial input, experimental reform of courses and implementation of a new education appraisal system, are underway in various areas in China.

Higher education has also leapt forward. By the end of 2000, there were around 1,000 regular institutions of higher learning, with 5.56 million students. As many as 2 million students compete each year, through entrance examinations, for 500,000 university openings. Certain fields of study have grown in popularity in Chinese higher education. While engineering and science remain very popular, other fields, including medicine, economics, foreign language, and law have grown rapidly in recent years. Another trend has been the rapid increase in the large number of advanced students studying abroad, mainly in North America, Europe, and Japan.(http://www.china-tour-cn.)

It is no secret anymore that Japan has achieved world status in education. Japanese education provides all children with a high quality, well-balanced basic education in the 3-R's, science, music, and art through 9 years of compulsory schooling.

Japanese education has produced multiple benefits, for the nation, as well as for its individual students. These benefits include a well-educated citizenry, which strengthens national democracy; an adaptable work force capable of high productivity in a competitive world economy; the opportunity for individual social and economic mobility; and an improved general quality of life.

Japanese education has been widely praised, especially because of outstanding results demonstrated in international comparative studies of school achievement in science and mathematics. It is not well known that Japan's record of distinction in education has roots that go back over a hundred years.(http://members.tripod.com.)

Drawbacks of the Present Education System

Universities can be established under a Central Act (Central Universities) or a State Act (State University). Of the 255 universities, 182 are State Universities and 17 Central Universities.

Till date there are 5200 Engineering colleges offering degrees and diplomas in engineering with around intake of 24,00,000 and 3300 management institutes offering management courses and degrees with an intake of 4,17,000. There are total 65 government aided institutes including 19 IITs 7 IIMs, 1 IISC, 5 IISERS, 20 NITS, 4 NITTTRS and 9 others. All of them are facing acute shortage of faculty specially PhDs at senior levels. (http:// www.aicte.org.in, http://set of@apeejay.edu)

There are no. of boards because of peer parents pressure and expectation, the presence of a number of education boards (SSLC, ICSE, CBSE, IB) leads to non uniformity.

At the time of admission, the syllabi prescribed by the various boards are accused of being archaic and some textbooks contain many errors. The boards are recently trying to improve quality of education, by increasing percentage of practical and project marks. However, critics say even this is memorized by students (or even plagiarized). This is attributed to pressure from parents, who are eager to see high scores more than overall development. Student politics is also a major issue, as many institutions are run by politicians. Ragging used to be a major problem in colleges, but tough rules and regulations have curbed it. Some state governments have made ragging a criminal offence. (Government official education website)

One of reasons for the acute shortage of faculty, as expressed by one renowned professor in Purdue University expressed that the workload assigned in Indian Universities is three times the work load assigned in Purdue University. The quality is definitely affected because such overload resulting in 25 to 30% students are only employable, as pointed out by Nascom. (http://www.indiatoday.intoday.in.)

The shortage of faculty is due to lack of research focus. In the revised pay commission Associate Professors must be PhD. with appropriate experience, which was not the case earlier. Due to this shortage of faculty is increased by @ 15-20%. (http://www.economictimes.indiatimes.com., www.amaidi.org.)

Many Colleges do not have Principals/Professors as per requirement and such colleges get relief through court orders for specific periods. Many Universities have staff appointed 40 to 50% of its sanctioned strength which is an serious issue. When it is the case with University, then University do not have moral courage to regulate affiliated colleges. (Gosavi- 2012).

One of the IIT Professor had commented that, Private Engineering Colleges are money making enterprises, who siphon money and use for other purpose, with Business motive such as increasing colleges or starting Colleges in other disciplines. If the situations continue unbeaten with expecting inclusive growth on one side and fee rise on the other side, there will not be quantum leap happening in next 20-25 years. (http://www.citeman.com, http://www.thehindu.com.)

Only if Universities improve in quality, the teaching profession will be more attractive. The acute shortage has increased during last few years from 40 to 55%. This shortage will be more if we try to maintain ideal teacher: student ratio (1:10), even up to 70-80% because of no of reasons discussed later. Government policy to appoint teachers on contract basis has affected a good lot desirous of coming to teaching profession, restricting them from joining. According to law of nature “Survival of the fittest” has shown its implication and many sub standard colleges are closing down filling only 20-25% of sanctioned intake, as against good colleges have applicants 1:2 or 1:25 ratio, of available seats, to number of students desirous of taking admissions. This variation is for no of reasons like, inadequate staff, quality of teachers in colleges, inefficient management not bothering to quality, but only interested in maximizing profits and so on. (http://www.economictimes.indiatimes.com, Gosavi-2012)

Various Reasons for Acute Shortage of Faculty

- Major reason for acute shortage of faculty is phenomenal Growth of Private Colleges. During last three decades there is enormous growth of Engineering and Management Institutions. Increased Intake of Government/Private Institutions after 1983 had increased the requirement of faculty exponentially. There were only 6.8 states Government Engineering Colleges and 1- 2 Management Institutions, at district places or, in major cities, which are increased enormously during last three decades.

- Availability of good inputs, for Research programmes, stipends, and scholarships in Engineering and Management courses resulting non attracting quality faculty. This is because of tremendous uncontrollable growth of Technical Institutions/Universities. Because of huge quantity is affected quality adversely.
- Systematic Training for the Teachers, is a dire essential, which is absent even in government college/Universities.
- Some Private Managements do not pay as per the scales and allowances as announced by regulatory bodies, state governments but paying some adhoc salary to Teachers. This is the main reason for acute shortage because talented faculty prefers to work in Industries and corporate than getting exploited.
- Because of Increasing seats, for some reserve categories in Government. Institutions/ Universities. The requirement of teachers is increased and scarcity is more.
- Government Policy to appoint contractual Teachers has adversely affected qualified faculty joining teaching profession, as against candidates prefers to work in private organizations. Less attractive pay packages in colleges and contradictory higher package and perks in corporate Industries especially in Computer Engineering/Information Technology sector, deprives good faculty members joining teaching Profession.
- Percentages of women entering in teaching profession are less negligible (10-15%) which needs to be increased, at least to 35-40%.
- Formations of stringent rules, for pursuing PG, PhD by renowned Universities needs to be reviewed and amended to user friendly and easy acceptable, so as to enroll more faculty members and hence completion of PhD programmes.
- Most of the IITs/IIMs students shift abroad and stay in there permanently. During last 20-30 years statistics, it is observed that, 70-80% of IITs/IIMs pass outs, prefer to settle permanently in Foreign Countries. This hampers economy of developing countries like India resulting in acute shortage of talented faculty.
- Non availability of PhD Guides in many renowned universities restricts enrollment of desirous PhDs candidates. It is a sorry state affair that, in spite of this known facts, no efforts are being taken by Government/Universities to improve scenario. This situation is same in all countries including US, UK, etc. (http://www.articles.timesofindia.indiatimes.com.)

Present Scenario of Technical Education System in India and Abroad

In the modern technological breakthrough race and tremendous flow of information and knowledge, the management of education and its system approach rather 'process approach' becomes more significant. And in this, India is a dominant player. India is facing new challenges due to its commitment to LPG – Liberalization, Privatization and Globalization. This has opened new roadmap entry, to several MNCs including those under 500 fortune categories. This calls for a blend of the managerial skills and talents from East with the theories and techniques of the West. 'Blending of the best of East and West of Management Education' is the key to successes in today's scenario. In the process, we have to take care that the best in our culture is preserved and propagated.

Quality though it is much talked about is a missing link presently in recent Indian Engineering and Management Education scenario. Hence focus is to be given on the areas, which need improvements, so that we can respond to current paradigms and can fetch global standards. It is also felt that, in the era of globalization, for meeting the challenges of changed requirements and for enhancing global competitiveness of Indian Industry, the creation of close, multilateral

cooperative linkages among the government, industry, and academia are to be established.

In India, abnormal Growth both in numbers and status of Engineering and Management Institutes occurred during the 1980s. A large number of multinational companies entered India, and sought to hire Business and Engineering Graduates for their shop floor, middle management and training positions. If we want to emerge, as super power, we will have to imbibe, instilling quality in Technical Education. It should be our endeavor, to produce world class technocrats, who would be sought globally. TQM, is a style of management, that has worked for several decades overseas and is receiving growing attention in the United States and is adopted almost in all countries.

In order to maintain the standard of technical education, a statutory authority- The All India Council for Technical Education (AICTE) was set up in 1987 and his responsible for planning, formulation and maintenance of norms and standards. AICTE also ensures quality assurance through accreditation, funding in thrust areas, monitoring and evaluation, maintaining parity of certification and awarding PG, UG and PhD degrees and ensuring coordinated and integrated development of nation and management of technical education in the country.

India occupies about one third of the surface of USA, while the population is nearly four times that of USA. The comparative figures between India and USA should be similar. It is therefore imperative, that India can not afford purely, Western Model for Technical Education. There is need to blend effectively the Western Technical Education Model with the wisdom of Eastern educational model.

Business education has its origins in the late 19th century, all over the world. The first management Institute of Wharton School of Finance and Commerce came into existence at the University of Pennsylvania, USA during 1881(which started management department in 1898).This was followed by University of Chicago and California in 1898. The Harvard Business School started operating in 1908. Thereafter the growth of schools was very rapid.

The first college-level business school was founded in 1913 in Mumbai (Sydenham College), and was soon followed by another in Delhi in 1920 (Commercial College, later renamed as Shri Ram College of Commerce). These business colleges imparted basic skills about the principles of trade and commerce to clerks and supervisors from fields such as banking, transport, and accounting. After India's independence in 1947, business education, which was associated with "babu-ism" and therefore lacked a strong social status, started to evolve. In an attempt to enhance vocational skills, the Government of India introduced commerce as a third stream of specialization at the high school level, science and arts being the other two.

Engineering education in India has a long tradition, the beginning of which goes back to the year 1847. In that year was established the Thomason College of Civil Engineering at Roorkee, later to become the Roorkee University (1949), the first engineering university in the country(which was converted to IIT Roorkee since 2000). This was followed by the establishment of the College of Engineering in Pune in 1854 which is still in existence. The Civil Engineering College in Howrah came up in 1856 to impart training to the engineering personnel of the PWD. The first degree examination in civil engineering was held in 1864. In 1921, it was renamed the Bengal engineering College, which was accorded the deemed university status in 1992. In Mumbai, Victoria jubilee Technological Institute (now Veermata Jijabai Technological Institute) was set up in 1887.

Another landmark in the history of engineering education was the establishment of the National Council of Education (Calcutta) in 1908 in the wake of nationalist movement of 1905-06. It established the nucleus of an institution for imparting education in engineering and technology

which in 1919, developed into the College of Engineering and Technology. The College, through a State Act, became the Jadavpur University in 1955, a unitary university now consisting of Faculties of Arts, Science, and Engineering and Technology.

In 1909 was established the Indian Institute of Science at Bangalore which owes its existence to the vision and munificence of the late J.N.Tata. It offers only postgraduate and research programmes. In 1958, it was accorded the deemed university status. Besides engineering colleges, separate colleges of technology, such as, College of Textile Technology, Serampore, West Bengal (1908), Government Central Textile Institute, Kanpur (1914), Harcourt Butler Technological Institute, Kanpur (1921) University Department of Chemical Technology, University of Bombay (1934) which now enjoys autonomous status, and Laxminarayan Institute of Technology (1942) were also established in the pre-independent days. (www.ese.iitb.ac.in/EnEdu.pdf)

Paradigm shift in the social status of business education began occurring during the 1980s. Two major forces were at play. First, competition for college level education became cutthroat, as the gap in the number of admissions at the premier undergraduate programmes and the number graduating from the high schools grew for the science stream. Second, as companies began to grow they began hiring commerce graduates from the colleges at the junior executive level, often backed by some in-company executive training programme, as the premier engineering colleges failed to meet their growing needs for executive personnel. (Pathak.et.al-2009)

The present scenario in Engineering Education across the world is that one of the best technical institutes, MIT (Massachusetts Institute of Technology) established in 1861, has about 11000 students, 1738 staff members and about 900 PhDs, with 77 Nobel Laureates, 52 National Medal of Science winners and 38 MacArthur Fellows. Some other are:- University of California, Stanford University, Georgia Tech University, Nanyand Institute of Technology, Singapore, Hong Kong University of Science and Technology. In India, top Engineering Institutes are IIT Kanpur, IIT Delhi, IIT Roorkee, AMITY University, Netaji Subhash Chandra Institute of Technology, IIT Mumbai, IIT Madras, ITBHU, IIT Guwahati, and IIT Kharagpur, BITS Ranchi.

Similarly in Management education, top Universities are Harvard University which is established in 1636 is the oldest in U. S., located in Cambridge and Boston and has an enrollment of 20,000 students, with 360,000 alumni all over the world. Some other leading universities are: New-York, California, Cambridge, Oxford, Imperial College, London. In India, top Management Institutes are: IIM Ahmadabad, IISc Bangalore, IIM Chennai, Symbiosis University, JBIMS, IIM Roorkee, XLRI Institute, AMITY University etc.

Western Model of Technical Education

1. Human behavior and motivation is guided by the fulfillment of human need as propounded by Freud, Maslow, McGregor and others
2. Organizations must survive and flourish under free competition resulting in only a few dominant organizations in each segment of industry.
3. The focus of business and industry is to serve the customers to their fullest satisfaction at the lowest possible price.
4. Organizations are free to hire and fire employees based on the behavior of the market and technological change.

Eastern Model of Technical Education

1. Each human being has a soul. We need to rise above our selfish interests and supplement it with enlightened self interest.
2. In the East spirituality is the way of life. We need to blend our material and spiritual needs for holistic view of happy living.
3. Technical education model of West fully develops the left side of the brain that controls logical, sequential and analytical aspects of decision making. Meditation or quality mind process is a proven mechanism for the development of the right side of the brain.
4. Indian talent has proved performance all over the world. They have ability to listen, take allow the team motivating all the players in the team.
5. In a populous country like India following an unbridled Western model of market economy/ consumerism can prove to be disastrous for the entire world because of global warming and other forms of environmental pollution.

Combo Model of Technical Education

In the light of above mentioned points it can be said that the West has taught us how to organize efficiently using technological innovations in the market economy. East however advocates a holistic approach, with ethical base resulting in human happiness through balanced approach on environmental protection and distribution of purchasing power to avoid the disaster implied in western model. The combine strength will utilize the strengths of both model and result into most efficient and global friendly technical education system acceptable to all stake holders. (Pathak et.al. -2009)

Ensurance of Quality with flexibility

The dominant competitive weapon of 21st century is going to be technical education and skill sets of the workforce. The government of India signed Washington accord, which permits Indian graduates for preference in employment, in all the member countries. This has made opening for the Indian technical talent, which will strengthen the global talent and in-turn contribute to development all over the world.

According to Bill Gates, The chairman of Microsoft Corporation, U.S.A.," *You need to have specialized knowledge a skill while maintaining a broad perspective…No one should assume that the expertise he has today will suffice tomorrow, so a willingness to lean is critical*". This statement is also resulting in a need of quality improvement with the change. So a strong relationship exists between the principles of Total Quality Management and the best practices Technical education (Pathk.et.al-2008).

Parameters of Technical Education Ensuring Academic Business Agility of Institutions

- *Input Quality of students*

The quality of students, undergoing technical education is the prime parameters governing the quality of education. The Government of India tried to introduce a common admission test for the Engineering colleges and Management Institutes but the Supreme Court of India rejected that attempt, because of the diversity of student profiles in India. In Government run Institution the quality of students is mixed, whereas in private Institutions especially, in minority institutions, majority of the students are at lowest eligibility. Whereas the teaching learning process in such college/universities is not that effective which in-turn affects the quality of technical education.

- *Course Curriculum*

We need to modify our Engineering and Management Education curriculum at the frequency of 3 to 5 years. The basic curriculum should include ethical and moral values and prevention of Culture of mankind. In the University system, this is not possible with the procedural delay in approving the revised curriculum. This limitation does not exist in autonomous Institutions / Deemed Universities.

There is need to improvise the course curriculum and make it more realistic and adaptive to suit industrial requirements. The course curriculum of technical education which is followed in India is not able to fetch the global standards. Syllabi should be, oriented towards needs of the industries and updated regularly. The assignments, projects should be more practical and should be decided in consultation with industry personnel. It is found, that the process of changing syllabi, is very tedious and lengthy, so the efforts need to be made to make this procedure easy.

- *Selection of Teaching Faculties*

The teaching faculty should have the qualities like team leader competency, creativity, collaboration, caring and student centric. This will lead to effective teaching learning process. Faculty members being the most crucial factor in the education process, it is a stupendous task, to meet the faculty needs, of the rapidly expanding institution system. There is an acute shortage of high quality teachers, particularly in the functional areas.

While appointing the teaching faculty, the candidates with industrial experience, should be given first priority. The selection should be made, on purely merit basis. It is generally found that people are absorbed due to recommendations, influences or by some other means. This hampers the quality of teaching and the students are ultimate sufferers.

- *Development of Teaching Materials and Case Studies*

The teaching faculty should make the use of case studies in their teaching sessions. This will help the students for better understanding, to develop their application orientation and analytical ability. The faculty can take these case studies from the books or they can make the use of self prepared cases by visiting industries. Very few institutions in the country have been able to develop adequate teaching material including case studies in terms of Indian references. So there is a need to venture wide-spread research, including case studies and publications indigenously. All course material should be available to the students on intranet for easy access as per their individual time schedules.

- *Continuous Feedback System*

Technical Institutes should follow continuous feedback system, from all stake holders' i.e. students, parents, industry/ recruiters, society and pass on the same to all concerned for corrective actions. Feedback is to be taken from the students about the different aspects of faculty like, knowledge of the subject, involvement, sincerity, punctuality, making teaching learning process more effective and tutorial discussion type, involving the student's active participation in the process. Also the feedback should be obtained for quality of placements, companies coming for campus selection, packages offered-lowest, highest, average, level of jobs etc. It should also include students view's for Infrastructure provided, industry- institute interface, any additions in lab equipment/software etc. The input received from this feedback, shall help the Institutes/Universities to have continuous improvement and also help to know the expectations of the students, parents, industries and society.

- *Placements*

Placement is an important indication of quality. Consistently successful placements indicate, that the colleges/Universities is achieving satisfaction index of all stake holders. Top ranked business colleges/Universities have excellent placements. Almost all the pass outs from these Institutions get excellent jobs with extremely high salaries, high category jobs. Some students are even getting employment opportunity abroad.

- *Institute- Industry Interface*

The Technical Institutes/Universities should try to establish, and effective Industry – Institute interface, through various initiatives like inviting experts from industries to share their expertise with the faculty and students, assigning live projects to the students in industry, organizing different events and activities in collaboration with industry, being a part of industrial projects as a continuous measure. The miss trust between both should be ideally zero to resulting meaning fully interaction.

- *Infrastructure*

The cost and resource limitations have made the development of infrastructure a challenge for most of the Technical Institutions. The Technical Institutes need to invest in excellent infrastructure, including residence rooms, state-of-the-art classrooms, library, computer labs, canteen mess sports facilities etc. It is being observed that most of the Technical Institutes/ Universities do not have infrastructure providing basic facilities also. And, Management authorities are reluctant to upgrade initiatives in this regard. (Gosavi -2012, Pathak.et.al.2008, 2009)

Faculty Development Programmes

As the faculty is heart of the Technical Education System, it contributes to National and Global Development. Teaching learning process which is the brain of the Technical Education System governs the quality of Technical Education. It is a two way process through: throw – is role of a Teacher and catch / grasp- is role of students. Hence involvement of both Teachers and the Students if whole heartedly results in quality and fruitful education.

Majority of faculty in most Indian Engineering and Management Institutes/ Universities do not have a PhD degree including Principal and Senior Professors. Further, rather than remaining purely teaching institutes, Indian Engineering and Management institutes have to encourage, faculty to apply knowledge through extension and consulting. Such extension activities help faculty bring real life experiences to the classroom, and allow Engineering and Management to augment their resources by sharing a part of the consulting fee. The emphasis should be given to ensure qualified, experience, dedicated faculty.

There should be conducive environment, for the faculty development. The faculty should be motivated and encouraged to pursue higher qualifications, to have participations in Seminars, conferences, in the country and abroad, in industrial projects, consultancy, internships etc. Whereas it is found that the faculty is involved to perform administrative and other work, such as compliance of DTE (Directorate of Technical Education), SSS (Shikshan Shulk Samiti), PNS reports (Pravesh Niyantran Samiti) etc. Therefore the energy and efforts of teaching faculty are unnecessarily vested in the undesired tasks instead of teaching and self-developmental activities. The higher teaching and administrative work loads in most Colleges/Universities on the faculty makes the faculty development initiatives quite difficult.

In most of the private colleges fresh graduates who neither have post graduate degree, nor have any teaching experience are joining as forced faculty members, as they do not have

acquired jobs in Industries. They do not have liking for teaching profession. All such faculty members should be made compulsorily undergo these programmes, undertaken by Government agencies. The senior retired faculty from IITs/IIMs, who have proved performance at their credit, written No. of books, have taught the subjects for years together, and interacted with all the teachers in the country and abroad through conferences and seminars should conduct such programmes. This will ensure proper guidance to the new entrant teachers and will ensure parity of uniform teaching methodology across the country and the globe.

In real sense, this will be passing on the Education Wealth, to the next generation teachers, with proved performance and results. This will ensure, that even the junior most faculty working in remote / rural area, will deliver the same quality of education as Teacher in best Institution / University in a metropolitan city. This will be, because of same inputs and methodologies adopted / learnt and implemented during Teaching Learning Process. This will not only benefit the entrant teachers but also students, colleges and Universities. The stake holders Industries, corporate, Society and the entire globe will be happy about the quality of Technical Education.

Such efforts of developing national and global training centers for technical faculty engineering/ management faculty with use of modern ICT techniques such as video conferencing/ National knowledge network, experts data banks through HR ministry will ensure quality teaching Learning process, at all levels will definitely elevate national/ global technical education standards.(Gosavi-2012, Pathak.et.al.2008-2009, Shrivastava et.al.2001)

Faculty Retention

It is observed, that faculty retention in Engineering and Management Institutions/Universities is a very tough task and is of major concern including Government/Aided Colleges. Due to acute shortage of faculty, there are huge requirement of faculty in private Colleges, who do not have even Principal/Head of various Branches with PhD qualification. The governing/regulating authorities, issue notices to appoint Principal or putting colleges/Universities under no admission categories. On the other hand, due to acute shortage of faculty, faculty leaves the present college and joins the other colleges with small salary hike of about 2 to 5 thousand with some additional perks. The case is even more critical in Computer Engineering/ Information Technology Branches.

In Government colleges or Government aided institutes faculty members, leave the jobs after completion of twenty years of service, taking voluntary retirement opting for a pension. Some leave the jobs because of transfer at remote place. Lengthy and cumbersome procedures required for taking decisions, promotion schemes in such colleges and non transference are also reasons for leaving these institutes. The transfer gets repeated after every three years and because of over security mentality of the faculty is that they do not want any additional rewards, either and in kind but prefer to not have additional work.

Some private colleges do not pay the salary of the staff as per pay scales and allowances as admissible and in time. They pay some adhoc salary and negligible allowance, stating the college come under rural area, and the management does not afford, to pay as per the announced scales. The outcome is that, faculty keeps on migrating from worst to better, better to good and Best/Dream colleges/Universities. As such retaining a qualified and PhD faculty, is too critical for Managements. Also upcoming colleges give substantial rise to PhD faculty, eligible for Principal ship/ Professor ship, with additional perks such as, driver with car for disposal for 24 hrs with fuel/maintenance, additional allowances, free quarters etc. These factors add to problem of faculty retention.

The faculty is stable in 2 to 5 % colleges/Universities, which pay salary as well as allowances

admissible, and in time to faculty members, with all the benefits as announced by regulatory authorities.

The major steps suggested to ensure faculty retention are:-

- Paying salary and allowances, as admissible and in time.
- Motivating and deputing them for pursuing higher studies as recommended without any monetary burden on management and faculty.
- Deputing them for seminars / conferences, to interact with outside world.
- Giving additional benefits like, registration fees, part of travel expenses for presenting paper at International conferences / seminars etc,
- Giving additional increment/s on completion of 3, 5, 7, 10 years of service or in multiples there of
- Giving additional increments for outstanding performance, for developing software/in house equipment etc.

The Local Managing committees can contribute, a lot for faculty retention, by suggesting measures like one time / recurring monetary awards for deserving faculty / supporting staff, the staff contributing for in-house development of software's useful for E-Governance / student Information Systems, monitoring attendance, results, performance appraisal etc. needs to be suitably awarded.

This also encourages retention of Good faculty, motivating them to participate in developing such tools/ I.C.T. techniques, to ensure efficient E-Governance and administration, minimizing undesired elements / activities in the system. This improves overall efficiency / Ranking of the Institute /University at State, Country and Global levels.

All these steps will ensure retention of good faculty and also create an academic healthy environment, in the organization with positive energy.

Measures to Overcome the Drawbacks and Recommendations

Following are some measures which will definitely improve Technical Education System:-

- The Government and Industries, should launch Institution in the "Philanthropic Mode" as a joint motive, with wholehearted participation from all experts will definitely result in strength of each.
- Government has the Prime and sole responsibility of ensuring quality in technical education and achieve it at all costs and consequences.
- Private Managements are just helping Governments by putting investments from their side and getting return with maximizing profits. However, effective monitoring of quality is the sole responsibility of regulatory authority bodies.
- All the Managements having to play the key role for achieving excellence should aim to be amongst the best like: Massachusetts, Harvard and IITs/IIMs will result in technical academic excellence.
- Some initiatives like G I bill or Public Funding for Launching Good Universities/Institutions be taken for subsidized education, to ensure that, no academically excellent student gets denial of admission for want of money.
- Producing / turning out adequate number with quality PhDs every year. At present, we produce 8 to 10% of out-turn of PhD's when compared with best countries. Hence the acute

shortage is faced.

- From the applications for starting Technical Institutes in next five years the growth estimation is 1.5 times which will still increase the shortage of faculty if proper steps are not taken in time.
- Appointing faculty/experts/Advisors as a continuous measure and tie up with foreign Universities so as to share best practices and strengths of either Universities/Institutions.
- Maintaining standards without any double standard/track.
- Confirmation of only 20% of faculty members based on performance like Harvard University.
- Availability of course material for benefit of students and faculty especially in rural area.
- By permitting, sharing of recourses like video conferencing, Nation Knowledge Network (NKN) with institutions / Universities which comply with 100% norms. This will also ensure sharing strengths of best Institutes and will effectively utilize human talent, infrastructural recourses in best possible way thereby increasing the utility index of Nation/Globe.
- A continuous collaboration/tie up with Industries for deputing visiting faculty on regular basis, one/two and once/twice in a month. Such tie ups should be for two/three core industries/ branches. This will enable students know what is going in Industries and first hand sharing of skills and talents of Industries H.R.
- M.O.U or Tie up for Projects/Internships/Research and Development Activities with more active involvement of renowned Industries and Institutions /Universities is a need of the society/country for ensuring technological developments to suffices needs.
- Need to reconsider and increase the retirement age of the faculty up to age of Seventy years unconditionally by all regulatory bodies. This is very much useful for meaningful interaction and taking over skill sets from senior faculty to middle level faculty. This will also solve the problem of non availability of PhD guides.
- The environment mistrust between Industry/Institutions, Research and Development organizations need to be changed with mutual co-operation and partnership with a thinking that students are carved for Industries. This harmonious synchronization will be fruitful in Research activities useful for the Industries/Society and contributions from Academic Talents and skills from Industrial personnel will combine to solve society's some unsolvable problems, developments.
- Though almost all the countries are keeping reserves seats in technical education for women though women are almost equal in numbers compared to males, they are not opting for these reserved seats and utilizing the opportunity. Efforts should be made at all levels to ensure that initially all these seats are filled by women candidates, and later this reservation percentage needs to be increased from 30 to 35 % to 50% as in actual, all over the world.
- Percentage of women taking teaching profession must be increased, encouraged. It is from the statistics that 5 to 10% women staff members are available in Comp/IT and E and TC areas. However, in Mechanical/Civil similar other branches the women are not taking up the assignments. Some attractions in pay packages, perks and facilities to be extended to attract more women in teaching profession.
- More user friendly programmes for PG/PhD must be designed with quality ensurance if possible in vacation/shifts in IITs/NITs, who have proved performance at their credit.
- IITs/NITs and some renowned private institutions with proved performances should be permitted

to undertake only PG/PhD programmes and not UG programmes.

- Budget allocation for faculty pursuing PhD. By private Managements must be ensured. Five to Ten percent of the budget must be allocated for this purpose from each College/University which will have sufficient funds to undertaken social need based activities and Research Projects by the faculty.
- IITs/IIMs pass outs to be retained as faculty members in IITs/NITs, Private Colleges with attractive package and perks with attractive opportunities to stay in country. This will result in reducing the Brain Drain and the talented faculty will be available in the country to accept Global issues and Research and Development activities.
- To relieve faculty members one/two days from teaching load for PhD work in a week by adjusting the workload on remaining days. This will enable faculty to complete PhD earlier without attending academic schedule/time tables.
- By signing adequate amount of bond with condition that, if not served the institute after completing PhD work or obtaining PhD degree. This will ensure managements interest to retain faculty at least next three years after PhD.
- Additional reimbursements for International/National level Paper Presentations with No of year of service. This will ensure retaining the faculty in College/University.
- Blend of managerial skills set and talents from the east and west resulting in combo model, if implemented will give best results.

Case Studies

In most of states in India certain good colleges who have earned good reputation amongst the Society and Stake holders get applications in the ratio of 1:2 to 1:10. This is because of the quality teaching learning process consistent excellent University results and qualitative placements, whereas there are some colleges where in-spite of repeated advertisement in Newspapers locally and all over the country they are not able to fill their 100% seats, the seats remains vacant vary from 5 to 80% which indicates that these colleges do not have bare minimum the infrastructural facilities, qualified faculty, hardware and software lab equipment, adequate library facilities, expected results and placements. Hence these colleges are denied by students, parents and the society. Many of them have applied for closure to the regulating bodies.

The situation is almost similar in all states in India and across the globe with minor variations. From such experiences the college managements should take lessons and ensure that they develop all the bare minimum facilities, infrastructure, classrooms, labs, follow 100% norms of the regulatory bodies and in real sense contribute to impart technical education in the country and across the globe.

Conclusion

In today's era of global competitiveness and break-through technologies, situation of uncontrolled growth of Engineering and Management Institutes continues, it may further reduce the competitive edge of Technical higher education. The proper and effective monitoring by regulatory bodies is the only tool which will ensure quality education. There is need to allow more allowances to faculty, freedom to enter into Consultancy assignments and attractive perks, such as pay packages at par with industry and corporate. According to NR Narayana Murthy "Lamenting the Shortage of High Quality faculty for prestigious Management and Technical Institutions" a mechanism should be devised to enroll and retain quality faculty by providing them incentives and resource facilities and freedom".

Most of the IITS/IIMS students shift abroad, if retained as faculty will reduce shortage in IITs / IIMs. After taking appropriate measures, as suggested and proper efforts if taken in right direction will overcome the acute shortages in all other Technical Institutes / Universities including private.

If all the private colleges, also voluntarily follow the above laid down norms of the regulatory bodies, recruit and pay faculty the salary and allowances admissible as announced by the governing authorities will definitely ensured, attracting qualified and PhD faculty, and the faculty retention. If the management of private Institutes / Universities allows them vacation as per statutes of university and facilities like leave, travel concession, mediclaim / group insurance for accident / death, more and more PhD faculty with industrial experience will prefer to join Noble teaching profession.

All the suggested recommendations if fully implemented will definitely increase the competitiveness in Technical Education by retaining qualified and experienced faculty without any shortages of PhDs.

This will enable in maintaining quality faculty in Technical Institutes which in turn improvise quality of teaching learning process, enable undertaking of Research and Development activities, quality results and placements. The qualified and experienced faculty will be able to take over consultancy projects, as per the need of the Industries and Society, fetching revenue to the Management, thereby raising the confidence level of faculty and students. This will also ensure flexibility in administrations. The College / University Managements should provide all the infrastructural facilities, Laboratories, equipments, Library facilities, hardware and software etc. should be state of the art.

Women education in India and abroad needs empowerment and more focus especially in higher plethora of education. Blending of strengths of East and West results in Combo educational model as recommended in the text.

All the Managements should aim at to be the best like, Massachusetts in Engineering and Harvard in Management, ensuring the quality in technical education. This will certainly be accepted and appreciated by all the stake holders.

This will definitely improve academic business agility of Engineering and Management Institutes/ Universities to the desired standard and empower Global Quality of Technical Education. It will ensure our marching towards achieving excellence in Technical Education and to produce world class citizens, for 21st century.

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