Technical and Vocational Education in Pakistan

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INTRODUCTION

The General Conference of UNESCO at its 18th Session (Paris, November 19, 1974) adopted a set of recommendations concerning Technical and Vocational Education. Since then UNESCO has been engaged in evaluating the extent to which the member states have implemented those recommendations. Certain guidelines were prepared on the basis of which the member countries had to undertake evaluative studies. This study has been initiated on the request of UNESCO Regional Office Bangkok. The guidelines (Annex-II) provided by UNESCO have been followed with certain deviations to suite the peculiar conditions of the country and to incorporate as much information as possible related with the Technical and Vocational Education in Pakistan. The study is divided into two parts: Part-I Containing 15 Sections describes the profile of the Education System. Part-II deals with the Dynamics of the Development Process and comprises four sections. A brief review/summary of each section is given below :-

Section-I provides perspective with regard to the structure of education at various levels and highlights entry points for various levels of technical/vocational education. It also discusses the limitations of the present system which does not allow horizontal or vertical mobility between engineering, technicians & skilled workers programmes; lack of pre-engineering curriculum before joining engineering colleges and lack of facilities in commerce education to impart training in handling modern office equipment and appliances like computers, word processors, etc.

Section-2 deals with organizational structure and administration. It describes the overall system of administration in terms of relationship of the Federating Units i.e. Provinces and the Federal Government and in that context provides perspective of educational administration. Organizational structure of education at Federal and Provincial levels has been highlighted. The programmes of technical/vocational education carried out under the Federal Ministry of Labour, Manpower & Overseas Pakistanis and the Provincial Departments of Labour & Manpower have also been discussed.

A historical perpsective of various educational reforms has been provided in Section-3. This section covers all the major landmarks of educational reforms starting from post-independence, All Pakistan Education Conference 1947 and culminating on National Education Policy 1979. Comparisons of various reforms have been made which invariably emphasize technical/vocational education. Specific provisions of the 1979 National Education Policy emphasizing technical/vocational education have been reproduced in this section.

Policy provisions find implementation in the National Five Year Plans. Section-4 on Policy Implementation tries to establish linkage between the National Education Policy, 1979 and the Fifth Five Year Plan 1978-83, launched one year before the announcement of the Policy. Subsequent Sixth Five Year Plan 1983-88 lost its thrust by a

modified Plan of the Ministry of Education which was called Action Plan. It did not provide a clearer perspective with regard to future programmes/projects. Programmes/projects conceived in the Action Plan were not supported by the Planning organizations at Federal/Provincial levels.

In Section-5 an attempt has been made to provide a perspective with regard to state of education at the time of independence. There was need for quantitative expansion of the education system to provide access to specific age-group students in all parts of the country. Availability of limited financial resources for education suppressed literacy rate of the country; restricted participation to 50% at the primary level; and created numerous problems related with deteriorating standards of education. It also provides perspective with regard to availability of financial resources for various levels of education under successive Five Year Plans. It has been observed that Education Sector could not get more than 2% of the G.N.P. under successive Five Year Plans till recently. The status of technical/vocational education within the education sector has been highlighted which received 4-5% of the total educational expenditures.

Section-6 on Integration of general, technical and vocational education discusses the efforts made to relate general education to the world of work. Under the 1972-80 Education Policy an attempt was made to introduce agro-technical education at lower secondary level. Various short-comings of the implementation of agro-technical

education component have been highlighted which are based on the evaluative studies carried out by different organizations in the country. Apprenticeship Training Scheme under the Apprenticeship Ordinance 1962 has been discussed. Under this scheme the Industrial Establishments to a certain number of workers.

Section-7 on Technical and Vocational Education as Preparation for an Occupational field discusses various levels of education. For instance it describes engineering education, technician education and vocational education for promotion and development of skills. these three levels of education produce Professional, Mid-professional, and Craftsmen level workers. It provides an overall picture of the technical/vocational institutions operating as component part of this system.

In order to distinguish clearly and to appreciate various levels of technical/vocational education, Section-8 provides specifically an illustration of the Engineering Education in Pakistan. Section-9 on Technician Education deals with institutions like Polytechnics and Colleges of Technologies which are producing mid-professional/supervisory personnel. Section-10 on Commerce Education describes this particular section of education and highlights some of its inherent problems.

Section-II describes Vocational Training System which operates under the Federal Ministry of Labour, Manpower and

Overseas Pakistanis/Provincial Departments of Labour and Manpower. This system comprises Technical Training Centres/ Vocational Institutes and Apprenticeship Training Centres, which are operating under the National & Provincial Training Boards. It also provides information with regard to the existing capacity of the system to produce skilled workers. The output capacity of semi-skilled workers produced by Small Industries Corporations, Overseas Pakistanis Foundation, Punjab Agency for Barani Areas Development, etc. has also been provided in this section, Section-12 discusses vocational training for women separately. This training falls under two distinct categories: (a) Formal training which is carried out by the Provincial Departments of Education, Labour & Manpower; and (b) Non-formal Training which is conducted by various government institutions, primarily the Departments of Social Welfare, Rural Development and Local Government, Small Industries Corporations/Boards, Women's Division, and Cabinet Secretariat of the Federal Government. Section 13 discusses Technical and Vocational Education as Continuing Education being carried out by the Allama Iqbal Open University, Islamabad.

In Section-14 attempt has been made to provide conceptual clarity of the term guidance. The need for introduction of guidance system as enunciated by the National Education Commission 1959 has been discussed. Problems in terms of introducing a guidance system in education have been highlighted.

The availability of standardized, reliable and valid psychological tests; and teachers conversant with administering & interpreting such tests is a pre-requisite for introduction of a guidance system. Though there are severe limitations, yet the Employment Exchange system operating in the country under the Provincial Labour Departments have incorporated guidance and counselling for the students community as well. This limited experience may be of interest to those in Education Departments who are pleading for the introduction of guidance and counselling in the education system of the country.

Section-15 on Teaching and Learning Processes: Methods and Materials tries to provide conceptual clarity to the term and highlights the mechanism for the development of curriculum, and evaluation of students performance at various levels of education. Certain inherent problems in the Technical/Vocational education especially related with curriculum and textbook production have been specifically mentioned. Various components of the technician courses have been discussed so as to provide insight into the curriculum content of technician education in Pakistan.

The second part focuses on the Dynamics of the Development Process. This part comprises of four sections which focus on (a) Major problems of technical/vocational education at macro level; (b) Problems at Institutional or micro level; (c) Innovative efforts to develop technical and vocational education related to rural development; and (d) Conclusion/Suggested measures.

Major problems of technical/vocational education have been discussed in Section-16. These include relevance of curricula with job requirements; lack of teachers' training; defective system of examination and evaluation; poor management and supervision; and limited role of private sector in promotion of technical/vocational education. The micro level problems are related to institutions which are mainly focused on outmoded managerial structures and processes; lack of pedagogical skills of teaching staff; lack of collaboration between employers organizations and institutions; problems of teaching - learning resources especially non-availability of textbooks; lack of institutional and programme evaluation; limited financial/administrative powers with the heads of institutions; unattractive benefits for teaching in institutions; and lack of research capability in the recently established institutions like National Technical Teachers Training College (NTTTC) and National Training Development Institute (NTDI) at Islamabad.

In Section-18, an attempt has been made to discuss innovations to develop technical and vocational education related to Rural Development. In this context two experiments conducted in Pakistan have been highlighted. One experiment discusses the aims & objectives; course content and rationale of agro-technical subjects and the expected outcomes visualized at the time of introduction of the scheme in 1974. Another experiment is that of Experimental Pilot Project Integrating Education with Rural Development (EPPIERD) which is now known by the name of Rural Education and Development (READ).

Section-19, recapitulates some of the problems in Technical and Vocational Education and suggests measures for its future improvement.

The author is grateful to a number of colleagues and friends in the Ministry of Education as well as in the Academy for their guidance and support in completion of this study. Mr. Nisar Ahmad Malik, provided valuable assistance in typing of the manuscript and revising the earlier draft sent to UNESCO. The patronage, guidance and support provided by Prof. Laeeq Ahmad Khan, Director General; and Dr. S. M. Qureshi, Federal Education Secretary/Chairman Board of Governors of the Academy is gratefully acknowledged. The author is grateful to UNESCO for the sponsorship of the study without which this particular area would have remained unexplored.

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1 - STRUCTURE OF THE EDUCATION SYSTEM

1.1. The present Educational Structure in Pakistan (see Diag:1) consists of 5 years of Primary Education, 3 years of Middle (Elementary or lower Secondary) followed by two years of secondary education. The entry to higher education starts from class eleventh onwards consists of technical institutions, colleges and universities. Technical education (including Engineering, Technician, skilled workers and commerce education) forms an integral part of this system.

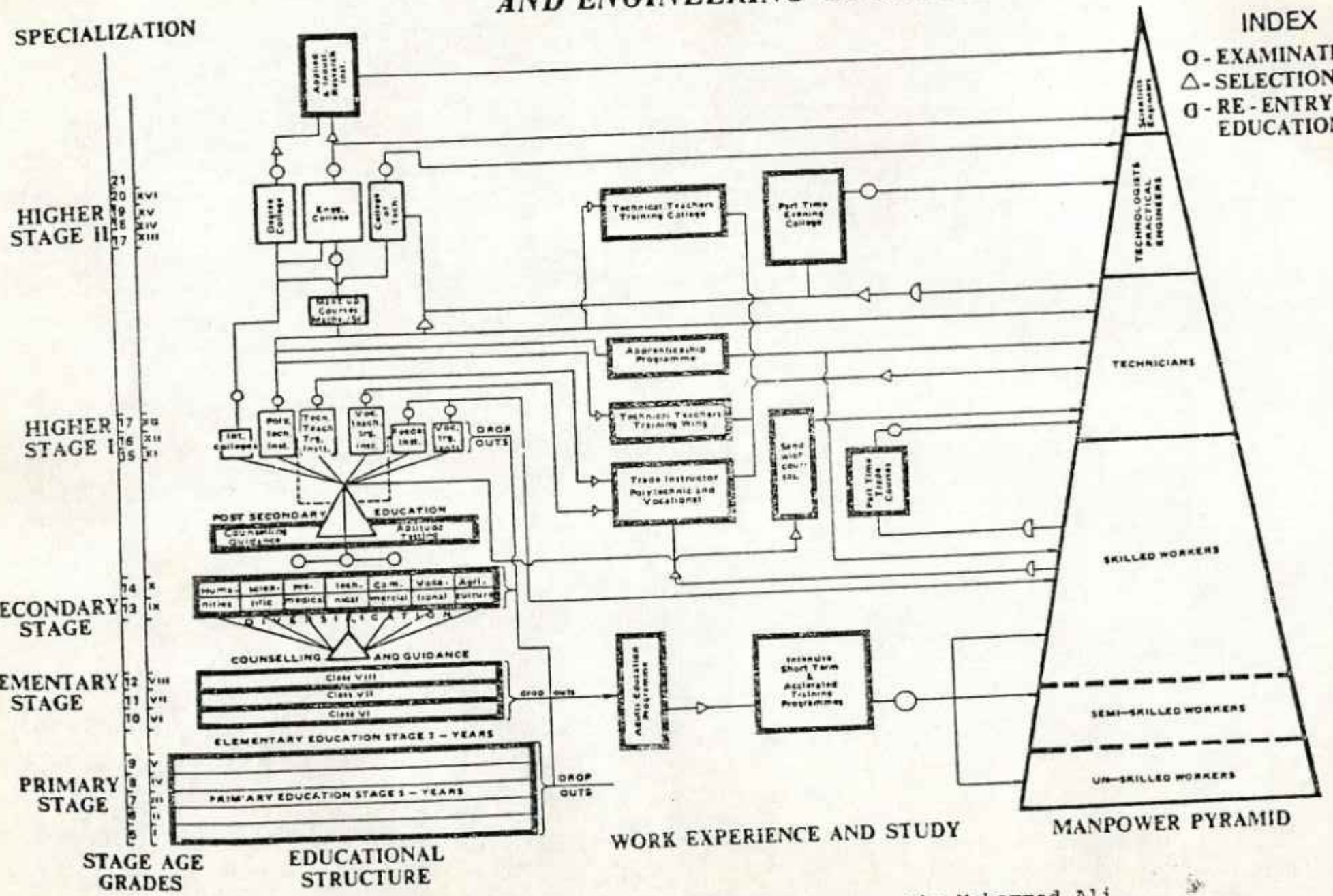
1.2. The admission to Engineering Colleges and Universities is after class 12. The technician education, more commonly known as 'Diploma level' starts after matriculation i.e. Secondary School Certificate. Any purposeful vocational education may start after lower secondary, although in some trades it may start below this stage also. The entry to some of the trade courses also requires matriculation as minimum level of attainment.

1.3. There are also special programmes such as teacher training, apprenticeship programmes, short term trade programmes for whcih physical facilities of existing institutions are being utilized.

1.4. Entry to commerce education starts from class XI onwards. At secondary level commerce education forms an integral part of general education system. There are however, a large number of institutes both in public and private sector operating to teach typing and shorthand on part time basis.

1.5. One of the limitations of the present system is that there is no scope of integration between different types of programmes. It

SYSTEM OF TECHNICAL VOCATIONAL AND ENGINEERING EDUCATION



Source: Technical Education in Pakistan - Mir Muhammad Ali

does not allow horizontal or vertical mobility between engineering, technician and skilled workers programme. This compels individuals to choose a particular profession at a very early stage. With the existing trend and preference in favour of white collared jobs there is a mad rush for engineering education resulting in overcrowding in the colleges. The technician and skilled workers professions become only the second and third choices respectively.

1.6. The second limitation of the present system is in its curriculum content. The academic requirements for admission to both engineering degree and science degree is completion of High Secondary level in science (12 years). The main emphasis in this course is on Mathematics, Physics and Chemistry.

1.7. Advancement in engineering and technology necessitates that teaching of some of the elementary courses currently included in the under graduate engineering curriculum should take place at an earlier stage. This will provide more time for special courses in engineering curriculum. It would be, therefore, worth consideration to modify the present design of the pre-engineering curriculum of High Secondary science, catering to serve the specific needs of preparation for the engineering stream of education.

1.8. In the case of commerce education the set up consists of a one year post matric course of Certificate in Commerce followed by another year of Diploma in commerc. Commerce Education at High Secondary level is offered both in the Commerce Colleges (under general education) in the form of Intermediate in Commerce (I.Com) and in Technical Education sector as Certificate in Commerce (C.Com), and Diploma in Commerce (D.Com).

1.8. The purpose of placing C.Com. and D.Com. under Technical Education is to protect its professional nature with bias on practical skills in secretarial competencies. It would, therefore, be worth consideration to further strengthen these courses in the same direction maintaining the same tempo to impart practical skills. For this purpose a 3 years diploma course in Secretarial technology has been designed by Sind Board of Technical Education. This incorporates the general contents of C.Com. and D.Com. and also caters to the need of handling of modern office equipment and appliances, computers, word processors etc. At an eventual stage the course may be further enriched by adding another year leading to the Degree in Business technology. The product of this programme shall be capable to acquire positions of junior executives, system analysts and computer programmers.

2 - ORGANIZATIONAL STRUCTURE AND ADMINISTRATION.

2.1. Pakistan is a Federal State. At the centre is the Federal Government which comprises several ministries and divisions. Each ministry or division is headed by a secretary who is in turn responsible to a minister. The Ministers constitute the Cabinet which is headed by the Prime Minister of Pakistan.

2.2. A similar pattern of administrative structure exists at the provincial level. A large number of central ministries have their counterparts in the provinces which are known as Departments. Each provincial department is headed by a secretary who is responsible to a minister.

2.3. For the purpose of administration the provinces are divided into a number of divisions. A division usually comprises several administrative districts. A division is headed by a commissioner and the head of the distict is known as the deputy commissioner. Districts are further divided into talukas or tehsils. Administration of education in the country is generally organized according to the above administrative units. However, different provinces have the second level provincial administration headed either at the provincial or regional levels. (A region comprises several divisions). The medium and lower educational administrators are placed at district, tehsil/taluka or even lower levels of administration.

2.4. The system of Government is centralized with Federal Ministries preparing policy statements for the sector; national sectoral plans within the framework of the national plan; appropriate guidelines, standards, task targets etc; national plans and annual development and recurring budget in co-operation with the Planning commission and the Ministry of Finance; and training programmes.

2.5. The heads of provincial departments are consulted by the federal ministries in matters relating to individual provinces. They are concerned with budget preparation at the provincial level almost in the same way as the ministries are involved at federal level. Unlike their federal counterparts the provincial departments are much more occupied by the whole business of preparing projects and implementing them. The relationship and the consequent communication between federal ministries and the provincial departments is limited and practically tends to be of a one way nature. Information, in the form of policy statements, national sectoral targets, and plans, standards and criteria, are passed down from the top. It is up to the provincial departments to implement these to the best of their abilities. Communication from the provincial departments to the appropriate federal authorities almost invariably passes through the provincial planning and development departments.

2.6. Federal Ministry of Education. The organizational structure of education in Pakistan represents a descending hierarchy of management functions from the top Federal Ministry of Education to the bottom level of educational administrative unit in a sub-division of a district. The provinces are autonomous in matters relating to education but there are certain areas reserved to the state in the constitution such as curriculum, syllabus, planning, policy and standards of education.

2.7. The Federal Ministry of Education functions within the framework of the administrative structure of the Government. The Secretary of Education who is responsible to the Federal Minister for Education is administrative head of the Secretariat of Education. The functions of the Secretariat of Education include the following :-

(1) Development and coordination of national policies, plans and programmes in education, development of curricula and text-books; National Book Foundation.

(2) International aspects of development and planning of Education.

(3) Copyright.

(4) External examination and equivalence of degrees and diplomas.

(5) Development of instructional technology; promotion and coordination of educational research.

(6) National language and other languages used for official purposes including medium of instruction.

(7) National Education institutions and organizations and grant-in-aid to them, excluding administrative control of law colleges; National Educational Council; Pakistan Institute of Development Economics; Provision of funds in respect of Cantonments/Garrison Schools and Colleges in Pakistan.

(8) Education in the capital of the Federation and Northern Areas and States.

(9) Financial assistance to educationists and men of letters and their bereaved families.

(10) Pride of performance awards in academic fields.

(11) National libraries.

(12) National Service Crops; military training for students.

(13) Boy Scouts and Girls Guides; Youth activities and movements.

(14) Welfare of Pakistani students abroad and foreign students in Pakistan.

(15) Relationship with UNESCO and participation in its activities; liaison with other international agencies and organizations in educational programmes.

(16) International exchange of students and teachers.

(17) Foreign studies and training/international assistance in the field of education.

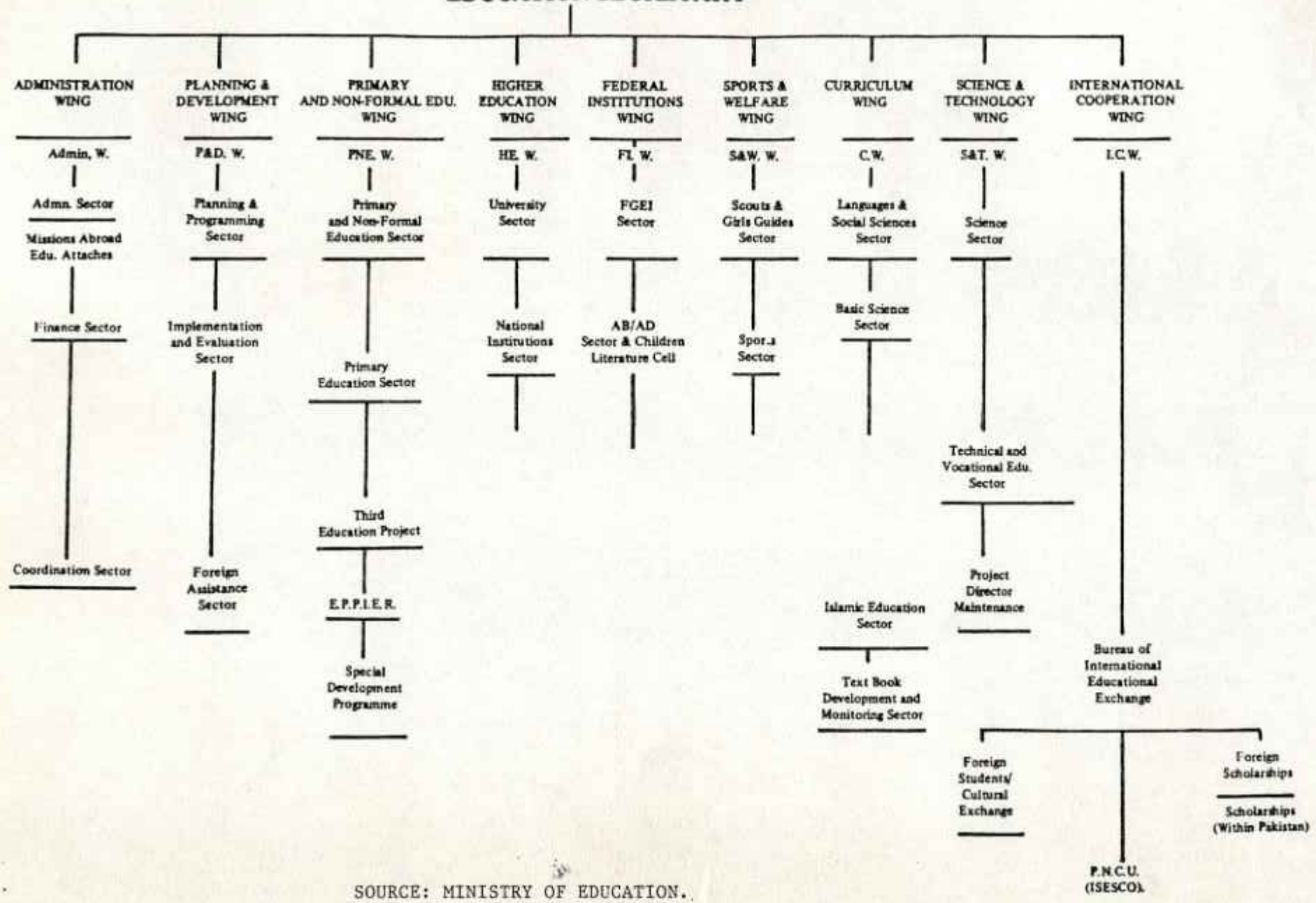
(18) Promotion of special studies designed to identify problems of national integrity and measures best calculated to protect the mainsprings of indeological inspiration to develop national cohesion.

(19) Administrative control of the National College of Arts, Lahore.

(20) Administrative control of the Islamic Research Institute.

2.8. The functions assigned to the Ministry of Education under the Rules of Business 1973, are being carried out through its constituent Units or Wings. The organizational chart of the Ministry of Education has been provided which indicates the names of the Wings and Sectors. There are 9 Wings i.e. Administration; Planning and Development; Primary & Non-Formal Education; Higher Education; Federal Institutions; Sports & Welfare; Curriculum; Science & Technology

ORGANIZATION CHART OF THE MINISTRY OF EDUCATION (SECRETARIAT)



SOURCE: MINISTRY OF EDUCATION.

and International Cooperation. Except Administration Wing, all other Wings are headed by Joint Educational Advisers who belong to the professional cadre exclusively recruited for the Ministry of Education. The Joint Educational Advisers move in the hierarchy from the position of Education Officers /Assistant Educational Advisers to Deputy Educational Advisers and Joint Educational Advisers. However, the Joint Secretaries from the Office Management Group are also deputed to serve the Ministry of Education. Usually, they are assigned the job of Administration Wing. Science & Technology Wing in the Ministry of Education is responsible for overseeing the implementation of Technical Education Policies and Coordinates provincial efforts in this direction.

2.9. As stated earlier the Ministry of Education has been instrumental in the formulation of education policies; whereas plans for the implementation of those policies were developed by the Planning Division which is also called Planning Commission. The recommendations of the 1959 National Education Commission report were partially incorporated in the Second Five Year Plan which was the only plan successfully implemented by the Government of Pakistan. Other Five Year Plans did not find conducive environment. Third Five Year Plan's targets were affected by the war with India in 1965. Fourth Five Year Plan (1970-75) was abandoned because of the sccession of East Pakistan and its emergence as independent Soveriegn State of Bangladesh. The

period from 1970 to 1977 was non-plan period in which development activities were carried out through annual development programmes. The Fifth Five Year Plan 1978-83 was launched before the promulgation of National Education Policy in 1979.

2.10. Provincial Education Department. At the top provincial level of educational management is the provincial education department. The provincial secretary of education is the chief executive of the provincial education department. In the performance of the functions of his office he is helped by a secretary of education who is assisted by a number of deputy secretaries and other officers. In some provinces a post of an additional secretary of education also exists. The next level of provincial educational management are directorates of education for Colleges, Schools and Technical Education. A directorate has a more or less similar establishment and functions as the department of provincial education at the divisional, regional or provincial level and acts as a subordinate office to the provincial education department. While Colleges/Polytechnics & Colleges of Technology are under the direct supervisory control of the directorates of college education and technical education, management and supervision of schools goes down in a heirarchical order to districts and tehsils talukas. The district and sub-divisional education officers and, in some cases, supervisors of primary schools are

responsible for administration and supervision of schools. As there are separate schools for boys and girls in the country, usually there are separate inspectorates of education for boys and girls schools at district levels and below. In recent years the provinces have undergone a reorganization of their educational administration system to help them adjust to the changing needs of the time and to improve the efficiency of management.

2.11. Each Provincial Education Department has autonomous bodies functioning under their administrative control. There are Boards of Secondary Education which conducts examinations at Secondary & Higher Secondary level. Besides, there are Boards of Technical Education which conducts students examination at Diploma level. There are Provincial Textbook Boards responsible for the production of textbooks. For Technical Education imported texts are used as no such mechanism has been developed in the country.

Administrative set up for Vocational Training:

2.12. In pursuance of the recommendations of a Study Group the Government created in June 1973 a Manpower Division in the Federal Government to focus its attention on manpower planning and development. According to the Mid-term Review of Employment and Labour Market Situation brought out by the ARTEP in March, 1986, the Manpower Division has the following charter of functions :-

(i) Reviews programmes for collection of statistics relating to employment and manpower planning including Labour Force Surveys and other manpowr surveys and on the basis of these prepare sectoral estimates for manpower supply and demand in the economy.

(ii) Develops programmes for raising the level of employment and channelling surplus and under-employed manpower into productive work;

(iii) Study and appraise on a continuous and critical basis the problems relating to labour management relationship, development of trade unionism safety and security of working conditions, labour legislation, labour policy, wages, bonus and labour productivity;

(iv) Develop and formulate programmes in the field of labour and manpower;

(v) Preparation and examination of schemes for labour and manpower development and evaluation of Annual Development Programme and Perspective Plan;

(vi) Assess at appropriate intervals the volume, distribution as well as demographic, economic and social characteristics of employed, unemployed and underemployed labour force; and

(vii) Liaison with statistical organizations for the improvement of the manpower data.

2.13. However, this charter does not conform to the one given in the Rules of Business, 1973. It also does not tally with the charter of functions as incorporated in the Cabinet Division publication of 1973 titled "Organization and Functions of Federal Secretariat". The charter as given in the Cabinet Division document is reproduced below:-

(1) National Policy and Planning regarding manpower and employment.

(2) Foreign employment and emigration.

(3) National policy regarding :-

(a) resettlement and employment of demobilised personnel; and

(b) registration of essential personnel under the Essential Personnel (Registration) Ordinance, 1948.

(4) Compilation of manpower and employment statistics for national and international consumption(National Talent Register)

(5) National Manpower Council.

(6) Administration :-

(a) Emigration Act and

(b) Control of Employment Ordinance 1965.

(7) Policy regarding setting up of Employment Exchanges;

(8) Welfare of seamen.

(9) Research into problems of overseas Pakistanis, promotion and coordination of meaures best suited to resolving them and motivating Pakistani citizens abroad to strengthen their links with the mother country.

(10) Welfare of Pakistani employees and emigrants abroad and their dependents in Pakistan.

Vocational Training System:

2.14. Responsibility for administering Vocational Training programmes is divided between the respective provinces and the Federal Government (Ministry of Labour, Manpower and Overseas Pakistanis). At the provincial level, the Labour Departments operate :-

- Technical Training Centres (TTC's) Government Vocational Institutes (GVI's) and Apprenticeship Training Centres (ATC's) which offer 2 year and 1-year courses in 25 trades.

- Apprenticeship programmes under Apprenticeship Ordinance for about 104 trades.

In order to systematise the training programmes, standardise the skills, up-grade the technical standards of the existing institutions, expand and regulate training facilities, a National Training Ordinance was promulgated in March, 1980. Under this Ordinance, a National Training Board under the Chairmanship of the Federal Minister for Labour, Manpower and Overseas Pakistanis has been set up in which due representation to Federal and Provincial Governments, employers and employees, etc. has been provided. Provincial Training Boards have also been established in each province to ensure the execution of training plans, trade testing registration, evaluation of training schemes, preparation of provincial training plans etc. The National Training Board has the following main functions :-

(i) Collaborate with the sources of Labour Market inforamtion as determined from a survey of establishments with a view to assessing on a continuing basis existing and future training needs, both local and foreign.

(ii) Systematically study existing training programmes with respect to their relevances, duration and size and recommend such measures to be taken as seem desirable in the light of this study.

(iii) Establish criteria for evaluating & determining training programmes and facilities.

(iv) Develop training syllabi and establish and specify national training standards and trade tests.

(v) Supervise such training programmes as are funded from the Federal budget.

(vi) Prepare national training plans, programmes and projects in view of local as well as foreign manpower requirements and submit them for the approval of the Federal Government;

(vii) recommend to the Federal Government means for financing training programmes;

(viii) Promote and finance training of establishment-based or institution-based training officials and instructors;

(ix) organise and conduct seminars and workshops for various types of personnel associated with training activities;

(x) collect and compile statistics related to training;

(xi) coordinate the working of Provincial Boards;

(xii) review existing and proposed legislation on vocational training and recommend necessary legislative provisions with the concurrence of the Provincial Boards.

Provincial set-up:

2.15. The Governments of Punjab and Sind have a full-fledged Directorate of Manpower and Training under the Department of Labour which carry out different surveys in the field of employment and which also looks after the training of skilled workers

in different technical training centres and government vocational institutes within the provinces. In all the four provinces, there are Provincial Training Boards under which a number of training establishments designed for producing skilled workers in different crafts are functioning. These Training Boards in the four provinces are being controlled by the National Training Bureau which designs the curricula and standardize their training. Moreover, foreign aid and the provision of equipment for training of the instructors have been centralized and are being controlled by the National Training Board.

3 - EDUCATIONAL REFORMS

3.1. The Ministry of Education is instrumental in formulation of Education Policies. Since 1947, numerous policies and strategies have been formulated to make the education system compatible with the requirements of an independent, sovereign and ideological state such as Pakistan. This is evident from the following significant milestones:

1. All Pakistan Education Conference 1947
2. National Educational Conference 1951
3. National Commission on Education 1959
4. Commission on Student Problems and Welfare 1964
5. National Commission on Manpower and Education 1969
6. New Education Policy 1970
7. Education Policy (1972-80)
8. National Education Policy 1979

3.2. The All Pakistan Education Conference made three basic recommendations : (a) education should be inspired by Islam; (b) free and compulsory education; and (c) emphasis on technical education. National Educational Conference 1951 led to the formulation of a six year National Plan for educational development. It failed to integrate educational objectives with socio-economic objectives and was found unworkable.

3.3. The National Commission on Education 1959 made several recommendations. One of them was diversification of curricula to

introduce technical/vocational subjects in secondary stages and enhancement of middle level technical (Polytechnic) education. Commission on Student Problems and Welfare 1964 made several recommendations with regard to physical facilities for students which could not be implemented due to financial constraints. The National Commission on manpower and Education 1969 attempted to make recommendations which could ensure integration of the educational system with national economy by way of adjusting educational output to job opportunities. The Commission, initiated some studies but was dissolved without finalizing its report.

3.4. New Educational Policy 1970 was adopted in 1970 which highlighted:

i) ideological orientation

ii) orientation towards scientific and technical education;

iii) decentralization of education administration;

iv) concentrated attack on illiteracy and emphasis on elementary education through National Education Corps.

Due to events of 1971, this Policy was abandoned.

3.5. The Education Policy 1972-80 made recommendations similar to the 1970 Policy but its keynote was the nationalization of the privately managed institutions. The implementation of the nationalization programme put severe constraints on the national exchequer. The non-development expenditure rose by about six times. Although during 1971-78, there were expansions of enrolments at all levels,

yet the goals of (i) universal basic education (ii) shift towards agro-technical studies and (iii) ideological orientation could not be met due to unrest and unprecedented political activity in educational institutions.

3.6. A National Education Conference was convened in October, 1977 for evolving a set of fresh recommendations for a new education policy. The policy was announced in 1979.

3.7. The major aims of this policy again focus on fostering deep and abiding loyalty to Islam, creating awareness that a Pakistani is also a part of Universal Muslim Ummah, inculcation of character in accordance with Quran and Sunnah, providing equal opportunities to all citizens for cultural and religious developments, development of creative and innovative faculties of people, functional literacy to all citizens, fostering descipline and promotion of scientific and technical education needed for socio-economic growth. To achieve these aims, the proposed strategy envisages:

i) Curricular revisions with a view to reorganising the entire content around Islamic thought.

ii) Possibility of merging the traditional Madrassah Education with modern education.

iii) Use of National Language as medium of instruction.

iv) Training for productive work.

v) Mobilization of community resources such as mosques, civic buildings, factories etc. for education purposes; effective participation of community in literacy/ education programme.

vi) Linking scientific and technical education with production.

vii) More emphasis on quality improvement and consolidation and opening new institutions only where demand is reasonable.

viii) Separate educational institutions for female students upto highest level with specially designed curricula.

3.8. Education Policy 1979 identified various problems in the technical and vocational education. Certain measures were suggested by the Policy for the improvement of the technical and vocational education. The policy statements are reproduced below :-

> Inspite of several efforts in the past the technical and vocational education is still not job-oriented. Moreover, there are hardly any arrangements for identifying the needs and providing training to 80% rural population to make them more productive in order to strengthen this large sector of our economy. In order to improve technical and vocational education, it has been decided to introduce production-oriented curriculum related to the market requirements in all technical and vocational institutes. Advisory Committees having representatives of trade and industry will be constituted to keep the training responsive to the changing market requirements.
>
> All the technical and vocational institutions will be encouraged to generate funds for supplementing their resources by producing saleable goods during training. Small production units will be established with technical and vocational institutes under a phased programme. Evening programmes will be introduced in technical and vocational institutes for the benefit of the community, wherever needed. Separate vocational schools for drop-outs of the school system will also be established. Equipment needed for various levels of technical and vocational institutes will be standardized. A mechanism for standardizing, testing and certification of technical and vocational skills required through formal, non-formal or traditional system of training in consultation with trade, industry and other users of the output of these institutions will be introduced.
>
> Practical on-the-job supervised training for Diploma and B.Tech students will be made compulsory and suitable legislation for providing this training in industrial organizations and undertakings will be enacted. In order to provide close liaison with industry the teachers of polytechnics and technical colleges will be encouraged to provide consultancy and advisory services to the industry. Personnel from industry would also be invited to advise these institutions on production methods. A teacher training college for the training of teachers of technical and vocational institutes will be established at national level.

4 - POLICY IMPLEMENTATION

4.1. In the preceding section specific provisions related to Technical and Vocational Education in the National Education Policy 1979 have been reproduced. The Policy was promulgated by the military government as there was no elected government and legislature at that time. This Policy as mentioned earlier, was promulgated when the Fifth Five Year Plan 1978-83 had already been launched.

4.2. The Sixth Five Year Plan formulated by the Planning Commission stated that: "The existing training programmes of engineering and other institutions training the technical manpower will be strengthened and expanded and new institutions for increasing the training capacity will be set up. A significant addition to these programmes will be a network of technical/trade schools and vocational institutes which will be established all over the country to provide training in technical skills to those leaving the school system at various stages before completing education upto matriculation". The plan proposed the reinforcement of existing 28 Polytechnics; setting up of 19 new Polytechnics (12 for men and 7 for women) and 10 mono-technics. For the training of skilled workers, the plan emphasized the development of 37 institutions known as Technical Training Centres/Vocational Institutes under the National Vocational Training Project funded by IBRD/ILO/UNDP.

4.3. The Ministry of Eduction prepared an Action Plan to facilitate the implementation of the Sixth Five Year Plan of

the Education Sector. While retaining some of the major programmes without deviating from the overall financial provisions of the Sixth Five Year Plan, the Action Plan suggested following programmes :-

(1) Establishment of 278 trade schools against the Sixth Plan provision of 200 trade schools (278 trade schools have been suggested on the basis of one trade school in each tehsil).

(2) Setting up of 278 Technial Middle Schools by addition of evening shifts in general schools. There is no such provision in the Sixth Plan.

(3) Setting up of technical high schools (introduction of evening shifts in 77 general schools) which has not been provided in the Sixth Plan.

(4) Opening of 19 Polytechnics, which is in conformity of the Sixth Plan.

(5) Strengthening of 16 Polytechnics/Technical Colleges with the help of Asian Development Bank.

(6) Opening of 10 Monotechnics in under developed areas.

(7) Introduction of evening shifts in 30 Polytechnics which has not been provided in the Sixth Plan.

(8) Establishment of production units in 50% polytechnics, i.e. 15 which has not been provided for in the Sixth Plan.

(9) Provision of consumables in 15 production units before attaining self reliance which has not been included in the Sixth Plan.

(10) Production of technical textbooks for polytechnics, curriculum revision.

(11) Award of overseas scholarships to polytechnic teachers which has not been included in the Sixth Plan.

(12) Strengthening of existing agro-technical facilities in 3,000 middle schools which has not been included in the Sixth Plan.

(13) Strengthening of agro-technical facilities in 200 high schools which has not been included in the Sixth Plan.

(14) Strengthening of existing agro-technical centres which have not been included in the Sixth Plan.

4.4 The Action Plan formulated by the Ministry of Education did not receive the support of the Planning Commission and the Provincial Planning Departments. Had such proposals been sent earlier they would have been incorporated in the Sixth Five Year Plan by the Planning Commission. It cannot be said with certainty how far the provisions of the Sixth Five Year Plan have been effectively implemented. The real situation can be ascertained by undertaking an evaluation of the Sixth Plan which is coming to its end by June, 1988. So far no such legislative instruments have been introduced to facilitate the implementation of the National

Education Policy. The seventh Five Year Plan (1988-93) is still in the process which is likely to be finalized before July, 1988 in consultation with the Provincial Governments.

5 - FINANCING OF EDUCATION

5.1. Pakistan inherited an education system which was deficient in several respects. There were very few educational institutions at the time of independence in 1947. The total number of institutions by kind, level and sex during 1947-48 were as under :-

		TOTAL	FEMALE
(1)	Primary	8413	1549
(2)	Middle (lower secondary or elementary).	2190	153
(3)	High Schools	408	64
(4)	Secondary Vocational.	46	18
(5)	Arts & Science Colleges	40	5
(6)	Professional Colleges.	-	-
(7)	Universities.	2	-

5.2. During the early period after independence most of the educational institutions especially Primary and Secondary Schools were managed and controlled by the local bodies. In the rural areas they were controlled by the local bodies (District Boards); whereas in the urban areas they were operating under the administrative control of Muincipalities. The local bodies could not generate adequate revenues to meet the expenditures especially on education. Technical education because of the poor agricultural and industrial base was not quite attractive.

5.3. Post independence era required substantial expansion in the provision of services including education. Gradually the provincial govèrnments took over the responsibility of meeting both the capital and recurrent costs of education. After the

introduction of planned development in early fifties. The responsibility was shared by the Federal Government and Provincial Governments. The Federal Government had to provide development or capital expenditures; and the Provincial Governments non-development or recurrent expenditures. The development expenditure has so far been 25-30%.

5.4. Prior to the 1972 Education Policy, many schools were financed by the private sector. After the introduction of 1972 Education Policy, all the privately managed educational institutions were nationalized which consequently diluted the government's efforts to universalize primary education. The 1979 Education Policy encouraged participation of the private sector but there has been limited response and that too confined to the urban centres. Today the subject of private involvement in education is highly controversial with opinions varying widely. On the one extreme are those who encourage extensive private involvement: "It is high time that the private sector in Pakistan should be encouraged to take responsibility for establishing educational institutions .....In the case of technical education the industries and big commercial organizations should share the cost of education. The investment made by the industries will be in their own interest, because finally they will be utilizing the services of the graduates coming out of technical institutions. Teachers groups are usually found to possess the opposite view. They adamently oppose denationalization largely because they fear

it would result in the deterioration of their pay and other benefits.

5.5. While the government periodically voices support for expanding the scope of private participation. movement has been very slow except for the growth in the number of private schools at the primary level. Some of the colleges and schools formaly backed by church groups have indicated interest in renewing their ties, but this has generally come to nothing. With the strong emphasis on Islamization, other religious groups may find the climate inhospitable. While the reinstitution of a system of private colleges like that which existed prior to 1972 seems improbable, there has been some private involvement. The Ismaili community headed by the Agha Khan has financed the Medical University in Karachi. The new University of Management in Lahore receives some of its financing from private sources in addition to very high tuition. Similarly. There has been some improvement in the Technical and Vocational Education especially under the Overseas Workers Foundation established by the Ministry of Labour & Manpower.

5.6. The total expenditure on Education sector has been 1.5 to 2.0 percent of the G.N.P. This level of expenditure especially when the role of the private sector is restricted, definitely, is very low as compared to other countries of the Region. The yearwise expenditure on various sub-sectors of education both development and non-development can be seen in Table-I. It is difficult to compare the expenditures of 1947-48 with that of the current year because of high rate of inflation. Inadequate availability of financial resources for education.

TABLE–1

GOVERNMENT EXPENDITURE ON EDUCATION BY LEVEL

(Rs. million)

Year	Total Expenditure	Primary Education	Secondary Education	College Education	University Education	Technical Education	Teacher Education	Other Items	Development Expenditure	Non-Development Expenditure
1947-48	30.4	11.0	5.4	(a)	1.9	(a)	8.0	4.1	..	..
1948-49	44.5	20.0	8.4	(a)	3.3	(a)	7.0	5.7	..	..
1949-50	43.9	20.8	9.0	(a)	6.5	(a)	1.3	5.7	..	..
1954-55	94.5	41.7	17.1	(a)	19.0	(a)	3.0	13.7	..	..
1959-60	163.8	60.2	34.4	17.7	15.2	4.0	7.1	25.2	48.0	115.8
1960-61	193.1	65.3	47.2	23.4	18.1	5.3	2.1	31.7	38.1	155.0
1961-62	272.6	82.2	62.8	35.0	35.1	13.4	5.2	38.9	62.4	210.2
1962-63	346.3	91.0	68.2	43.9	52.3	26.7	6.7	57.5	123.1	223.2
1963-64	399.7	117.2	59.3	31.9	40.1	39.9	10.0	101.3	142.7	257.0
1964-65	450.9	137.0	63.3	33.1	47.9	46.7	10.3	112.6	160.4	290.5
1965-66	509.2	142.2	67.3	38.2	43.1	42.2	12.7	157.9	177.5	331.7
1966-67	440.0	152.1	75.1	35.7	36.1	30.3	12.3	98.4	106.2	333.8
1967-68	513.6	161.9	75.6	43.0	40.6	40.5	13.7	138.3	160.9	352.7
1968-69	553.0	168.9	79.6	46.4	44.2	47.4	14.2	152.3	185.4	367.6
1969-70	578.7	196.8	91.8	49.6	44.7	46.7	16.5	132.6	170.1	408.6
1970-71	789.9	221.9	93.8	45.3	92.0	81.9(c)	24.4(d)	230.6	309.5	480.4
1971-72	796.8	275.3	103.7	49.8	69.3	79.8(c)	20.0(d)	198.9	201.3	595.5
1972-73	1,000.7	315.4	113.5	85.6	81.8	79.9(c)	15.9(d)	308.4	277.2	723.5
1973-74	1,269.3	399.2	189.7	166.8	107.9	152.0(c)	17.7(d)	236.0	340.6	928.7
1974-75	1,744.5	451.5	290.0	102.3	124.0	191.8(c)	29.5(d)	495.4	523.4	1,221.1
1975-76	2,482.2	767.3	431.3	249.4	174.3	336.1(c)	38.5(d)	501.3	751.1	1,731.1
1976-77	2,802.6	853.1	577.9	274.6	210.7	338.5(c)	42.2(d)	505.4	782.3	2,020.3
1977-78	3,300.7	823.6	464.7	672.4	258.9	323.1(c)	58.5(d)	700.4	856.0	2,445.7
1978-79	3,875.9	1,305.1	731.7	367.8	324.2	515.2(c)	73.3(d)	558.6	1,067.0	2,808.9
1979-80	4,153.5	1,604.4	820.4	387.5	426.2	518.7(c)	71.0(d)	325.3	1,060.2	3,093.3
1980-81	4,619.5	1,570.5	918.8	427.6	459.2	540.5(c)	57.4(d)	639.1	1,240.5	3,378.6
1981-82	5,602.0	1,820.0	986.9	493.8	611.3	748.8(c)	83.5(d)	857.9	1,687.4	3,914.6
1982-83	6,469.5	2,096.2	1,256.0	642.0	665.5	952.7(c)	100.7(d)	756.8	1,940.5	4,529.0
1983-84	7,542.3	2,643.6	1,599.0	784.3	701.7	1,003.1	96.4(d)	756.6	1,715.4	5,826.9
1984-85(R)	8,893.4	3,280.2	2,369.3	1,033.8	925.7	389.4	252.1(d)	688.7	1,873.2	7,020.2
1985-86(R)	10,505.9	3,791.3	2,634.4	1,116.5	997.8	615.5	305.1(d)	1,058.7	2,582.8	8,908.5
1986-87(E)	12,410.8	4,478.7	2,899.4	1,227.7	1,356.2	972.9	369.2(d)	1,378.4	2,176.4	10,234.4

Sources: 1. Central Bureau of Education.
2. Ministry of Education.

.. not available.
E: estimated.
R: revised.

Notes:–
1. Expenditure incurred on Health, Education, Agriculture, Veterinary, Forest, Industries and Other Departments has been included under Technical Education.
2. Budget Allocations:
(a) Expenditure included under universities.
(b) Expenditure included under teacher education.
(c) Expenditure includes scholarships, administration and other facilities etc.
(d) Expenditure on teacher training schools only, expenditure on teacher training colleges included under technical education.

suppressed the literacy rate which currently is 26%; deprived 50% of primary school age children from education; ill equipped Schools & Colleges. There has not only been limited quantitative expansion but also qualitative deterioration. The size of education system during 1986-87 was as under :-

		TOTAL	FEMALE
(1)	Primary Schools.	88734	24895
(2)	Middle (elementary or lower secondary schools).	6448	1965
(3)	High Schools.	4988	1441
(4)	Secondary Vocational Institutions.	296	106
(5)	Arts & Science Colleges.	473	163
(6)	Professional Colleges.	100	8
(7)	Universities.	22	-

5.7. The number of educational institutions is not a reliable indicator of the size of education system. In fact, it is the enrolment of the specific age group children in various streams of education. But this section does not allow us to deviate from the aspect of Finance.

5.8. The Sixth Five Year Plan has provided following figures of financial outlays on various sub-sectors of Education during various Plan periods:-

EDUCATION AND MANPOWER

Financial Outlays

(Million Rupees)

	First Plan (1955—60)	Second Plan (1960—65)	Third Plan (1965—70)	Non-Plan Period (1970—78)	Fifth Plan (1978—83)	Sixth Plan (Allocations) 1983—88
Primary..	23	19	25	444	1413	7000
Secondary	46	95	129	542	1090	4125
Teacher	5	18	15	114	990	305
Technical :						
(*i*) Programmes under Education	7	79	105	314	465	1315
(*ii*) Programmes under Manpower & Labour	4	7	26	166	286	1020
Colleges	31	68	64	374	537	1300
Universities	40	59	59	399	687	2100*
Scholarships	2	49	77	299	350	660
Mass Literacy					50	750
Social and Cultural Activities	18	14	11	365	**	**
Miscellaneous	54	55	52	425	476	1275
Total ..	232	463	563	3442	5644	19850

5.9. In order to generate revenues for the education sector to achieve the objective of universalizing, primary education and to reinforce the existing system with additional inputs for qualitative improvement, the government imposed 5% surcharge on all the imports during 1985-86. It is not known how far this fund has contributed to the development of education. The total expenditure of education reveals that there is hardly any significant increase and still educational expenditure is about 2% of the G.N.P. If the private sector's efforts are included, it may fall within the range of 2 to 2.5% of the G.N.P.

5.10. From Table-I, it will be observed that technical education did not receive any recognition during the period from 1947-48 to 1954-55. Whatever expenditure was incurred on technical education was Lumped with the expenditure on teacher education. During 1959-60 technical education was provided Rupees Four million and gradually went up to 46.7 million during 1969-70. From 1970 to 1983 certain other expenditures like scholarships, administration,teachers training colleges & other facilities have been Lumped in the expenditure on technical education which does not provide a clear picture. The 1984-85 figures indicate an expenditure of Rs.389.4 million which went up to Rs.615.5 million during the succeeding year. The expenditure on technical education during 1984-85 was 4.4% of the total education expenditure which rose to 5.8% during the succeeding year i.e. 1985-86. If we have a look at the expenditures during 1959-60 at that time expenditure on technical education was 2.4% of the total education expenditure. Which rose to 10% during 1964-65 & came down to 8% during 1969-70. This means that the techncial education has not received that priority which it deserved. In fact the expenditures on technical eduction reveals as to what extent policy decisions have been supported by availability of financial resources.

6 - INTEGRATION OF GENERAL TECHNICAL AND VOCATIONAL EDUCATION*

6.1. The earliest attempt to reorganize secondary education to make it more relevant to the needs of the country was made in 1951 when the Ministry of Education convened a joint conference of Advisory Board of Education, the Inter University Board and the Council of Technical Education, to discuss the Six Year Plan of Educational Development. The conference took note of the fact that curricula in the schools of Pakistan reflected literary bias and lack of diversification. The Conference recommended that "Technical, Agricultural and Commercial Education should be an integral part of the system of general education" and further recommended that "duration of courses of Technical, Agricultural and Commercial Education at the secondary stage correspond with that of general education at the secondary stage".

6.2. As a result of these recommendations "Practical Arts" was introduced in class VI-VIII with the following objectives:

(i) to teach the necessity and dignity of manual work.

(ii) to illustrate the diversification of various aspects of the economic life, industrial, agricultural, etc.

(iii) to provide for testing personal interest and aptitude in representative crafts and occupations.

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*This section is reproduced from the authors' earlier study titled "Innovative Experiences in the Optimal use of Financial Resources for Education in Pakistan" carried out for UNESCO, Bangkok in July, 1985.

6.3. Selection of the type of the practical arts to be provided was to be done on the basis of the occupation pursued in the locality and also according to the sex of the pupil.

6.4. This underlying principle of vocationalization of general education continued in all successive reforms and policies including the report of the Commission on National Education (1959) and New Education Policy (1970). However, these recommendations could not produce the desired impact mainly due to the fact that the diversification was optional with the result that majority of students continued to offer courses in humanities group.

6.5. In 1972, the Government introduced the Education Policy (1972-80). One of the objectives of this Policy was "Designing curricula relevant to the national, special and economic needs compatible with our basic ideology and providing a massive shift from general education to more purposeful Agro-technical Education".

6.6. The Agro-technicl courses envisaged in this Policy were different from the previous effort in three important ways:

Firstly, considering the strong agrarian bias of the economy, due emphasis had to be given to agricultural vocations, instead of concentrating on the industrial/technical sector. Secondly, a compulsory vocational component was

introduced in the secondary curricula, to ensure that every student does take up a vocational subject. It will be recalled that previous attempts at vocationalization had failed precisely because students had the option to pursue an aimless course of studies. The Education Policy has very explicitly stated that Agro-technical education will be integrated with general education for the following reasons:-

> "In the past the general tendency has been to establish separate institutions for technical education. These institutions have not always produced efficient industrial workers. The education given in them has lacked the necessary cultural content and in practice they catered for the rejects of the general stream and a certain stigma was attached to their programme. The new programme will provide for progressive integration of general and technical education"

6.7. With the guidelines in view, the National Bureau of Curriculum started the task of revising the curricula so as to make them effective in achieving the objectives of the education policy. In the first phase of implementation, draft curricula were prepared for class VI-VIII and class IX-X. These were widely circulated amongst teachers, administrators and planners to elicit their opinion. By 1974, the Agro-technical Curricula for class VI-VIII had been finalised. (Agro-technical Studies Curriculum for classes VI-VIII.

National Bureau of Curriculum and Textbooks Ministry of Education, 1974).

6.8. The curriculum is different from previous curricula in the following ways :-

(i) Clear and definite objectives have been laid down in keeping with national goals.

(ii) These objectives have been translated into measurable activities.

(iii) Vocational courses have been selected by keeping in view their relevance to the present day needs of Pakistan.

(iv) A distinction has been made between the cognitive, affective and motor-sensori domains.

(v) To ensure successful implementation, an effective mechanism for teaching, supervision and administration of these courses has been outlined.

(vi) Instead of a large number of vague options, three alternative groups (Industrial, Agriculture and Home Economics) have been specified.

(vii) Agro-technical courses are to be taught alongside general education courses in languages, Science, Mathematics, Social Studies, Islamiat, Arts and Physical Education.

(viii) The proportion of time to be allocated to Agro-technical studies out of the total time-table is as follows :-

Class VI	13%
Class VII	18%
Class VIII	22%

6.9. The Evaluation Report of Agro-technical and Vocational Scheme of Education in Sind and Baluchistan highlighted poor

physical facilities, unsatisfactory condition of workshop and equipment, supply of material, and reading material. The student teacher ratio was also reported to be unsatisfactory. The report also indicated that there had been conceptual differences and the supervisory personnel had different notions about the scheme. The Report recommends improvement of the condition of workshops; standardization of raw material and ensuring its supply to all the workshops; preparation of teacher guides/manuals of Agro-technical and Vocational courses; proper student-teacher ratio; orientation progammes for the supervisory personnel; mobilization of community resources; evaluation of students; and carrying out of the formative evaluation.

6.10. The Evaluation Study carried out by the Allama Iqbal Open University has highlighted some of the problems related to planning, organization, administration, and financing of the scheme. According to the Study, uniform plans for all the provinces were not drawn: "These plans were different for each provinces and seemed to have been prepared independent of any guidance from the Central Implementing Agency". Similarly, each province had its own organization for the implementation of the scheme. As far as the finances were concerned, the study reveals that "In all the provinces, the budget for agro-technical/vocational education was allocated by the provincial government as part of the general education budget".

6.11. In addition to the aforementioned deficiencies, the evaluation report of the Province of Punjab has drawn a comprehensive list of the shortcoming/weaknesses of the programme. The most important of these seems to be the shortage of suitably trained and qualified teachers in almost all the trades; non-availability of textbooks on time; lack of facilities for pre and in-service training facilities; and separate administrative/ supervisory set up for the scheme. The Report recommends the provision of properly trained teachers; establishment of Agro-technical Teachers Training Centres; Provision of stores/ workshops/laboratories/equipment; Regular inspection/supervision of Agro-technical subjects; Reviewing of curricula; Establishment of suitable libraries; increase of recurring grants; introduction of inspection program at the district level; training of super-visory staff; and training of teachers in colleges for elementary teachers.

6.12 The Evaluative studies so far conducted by various agencies/organizations have not seriously probed into the financial aspects of the programme. The estimated financial requirement for the project for the initial three years were as under :-

CAPITAL COST

(Rupees in Million)

Subject	1975-76	1976-77	1977-78	Total
Industrial	20.0	20.0	32.5	72.5
Agricultural	6.0	6.0	6.1	18.1
Home Economics	4.0	4.0	3.4.	11.4
TOTAL	30.0	30.0	42.0	102.0

In the earlier years of the introduction of Agro-technical/ Vocational Education, Federal grants were allocated to the provinces. The Federal Government had been providing funds for capital expenditure like purchase of equipment; setting up of agro-technical teachers training centres; etc; whereas the provincial governments had to meet the recurrent expenditure of the project. As the situation exists, the budget for the Agro-tech and Vocational Education is allocated by the provincial governments as part of general education budget. No separate system has been evolved for the financing of Agro-technical and Vocational Education. This has consequently affected adversely the realization of stipulated objectives. Judged on the criteria of the stated objectives, the scheme of Agro-technical education, apparently, has failed to attain the goals for which it was introduced, or at least the programme has not been so successful in the schools as it was envisaged by its authors or sponsors.

6.13. The Apprenticeship Training Scheme was introduced in the Industraial Units in 1958 by the Government of Pakistan on voluntary basis to meet the shortages of skilled manpower in the country. The results were encouraging and consequently systematic apprenticeship scheme came into existance under the apprenticeship ordinance 1962 making it obligatory on the Industrial establishments, employing 50 workers or above, to introduce the Apprenticeship Programmes to train apprentices in the proportion of 20% of the total number of workers employed by them in apprenticeable trades of the establishment.

7 - TECHNICAL AND VOCATIONAL EDUCATION AS PREPARATION FOR AN OCCUPATIONAL FIELD.

7.1. The development of a sizeable infrastructure for technical education at various levels in Pakistan stemmed from the recognition that human resources development stands along with physical capital and technological progress as a powerful and indispensable means of achieving development. Education and training to a large extent determine the pace and direction of national development. Technical manpower is an important segment of the manpower spectrum required to execute and sustain development in all its important facets and plays a significant role in various fields such as industry, agriculture, business, public works, health, scientific research, education, etc.

7.2. There are three basic categories of manpower which are defined as per Unesco's recommendation as under:

i) the term "engineer" or "technologist" applies to persons working in occupations for which the need of education in appropriate sciences in universities or equivalent institutions of higher education is officially or traditionally recognized; this level of occupations would cover such activities as research, development, organization, planning and production;

ii) the term "technician" applies to persons working in occupations requiring a knowledge of technology and related sciences between that of a skilled worker and that of an engineer or technologist; occupations at the technician's level may call for inspection and maintenance, detailed development plans, supervision of production work, and details of construction. Collaboration with the engineer is an essential part of the work of the technician;

iii) the term "skilled worker" applies to persons who have received a broad education and training in the exercise of a trade or craft in a particular field.

7.3. In Pakistan, it may be useful to recognize the following organisational stages:

i) Professional Level:

i.e. Degree Programmes in engineering, administered by Enginering Colleges and Universities.

ii) Mid-Professional (Diploma) Level:

The level is equivalent to the higher secondary stage where diploma level technical/vocational education is administered in institutions such as Polytechnics, Colelges/Institutes of Technology, etc., offering Post-matric 3 years course in various technologies. The out-put from these institutions is expected to fill positions of supervisory capacity in industrial establishments/technical services etc. Additionally, Commercial Institutes, also fall in this category which offer post-matric diploma courses in commercial subjects such as accountancy, secretarial practices, book keeping, etc.

iii) Craftsmen Level:

This concerns the training needs of skilled workers at the level of operators (carpenters, masons, machinists, welders, electricians etc.) A variety of institutions offering post-middle and post-matric courses under different ministries/provincial departments are operating with courses of varying contents, duration and objectives. Quite a few vocational schools offer courses for girls.

iv) Pre-Vocational Levels:

This level may be construed to encompass all such courses which have been introduced below matric level in various general education institutions with a view to acquainting the students with elementary vocational skills in middle and high schools of Pakistan.

7.4. Since Independence, Pakistan has progressively built up an infrastructure for technical/vocational education and training. The present net work comprises institutions such as Universities and Colleges of Engineering, Polytechnics/Colleges of Technology, Commercial Training Institutes/Colleges, Vocational Training Institutes, Technical Training Centres, Agro-technical Schools offering technical streams at the middle and high school stages. The Allama Iqbal Open University (AIOU) at Islamabad also conducts programmes of vocational nature through distance education system.

7.5. Successive Five Year Plans and various education policies have been foreseeing the increasing involvement of the industry and employers in the training of technical manpower of requisite skills to make any significant break-through in this direction. Further, various programmes had to be initiated after Independence to produce rapidly a substantial number of trained, skilled workers and technicians in a relatively short period of time to meet the critical skill shortages confronted in mounting large scale development effort. Accordingly, no ready alternatives existed except to set up a number of specialized institutions,

basically forming an integral part of the governmental set-up. (See "Content of General Education in Relation to occupational Training in Pakistan", AEPAM, December, 1985).

7.6. The present system of engineering/technical/vocational education comprises of seven Universities/Colleges of Engineering; Nine Colleges of Technology; Twenty Six Polytechnics (19 Male + 7 Female); Thirteen Colleges of Commerce; Seventy Commercial institutions; 146 vocational institutes (15 male and 131 female); and 44 Technical Training centres/Vocational Institutes under the Provincial Labour Departments. Further details of their intake capacity, enrolment, and output can be seen in the Annex-II. It may be mentioned here that a National Technical Teachers Training College (NTTTC) is being established at Islamabad which will provide facilities of staff development of the Polytechnics/Colleges of Technology. Furthermore, a National Training Development Institute is being set up at Islamabad for in-service training of those instructors who are imparting instructions in the Technical Training Centres and Vocational Institutes being operated by the Labour Departments of the Provincial Governments.

8 - ENGINEERING EDUCATION

8.1. Report of the Commission on National Education (1959) listed following objectives of engineering education :-

(a) to give the students a competence in applying the principles of mathematical and physical sciences to the solution of engineering problems;

(b) to inspire students with a determination to use local raw materials and to develop new techniques appropriate to our conditions;

(c) to educate students in a sympathetic undertaking of the economic and social conditions and ways of life in our country;

(d) to develop in students a creative and imaginative approach to their chosen profession, a strong professional consciousness, a qualities of community leadership.

8.2. The admission requirements were also spelled out by the Commission. According to the Commission:"Qualification for Admission should continue to be Intermediate Science. Aptitude tests adopted to local conditions should be experimentally developed to supplement examination results". The Commission recommended that the minimum duration of the degree course should be four years.

8.3. The 1979 Education Policy has dealt with Engineering under professional education. The policy suggests consolidation and improvement of the existing system; adequate availability of Laboratory equipment, workshop machinery and books to all institutions; and close collaboration between engineering institutions and the employers; on-the-job training; and encouraging institutions to provide consultency services.

8.4. At the time when the National Education Policy was being promulgated, the Fifth Five Year Plan 1978-83 had already been launched by the Government. According to the Plan, there were Five (5) Engineering Colleges (Two at Karachi and One each at Peshawar, Sahiwal and Jamshoro) and an Engineering University at Lahore. In addition, graduate engineers in agriculture, chemical engineering and textile technology were trained at Agriculture Universities at Faisalabad and Tandojam, Institute of Chemical Engineering and Technology (Punjab University), Lahore, and National College of Textile Technology, Faisalabad respectively. The National College of Arts Lahore provided degree level training to architects and the Marine Academy (functioning under Ministry of Communication) were training engineers for Merchant navy. All these institutions together provided training in 14 technologies.

8.5. Important problems in the field of Engineering Education as reflected in the Fifth Five Year Plan were lack of facilities for post-graduate training and insufficient motivation for graduate engineers to persue full time post-graduate courses. The University of Engineering and Technology, Lahore charted in 1961 was stated to have limited number of students enrolled in post-graduate courses in selected branches of Civil, Electrical and Mechanical Technologies. Most of these students were stated to have been attending part-time evening courses and a large number of post-graduate students were leaving the University without completing their courses.

8.6. The Sixth Five Year Plan (1983-88) has stated that despite the existance of four Engineering Universities, of which one is over 20 years old, the present teaching programmes are largely confined to B.Sc Engineering courses. Only limited progress has been made in the development of M.Sc Engineering programmes and facilities of research are practically non-existent. Some-times the quality of engineering graduates produced by these institutions is considered even inferior to even those engineers trained in some of the other developing countries.

8.7. It will be observed that the number of Engineering Universities increased from one to four, whereas the number of Engineering Colleges fell from 5 to 2. This means that certain Engineering Colleges like those at Peshawar, Karachi and Jamshoro were given the status of Engineering Universities during the Fifth Five Year Plan. This upgradation was a welcome step as each province got a University of its own for ego satisfaction. However, as the Sixth Plan has pointed out, there is little increase in enrolment of post-graduate students persuing their academic programmes towards M.Sc. and Ph.D level. May be there is restricted market in which only graduate engineers can get lucrative public sector employment. Research & Development does not seem to be attractive professions for the engineers.

8.8. Engineering Universities have their own system of examination and evaluation. Those colleges which are offering graduate courses are affiliated with the Engineering Universities of the

respective province for the purposes of examination and evaluation. This system has its own merits and demerits which will be discussed in appropriate place elsewhere. It is suffice to say that there has been deterioration of the system with resultant loss of credibility of the Pakistani Engineering Institutions. The Sixth Five Year Plan (1983-88) purposes that the Centre of Excellence in Water Resource Engineering at Lahore will be further strengthened so that the quality of M.Phil and Ph.D degree programmes is adequately improved. The plan further states that selected departments at other Engineering Universities will be developed into Centres for Advanced Studies. These Centres were stated to be fully equipped and staffed and shall develop the academic programmes in collaboration with reputed Universities.

8.9. The Sixth Five Year Plan also states that projects of the newly created N.W.F.P. University of Engineering & Technology and Khuzdar Engineering College in Baluchistan will be completed during the Sixth Five Year Plan and training in new technologies such as Electronics, light & heavy engineering, irrigation, drainage, buildings and transport will be emphasized. The Plan further suggest that since the requirements of engineers will be larger during the next and subsequent plan periods, the intake capacity of B.Sc. Engineering course will be increased in existing institutions to the optimum level, and work will be initiated on a new project for the setting up of a new Engineering College in the Punjab. This prediction of the planner did not become true as there is considerable unemployment of engineering graduates.

Perhaps the predication would have been time by if there was no change in the International climate. The fall in prices of petrolium products necessitated winding up of certain projects in the OPEC Countries of the Middle East which had its a dverse effects on the job opportunities of young engineers.

8.10. Though the Engineering Universities are governed by the University Grants Commission in terms of their finances; yet they are virtually under the administrative control of the provincial government. This dual control, according to financial analysts does not seem to work well because of the financial indiscipline for which the Universities are made responsible. The Engineering Universities like other Universities enjoy considerable autonomy in terms of their administrative/academic/and financial matters. They have their own vice-chancellors, syndicates/senates and other governing bodies. The Engineering Colleges, unless they are an integral part of the University, are under the administrative control of the Provincial Government.

9 - TECHNICIAN EDUCATION

9.1. As mentioned earlier technician education is the mid professional (diploma) level which is equivalent to the higher secondary stage. The diploma level technical/vocational education is administered in institutions such as Polytechnics,Colleges/ Institutes of Technology etc, offering post-matric (secondary) 3 years course in various technologies. The 1979 Education Policy identified various problems in the technical and vocational education which have been listed earlier under educational reforms but are reproduced here for the convenience of readers*:-

> Inspite of several efforts in the past the technical and vocational education is still not job-oriented. Moreover, there are hardly any arrangements for identifying the needs and providing training to 80% rural population to make them more productive in order to strengthen this large sector of our economy. In order to improve technical and vocational education, it has been decided to introduce production-oriented curriculum related to the market requirements in all technical and vocational institutes. Advisory Committees having representatives of trade and industry will be consitituted to keep the training responsive to the changing market requirements.
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> All the technical and vocational institutions will be encouraged to generate funds for supplementing their resources by producing saleable goods during training. Small production units will be established with technical and vocational institutes under a phased programme. Evening programmes will be introduced in technical and vocational institutes

*Government of Pakistan, National Education Policy and Implementation Programme, Ministry of Education, Islamabad, 1979, p.38.

for the benefit of the community, wherever needed. Separate Vocational schools for drop-outs of the school system will also be established. Equipment needed for various levels of technical and vocational institutes will be standardized. A mechanism for standardizing, testing and certification of technical and vocational skills required through formal, non-formal or traditional system of training in consultation with trade, industry and other users of the output of these institutions will be introduced.

Practical on-the-job supervised training for Diploma and B.Tech students will be made compulsory and suitable legislation for providing this training in industrial organizations and undertakings will be enacted. In order to provide close liaison with industry the teachers of polytechnics and technical colleges will be encouraged to provide consultancy and advisory services to the industry. Personnel from industry would also be invited to advise these institutions on production methods. A teacher training college for the training of teachers of technical and vocational institutes will be established at national level.

9.2. At present there are 9 Colleges of Technology in the country imparting technician education both at diploma and degree level. These colleges have an intake capacity of 3600 at diploma level and 660 at Bachelor of Technology (B.Tech) level. They have an annual output of 1800 diploma holders and 262 B.Tech graduates. Colleges of Technology in fact have been the upgraded polytechnic institutions which were initially established for diploma level (3 years) technician education. In addition to these Colleges of

Technology, there are 19 Polytechnics for male and 7 polytechnics for female. The intake capacity of male polytechnics is 4230; whereas that of female polytechnics is 700. Their annual estimated output is 2300 and 300 respectively.

9.3. The Sixth Five Year Plan of the Government of Pakistan has laid special emphasis on an extended provision for technical and vocational training. According to the Plan, the number of polytechnics will be increased from 28 to 47; and mono-technics from 7 to 17. The output of polytechnic diploma holders will increase from 4,000 to 5,000 per year. In addition, 200 trade schools will be established which will produce 4,000 skilled workers. This number will be in addition to 45,000 skilled workers being trained in the private sector for which the Plan contemplates qualitative improvement and a system of certification which will be instituted by the National Training Board.

9.4. The Ministry of Education prepared an Action Plan to facilitate the implementation of the Sixth Five Year Plan. The Action Plan proposed a detailed list of programmes/projects to be carried out during the Sixth Plan period. A list of such programmes/projects has been provided earlier in the section on Policy Implementation. Since the Plan did not have the approval of the competent bodies, it could not receive any support either from the Planning Division or the Ministry of Finance who have a decisive role in funding of development programmes/projects.

9.5. The curriculum of Polytechnics and Colleges of Technology is formulated by the Federal Ministry of Education where a separate Wing of Science and Technology under a Senior Expert (Joint Educational Adviser) is operating. Curriculum Development is a joint effort of the Ministry of Education and experts of technician education in the provinces. Testing and evaluation is the responsibility of the Boards of Technical Education which are operating under the administrative control of the Provincial Education Departments. They are autonomous bodies funded by their respective provincial governments. However, they generate their own revenues in the form of charging examination fee from the students.

9.6. The teachers in Polytechnics/Colleges of Technology are engineering graduates who have no training in the art of pedagogy. There are no such training institutions and if there is any, that cannot cope with the requirements of a large number of teachers. The Federal Government under assistance from the Asian Development bank has set up a National Technical Teachers Training College at Islamabad. This training institution is expected to overcome the deficiency of training teachers of Polytechnics/Colleges of Technology.

10 - COMMERCE EDUCATION

10.1. The National Education Commission (1959) dealt with Commercial Education in a very comprehensive manner. According to the Commission all education, however specialized, should keep in view the necessity to educate a citizen and an individual as well as a specialist. As with other subjects, commercial education must be developed as part of the broader educational system and must be given an important place in general education at every stage.

10.2. The commission was of the view that technical efficiency in industrial or agricultural production may be rendered largely ineffective if the machinery of administration is unable to handle successfully the problems of labour relations, costing, marketing, advertising banking insurance, shipping and merchandising in the widest sense. These supporting services, which are necessary if science and technology are to be successfully applied to industry and agricultrue, are the concern of commercial education.

10.3. The commission further observed that the needs of a modern state cannot be met without a large body of trained personnel qualified for careers in public and business administration, trade, industry and commerce. The concept of commercial education, therefore, involves the establishment of special institutions such as commercial institutes to train those who will pursue professional careers in trade, industry and commerce. It also involves the establishment of graduate and post-

graduate courses in our universities in the fields of commerce, business and public administration.

10.4. In the field of commercial education the commission observed that the country needs three grades of personnel roughly parallel to the skilled workers the technicians and the engineers who are essential for industrial workshops. Translated into commercial terms, these are: first, the skilled clerical workers in many grades whose work is accurate, speedy and reliable; next, are the supervisory personnel who are well educated, possess many of the skills of the clerical workers they supervise, and who, in addition, can handle their subordinates efficiently and humanely and can interpret the policy requirements of the management. Finally, at the top level is the executive class who should be thoroughly conversant with economic and commercial principles and able to frame policy for production and development.

10.5. Each of these require different kinds of training at different levels, but experience in the actual commercial enterprise is the chief factor making for success in the first two categories. As far as skilled clerical workers are concerned there will generally be a common core of office skills which all should receive, and in certain cases, notably in the case of typists, stenographers, and account clerks, basic training in skills can easily and most effectively be given by intensive institutional training courses.

10.6. To reorientate education so as to meet the needs of the people, the commission proposed the following steps :-

(a) To diversify the school curriculum so that pupils may take up, in accordance with their aptitudes, a few elective subjects in the field of technical, agricultural and commercial studies in addition to the core of compulsory subjects.

(b) To provide special institutions, such as Commercial Institutes, at which students may take up courses at the professional level.

Students who take elective subjects in Classes IX and X would be able to enter employment in business and commerce direct or they can join commercial institutes to secure professional qualifications. Those who take the elective subjects in the present Intermediate classes are able to proceed to the university for higher studies. However, if a student does not wish to go in for higher education, he would be able, with the education that he has had, to enter an industry with a certain degree of confidence.

10.7. The technician level education in commerce is imparted in the commerce institutes. The commercial institutes train young people in office skills so that they are immediately useful when they enter employment. The course at the commercial institutes last for 1-2 years and offer basic training in office skills combined with basic background studies and language instruction. With this training plus experience in office practice they become valuable assets in business and commercial work than ordinary

graduates. According to the 1985-86 estimates, there were 13 Commerce Colleges and 70 Commercial Institutes with an intake capacity of 1600 & 6500; and annual output of 1200 & 4500 respectively.

10.8. Courses at the commercial institutes are designed to meet the requirements of industry, commerce and the government services. The basic courses include language (including business correspondence, summary and precise writing), commercial arithmetic and accounts, typewriting, shorthand, book-keeping, economics and principles of commerce.

10.9. The Boards of Intermediate and Secondary Education/Boards of Technical Education develops their curriculum in consultation with the practitioners at the Diploma and Certificate level, whereas the Universities prescribe syllabi for the Bachelor and Master level courses and taught in the Colleges of Commerce at Bachelor level and universities at post-graduate level. Unfortunately there is no feed back mechanism on the basis of which the Boards/Universities may update the curricula of commercial education. There are certain disciplines which have not been included in the curriculum of Commercial Education. For instance computer is becoming increasingly essential in business, commerce and government institutions which need to be incorporated in the commercial education.

10.10. Annual system of examination is prevalent at secondary, higher secondary and graduate level. The Boards of Intermediate & Secondary Education are responsible for conducting the examinations at

Intermediate level i.e. Intermediate in Commerce (I.Com) in Punjab, the Boards of Technical education are conducting such annual examinations.,

10.11. Commercial education is presently administered by the Directorates of Technical Education. This field of education has not been given recognition it deserves and has not been able to attract the administrative and financial support, being an appendage of the larger sub-system of Polytechnics/Colleges of Technology which are meant for imparting technician education. The working group for the Seventh Five Year Plan constituted by the Planning Commission recommended that "Commerce Institutions should have their own Directorates and examining bodies where feasible. In view of expected expansion of Commerce Education separate Directorates and Boards of Commerce Education may be set up in provinces such as Punjab."

10.12. The set up of commercial education consists of one year post-matric course of certificate in Commerce followed by another year of diploma in commerce. Commerce education at Intermediate or Higher secondary level is offered both in the Commerce Colleges (under general education) in the form of I.Com and in Technical Education Sector as C.Com and D.Com. The purpose of placing C.Com & D.Com under Technical Education is to protect its professional nature with bias on practical skills in secretarial competencies.