

GLOBALIZATION : ITS EFFECTS AND IMPLICATIONS FOR TECHNICAL EDUCATION

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1. INTRODUCTION :

Indian economy after remaining protected for more than forty years plunged into drastic economic reforms in 1991, when a balance of payment crisis sent the national government in search of aid from IMF. The conditions put on this aid forced the government to move towards liberalization. New Economic Policy was launched in 1991 (Kuruvilla and Hiers, 1997). Since the middle of 1991, Indian economy is undergoing large structural changes which are inevitable in view of the changes taking place in the global economy. Sweeping market-oriented reforms in industry, foreign trade and investment were introduced to liberalize the economy from the shackles that were binding it for decades. In order to bring the Indian economy back on rails, following major economic policy initiative have been undertaken : (Malhotra et al, 1993).

- The public sector which had the monopoly in certain areas and generally showed low efficiency, is re-

ceiving a back seat and the free market economy is replacing the control -permit procedures of previous decades.

- Public sector industrial units which are sick and high drain on the public exchequer will be closed down.
- More free entry of the private sector in many new industrial production areas and infrastructure.
- Foreign capital and investment including foreign technology transfer will have a large entry in the Indian market.
- No upper limits for monopoly business.
- Opening up channels for entry of resources from the parallel economy (black money) which was largely the creation of the control-permit system, into fruitful investment without any question asked about the source.

The reforms under New Industrial Policy included (a) sweeping away of

industrial licensing controls (b) reduction of industries reserved for public sector to six namely, defence products, atomic energy, coal and lignite, mineral oils, railway transport and minerals (c) elimination of separate permission required by large houses for investment and expansion under monopolies and Restrictive Trade Practices Act (d) automatic approval of foreign investment upto 51 percent and foreign technology agreements permitted for 35 priority industries which account for 50 percent value added in manufacturing sector (e) policy for drugs and pharmaceutical industry aligned with the liberalized industrial policy and the span of price control reduced and rationalized (f) revision of National Mineral Policy and Amendment of Mines and Mineral Development Act to open this sector to private and foreign investment and (g) RBI based automatic approval policy for foreign investment made applicable to mining (except for atomic mineral fuels) subject to a limit of fifty percent foreign equity (Yojana 1995).

Separate policy measures had been announced in the form of specific package aimed at upliftment of small scale, tiny and cottage industries as well as export oriented units and units located in export processing zone and technological parks. During 1996, Government liberalized further the policies for foreign direct investment (Economic Survey, 1996-97).

Economic survey (1995-96) reported that reforms undertaken over the last four and a half years have led to a revival of strong economic growth, rapid expansion of productive employ-

ment, a reduction of poverty and a marked decline in inflation. The average economic growth rate for the seventh five year plan was 6.0 percent, which showed decline in 1992-93, and was sustained at 6.0 percent in 1993-94 and was estimated to register significant increase of 7.2 percent in 1994-95 (Economic Survey, 1996-97). It is further estimated that economic growth rate by the end of eighth plan will be 6.5 percent. Industry registered growth of 11.7 percent in 1995-96 as compared to 8.2 percent in 1990-91, 0.6 percent in 1991-92, 2.3 percent in 1992-93, 6.0 percent in 1993-94 and 9.4 percent in 1995-96. During April-October, 1996, industrial growth rate showed a slight decline as compared to previous year and this decline is mainly due to the poor performance of electricity generation and mining (especially crude oil.) The survey further reports that the relative slowdown is neither generalized nor widespread. The slowdown is essentially confined to the basic goods.

Industrial investment was estimated to be of the order of Rs. 6,34,760 crore for the period 1991 to December, 1996 and employment estimated for the same period was 5.7 million. The total number of foreign collaborations approved amounted to 10,041 of which 5434 proposals involved direct foreign investment is amounting to Rs. 78,030 crore. More than 75 percent of this investment is in priority sectors such as core and infrastructure industries, capital goods and services.

Annual Survey of Industries (ASI) indicated that the number of workers and employees rose by 1 percent in

1993-94 from the previous years. The bulk of job creation has been in agriculture sector. It further says that the reforms of July, 1991 is shifting labour increasingly towards agriculture and food processing, services and unorganized manufacturing rather than towards big factories (Business India, 1995).

Mayer (1995) observed that industry in India has experienced growth, however productivity increases have yet to mark. The low growth of productivity both in technological as well as non-technological areas mainly attributed to factors such as technological obsolescence, uneconomic scale of operation, high cost of finance, poor quality and high cost of raw materials, low rate of capacity utilization, HRD activity, over-staffing and low labour productivity, infrastructural bottlenecks, industrial relations etc.

2. GLOBALIZATION : SOME EFFECTS ON INDUSTRY :

Some visible trends of effect of liberalized policies on industry include :

- **Greater Concern for Quality**

Greater concern is shown for quality and to achieve this stress is laid on improving quality of resources - physical, technological and human, processes; services and products. Industries are training management and employees in TQM and introducing quality circles (QCs) to involve grass-root level employees in solving problems and improving quality. In addition, structural, procedural and process changes are being introduced.

- **Collaboration and Joint Ventures :**

The increased competition both internal and external has forced the industry towards collaboration and joint ventures. For example, Godrej Appliances now Godrej-GE Appliances, Kelvinator/Whirlpool, and Maruti Udyog Ltd., (joint venture with Suzuki Motors of Japan)

In case of 'white goods' industry, Kuruvilla and Hiers (1998) reports that there will be major shake-up in this sector in the next few years with two or more dominant players emerging. In addition, the industry is almost completely dominated by global firms either through direct investment or the collaborative joint ventures.

- **Technology Upgradation and Automation :**

Most of the industries desirous of competing with international standards are in the process of modernising and upgrading the technology. The processes in industry are becoming highly automated. The demand for knowledge based workers will increase.

- **Grater Stress on Training :**

Human resource development is being stressed and industry is training personnel working at different levels through on-the-job and off-the-job training programmes. Special emphasis is laid on skill upgradation and developing multi skills among the employees to enable them to shift to more productive jobs. In the years to come, more

and more on-the-job training will be preferred and the potential of new information and communication technologies will be exploited.

- **Downsizing of Industrial Units :**

Though the overall employment has increased, but there are cases of industrial retrenchment. Modernization and technology upgradation translates into lower levels of labour requirement. In addition, the trend is towards having lean organizational structures.

- **Hiring of Contractual and Part Time Workers as well as Consultants :**

Another trend is towards hiring contractual and part time workers as well as appoint consultants to undertake industrial projects.

- **Stress on Improving Work Environment :**

Industries have started paying more attention to improving work environment by showing concern for human resources and ensuring their participation in management.

- **Capabilities Expected of Workforce :**

Industry requires and prefers those who in addition to technical knowledge and skills possess the capabilities such as adaptability, flexibility, innovativeness, responsiveness and learning to learn. The emphasis is more on generic skills.

- **Professional Management :**

Professionals are now required for managing industries or business. Professionals who have vision, and understanding of global markets,

and can respond quickly to changes take immediate decisions are in demand.

3. IMPLICATIONS FOR TECHNICAL EDUCATION :

Education and training must be considered as straight weapons to compete in the global market. The Industrial Research and Development Advisory Committee of the Commission of the European Communities rightly observed that investment in technological R & D might fail to produce the expected benefits due to lack of qualified people (IACEE, 1991). Technical education system produces technical manpower for the industry and needs to be responsive to the changes taking place in the economy. An efficient and effective initial and continuing education is essential to meet the fast changing demands of world of work in general and industry in particular.

Below are discussed some important changes which need to be introduced in technical education to make it respond efficiently and effectively to the changes taking place in the industry on account of globalization :

- **Strengthening of Technical Education :**

Technical education system need to be strengthened by providing the institutions with the required resources (physical, human and financial), establishing needed structures; simplifying procedures and processes; granting autonomy-partial or full; according due status to these institutions and providing

proper policy support. In addition, networking among the institutions is essential for proper co-ordination and optimum utilization of resources.

– **Systematic Planning of Courses :**

More systematic occupational, need and task analysis in conjunction with the industry needs to be carried out to identify the new courses to be offered (UNEVOC, 1997). In countries, where employment opportunities are being created, there appears to be a shift away from secondary or manufacturing industries towards tertiary or service oriented industries (Stanford, 1997). Market changes must be taken into consideration while planning courses.

– **Continuing Education to be Mainstream Activity :**

All technical institutions should offer continuing education programmes for the already existing workforce to meet the ever-changing demands of technology and for their vertical mobility. Continuing education should also aim at developing multi-skills among the workforce or develop new skills to enable it to shift to more productive jobs.

– **Flexible Course Offering :**

The courses should be modular with credit based system of evaluation and allow self pacing to learners.

– **Competencies to be Developed :**

In addition, to developing technical knowledge and skills competencies

such as adaptability, flexibility, responsiveness, innovativeness and learning to learn need to be developed among learners. International Round Table on Training of Teachers in Technical and Vocational Education stressed that people should receive the type of technical and vocational education that gives them the competencies to further their education as necessary and thus, make them confident that they are permanently employable (UNEVOC, 1997). In the changing job markets and global economy, thinking of permanent employment is unrealistic. According to Stanford (1997) newer work place skills and generic skills are to be developed.

For developing these capabilities, the training strategies and techniques must change. Greater stress has to be laid on case-study, role-play, seminars, projects, computer aided instruction, simulations and games, etc.

– **Alternative Models of Delivery :**

In addition to offering regular, formal, institution based courses the institutions should start offering courses through alternative modes integrating new information and communication technologies. This will help in increasing the reach of the programmes and catering to the training needs of diverse groups. Adoption of alternate modes of delivery will require development of self-learning modules, computer software, videofilms etc.

– **Competent Staff and Faculty :**

Human resources are the most important resource in any institution. Technical education should be able to attract and retain well qualified and experienced staff and faculty. Faculty should preferably possess industrial experience. Continuous updating and upgrading of knowledge and skills and industrial exposure is essential for the faculty.

– **Select Talented Students :**

Students who are academically bright and possess the right type of aptitude should be admitted to various courses. Entrance test must have a component of testing aptitude and creativity.

– **Partnership with Industry :**

Industry must provide effective work experience within the educational institutions, on-going work experience for technical teachers and trainers and must invest significant resources in education and training in order to maintain competent workforce it needs. Industry must also support, to the extent necessary, its employers in their pursuit of further knowledge and skills for their personal fulfillment and for their securing of satisfying employment. Thus, the employing world is a primary partner in the endeavour to deliver effective and efficient technical and vocational education (International Round Table on Training Teacher in Technical and Vocational Education).

– **Stress on Total Quality :**

Total quality management approach and its techniques need to

be introduced in the technical education system to improve its quality. For example benchmarking of educational process and practices, treating students as customers, formation of quality circles to specific teaching standards and solving educational problems, rewarding good teachers, obtaining feedback from students and employers and involvement of students and teachers in management can help in improving quality of processes and services. Institution should now strive for attaining quality certification to compete in international market.

– **Stress on Research and Development :**

Technical teachers should undertake action research to improve the efficiency and effectiveness of process and practices, as well as undertake R & D for improving industrial practices, processes, work efficiency, productivity, quality of work life, work environment, product design etc. and disseminate information to the industry and facilitate the process of implementation of the research findings in industry.

The implications discussed above need to be taken into account while restructuring polytechnic education and enabling the system to respond to effects of globalization and meet industrial requirement.

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