BANGLADESH

PROGRAMMES OF TECHNICAL EDUCATION

For technical education, Bangladesh possesses the following educational institutions:

(a) Three engineering colleges, at Rajshahi, Chittagong and Khulna.

(b) A Technical Teachers' Training College at Dacca for imparting training and higher education to teachers for polytechnic institutes.

(c) 17 polytechnic institutes, one at each district town except Patuakhali and Tangail; a Swedish Bangladesh Institute of Technology in the district of Chittagong Hill Tracts, located at Kaptai; a Graphic Arts Institute at Dacca, and three monotechnics (Bangladesh Textile Institute, Bangladesh Leather Institute, and the Institute of Glass and Ceramics) all located at Dacca.

(d) A commercial institute at Dacca and 15 commercial sections attached to different polytechnic institutes.

(e) 35 vocational institutes at sub-divisional headquarters, and 13 second shift trade programmes attached to polytechnic institutes.

(f) A survey institute at Comilla.

(g) Bangladesh Educational Equipment Development Bureau at Dacca for the purpose of designing educational equipment for schools and colleges.

As there were only three polytechnics in 1961, it can be seen that the expansion of technical education has been considerable. Polytechnic education now reaches most parts of the country.

ENGINEERING COLLEGES - FIRST DEGREE IN ENGINEERING

The engineering colleges offer four-year courses of study leading to B.Sc. Engineering degrees in Civil Engineering, Mechanical Engineering, and Electrical Engineering.

Although these institutions are termed "colleges" they perform a university function by providing a four-year course (after Intermediate School) equivalent to a Master's Degree in other disciplines offered by different universities. The academic programmes are controlled by the Faculty of Engineering of the affiliating university.

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All the engineering colleges of the country form outer campuses of the Bangladesh University of Engineering and Technology. This step is expected to pave the way for harmonious growth of engineering education in the country.

Rajshahi Engineering College

Apart from the erstwhile Engineering College at Dacca which was ultimately upgraded to the present Bangladesh University of Engineering and Technology, the Engineering College at Rajshahi is the oldest, having been established in 1964.

Chittagong Engineering College

The Chittagong Engineering College was established in 1968 and is located about 20 miles from the main town. Though it started with 120 students, it now admits 180 students per year, and the total enrolment is 720. It suffers from a lack of workshop equipment, laboratory equipment, machine tools, etc, and the shortage of teachers is very acute.

Khulna Engineering College

This newly-established college, which is also located away from the main town, admits 131 students in the first year of the B.Sc. Engineering course. In addition, it admits about eleven students in the preparatory course for the polytechnic's diploma holders. The college is yet to be properly equipped in terms of teachers, equipment and physical facilities.

Technical Teachers' Training College

There is one technical teachers' training college in Bangladesh to provide training and higher education for teachers at polytechnic institutes. The college does not have a campus of its own and is located on the first floor of the Glass and Ceramic Institute. The College offers the following courses:

(a) A one-year course (diploma in technical education) after diploma in engineering.

(b) A two-year course (B.Sc. in technical education) after diploma in technical education.

The intake capacity of the college is 150 trainees a year (90 in the diploma programme and 60 in the degree programme). Training is offered in Civil Engineering, Mechanical Engineering, Power Engineering, Electrical Engineering, and Electronics Engineering.

There are two in-service programmes:

(a) Diploma in Technical Education

Duration:	1 year
Pre-requisite:	Diploma in Engineering
Examining body:	Bangladesh Technical Education Board, Dacca 2
Major employer:	Directorate of Technical Education, Bangladesh
Nature of job after training:	Mainly teaching at various polytechnic institutes of Bangladesh

(b) B.Sc. in Technical Education

Duration:	2 years
Pre-requisite:	Diploma in Technical Education
Examining body:	University of Dacca
Major employer:	Directorate of Technical Education, Bangladesh
Nature of job after training:	Mainly teaching and administrative jobs at various polytechnic institutes of Bangladesh

For the first of these courses, technical education subjects take up 35% of the time, and engineering and allied subjects, 65%. For the second, the proportions are 30% and 70% respectively.

POLYTECHNIC INSTITUTES IN BANGLADESH

At present there are 17 polytechnic institutes in Bangladesh having a total enrolment capacity of 3,300 in their first year classes. They offer three-year post-secondary Diploma in Engineering courses in the following technologies: civil, electrical, mechanical, power, radio-electronics, chemical, architecture, refrigeration and air conditioning, farm, automobile, machine shop, industrial wood, electrical machine, and food (this course is in the offing).

The first-year course comprises science, mathematics, drawing, shop, and management courses, offered in two semesters to all students. Specialized courses start in the second year and continue for two years in four semesters. To obtain the Diploma, students take a final examination in two parts under the Bangladesh Technical Education Board.

Diploma holders are frequently employed as sub-assistant engineers to perform work of a supervisory nature in engineering activities in government departments, autonomous bodies and private enterprise. They are also appointed as Junior Instructors (Technical) in polytechnic institutes.

A list of all Polytechnics and the courses run in them is given in Appendix 2, page 14.

MONOTECHNIC INSTITUTES

Bangladesh Institute of Glass and Ceramics

This Institute was established in 1951 under the Ministry of Commerce, Labour and Industries, and is located in the Tejgaon Industrial Area. It is the only institute of its type in Bangladesh. It offers a one-year artisan course in ceramic technology. The present enrolment of students is 25. The opening of a similar course in glass technology is under consideration. In addition to regular academic programmes, the Institute provides testing and production facilities for allied industries.

Bangladesh Textile Institute

Established in 1950 under the Ministry of Commerce, Labour and Industries, this, too, is the only institute of its type in Bangladesh. It is located in the Tejgaon Industrial Area.

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The Institute offers the three-year diploma courses after S.S.C. in jute technology and in textile technology; and a two-year diploma course after H.S.C. in textile chemistry.

Bangladesh Leather Institute

The Institute, established under the Ministry of Commerce, Labour and Industries in 1969, offers the following courses: a three-year diploma course after H.S.C.; a two-year certificate course after S.S.C.; and a one-year artisan course after VIII grade.

Bangladesh Institute of Graphic Arts

The Institute of Graphic Arts, the only Institute of its type in Bangladesh, offers a three-year (post S.S.C.) diploma course in printing, specializing in six different branches. It has an admission capacity of 30 students per year and its present enrolment is 80 students. In addition to regular academic programmes, the Institute has a production unit and offers printing facilities to government and non-government agencies for rare and quality works.

Bangladesh Survey Institute

The Bangladesh Survey Institute at Comilla offers a one-year (post S.S.C.) course in draftsmanship and a two-year course leading to a Survey examination.

VOCATIONAL TRAINING INSTITUTES

In Bangladesh there are 35 vocational training institutes of which 13 are attached to polytechnics and have no separate premises of their own. They provide very useful courses which fit well into the overall economy of the nation. They are evenly and judiciously distributed throughout the country. Their special feature is that they produce people who are not mere job-seekers but have the capacity to start their own industry and become self-employed.

MANPOWER PLANNING

The data made available to me clearly indicates that the Government is aware of the importance of manpower planning. A stock-taking of the whole situation appears to have been done. The surveys of manpower could prove very useful. An obvious conclusion one can draw from the data is that employment will be available to technically-trained personnel and they will not face unemployment at least in their own category of manpower.

Appendix 3 shows the input and output of engineering graduates and diploma holders (engineering technicians) for the last few years and the projected manpower supply of these categories have been shown. Appendix 4 shows the numbers of posts available, their minimum academic requirements, and the numbers of qualified people seeking employment. (See pages 16 and 17.)

SPECIALIZED TECHNICIAN COURSE

Bangladesh is a riverine country and its economy depends largely on the improvement of river transport. In order to provide the necessary manpower for the construction, operation and maintenance of river craft, a Marine Diesel Training Centre was established in 1958, with the assistance of I.L.O. (under UNDP).

Manpower required for operating, repairing and maintaining diesel-driven vehicles, power plants, pumps, compressors etc. are also produced by this training centre.

The courses run by the Centre are shown in the following table:

DESCRIPTION	DURATION	ENTRY QUALIFICATION	AGE	FIRST YEAR ENTRY
Marine Diesel	2 yrs	VIIIth Class Pass	14 to 18 yrs	50
Marine Diesel Artificer Course	- do -	Matriculate	15 to 20 yrs	20
Shipbuilding Draftsmanship Course	- do -	- do -	- do -	20
Welding Course (Arc & Gas)	- do -	VIIIth Class Pass	15 to 28 yrs	20
Refresher Course	1 to 3 mths	-	14 to 18 yrs	20

Method of Admission of Trainees

Proper advertisement is made in the daily newspapers. Reputable firms and industries are also informed by circulars inviting nominees for admission. Selection is made by a Committee on the basis of a written test and interview. The trainees are awarded a trade certificate on successful completion of their training either by the head of the institution or by the Director of Labour. The Centre does not take any responsibility for providing jobs for the trainees when they have passed out.

Examinations and Awards

Examinations for first degree courses in engineering are conducted by the Bangladesh University of Engineering and Technology, Dacca. This university controls the academic matter in respect of all the engineering colleges in Bangladesh, although in all other matters these colleges are autonomous and enjoy the status of universities.

Examinations for technician diploma courses are conducted by the Bangladesh Technical Education Board, a Diploma in Engineering in the appropriate branch being awarded by this Board to those successfully passing the examinations after undergoing the approved courses of study.

APPRENTICESHIP TRAINING

Although the country is not properly developed industrially, the Government is keen to develop proper training for the personnel needed to man industry and other organizations. The Government has enforced the Apprenticeship Training Act, 1850, with necessary amendments in 1974.

Apprenticeship Training was introduced on a voluntary basis in May 1960. Although the Apprenticeship Act of 1850 was on the Statute Book, it was not implemented, and the Apprenticeship Ordinance, 1962, repealed it. Apprenticeship was

made a provincial government matter in 1962. Apprenticeship Ordinance was enforced on 61 undertakings on 22.7.1968; on 18 more undertakings on 14.3.1974; and 14 trades were declared apprenticeable on 2.11.1968. The above-mentioned list of designated trades was expanded to a total of 27 trades on 4.6.1974.

Between May 1960 and December 1968, the period during which apprenticeship training was carried out voluntarily, a total of 1,215 apprentices were enrolled. Of these, 830 completed their training, 195 dropped out without completing their training, and 190 were still under training on 31.12.1968. Total enrolment from May 1960 to Octover 1974 has been 1,745, of whom 1,268 have completed their training, 333 dropped out without completing their training and 144 were under training on 1.11.1974.

The following reasons have been suggested to explain the negative attitude of industries to apprenticeship: lack of training facilities, the unsound financial position of some organizations, lack of qualified supervisory personnel in an establishment to look after the practical training, and lack of technically qualified staff to provide related instruction to the apprentices.

ADVANCED TRAINING PROGRAMMES

Facilities have been created for advanced training programmes through the agency of the Bangladesh Industrial Technical Assistance Centre, Dacca, known as BITAC. The programmes are developed to meet the needs for highly skilled personnel in appropriate industries in Bangladesh, and designed to provide the engineer, the technician, the shop foreman, the supervisor, and the experienced shop worker with a concentrated, practical course in shop-work of a high order of precision and excellence.

This novel shop experience, gained under ideal training conditions, allows the trainee to re-examine his own shop practices and methods in the light of advanced techniques and high standards. During the course, the trainee is called upon to employ his highest skills in the performance of shop assignments, and these assignments increasingly make higher demands on his abilities. The trainee thus acquires new and higher skills. Classroom and workshop sessions will be devoted to safety, and assist the recognition of hazardous conditions and the reduction of accidents.

At present BITAC has facilities to impart training in machine and tool shop practices; machine and tool design; die design; heat treatment; pattern shop practices; foundry shop practices; welding; and protective coating.

PROFESSIONAL BODIES

The Institute of Engineers, Bangladesh, is probably the only professional body of engineers in the country. It admits members for Studentship, Graduateship and Associate Membership through professional examinations. In Bangladesh, the professional qualifications acquired in sections A and B of the professional examinations of the Institute of Engineers, Bangladesh, are recognized in part for the Bachelors Degree in Engineering. The Institute conducts no other academic activity having an important bearing on the quality and improvement of technical education in Bangladesh.

FUTURE NEEDS

It is apparent that the Apprenticeship Rules now in force in Bangladesh are inadequate. The country requires many training places for practical training in industry as the number of graduates and technicians admitted annually, or, failing that, at least half that number. This is necessary in view of the need for practice-oriented courses and experienced personnel.

APPENDIX 1: OFFICIALS MET AND VISITS UNDERTAKEN

Officials

Dr. Wahiduddin Ahmed	Director of Technical Education, Ex Dean of Faculty of Engineering
Mr. Abdur Rashid	Chairman, Bangladesh Technical Education Board
Mr. Saiful Haque	Vice-Principal, Dacca Polytechnic
Mr. Ruhul Amin	Chief Instructor (Clerical)
Mr. A. Karim	Chief Instructor (Mechanical)
Dr. Lutfar Rahman	Principal, Bangladesh Textile Institute
Mr. Nazmal Haque	Professor, Technical Teacher Training College

Some Institutions Visited

Polytechnic, Dacca; Technical Teacher Training College; Bangladesh Industrial Technical Assistance Centre (BITAC); Bangladesh German Technical Training Centre.

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APPENDIX 2: TECHNICAL INSTITUTIONS ABOVE CRAFT LEVEL

Educational Institution	Courses Offered	Annual Admission Capacity
1. TECHNICAL TEACHERS' EDUCATION		
Technical Teachers' Training College, Dacca	Diploma in Technical Education; B. Ed. (Tech.)	150
2. ENGINEERING EDUCATION		
Rajshahi Engineering College	Civil Engineering Mechanical Engineering Electrical Engineering	180
Chittagong Engineering College	- do -	180
Khulna Engineering College	- do -	120
3. POLYTECHNIC EDUCATION		
Dacca Polytechnic Institute	Civil Technology Electrical Technology Mechanical Technology Power Technology Radio and Electronics Technology Architecture Building Technology	640
Chittagong Polytechnic Institute	Civil Technology Electrical Technology Mechanical Technology Power Technology Radio and Electronics Welding Technology	480
Khulna Polytechnic Institute	Civil Technology Electrical Technology Mechanical Technology Power Technology	320
Comilla Polytechnic Institute	Civil Technology Electrical Technology Mechanical Technology Surveying Technology	320
Mymensingh Polytechnic Institute	Civil Technology Electrical Technology Mechanical Technology Farm Technology	320
Barisal Polytechnic Institute	Civil Technology Mechanical Technology Power Technology	240

Bogra Polytechnic Institute	Civil Technology Mechanical Technology Power Technology	240
Pabna Polytechnic Institute	Civil Technology Mechanical Technology Power Technology Survey Technology	240
Rangpur Polytechnic Institute	Civil Technology Power Technology	240
Sylhet Polytechnic Institute	Civil Technology Mechanical Technology Power Technology	240
Dinajpur Polytechnic Institute	Civil Technology Mechanical Technology Power Technology	160
Faridpur Polytechnic Institute	Civil Technology Mechanical Technology Power Technology	160
Feni Polytechnic Institute	Civil Technology Mechanical Technology Power Technology	160
Jessore Polytechnic Institute	Civil Technology Mechanical Technology Power Technology	160
Kushtia Polytechnic Institute	Civil Technology Mechanical Technology Power Technology	160
Rajshahi Polytechnic Institute	Civil Technology Mechanical Technology Electrical Technology	160
Graphic Arts Institute, Dacca	Printing Management	40

4. MONOTECHNICS

Swedish Bangladesh Institute of Technology, Kaptai	Industrial Wood Technology Automobile Technology Electrical Technology	100
Bangladesh Textile Institute at Dacca	Jute Technology Cotton Technology Textile Technology Textile Chemistry	100
Bangladesh Leather Technology Institute, Dacca	Diploma in Leather Technology Certificate in Leather Tech. Artisan Course in Foot Wear and Leather Goods Manufacturing	60
Bangladesh Glass and Ceramics Institute, Dacca	Artisan Course in Ceramic Technology Artisan Course in Glass Technology	60
Bangladesh Survey Institute	Aminship Course Survey Final Course	80

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APPENDIX 3: OUTPUT OF INSTITUTIONS

	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976	1976-1977	1977-1978
ENGINEERING COLLEGES (Degree Level)							
Rajshahi Eng. College	140	140	140	140	140	190	220
Chittagong Eng. College	-	-	140	140	140	160	200
Khulna Eng. College	-	-	-	-	-	90	140
TECHNICIAN EDUCATION (Diploma Level)							
Dacca Polytechnic Inst.	520	520	520	520	520	530	590
Chittagong " "	250	390	390	390	390	390	390
Khulna " "	190	240	250	250	250	250	230
Comilla " "	150	180	230	230	230	230	250
Mymensingh " "	150	180	230	230	230	230	230
Barisal " "	60	100	120	120	120	160	160
Bogra " "	60	100	120	120	120	200	230
Pabna " "	60	100	120	120	120	160	160
Rangpur " "	60	100	120	120	120	160	160
Sylhet " "	60	100	120	120	120	160	160
Faridpur " "	60	100	120	120	120	120	120
Rajshahi " "	60	100	120	120	120	120	120
Feni " "	60	100	120	120	120	120	120
Jessore " "	60	100	120	120	120	120	120
Kushtia " "	60	100	120	120	120	120	120
Dinajpur " "	60	100	120	120	120	120	120
Graphic Arts Inst. Dacca	20	20	20	20	20	30	30
Joydevpur Polytechnic Inst.	-	-	-	-	-	130	160
Tangail " "	-	-	-	-	-	-	60
Patukhali " "	-	-	-	-	-	-	60
Womens' Poly. Inst. Dacca	-	-	-	-	-	-	-
Swedish Bangladesh Inst. of Technology, Kapta	70	70	70	70	70	70	100
Bangladesh Textile Inst.	80	80	80	80	80	100	140
Bangladesh Leather Tech. Institute	16	16	16	16	32	32	32

APPENDIX 4: MANPOWER DATA IN ENGINEERING AND RELATED FIELDS

Minimum Academic Requirement	Number of Posts Available	Number of Qualified People
B.Sc. (Civil Engineering)	1,976	1,899
B.Sc. (Electrical Engineering) M.Sc. (Applied Physics)	1,321	1,187 (1)
B.Sc. (Mechanical Engineering)	998	849 (1)
B.Sc. (Chemical Engineering) M.Sc. (Applied Chemistry)	460	399 (2)
Degree in Metallurgy	31	39
B.Sc. (Architecture)	86	83
Diploma in Civil Engineering and Allied Technologies	4,164	4,469 (3)
Diploma in Architecture and Allied Technologies	74	66
Diploma in Mechanical and Allied Technologies	2,400	2,192 (2)
Diploma in Electrical and Allied Technologies	2,823	3,156
Diploma in Radio Electronics	601	256
Diploma in Chemical Technology	281	88 (2)

(1) The deficit has provided an opening for some surplus holders of M.Sc. (Physics) and B.Sc. (Pass).

(2) The deficit has provided an opening for some surplus holders of B.Sc. (Pass).

(3) Some of the surplus could be employed in posts meant for graduate engineers since the supply of B.Sc. (Civil Engineering) is short of the required number.