

AN ANALYSIS OF THE PRESENT SYSTEM OF TECHNICAL EDUCATION IN PAKISTAN

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ABSTRACT

In his message to the first educational conference in November 1947 at Karachi, Quaid-e-Azam said, “there is no doubt that future of our state depends upon the type of education we give to our children and the way we bring them up as future citizens of Pakistan. There is an immediate and urgent need to give scientific and technical education to our people in order to build our future economic life. We should not forget that we have to compete with the world which is moving very fast in this direction.” 53 Years down the road, there appears to be no realization by the successive governments that it is the only means of providing highly trained manpower for country’s growing industrial requirements and to enhance productivity. The need for education in the field of technology, beyond any doubt, is the key to future, and it is now a necessity for Pakistan. Carryout a detailed study of technical education for Pakistan with emphasis on its importance, scope, level and relevance to national development and recommend suitable measures to attain the objective.

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INTRODUCTION

The top priority for developing countries like Pakistan is to create wealth through industrialization, not only to supply its own markets, but also to enter into the worlds competitive markets. Modern industrialization, a by-product of the two world wars, depends upon technology. To harness the technology trained manpower is needed.

Trained manpower, linked with the national development plan is essential for socio-economic development. Due to excessive general education facilities, the number of graduates without technical education looking for employment in the white-collar sector is far beyond the absorption capacity of the country. It is resulting in frustrated youth, increased pressure on higher education, and an increase in social problems and crime. Thus there is a need for a sort of education which must be related to the world of work and development and acquisition of skill in employable trades. Technical/vocational/commercial education caters for this requirement.

Technical education refers to post-secondary courses and practical training in colleges of technology and polytechnic institutes to prepare technicians for middle level supervisory staff. Vocational education in vocational institutes refers to the lower level education and training for preparing semi-skilled and skilled workers in the trades. Commercial educational institutions train manpower for business sector and offices.

The overall education profile of Pakistan is not very encouraging. High dropout rates at primary and secondary level and just 3%¹ participation at University level as compared to 50% in advanced countries clearly

¹ Education Guide of Pakistan (1999-2000) p. 25

demonstrate this fact. This is despite the fact that major portion of education budget is allocated to these sub sectors of education.

Technical education has been getting the least of all these sub sectors till 1998. Therefore it is no wonder that its state is also no better. –There are 21 Divisions without a polytechnic for women, 65 District without any polytechnic for boys, 329 Tehsils without vocational institute for boys, and 277 Tehsils without a vocational institute for girls.¹² There is no industry – institution liaison. There is a lack of relevance of curriculum to job market requirements. Imported books are very expensive, pose a language problem, and do not cover the entire course in a single textbook. Training facilities are inadequate, and have poorly equipped and maintained workshops.

Aim. To carryout an analysis of the present system of technical education in Pakistan highlight its grey areas and suggest viable measures for its improvement.

Scheme of presentation

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PART-I

² Education guide of Pakistan (1999-2000) P24

IMPORTANCE OF TECHNICAL EDUCATION

Technical Education-A Necessity

Technical and vocational education (TVE) is a must for socio-economic development. If a highly developed general education is not complemented with an equally developed TVE, advanced science and technology cannot be converted into effective productivity, and therefore cannot bring about rapid economic and social development.

TVE in Pakistan needs to be extended across the country step by step. With every step towards industrialization and modernization of production units and work premises, the demand for vocationally trained and technically educated manpower rises. The process of industrialization, efficient use of technologies and plants, and technology upgradation and adaptation are all-dependent on availability of vocational and technical competence of manpower.

The experience of the Asian tigers and the newly industrialising South East Asian economies has clearly demonstrated the advantages of possessing such a manpower. Another consideration resulting in a relatively greater attention on this type of education has been the growing unemployment of the educated manpower with general education.

Technical Education and Economic Development

As highlighted in preceding paragraphs the technical education is must for promoting and sustaining the economic development of any nation. The case of Japan, South Korea and Indonesia are the practical example of high rate of return on investment in education in general and technical education in particular. Even the non industrialized countries like Egypt have also grasped the importance of this sub sector of education and

is giving due attention to it. Following are some of the efforts of these countries, which manifest their emphasis on technical education.

- a. **Japan.** Japan is a highly education-minded society. Education is esteemed, and educational achievement is often the prerequisite for success in work and in society at large. **Sixty-two technical colleges**³ have been operating since the early 1960s. These technical colleges are national institutions established to train highly skilled technicians in five-year programs in a number of fields. About 10 percent⁴ of technical college graduates transfer to universities as third-year students.
- b. **South Korea.** South Korean planners realized that the country needed to advance quickly in such areas as high technology if the economy were to grow while matching foreign competition. They took decisions to build the Pohang Institute of Science and Technology and the Research Institute of Industrial Science and Technology. They also used a great deal of money to lure back more than 100⁵ top South Korean scientists and researchers who had emigrated abroad.
- c. It invested heavily in education sector. –In 1960 about one-third of children between twelve and fourteen years of age attended middle schools; that proportion increased to 53.3 percent in 1970 and 74.0 percent in 1975. In 1960 some 19.9 percent of the population between fifteen and seventeen years of age attended high schools; that proportion increased to 29.3 percent in 1970 and 40.5 percent in 1975. By 1970 about 9.3 percent of college-age youths attended colleges and

³ Japan Facts Books at Web Site www.upm.edu.my

⁴ *ibid.*

⁵ South Korea Facts Book at web site www.upm.edn.my

universities and the number of university graduates exceeded 30,000 a year⁶.

- d. As of the late 1980s, many of South Korea's younger scientists, technocrats, and economic planners had received their graduate education in the United States. Throughout the 1970s and 1980s, the government sponsored the scientific and technical education of many graduate students at prestigious institutions, such as Harvard University and the Massachusetts Institute of Technology.
- e. **Indonesia.** Indonesia has been giving the technical education its requisite importance right from its inception. During the first fifty years of independence higher education was required to –offer seventy (70) percent of all curricular offerings in the Social Sciences (Non-physical Sciences and Economics) and thirty (30) percent in the Physical Sciences.⁷ What is now being suggested is that the system adopts the reverse, i.e. 30.70⁸ ratio. Such a plan would be consistent with the Long-term Development and would provide the skilled technicians so urgently needed by industry.
- f. **Egypt.** Despite its agro based economy like ours, Egypt has also emphasized quite heavily on technical education. It is evident from the enrollment of student in technical education as compared with enrolment at intermediate level. It is almost

⁶ South Korea facts book at Website www.upm.edu.my/

⁷ Indonesia Facts Book at web site www.upm.edn.my

⁸ Professor Rubini — Technologically oriented education system in Indonesian website www.l.rad.net.id/Hi-Ed-Seminar/paper/rubini.html

half of it both for male and females. The following table shows participation at different levels of education.⁹

Level	Male	Female	Total
Primary	3,397,779	2,605,071	6,002,850
Intermediate	1,274,137	860,870	2,135,007
Secondary			
General	355,454	213,912	569,366
Technical	526,283	351,116	877,399
Total secondary	881,737	565,028	1,446,765
Teacher training	34,113	50,474	84,587
University	445,963	215,384	661,347

PART-II

EDUCATION PROFILE OF PAKISTAN

Public Sector Expenditures on Education

–During the current year 1999-2000, total public sector expenditures on education is estimated to be Rs. 71.129 billions as compared to Rs. 68.598 billions last year. This shows an increase of 1.7 percent. It include Rs. 7.687 billions for development expenditure as compared to Rs. 6.321 billions last year. Rs. 63.42 billions have been kept for non-development expenditure as compared to Rs. 62.276 billions last year¹⁰. Total public expenditure on education remained on average 2.2 percent of the GDP for

⁹ Egypt Facts Book at web site www.upm.edn.my

¹⁰ Brief of Planing and Development Division, Government of NWFP, Chapter 11 p141

the last three years. This is even lower than the expenditures of Bangladesh government on education which is 2.3 percent of the GDP. The expenditure on education of some of the other countries of the region is as follow¹¹.

a. Nepal	2.9%
b. Sri Lanka	3.1%
c. India	3.7%
d. Thailand	4.0%
e. South Korea	4.2%
f. Malaysia	5.1%
g. Iran	5.4%
h. Maldives	8.1%
i. Mongolia	8.5%

The government expenditures on education for the last three years are as follow¹²:

Budget	1997-98 (Rs. In Billions)	1998-99 (Rs. In billions)	1999-2000 (Rs. In Billions)
Development expenditure	7.65	6.32	7.69
Non Development Expenditure	56.43	62.27	63.44
Total			
Total expenditure as % of GNP	64.08	68.60	71.13
	2.34	2.22	2.14

¹¹ Education guide of Pakistan (1999-2000) p31

¹² Brief of Planning and Development Division, Government of NWFP, Chapter 11 p141

Share-sub sectors of Education (Annex A)

The major chunk of the allocated budget for education goes to primary education. For example in allocations for 1997-98 more than half of the allocated budget –i.e. Rs. 34.3 billions out of a total of Rs. 64.08 billions were given to primary education. It was followed by secondary education with RS. 14.705 billions, college education Rs.5.247 billions and University education getting Rs.2.918 billions. Technical education got the least amount of Rs. 1.548 billions¹³.

The Government has allocated Rs. 708.290¹⁴ billions for the coming five years to education.. Here again the major portion goes to Elementary education (Rs. 308.494 billions) followed by Secondary education (Rs. 245.699 billions). However this time technical education has been given preference over the College and University education. It has been allocated Rs. 45 billions whereas College and University education get Rs. 30 and 42 billions respectively. Moreover this exclude the funds allocated by ADB (78.1 millions US \$)for promotion of technical education through Technical Education Project.

Statistics of Educational Institutes

Elementary Education (Class i-viii)¹⁵. There are 145,960 public sector primary (One third female), plus 37,000 mosque, and 7177 non-formal schools run by the Prime Ministers Literacy Commission. There are 2284 ghost schools (Punjab 709, Sindh 1290, and Balochistan 285): 30% schools are under-utilized. There are 14,590 public sector Middle Schools, against 6430 female school . However 10,000 high schools also provide

¹³ Extract from National Education Policy 1998-2010

¹⁴ *ibid.*

¹⁵ Education Guide of Pakistan (1999-2000) p20

middle level education. The total number of educational institution for middle level education in the public sector is 24,590.

Secondary Education (class ix-x)¹⁶. There are 24,403 public sector middle and high schools [14,595 male (60%) and 9808 female (40%)]. Middle level enrollment is 3.75 million (including 1.39 million females, 37%): at secondary level (Class IX-X) it is 1.55 million, including 0.54 million female (35%). The participation rate at the middle level is 31.6% (36.5% male, 25.8% female), and at secondary level is 29.7% (male 36.3%, female 22.3%).

Higher Education¹⁷. There are four universities and five colleges/faculties for **Agriculture Education**, seven public and one private university as well as two constituent /affiliated colleges for **Engineering Education** and thirty four medical colleges for **Health Education**

Technical and Vocational Education.¹⁸ Pakistan started with only two polytechnic institutes, one at Karachi and the other at Rawalpindi. In 1997 there were 84 institutes offering three years diploma in over 20 technologies. There were 194 vocational institutes offering 1 year and 2 years diplomas. 216 institutes were providing commercial education. The government plans to increase mono/polytechnics to 135, vocational 294, and commercial to 266 by year 2002. It is thus hoped that a total enrolment target of 62, 15 and 28 thousand students would be achieved in these institutions respectively.

¹⁶ *ibid.* p21

¹⁷ Education Guide of Pakistan (1999-2000) P25

¹⁸ Education Guide of Pakistan (1999-2000) p24

PART-III

SYSTEM OF ACQUISITION OF TECHNICAL EDUCATION

Structural Arrangements

Technical education and skill development is being provided by a host of institutions and organizations besides the ministry/department of education. The present delivery system can be divided into three, namely: formal, non-formal and informal (Annex B). The formal education and training can be classified as: pre-vocational (in schools), and post-matric vocational training and commercial & technical education. The post-matric vocational training is in the fields of "training in industrial skills, vocational training and commercial education. The technical education is provided in polytechnics and colleges of technologies. The important point to note for the formal training and education is the fact that two distinct ministries and department, namely education and labor and manpower are responsible. **Incidentally they act independent of each other.**

The non-formal training is at the level of under-matric as well as of post-matric. It comprises training by the Technical Training Centers (TTC)/Vocational Institutes (VI), in-plant training of industrial concerns mainly belonging to the public sector, training by a number of federal and provincial government ministries and departments/directorates as well as small industries corporations/boards. The training in para-medics agriculture and industrial skills is imparted by the TTCs/VIs. In-plant training is being offered by WAPDA, Pakistan Telecommunication Corporation, Pakistan Steels, Pakistan Ordinance Factories, Pakistan International Airlines, Pakistan Railways etc.

Sources and Providers

It is interesting to infer from the above that the delivery system of such education and training is **organized/regulated** as well as **unorganized/un-regulated**. While the former relates to formal and non-formal form of education and training, the later essentially is informal but non-formal can also be found (Annex C) The technical and commercial education is formal and based on education policies announced at different point of time(Annex D). The Directorates and Boards of Technical Education are the providers and managers of this education. Necessary technical competence and infrastructure supports has been provided to this form of education through the Asian Development Bank(ADB) Technical Education Project (Annex E).

Non-formal technical education and training is provided by the ministry of labor through provincial directorates of manpower and training (DM&Ts). It draws its strength from the National Ordinance, 1980. This ordinance led to the establishment of National Training Bureau (NTB) which is the secretariat of National Training Board and Provincial Training Boards (PTBs).

The unorganized/un-regulated providers of training are mainly the owners/operators of host of activities traditionally known as *ustad-shagird* system. This type of training remains completely un-regulated. The other providers of training in this category are the public sector organizations and different departments/directorates of the federal and provincial governments.

PART-IV

ROLE OF ARMED FORCES

Establishment of National University of Science and Technology (NUST)

The biggest contribution of the armed forces is establishment of NUST. It has been established with special focus on following objectives¹⁹.

- a. To develop competent scientific and technical manpower having international level of higher education so as to meet country's public and private sector needs.
- b. To help speedy attainment of capability in newly emerging fields of science, engineering and technologies by coordinating technological/scientific areas of national interest.
- c. To provide a forum for exchange of knowledge amongst the elite from the world of science and technology, both within and outside Pakistan.

It offers Bachelor's degree programs in engineering in ten disciplines. Runs undergraduate courses in medicine and dental surgery. Offers BBA (Hon) degree in six academic semesters. The University has strong international linkages with Universities of repute including The Michigan State University. The University has an established Research and Development section which focuses on goal oriented research and development relevant to the country's needs.

Contributions- Armed Forces Institutions

The various colleges of the Armed forces train civilian students beside imparting training to its officers. In overall perspective the trained officers also become part of the technically trained manpower pool of the country and can contribute significantly during service and after

retirement. The data of various civilian students having been trained by various army colleges during the last three years is as follow:

¹⁹ Nust Website www.nust.edn.pk

a. College of Electrical and Mechanical Engineering(EME)²⁰

Year	Msc. mechanical	Msc Electrical	Msc. Computer	Bsc. mechanical	Bsc. Electrical	Bsc. computer
1997	6	2	-	14	25	-
1998	2	3	4	10	17	-
1999	4	3	3	16	28	15

- b. At present 306 NUST students and 97 welfare students are undergoing training in EME college. Dr. Maooz of the college informed that the plan for next year is to have 480 NUST students and 136 civilian students.
- c. **Army Medical College²¹**. A total of 155 civilians have graduated from the college in the last three years. The college plans to increase the intake of five civilian students each year.
- d. Details if the last three years civilian graduates are:

Year	Paying cadets	NUST students
1997	25	-
1998	26	35
1999	37	45

e. **College of Signals²²**. The college has imparted education to 86 civilian students in the last three years in telecommunication engineering and computer software engineering. Details are:

²⁰ Dr Maooz EME College Rawalpindi

²¹ Adjutant Army Medical College.

²² Professor Wali Muhammad, Military College of Signals.

Year	Paying cadets	NUST Students
1997	10	15
1998	12	15
1999	11	24

e. **Military College of Engineers**²³. It has trained a total of 100 civilian students in civil engineering in the last three years. Details are:

Year	Paying Cadets	NUST Students
1997	27	7
1998	23	11
1999	19	11

Apart from the above mentioned colleges which provide higher technical education, the technical Arms of the Army, Airforce and Navy provide technical skill related training to their personnel. Most of these personnel get retired at an early age and get adjusted in public or private sector enterprises. Thus they also add significantly to the pool of technically trained manpower.

PART-V

IMPEDIMENTS/ISSUES RELATED TO TECHNICAL EDUCATION

Supply Oriented System . The whole system of technical education in Pakistan is supply oriented. There are no arrangements for assessing the needs of engineering graduates for public and private enterprises. This is the main reason that so many engineers are jobless today.

²³ Adjutant Military College of Engineers.

The labour market analysis has been introduced for polytechnics lately , yet its implementation with regards to admission in different technologies in polytechnics seem highly questionable. Political and administrative hurdles are numerous in this aspect. The cultural and social values and personal likes /dislikes are also contributory factors.

Imbalance in Trained Manpower. There is imbalance between various categories of technical manpower which tend to distort the pyramid structure. For a balanced growth of the system the ratio between engineers, technicians and skilled workers is expected -1:3-5:20-25 (variable)²⁴. While the growth of vocational training could not keep pace with the expansion in technicians training, the output for engineers seems to be higher. Research and systems evaluation appear to be the weakest area.

Inadequacy. There is inadequacy of the whole system to meet the education and training requirements of the schools drop outs. During the period of 1977-78 and 1992-93, despite 158% increase in enrollments in classes VI-X, there were still 8.3 Millions. children out of secondary schools education(Annex F). Another related issue is the absence of integrating instructions on commercial & vocational education and training as a part of general education. That is the reason that we are producing hundreds of thousands of unemployable under matriculates, matriculates and intermediates

²⁴ Interview with Mr Pervez Iqbal, Senior Research Officer, Science and Technology Education Division Islamabad

Separate Treatment of The Sub Sector currently the sub-sector is not treated as an integral part of mainstream education. This is amply demonstrated by:

- a. The low number of children who enroll in Technical and Vocational education programs.
- b. The low and disproportionate allocation of resources to the sub-sector in spite of its relatively higher cost of delivery.

Curriculum. Most of the programs in Technical Education have been conceived without due analysis of employment situations and changing patterns of skills and competencies, resulting from changing technologies, products and management practices.

Shortage of Teachers

Shortage of staff is a common problem of all the institutions under the administrative fold of the Directorates of Technical Education. One reason is the cumbersome and the time consuming procedure of recruitment and promotion. In the case of fresh recruitment through Public Service Commission, the completion of the process takes nearly two years.

The second reason is the non-cooperative and not very wise attitude of the Finance Department, which flatly refuses to accord sanction even to the creation of posts in these institutions. A sizable number of teachers particularly engineers use the department as a spring board and leave the department on the first available opportunity.

Training of Teachers

Most of the teachers are untrained and do not possess requisite skills and competencies. Pre-service teachers training in technical education is nonexistent. The existing in-service Teachers Training

facilities are grossly defective. –The same type of training is given to teachers with extremely varied educational backgrounds²⁵.

The teachers have no industrial experience and this is adversely affecting the practical aspects of the training. Moreover because of the absence of any linkage whatsoever between the industry and the teaching institutions the teacher is imparting training in a vacuum and the trainees are denied the benefits of firsthand knowledge of actual working conditions in the world of employment.

Equipment and Consumable Material Problem.

Equipment for training is either deficient or in need of repair. A portion of it is obsolete. There are no standardized, well-prepared and sufficiently illustrated lists of equipment. This has opened the doors of corruption and the workshop and laboratories are full of unnecessary, defective and substandard equipment and machinery. Expensive machines which have no use or very little use were purchased and simple and cheap instruments and machines which were a basic requirement for a large number of practicals were ignored. Because of extreme paucity of funds for repair and maintenance, most of the equipment is lying un-used and has become obsolete. Nominal funds are provided for the procurement of raw materials.

Administrative Hurdles

Even the available funds cannot be used properly due to outdated, unfavorable and illogical rules and centralized administrative setup. This outdated and highly centralized system does not promote efficiency, productivity and responsiveness to changing environment. Financial and

²⁵ Interview with Mr Tanvir ,Research Officer, Technical Educaton Project Balochistan

administrative powers of heads of institutions are not commensurate with the nature of activities in training programs.

The Examination System

The current examination system puts minimum premium on practical proficiency and skills of trainees. Its effectiveness, reliability and credibility is questionable. It results in selective studies, low coverage of courses, subjective marking and injustice to capable students.

The provincial Boards of Technical Education conducts two examinations, Annual and Supplementary. Each examination consumes approximately two months. In this way a total of four months are consumed by examinations. If normal holidays and forced closures are taken into account then the actual teaching time is simply reduced to 100-120 days.

Lack of Practicals in teaching and Evaluation

On paper, the Diploma of Associate Engineer curricula is 60% practical and 40% theory but in practice, for various reasons, practicals are criminally neglected both at the time of teaching and also during examination. Same is the case for engineering graduates.

Enrolment over and above the sanctioned capacity, shortage of functioning equipment, non—availability of consumable materials, shortage of teachers and the non-availability of required time for the practicals are some of the causes adversely affecting the practical aspects of training.

Lack of Management and Entrepreneurship Skills

Upward mobility chances for further education and training exists only for the technical and commercial education. Almost none of the vocational training and technical education impart instructions on management and entrepreneurship development related aspects.

Heavy Costs. The heavy cost involved in providing vocational training and technical education also continues to pose a major challenge in our efforts to have greater number of such institutions. The establishment of a typical vocational institution today, for instance, costs a sum of Rs. 60 Millions. with an intake capacity of 200 trainees. The recurring expenditure for its operation is estimated to be Rs. 3 Millions²⁶. The situation would not be dissimilar either for the polytechnic institutes, rather the cost involved would be significantly higher.

Share of women.²⁷ Women constitute 48.3 % of our population, yet their participation rate in technical education is very meager. Apart from the social and cultural reasons the existing infrastructure for technical education and the in-service conditions for women in the field are also acting as a hurdle. For example in the entire Balochistan there is no polytechnic for women.

Problems Related to Vocational Institutes

These institutes are meant to produce skilled workers, craftsman and operators, such as carpenters, masons, welders, electricians, mechanics and so on. A large number of institutes and agencies, besides Vocational Institutes, are involved, in this area of training, both at the Provincial and Federal level. There are many instances of clear duplication

²⁶ Sub Committee report to Federal Education advisory Board

²⁷ M Aslam, Human Resource Development and Management in Pakistan, P 22

and thus wastage of scarce national resources. Today there is no co-ordination between the various agencies involved in this national effort.

Due to established social taboos and norms, the common choice in admission to these institutions remain in those trades, which are socially preferred, though the scope of employment may be limited. Trades such as carpentry, foundry, tailoring and masonry, which are in demand, do not find favor with applicants as compared to trades of electrician, machinist, auto-mechanic, welding, refrigeration and air-conditioning. Family traditions, social connections and parental preferences are important constraints of intake in certain trades.

Lack of Flexibility. The lack of flexibility of the vocational training institutions in terms of nature and types of courses offered, and their duration also continue to make the utilisation of existing facilities limited. The fact that entry requirement of vocational training even in the formal institutions is matric and for the non-formal at least middle also restricts the enrolment of a large proportion of interested youth for the skills development.

Under utilization of existing Vocational Institutes. The under-utilization of the existing facilities continue to act as a major cause of concern. This can be attributed to lack of flexibility in offering the courses and locational disadvantages. For example in Balochistan TTC at Sibi has a strength of less than ten students where as TTCs at Qilla Abdullah and Sui²⁸ are virtually deserted.

²⁸ Interview with Director labour and Manpower Balochistan

RECOMMENDATIONS

Shortage of Teachers Recruitment and promotion procedure should be Decentralized and simplified. The past practice of adhoc appointments till the selection by Public Service Commission needs revival. Better and attractive service structure should be offered to technical education teachers.

***Training of Staff** The Technical Education Project has a provision for the establishment of independent and full-fledged Technical Education Training Colleges/institutions for each province. These colleges will go a long way in meeting the training requirements of teachers. However in order to make the teacher more capable, resourceful and abreast with the latest developments it needs a continuous in-service training and interaction with industry. In-built arrangements need to be made in the above mentioned new service structure for linking promotion with successful completion of training and practical work in the field/ industry.*

***Curriculum.** The establishment of the R&D Cell by the Technical Education Project will go a long way in developing and updating the curricula on a continuous basis. The only cardinal point to be kept in mind is that it must be brought in step with market demands of the particular technology. Emphasis should be more on practical related training. Entrepreneurship and management subjects should be introduced at diploma level courses.*

Examination System Examination system should be reverted to semester system. In case a reversion to semester system is not possible in the short term, for political and administrative reasons, at least supplementary examination must be done away with. The time thus saved can be

allocated for conducting practicals in teaching and examinations more comprehensively.

Generation of Resources

Paucity of funds is a problem and its gravity is increasing day by day. Starting of short courses in the evening in Polytechnics will help these institutions to generate funds of their own on no profit and no loss basis.

Faculty in government vocational institutes (GVIs) be allowed to use their workshops and laboratories for undertaking jobs assigned to them by the community. They will not only generate funds for the maintenance and updating of equipment but provide valuable practical experience to their junior colleagues and desirous and poor students. This will also work as a linkage between the institutions and industry.

Administrative Changes. The administrative, financial and audit rules instead of facilitating things make them complicated and in many cases kill initiative and drive. In order to make them effective. the heads of institutions need to be vested with more administrative and financial powers. Similarly the administrative and financial powers of the Directorate of Technical Education need to be enhanced so that necessary decisions are made in time and the achievement of the objectives is ensured.

Budgetary Allocations. Higher allocation of budgetary resources must be made available for Technical and vocational Education programs/according to the real requirements of the institutions with regard to workshop expenses and training.

Integration into Mainstream. The sub-sector must be integrated into the educational mainstream at all levels, that is pre-matric, matric, FSc. This may be initiated by starting Matric (Tech) and FSc (Tech) schemes at secondary and higher secondary schools. The admission to a vocational institution should be after matric (tech) and polytechnic after FSc(Tech.). The present Diploma of Associate Engineer (DAE) should be reduced to 2 years duration by cutting 1 year for related studies and foundation courses of the technologies as against matric for 3 years DAE program.

Share of Women in Technical Education. It should be increased The private sector and NGOs may be encouraged to offer technical education in subject displaying greater employment potential for Women.

The service structure of vocational institutes for women should be reorganized. The present service structures in vocational institutions for women does not attract the highly qualified and experienced professional ladies. The service structures should be reorganized with provisions of career development.

Crash programs in some technologies for participation of Women in economic activities should be organized for vocational training of women. Self employable vocations which can be considered are: computer technology, software development, biomedical technology, automation and communication technologies. Short courses which may include: entrepreneurship development, marketing, child care and hotel management should also be arranged for them.

Equipment. The research and development (R&D) cell of the technical education project should be directed to prepare standardized and well-

illustrated lists of equipment and machinery in the light of revised curriculum. At the same time efforts should be made to equip this section with the latest literature on the training aids and other relevant activities. Moreover appropriate funds allocation should be made for repair of defective equipment and raw material.

CONCLUSION

Technical education has become a necessity for economic development in the present era. A workable system of delivering the said education exists in Pakistan. The government has also started allocating more funds to it. Asian development bank assisted project has been undertaken for improvement of technical education in Pakistan. However there is still a long way to go. We need to coordinate the efforts of different agencies/institutions, which impart technical education. Women participation needs enhancement. Curriculum needs revision and constant updating. Effective linkages with labor market and industry have to be established. Above all we need to address the political financial and administrative hurdles. The armed forces of Pakistan are making meaningful contributions in imparting the technical education. There is a need to sustain these efforts.

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Persons Contacted/Interviewed

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