Bangladesh
Ministry of Education
Ministry of Primary and Mass Education

Bangladesh
Preparatory Survey
for Education Sector

Final Report

March 2017

Japan International Cooperation Agency
(JICA)

IC Net Limited
and
PADECO Co., Ltd.

Table of contents

List of figures

List of tables

Abbreviations and acronyms

ADB	Asian Development Bank
BANBEIS	Bangladesh Bureau of Educational Information & Statistics
BBS	Bangladesh Bureau of Statistics
BCS	Bangladesh Civil Service
BDT	Bangladesh Taka
BEED	Bangladesh Education Engineering Department
BEERI	Bangladesh Education Extension and Research Institute
BMET	Bureau of Manpower Employment and Training
BOU	Bangladesh Open University
BSTB	Bangladesh School Textbook Board
BTEB	Bangladesh Technical Education Board
BUET	Bangladesh University of Engineering and Technology
CGPA	Cumulative Grade Point Average
CIDA	Canadian International Development Agency
CNC	Computer Numerical Control
CPI	Corruption Perception Index
DIA	Directorate of Inspection and Audit
DMPI	Dhaka Mohila Polytechnic Institute
DPEd	Diploma in Primary and Pre-Primary Education
DPI	Dhaka Polytechnic Institute
DPs	Development Partners
DSHE	Directorate of Secondary and Higher Education
DTE	Directorate of Technical Education
EFA	Education For All
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GPI	Gender Parity Index
GTSC	Gazipur Government Technical School & College
HEMIS	Higher Education Management Information System
HEQEP	Higher Education Quality Enhancement Project
HSC	Higher Secondary Certificate
HSC-Voc	Higher Secondary Certificate Vocational
HSTTI	Higher Secondary Teachers' Training College

ICT	Information and Communication Technology
ILO	International Labour Organization
IQAC	International Quality Assurance Cell
ISC	Industry Skills Councils
JSC	Junior Secondary Certificate
KOICA	Korea International Cooperation Agency
LGB	Local Government Division
MDGs	Millennium Development Goals
MOE	Ministry of Education
MOEWOE	Ministry of Expatriate Welfare and Overseas Employment
MOLE	Ministry of Labour and Employment
MOPME	Ministry of Primary and Mass Education
MPO	Monthly Pay Order
MTMPS	Medium Term Macroeconomic Policy Statement
NAEM	National Academy for Educational Management
NCDC	National Curriculum Development Center
NCTB	National Curriculum and Textbook Board
NEP 2010	National Education Policy 2010
NER	Net Enrolment Ratio
NIEAER	National Institute for Education Administration Extension and Research
NIEMR	National Institute of Educational Management and Research
NIR	Net Intake Rate
NSDP2011	National Skill Development Policy 2011
NTRCA	Non-Governmental Teachers' Registration and Certification Authority
NTVQF	National Technical and Vocational Qualification Framework
PEDP1	Primary Education Development Program 1
PEDP2	Primary Education Development Program 2
PEDP3	Primary Education Development Program 3
PPB 2021	Perspective Plan of Bangladesh 2021
PRSP	Poverty Reduction Strategy Paper
PSC	Primary School Certificate
QAACB	Quality Assurance and Accreditation Council of Bangladesh
QAU	Quality Assurance Unit
RMG	Ready Made Garment
SDGs	Sustainable Development Goals

SEQAEP	Secondary Education Quality and Access Enhancement Project
SESDP	Secondary Education Sector Development Program
SESIP	Secondary Education Sector Investment program
SMCs	School Managing Committees
SME	Small and Medium-size Enterprises
SSC	Secondary School Certificate
SSC-Voc	Secondary School Certificate Vocational
STEP	Skills and Training Enhancement Project
TEC	Technical Education College
TSC	Technical School and College
TTTC	Technical Teachers Training College
TVET	Technical and Vocational Education and Training
UGC	University Grant Commission
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VTI	Vocational Training Institute
VTTI	Vocational Teacher's Training Institute
WB	World Bank

Executive Summary

CHAPTER 1 Overview of the Study

(1) Background

In the education sector, Bangladesh has promoted the enhancement of primary education since the establishment of the Compulsory Primary Education Act and its agreement to UNESCO's 'Education for All (EFA)' declaration in 1990. Since 1998, Bangladesh has carried out education reforms with assistance from Development Partners, and the Japanese government has provided comprehensive cooperation by dispatching policy advisors and implementing technical cooperation projects. However, in recent years, evidence has emerged of post-primary education challenges, including lower secondary school enrolment rates, completion rates in secondary education and educational content that has little connection with the real world, economy and industry.

Given the above, in 2015, the Bangladesh government requested Japan for technical cooperation to solve the challenges faced by the educational sector. This survey is carried out to review the cooperation projects implemented thus far, examine the future direction of cooperation for the entire education sector and discuss the possibilities of assistance for secondary and higher education and technical education.

(2) The objective of this Survey

To further strengthen the strategy of Japan International Cooperation Agency (JICA)'s education program in Bangladesh, information gathering necessary to examine the contents of the Program formulation and analyse issues and assistance needs will be carried out. For primary education, existing information will be used. Amongst others, information gathering and analysis will be carried out concerning secondary, higher, and technical education, which are subsectors and for which cooperation is not presently extended. Concerning the technical cooperation project for assisting Polytechnic Institutes for which the government of Bangladesh has already requested to the Government of Japan, the contents of assistance will be proposed in this study based on more detailed information gathering and analysis of the current status of the project formulation.

(3) The survey methods

In this survey, information gathering and reviews were carried out through documentary surveys, questionnaire surveys and interviews. Also, Bangladesh government officials, who work for technical education, were invited to Japan to gain an understanding of the technical education policies in Japan and observe human resources development at TVET facilities and the recruitment and development of personnel at private companies.

(4) Special matter regarding this survey

Because of the terrorist incident that occurred in July 2016, travel restrictions to Bangladesh were imposed, and the survey implementation period was changed accordingly. The survey team commissioned local consultant to carry out information gathering.

CHAPTER 2 The Political, Social, and Economic Situation in Bangladesh

(1) Political Situation

Bangladesh achieved the independence in 1971. After independence, a constitution was enacted with the basic national principles of 'socialism', 'nationalism', 'separation of religion and state', and 'democracy' in 1972; however, the domestic situation deteriorated extremely from 1974 onwards because of confusion surrounding independence, a vulnerable industrial base, a shortage of human

resources, and the subsequent spread of hunger. After a military coup d'état occurred in 1975, the political system was changed to a parliamentary democracy accompanying the amendment of the constitution in 1991. Thereafter, Bangladesh has held a national election every five years and the administration has been changed at each national election until 2009. However, the Hasina administration, which took office in 2009, has continued for two consecutive periods.

(2) Society, economy, and industry

Bangladesh is one of the most populous countries in the world, with a population of over 160 million. The population growth rate is currently declining. The population increase is believed to be due to improved medical care, living condition, nutrition and the low average age of first marriages. Economic inequalities in association with the population growth have also become an issue, and the Gini coefficient index used to measure inequality remained the same between 2000 and 2010, meaning that the situation has not improved. Rural areas in particular exhibit a clear declining trend, and it is necessary to take a closer look at the index.

In the economy, the annual GDP growth rate of around 6% is maintained and is expected to be around 6.9% in 2017. The investment growth rate, compared to the high level of 17–18% at one time has fallen and remains at around 12–13%. Foreign direct investment increased from 845 million USD in 2005 to 1,527 million USD in 2014. Regarding the growth rate by industry sector, the agriculture-based primary sector is declining. The manufacturing-based secondary sector, after experiencing significant growth between 2010 and 2011, has slowly improved. Growth in the service-based tertiary sector maintained relatively stable between 2010 and 2015. The secondary and tertiary industries are expected to experience stable economic growth unless they suffer significant negative economic impact from other countries.

In the textile industry, sewing products account for 80% of total exports, while leather products and jute products account for less than 10%. This unbalanced industrial structure over a long period has become an important industrial issue since it poses an impediment to switching to other exported products and the promotion of new special products. In addition, the low level of technology and quality control has had a negative impact on industrial development.

CHAPTER 3 The Current Situation and the Challenges of Education Sector

(1) General Education

The education system in Bangladesh is classified into three categories: the general education, technical-vocational education and madrasah education. Other categories include the professional Education. The general education consists of primary education (grades 1-5), junior secondary education (grades 6-8), secondary education (grades 9-10) and higher secondary education (grades 11-12). The higher education (tertiary) is from the grade 13. The five years (from age 6 to 11) of primary education are compulsory. The period of compulsory education is scheduled to be extended to eight years from the 1st grade to the 8th grade (age from 6 to 14 years old) under NEP2010. However, the timing of its introduction is not yet decided.

(2) Technical-Vocational Education

The TVET is administered by the Ministry of Education (MOE) and Ministry of Expatriate Welfare and Overseas Employment (MOEWOE). The TVET provided by the MOE are classified into four programs.

The secondary vocational training course (SSC vocational course) is intended for 9th -10th graders, and the higher secondary vocational training course (HSC vocational course) is intended for 11th-12th graders. The engineering diploma Course provided by the polytechnic institutes is for 11th-14th graders and the bachelor of engineering course is for 13th -16th graders.

The SSC vocational course has a higher number of class hours than general secondary education owing to the addition of the vocational training subjects. In the SSC vocational course, students qualify

for a certification examination in secondary education in the same way as the students in the general education course. Upon completion of this course, students are certified as having completed secondary education.

As of 2016, there were 64 technical school and colleges (TSCs) in the country that provide SSC and HSC vocational courses. The SSC and HSC vocational courses have a higher number of class hours because of the addition of the vocational training subjects. Students who have completed the SSC vocational course at TSCs do not have to enroll in the HSC vocational and can choose to enroll in the engineering diploma course. In the HSC vocational course, students also qualify for a certification examination in Higher Secondary Education in the same way as the students in the General Education System. Upon completion of this course, students are certified as having completed higher secondary education.

Although the minimum requirement for entering the engineering diploma course is the completion of either the secondary general education course or SSC vocational, it is possible to advance to the engineering diploma course upon completion of the HSC vocational course. For those who aspire to become teachers at the TVET institutions, there is an option to enroll in the Technical Teachers Training College (TTTC) after completion of the engineering diploma course. TTTC offers a technical education diploma course and bachelor course in technical education, and students can earn either a technical education diploma or a bachelor's degree in technical education. The diploma course is for one year and the bachelor course is for two years.

(3) Madrasah Education

The madrasah education is classified into Alia Madrasah and Qaumi Madrasah, depending on the types of education. The Alia Madrasah covers school curricula ranging from primary education to university-level education and has a system corresponding to the general school system in terms of the classification of education courses and the length of the course of study, and students must take final exams after completing each course. The Alia Madrasah is administered by the MOE Madrash Education Board, responsible for school management and supervision of educational contents. The Qaumi Madrasah is run without assistance from the MOE and offers Islamic education based on the original curricula in Arabic, Persian and Urdu. According to the questionnaire survey conducted in the Qaumi Madrasah Education Board in 2008, there are 5,000 schools directly controlled by the Board and about 10,000 registered schools.

CHAPTER 4 The Needs and Challenges of Human Resources in Industrial Sector

(1) Industrial human resources (employment area, education level, migrant work, replacement by foreign labour force)

Regarding the employment situation for industrial human resources, people engaged in service industries account for 55.3% in urban areas, and people engaged in agriculture account for 56.2% in rural areas, indicating that the major industries differ between the urban and rural areas. Regarding educational levels, while the percentage of children not completing primary education is only 39% in urban areas, it is 62% in rural areas. While the percentage of children entering secondary education, including junior and upper schools is about 50% in urban areas, it is as low as 25% in rural areas. Thus, there are differences in the educational level between urban and rural areas. The unemployment rates have hovered around 4%, and people engaged in the informal sector account for 80%, revealing issues such as unstable employment and low-paid labour. In addition, there is the issue of migration of labour within the country and overseas. While overseas migrant labour is encouraged, there are concerns about the positive and negative impacts from the labour force replacement by receiving migrant workers from the Middle East and Southeast Asia. The main reason for employing foreign workers is supplementation for the lack of ability and skill shortages on the part of domestic employees and quantitative adjustment of personnel.

Regarding the issue of industrial human resources, a shortage of human resources for industrial

demand is apparent. Therefore, it is necessary to advance the development of human resources considering the differences in industrial structure and educational levels within a favourable economic situation and low unemployment rate between the urban and rural areas, the employment forms related to unstable employment and wage problems, and the labour structure seen in the migration of labour within the country and abroad.

(2) Industrial human resources needs

Bangladesh has been relying heavily on the textile industry, supported by cheap labour costs. In view of the fierce industrial competition with neighboring countries in the future, it is essential to promote and develop industries handling high value-added products in addition to the textile industry. At present, much attention is being paid to the light industries, and the demand for human resources required by manufacturing sectors capable of manufacturing and processing high-quality components is expected to increase. Despite the constant problems regarding securing and hiring skilled human resources faced by the local companies, according to the results of the questionnaire survey, there was growing demand for problem-solving capabilities, positive attitude and high motivation toward work as well as individuality and communication skills that serve as the basis for such an attitude and motivation. On the other hand, there was little demand for the technical expertise that was believed to be in high demand.

To examine the demand for education in the industrial sector, an extensive survey was carried out on companies in various sectors, including clothing, farming, processed farm products, light industries, leather products, medicines, telecommunication technologies and software, and jute products. Regarding the technical subjects in technical education, mechanical, electric and electronical engineering, welding techniques were in great demand. Among the science-related subjects, biology and chemistry were highly popular. In addition, there was demand for statistics. Regarding the type of occupation, line administrators, site plant managers, administrators responsible for quality control and quality assurance, technicians capable of machine operation and maintenance and management of machines, and electrical engineers were high in demand.

CHAPTER 5 Challenges and Proposal for Future Education in Bangladesh

(1) Proposals for JICA Education Program Approaches and Proposed Directions and Strategies for Programs

Specific goals, approaches and the directions of the future assistance programs that could be considered by JICA will be proposed to develop human resources capable of playing a significant role in the country's growth the vision for which was drawn by the government of Bangladesh from the current state and challenges of the general educational sector in Bangladesh and the JICA Educational Cooperation Position Paper (2015) determined by JICA.

Human resources vision demanded in the Bangladesh society can be said that "Persons who have reliable basic scholastic ability as well as the knowledge and attitude necessary as members of society, are equipped with abilities and skills necessary for their own economic independence and fulfilment of the country's and society's needs and can carry out creative work in cooperation with people around them, finding problems and considering solutions by themselves."

To develop such human resources, the accumulation of education is essential, and it is important to establish the unified program goals across the entire educational sector. In addition, such goals must promote the realisation of high-quality uninterrupted learning targeting all people throughout the country, enhancement and strengthening of personnel foundations contributing to fair and sustainable economic growth and stability of society and achievement of SDGs in Bangladesh. In addition, to achieve the goals of this educational program, respective stages of the educational subsectors must have continuous and consistent content as uninterrupted learning. In addition to considering various types of assistance by Development Partners, specific directions of cooperation for the educational subsectors by the Japanese government will be proposed as follows.

1) Proposed Directions for Primary and Secondary Education Program

It is important to improve the curricula serving as the basis for providing appropriate educational opportunities from the primary education stage, develop textbooks and learning materials based on the curricula, build a learning cycle through classroom experiences and academic achievement evaluation and maintain and strengthen the consistency within the learning cycle. In the secondary and higher secondary education, it is important to provide career education and improve the quality of basic skills for becoming a member of society considering employment opportunities and further education in addition to the acquisition of knowledge and skills. Specific directions for cooperation through assistance in developing the comprehensive educational systems, including the improvement of students' academic achievement by building a learning cycle focused on academic subjects and assistance in acquiring knowledge and personal qualities required for finding employment and the pursuit of further study can be proposed.

2) Proposed Directions for Technical Education Program

It is important that people who receive a technical education make significant contributions to the social development, economic growth and the industry development and promotion of the country in future. At the same time, technical education is expected to contribute to creating opportunities for access to educational Programs. In SDGs and Japan's New Educational Cooperation Policy 2016–2020, the educational cooperation related to the establishment of the foundation for the development of human resources capable of promoting industrial and science technology and social economy development are defined as priority issues and the cooperation building on Japan's industrial development process and knowledge of Japan's manufacturing (monozukuri) clarify Japan's competitive advantages. With the aim of acquiring the capabilities of young adults and professionals required for the sustainable growth of society and the economy, specific directions for cooperation in the improvement of the accumulating effects of solid education and development of industrial human resources can be proposed.

3) Proposed Directions for Higher Education Program

It is important that the basic academic ability and knowledge obtained in during primary and secondary education be developed into advanced knowledge and skills through higher education. It is important to promote efforts to increase the number of people who understand the value of higher education, which puts focus on the process of learning as well as the results of learning. Although Japan has been providing assistance to science and technology and engineering-type higher education, only a handful of institutions such as universities have received benefits. It is also true that the immature level of private companies hinders the occurrence and progress of innovations widely. Specific directions for cooperation that can contribute to giving benefits to a wide variety of universities, promotion and development of private companies, creation of an environment for promoting innovation in the future can be proposed.

CHAPTER 6 Proposal for Future Technical Cooperation Project of Technical Education

(1) Abilities to strengthen through technical education

In light of the competencies and abilities demanded by industrial companies, the changes to come in industrial structure, and the employment status of TVET graduates after graduation, students must gain better basic learning competencies through primary and secondary education. Then, it is important for students to acquire the following through TVET: 1) reliable technical knowledge and skills such as understanding of production processes, ability to comprehend and make drawings, and techniques for creating and processing the products based on drawings; 2) fundamental competencies for working people; and 3) ability to set their own objectives in employment.

(2) Technical Cooperation to polytechnic institutions

The following are required to strengthen the technical education at polytechnic institutes: capacity development of technical teachers, organizational capacity development, and educational system reform.

Possible activities to achieve the above include development of curricula and teaching materials, teacher training, and inspection on the developed teaching materials to verify their effectiveness. For such activities, support to and coordination among the following four stakeholders will be essential: DTE that plans and develops strategies and policies; BTEB that engages in curriculum development; TTTC that trains candidates for teachers; and polytechnic institutes that will be the recipient of the prospective technical cooperation. In addition, teacher training is particularly important because it is technical education teachers who will use the developed curricula and teaching materials for developing human resources.

(3) Draft Plan of Technical Cooperation Project of Technical Education

Technical cooperation to Bangladesh's technical education is a field in which Japan's advantages can be applied. The polytechnic institutes in Bangladesh and the national technical colleges of Japan have similarities in their educational systems. In addition, it is possible to apply the knowledge and experiences of Japan's polytechnic colleges to Bangladesh with necessary adjustments to fit the needs of Bangladesh. Meanwhile, the survey team proposes to focus on the three technical areas of electricity, electronics, and mechanical engineering for the following reasons: Bangladesh's needs are likely to increase in such industrial sectors as light manufacturing that are expected to develop in the years to come; and Japan excels in manufacturing. The survey team also proposes to build a model of industrial human resource development while developing teaching materials and improving the learning environment for relevant technologies as well as implementing on a pilot basis and confirming the effectiveness of career-oriented education to have students accumulate the fundamental competencies for working people.

The proposed plan of the revise project is as follows:

Project name (Tentative): Project for Improvement of Technical Education According to the Need for Industrial Human Resources

Super Goal: To contribute to the country's society and economy through polytechnic institutes' sustainable production of able engineers by the introduction of an improved educational system

Overall Goal: To disseminate developed curriculums, teaching materials and practice methods among the polytechnic institutes

Project Purpose: To improve the quality of the development of industrial human resources at the pilot polytechnic institutes through the improvement of curriculums and teaching materials for technical education mainly in electricity, electronics and mechanical engineering according to the needs in the industrial sector

Expected Outputs:

1) Establishment of a strategy for technical education at the higher education level (diploma course at polytechnic institutes)
2) Development of curriculums and teaching materials for diploma courses on electricity, electronics and mechanical engineering at polytechnic colleges according to the needs in the industrial sector in Bangladesh and inspection of them at pilot polytechnic institutes
3) Introduction of equipment for practice in pilot polytechnic institutes for the purpose of effectively providing technical education based on revised curriculums

4) Strengthening of the abilities of pilot polytechnic institute teachers by the Technical Teachers Training College (TTTC) by the use of improved or developed courses, curriculums and teaching materials
5) Utilisation of improved or developed courses, curriculums and teaching materials at pilot polytechnic institutes

CHAPTER1 Overview of the Study

1.1 Background

The People's Republic of Bangladesh (Bangladesh) aims to accelerate sustainable and equitable economic growth and move out of poverty to become a middle-income country by 2021, under the 'Perspective Plan of Bangladesh' (2010–2021). In terms of economic growth, Bangladesh was selected as NEXT11 after BRICs, the only country to be selected from the list of Least Developed Countries (LDC) by the Goldman Sachs Group, Inc. The GDP growth rate of the country has been constant at approximately 6% annually in recent years and its GNI per capita rose to 1,080 United States Dollar (USD) (2014) from 420 USD (2000), which means that the country has become a lower-middle income country and further growth is expected.[1] From the viewpoints of sustainability, equality, and poverty, improvements of some social development indicators, such as in the educational field, are also progressing, which shows evidence of the achievement of the MDG indicators. On the other hand, inequality has not decreased, with the Gini coefficient remaining almost unchanged from 0.451 in 2000 to 0.458 in 2010. Moreover, Bangladesh is one of the world's most vulnerable countries to climate change and natural disasters, and one-third of its low-lying land is frequently submerged because of large-scale flooding. Recently, in addition to conventional political demonstrations, terrorist attacks have been increasing. This has seriously impacted the country, not only socially but also economically.

In the education sector, Bangladesh has promoted the enhancement of primary education since the establishment of the Compulsory Primary Education Act and its agreement to UNESCO's 'Education for All (EFA)' declaration in 1990, and particularly stressed the achievement of complete enrolment and the securing of educational quality improvements through the capacity build-up of teachers. The 'First Primary Education Development Program (PEDP1)', the 'Second Primary Education Development Program (PEDP2)', and the 'Third Primary Education Development Program (PEDP3)' have been implemented with assistance from several Development Partners (DPs) since 1998. PEDP1 aimed to improve enrolment rates and education continuous rates, as well as to strengthen the monitoring system. PEDP2 stressed these points by applying a sector-wide approach, targeting primary education in collaboration with DPs. Japan has also extended comprehensive cooperation as its 'Basic Education Improvement Program' under the Cooperation Priority Area 'Addressing Social Vulnerability', including: enforcement of teacher training led by policy advisors (individual experts) dispatched continuously and the technical cooperation project 'Strengthening the Capacity of Teacher Training in Primary Teacher Training Institutes (PTIs) to Improve Classroom Teaching', which has been implemented since 2004, and technical support as nationwide activities for the revision of curriculum and textbooks.

The Ministry of Primary and Mass Education (MOMPE) started the PEDP3 (2011-2017), and with the support and assistance of the DPs, the net enrolment rate in primary education reached 97.7% in 2015. The passage rate of the Primary School Certificate (PSC) examination also increased to 98% (in 2014) from 89% (in 2009), and the completion rate improved to 79% (in 2014) from 55% (in 2009) as well.[2] On the other hand, concerning the 'well-balanced development at all levels from primary education to higher education' and 'steps toward full-fledged professionals' under the National Education Policy 2010 (NEP2010), the enrolment rates in secondary education, which corresponds to the 6th to 12th grade, and the completion rate of the 12th grade were 50.2% and 58.1% respectively in 2014. In other words, the percentage of students who graduate from high school in Bangladesh is equal to one-third of those who graduate from high school in Japan. In addition, in the case of Polytechnic Institutes, although the Directorate of Technical Education (DTE) of the Ministry of Education (MOE) aims to foster middle-standing engineers who support the industrialization of the country, it has become an issue that the contents of education and market demand are not linked. Furthermore, there are other

[1] From the World Development Indicator, World Bank (WB)

[2] Many children graduate from schools without attaining the necessary academic level in such a manner that the percentage of attaining the necessary level at the National Student Assessment (NSA) was at 25% (in 2013) both in Bengali language and Mathematics.

issues on the accumulation of knowledge and capabilities in primary and secondary education. In addition, because of the lack of group activities, work competency in the industrial field is not sufficient. As the contribution of education to the industrial sector is still limited, the government of Bangladesh requested the technical assistance of Japan on this matter in 2015.

Based on the above circumstances, it was necessary to examine the possibility of extending assistance to Bangladesh in secondary, higher, and technical education, to review past cooperation in primary education, and to determine the future direction to be taken for education as a whole.

1.2 The objective of this Survey

To further strengthen the strategy of JICA's education Program in Bangladesh, information gathering necessary to examine the contents of the Program formulation and analyses issues and assistance needs will be carried out. Amongst others, information gathering and analysis will be carried out concerning secondary, higher, and technical education, which are subsectors and for which cooperation is not presently extended. Concerning the technical cooperation project for assisting Polytechnic Institutes for which the government of Bangladesh has already requested cooperation, the contents of assistance will be proposed in this study based on more detailed information gathering and analysis of the current status of the project formulation. For primary education, existing information will be used.

1.3 Activity Schedule

The following table shows the activity schedule of this Survey.

Table 1-1 Activity Schedule

Schedule	Local/ Japan	Contents of major operations
April–May 2016	The first local Study	Meeting at JICA Bangladesh office, meeting with DTE of MOE, explanation of the survey using inception report, submission of work plan, interview study for each organisation, information gathering, literature examination, review regarding current status of education and education and development of industrial human resources, preparation of draft progress report.
June–July 2016		Interview study for each organisation, information gathering, literature examination, preparation of draft of assistance plan and discussion, preparation of invitation Program to Japan
July 2016	Work in Japan	Implementation of invitation Program to Japan
Aug.–Sep. 2016	Work in Japan	Preparation and submission of progress report, preparation of scheme of programmatic assistance, design of technical project
Oct.–Dec. 2016	Work in Japan	Preparation of draft final report
Dec.2016–Jan. 2017	The second local study	Meeting with DTE, MOE regarding the result of survey and proposal of the future technical cooperation
January 2017	Work in Japan	Preparation of draft final report and submission
Feb.-Mar. 2017	Work in Japan	Preparation of final report and submission

Source: Survey Team

The duration of the survey was from the end of April 2016 to the end of October 2016, but because of the terrorist attack in Dhaka on 1 July 2016, the schedule after July 2016 was changed. The end of the survey period was thus postponed until the end of March 2017 after consulting with the JICA headquarters. Initially, the survey team planned the second local study from August 2016, but because of security measures by JICA, the survey team could not travel to Dhaka as planned. Therefore, the survey team decided to cancel the local study except for their meeting with the DTE, and the information collection in the field was done as much as possible by local consultants under the survey team's instructions. Based on the information provided by the local consultants, the survey team worked in Japan.

1.4 Composition of Members

The following table shows the composition of the members of this survey.

Table 1-2 Composition of the Members of the Survey Team

Name	Operations in Charge	Affiliation
Takujiro Ito	Leader and comprehensive analyst of Education sector 1/ Technical Education and Vocational Training1	IC Net Limited
Tatsuya Nagumo	Deputy leader and comprehensive analyst of Education sector 2	PADECO Co., LTD.
Hideki Kumagai	Technical Education and Vocational Training2	IC Net Limited
Kaito Miwa	Secondary and Higher Education	PADECO Co., LTD.
Takahiro Tanabe	Industrial Human Resource Needs1	IC Net Limited
Kenji Momota	Industrial Human Resource Needs2/ Training Planning	IC Net Limited
Yumi Yamaguchi	Industrial Human Resource Needs3/ Assistant/ Coordinator	IC Net Limited

Source: The Survey Team

CHAPTER2 The Political, Social, and Economic Situation in Bangladesh

Bangladesh is located on a delta plain where the Ganges and several other rivers meet in the Bengal region in the east of the Indian subcontinent. The size of the country is approximately 140,000 km^2 (about 40% of the size of Japan), with a population of 159.07 million people[3]. It is the seventh-most populous country in the world. The population density is extremely high, at 1,222 people/km^2[4] – the second highest population density of countries with populations over ten million. The average annual growth rate of the population is 1.20%[5], and this growth is continuing. The country shares a border with Myanmar on its south-eastern side and is otherwise surrounded by India, except on its south side, which faces the Bay of Bengal. Although the land is fertile, damages to agricultural production and agricultural and social infrastructure due to natural disasters such as floods and cyclones caused by the monsoon season are issues to address. In this chapter, the political and economic conditions surrounding education in Bangladesh will be examined.

2.1 Changes in Political Situation in Bangladesh

In the Bengal region, cotton textile production, presently the major industry of the country, had already begun by the 4th century B.C., when the region was under the control of the Maura Empire, which unified the northern part of India. Various religions took hold in the Bengal region, with Hinduism introduced around the 4th century (Guputa Empire), Buddhism around the 8th century (Pala Empire), and Islam in the 12th century (Sena Empire). The British East India Company, established in 1600, advanced into the Bengal region in 1632, and colonial rule was established in 1765. In 1947, when British India separated into the two independent nations of India and Pakistan, East Bengal elected to become part of Pakistan because of its large Muslim population, and Islam became its state religion. However, triggered by the motion to make Urdu, which is the language of West Pakistan, an official language of Pakistan, the movement for autonomy expanded and Bangladesh achieved de facto independence on 16 December 1971. After independence, a constitution was enacted with the basic national principles of 'socialism', 'nationalism', 'separation of religion and state', and 'democracy' in 1972; however, the domestic situation deteriorated extremely from 1974 onwards because of confusion surrounding independence, a vulnerable industrial base, a shortage of human resources, and the subsequent spread of hunger. As a result, a military coup d'état occurred in 1975 and this government was maintained until December 1990. The political system was changed to a parliamentary democracy accompanying the amendment of the constitution in 1991. Thereafter, Bangladesh has held a national election every five years and the administration has been changed at each national election until 2009. However, the Hasina administration, which took office in 2009, has continued for two consecutive periods.

For about two years from November 2006, a caretaker government continued under the declaration of a state of emergency due to intensified conflicts between political parties, and measures against corruption were promoted. Later, the Awami League achieved a landslide victory in the national election of 2008 by holding up a manifest 'Vision 2021'6, aiming to become a middle-income country by 2021, the year of the 50th anniversary of independence, and the Hasina administration (second) was established. In 2013, however, opinions were divided between the ruling and opposition parties over the introduction of a caretaker government and intense protest movements occurred nationwide. The national election was held in January 2014 amidst an election boycott by the 18-party opposition alliance, and the Hasina administration (third) was established as a result of the overwhelming victory of

[3] WB (2014)
[4] WB (2014)
[5] Bangladesh Bureau of Statistic (BBS) (March 2011)
[6] Vision 2021 is a document that was compiled by the Bangladesh Awami League party as its political manifesto before the national election of 2008, which includes major plans for Bangladesh including the Perspective Plan and Five-Year Plan. In the document, participatory democracy, the establishment of an effective government system, the eradication of poverty, and plans to become a middle-income country (annual income per person at approximately 2,000 USD), etc. are advocated. The country became independent in 1971, and 2021 marks the 50th anniversary after the independence.

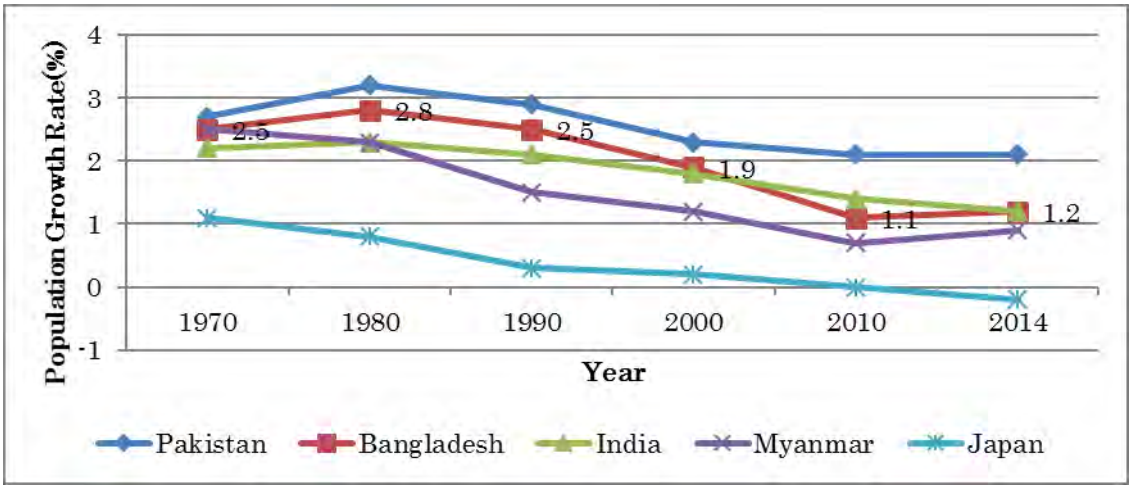
the ruling Awami League party. In 2015, the opposition alliance carried out an anti-government campaign again on the occasion of the first anniversary of the election boycotted by opposition parties. Thus, it can be said that the political situation in Bangladesh is not stable.

2.2 Social and Economic Situations

In this section, the social and economic situations of Bangladesh will be overviewed in terms of comparison with other countries and secular changes that have occurred, etc.

(1) Population Growth

The population of Bangladesh exceeded 159.4 million people in the 2015 statistics,[7] ranking as the eighth largest population in the world.[8] The average annual growth rate of the population was 1.2% in 2014. It reached its peak around 1980 at 2.8% after the Bangladesh War of Independence in 1971 and showed a slow decline thereafter. Thereafter, the population, at about 71.5 million people in 1974, increased to 144 million people in 2011. Trends in population growth show a tendency of decline after reaching a peak at 2.8% in the 1980s. Neighboring countries (India, Pakistan, and Myanmar) show similar tendencies.



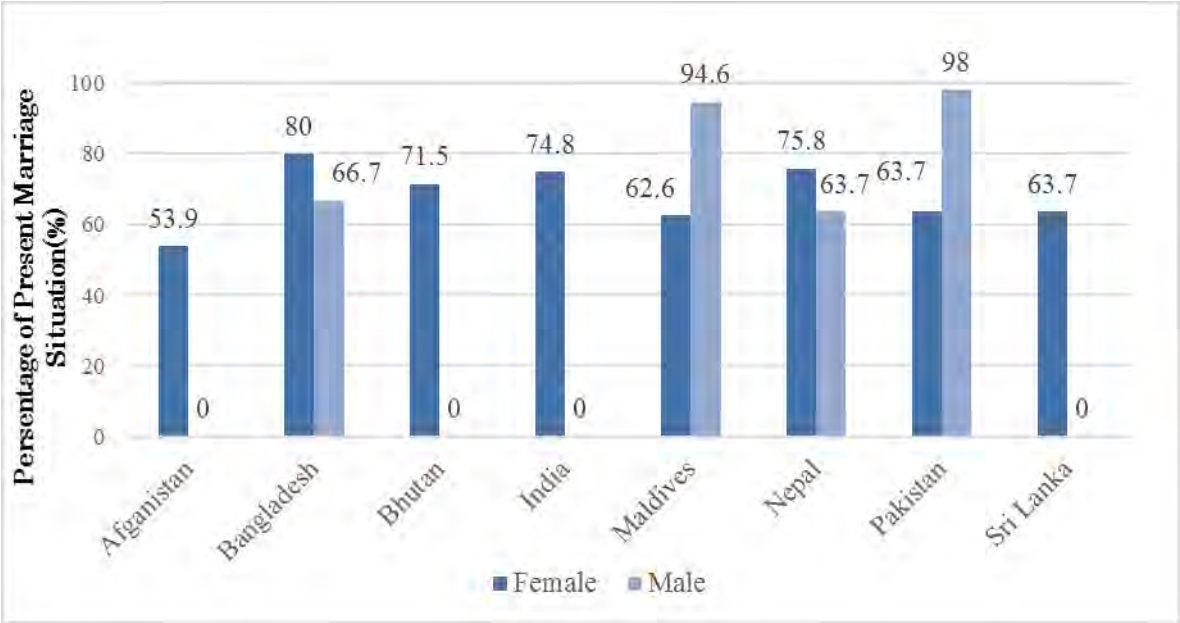
Source: Prepared by the Survey Team based on the World Development Indicator, World Bank (WB)

Figure 2-1 Transitions of Population Growth Rate in Neighbouring Countries

(2) The Recent Trend in Population Growth and its Background (Marriage, Childbirth and Medical Care)

Such high population growth in Bangladesh mainly stems from a high birth rate due to the early marriage of women and improvements in medical care. The following table shows the present marriage rates of females (15-49 years old) and males (15-54 years old). In Bangladesh, 80.0% of females and 66.7% of males are married, with the female marriage rate as the highest amongst neighboring countries. On the other hand, the male marriage rate is relatively low amongst neighboring countries.

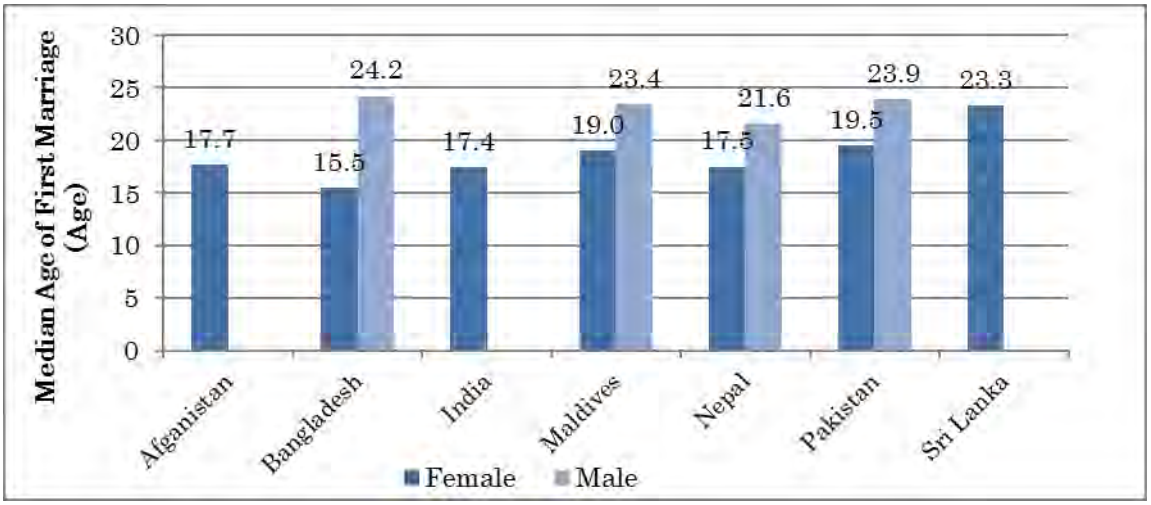
[7] BBS (October 2015)
[8] From the World Bank Development Indicator, WB. Eighth largest population, following: 1. China, 2. India, 3. US, 4. Indonesia, 5. Brazil, 6. Pakistan, 7. Nigeria.



Source：'Population Monograph of Bangladesh: Volume-13 Trends, Patterns and Determinants of Marriage in Bangladesh', Bangladesh Bureau of Statistics (BBS) (2015)

Figure 2-2 Present Marriage Rate (%) of Females (15-49 years old) and Males (15-54 years old) in Countries in South Asia

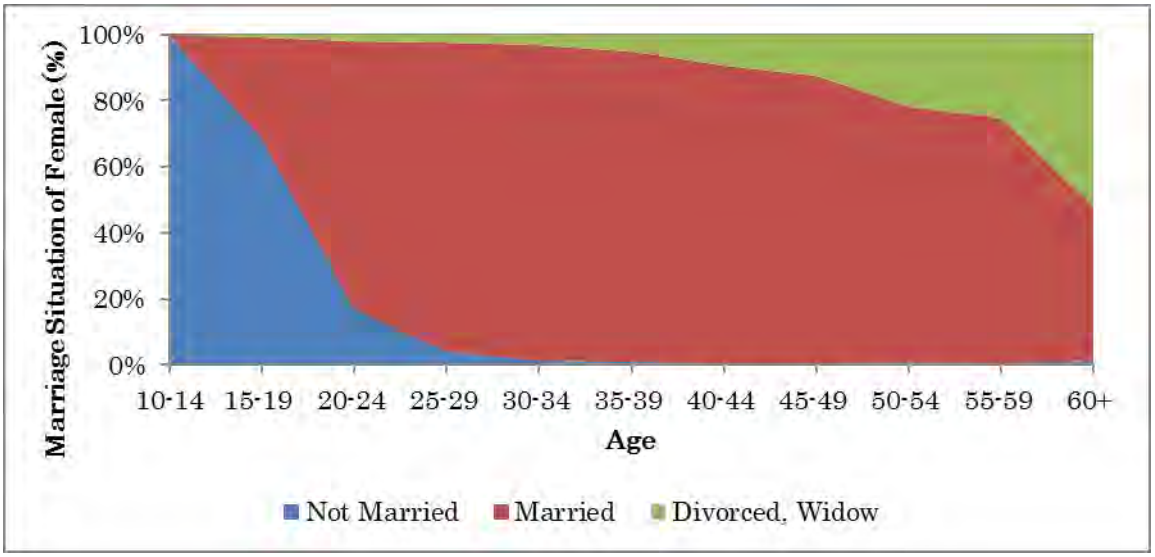
The following figure shows the median age of the first marriage for females (25-49 years old) and males (25-54 years old) in countries in South Asia. In Bangladesh, the median female is 15.5 years old at first marriage and the median male is 24 years old; the value for females is the youngest amongst neighboring countries. The legal marriage age in Bangladesh is 21 years old for males and 18 years old for females, which means that the median female age at first marriage is substantially younger than the legal marriage age.



Sources: 'Population Monograph of Bangladesh: Volume-13 Trends, Patterns and Determinants of Marriage in Bangladesh', BBS (2015)

Figure 2-3 Median Age of First Marriage of Females (25-49 years old) and Males (25-54 years old) in Countries in South Asia

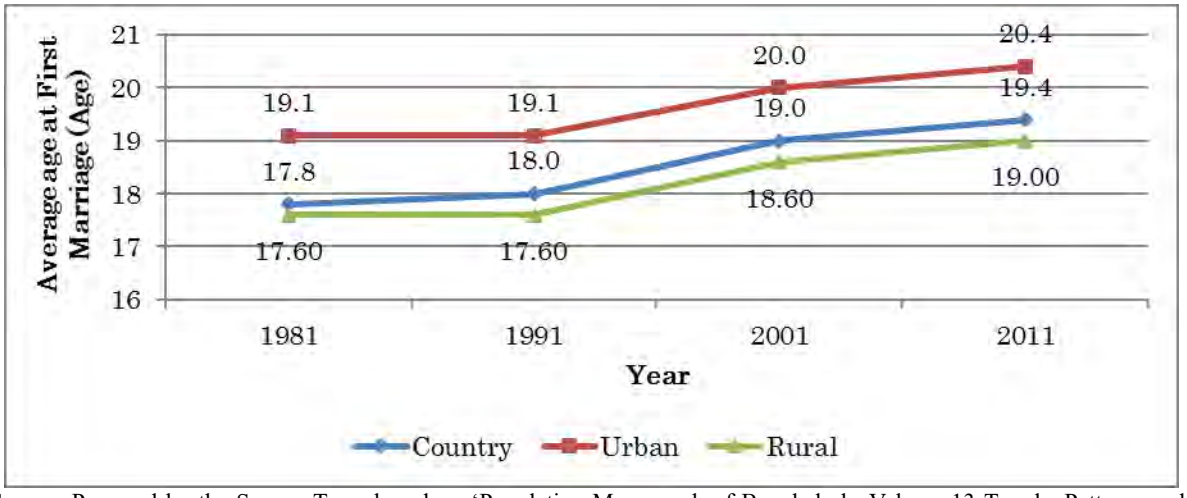
The following figure shows the marital status of females by age group (2011). The percentage of married females is 0.3% even for the 10-14 year-old group and 30.7% for the 15-19 year-old group, which shows that marriage at younger ages is problematic.



Sources : Prepared by the Survey Team based on 'Population Monograph of Bangladesh: Volume-13 Trends, Patterns and Determinants of Marriage in Bangladesh', BBS (2015)

Figure 2-4 Marital Status of Females by Age Group (2011)

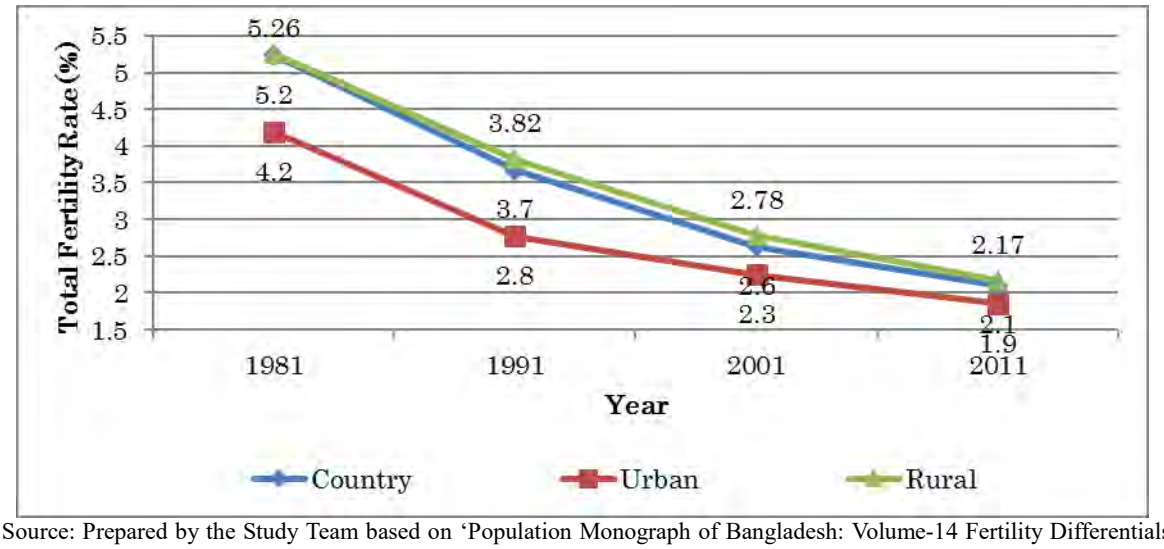
Marriage among young females is a serious issue, but this situation is improving. The following figure shows secular changes in the average age at first marriage. In rural areas, the average age at first marriage rose to 19.0 years old in 2011 from 17.6 years old in 1981, while the average age at first marriage rose to 20.4 years old in 2011 from 19.1 years old in 1981 in urban areas.



Source: Prepared by the Survey Team based on 'Population Monograph of Bangladesh: Volume-13 Trends, Patterns and Determinants of Marriage in Bangladesh', BBS (2015)

Figure 2-5 Transitions of Average Age at First Marriage for Females

The following figure shows transitions in the total fertility rate. In 1981, the total fertility rate in rural areas was 5.26 and that of urban areas was 4.2, a difference of 2.06. In 2011, the difference greatly narrowed to only 0.27, with 2.17 for rural areas and 1.9 for urban areas.



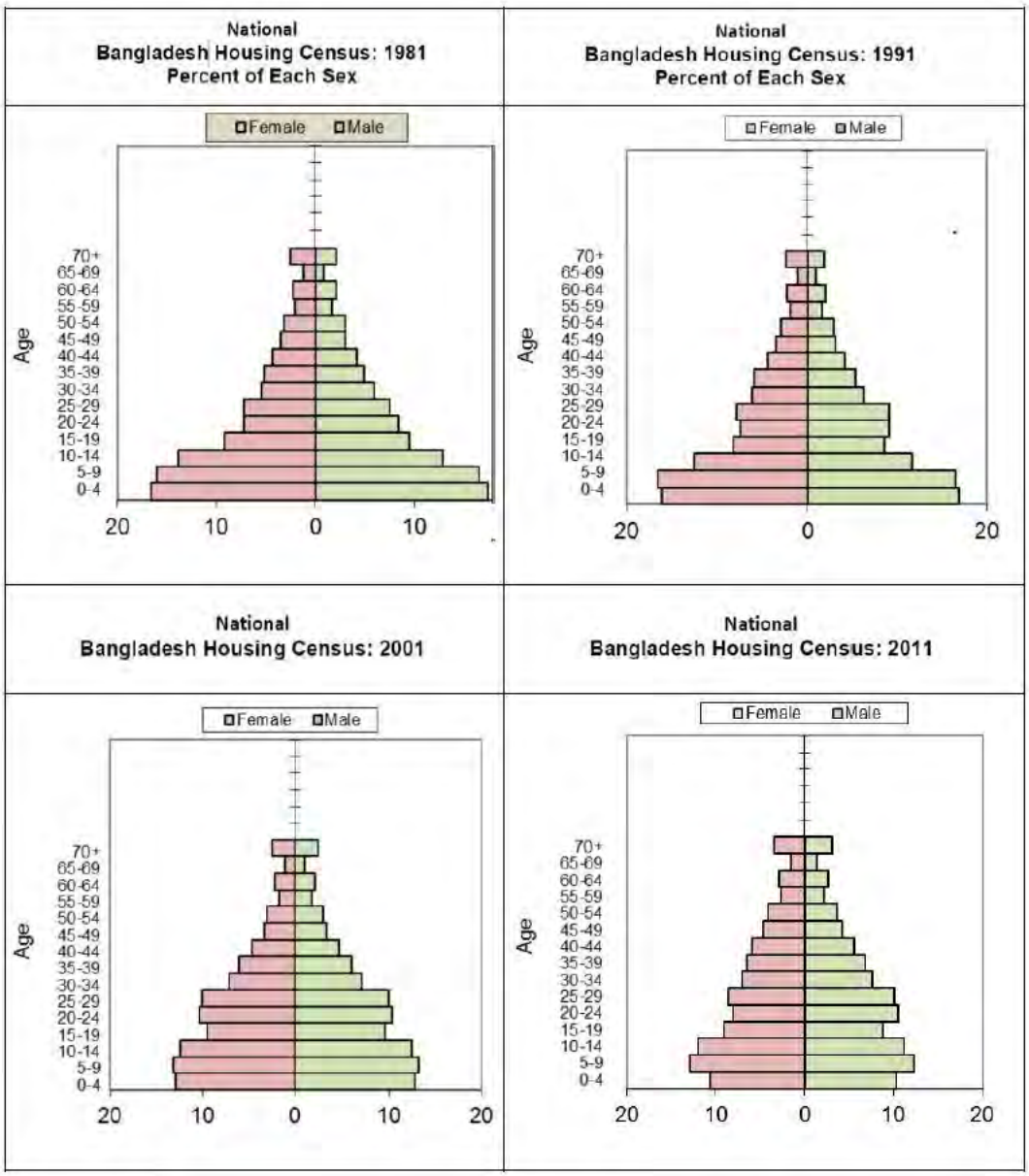
Source: Prepared by the Study Team based on 'Population Monograph of Bangladesh: Volume-14 Fertility Differentials in Bangladesh', BBS (2015)

Figure 2-6 Transitions in the Total Fertility Rate

The infant mortality rate and average life expectancy are improving thanks to improvements in the country's medical services and living/dietary conditions. The infant mortality rate per 1,000 infants and the average life expectancy greatly improved respectively from 149.5 in 1970 to 30.7 in 2015 and from 47.5 years old in 1970 to 72.0 years old in 2015[9].

That is to say, while the total fertility rate is declining markedly because of the rising marriage age, it can be said that Bangladesh's overall population growth is increasing because of the improved mortality rate and life expectancy related to improved medical services and diet. In other words, it indicates that the youth population is decreasing. The population pyramids in the figure below, which were extracted from 'Population of Monograph of Bangladesh: Age-Sex Composition of Bangladesh Population-Population' (2015), show that the National Census until 2001 showed a pyramid shape where population groups of 0-15 years old were large. However, the population group of 0-5 years old started to decline from 2011 onward and the bottom of the population pyramid is collapsing. Although the working age population is expected to grow over the next decade, it is implied that the population growth will slow down in the long term and the country is likely to head toward an aging society where a small number of young people support many elderly people, depending on future demographics.

[9] All data in the text are based on data from the World Development Indicator, WB.



Source: 'Population Monograph of Bangladesh: Age-Sex Composition of Bangladesh Population- Population' cited from p.30, BBS (2015)

Figure 2-7 Change in the Population Pyramid from 1981 to 2011

(3) Population Projection

The following table shows the government's population projections for Bangladesh based on the National Census of 2011. Based on the assumption that the average life expectancy will be 79 years for males and 80 years for females by 2061, three population projections are provided: Scenario 1, where the total fertility rate is maintained at 2.3; Scenario 2, where the total fertility rate increases to 1.9; and Scenario 3, where the total fertility rate greatly increases to 1.6.

Table 2-1 Population Projections and Their Assumptions

Year	Life expectancy at birth		Total Fertility Rate (TFR)			Population Outlook（Thousand）		
	Male	Female	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
2011	67	68	2.3	2.3	2.3	149,764	149,764	149,764
2016	68	69	2.3	2.3	2.3	160,221	160,221	160,221
2021	69	70	2.3	2.1	2.1	171,684	171,684	171,684
2026	70	72	2.3	1.9	1.9	183,593	182,096	182,096
2031	71	73	2.3	1.9	1.6	195,176	190,735	190,735
2036	73	74	2.3	1.9	1.6	205,793	198,503	196,299
2041	74	75	2.3	1.9	1.6	215,899	205,638	201,314
2046	75	76	2.3	1.9	1.6	225,386	211,663	205,255
2051	77	78	2.3	1.9	1.6	234,382	216,465	207,869
2056	78	79	2.3	1.9	1.6	243,287	220,559	209,466
2061	79	80	2.3	1.9	1.6	251,450	223,390	209,415

Sources: 'Population projection of Bangladesh Dynamics and Trends 2011-2061', Table 4.3, BBS

The following table shows the number of school-age children at each educational phase through 2061 based on Scenario 2. The peak will be reached in 2016 for primary education, 2016 for junior secondary education (JS), 2021 for secondary education (SS), and 2021 for higher education (mainly university). If the school enrolment rate remains at the same level, the total required number of facilities and teachers will decrease in later years.

Table 2-2 Projections of Number of School-age Children at Each Educational Phase

Education Level	Projections of Number of School-age Children at Each Education Phase persons (Unit: 1,000 persons)							
	2011	2016	2021	2026	2031	2041	2051	2061
Primary (Five years)	18,892	15,750	14,414	15,484	15,390	13,583	13,289	12,714
JS (Three years)	10,473	11,526	8,790	8,684	9,483	8,218	8,073	7,758
SS (Two years)	6,061	7,494	6,809	5,708	6,046	5,777	5,406	5,236
HS (Two years)	5,275	7,118	7,615	5,713	5,809	6,038	5,438	5,285
Higher Education (Four years)	10,572	12,065	14,960	13,574	11,373	12,501	10,843	10,674
Total	51,273	53,953	52,588	49,163	48,101	46,117	43,049	41,667

Sources: Prepared by the Survey Team based on 'Population projection of Bangladesh Dynamics and Trends 2011-2061', Appendix5, BBS

(4) Urban Development and Population Inflows

Bangladesh has one of the highest population densities in the world. In particular, the population density of Dhaka, the country's capital city, is very high and shows a sharp growth from 685 people/km^2 in 1974 to 1,521 people/km^2 in 2011.[10] The growth substantially exceeds the natural population growth rate, which is greatly affected by the population inflows to the capital city.[11] Population growth in urban areas stands out, and the population growth in urban areas increased from 8.78% in 1974 to 28.0% in 2011. In addition, the number of cities increased from 108 in 1974 to 506 in 2011.[12] Yearly average population growth in urban areas is exceeding the national average of population growth, and thus, urban areas are expanding gradually.

[10] BBS

[11] As major reasons for urban population growth, the 'Population and Housing Census 2011 National Volume-3 Urban Area Report' (2014) lists: 1) natural growth of the urban population; 2) population inflows to cities; 3) expansion of urban areas; and 4) changes in the definition of city. Aside from Dhaka, Chittagong, Gazipur, Cox's Bazaar, and Narayanganj marked higher population growth rates.

[12] Population and Housing Census 2011 National Volume-3 Urban Area Report, BBS (2014)

(5) Inequality Between Urban Areas and Rural Areas

The Gini coefficient, which is an index showing the degree of income equality and inequality of a nation or an area, remains almost the same at 0.458 in 2010 from 0.451 in 2000; thus, income inequality in Bangladesh has not improved. When comparing rural areas and urban areas, incomes are slightly higher in urban areas than in rural areas; however, a secular index deterioration of rural areas should also be noted. The Gini coefficient in rural areas rose by about 0.04 points in 2010 compared to 2000, and the gap in rural areas is showing a tendency for expansion as well.

Table 2-3 Change of Gini Coefficient (%)

Area	1991/1992[13] (%)	2000 (%)	2005 (%)	2010 (%)
Country	0.388	0.451	0.467	0.458
Urban	N/A	0.497	0.497	0.452
Rural	N/A	0.393	0.428	0.431

Source: 'Report of the Household Income & Expenditure Survey 2010', BBS (2010)

The diffusion rates of infrastructure in urban and rural areas are shown in the following table. The diffusion rate differences of electricity, water, and toilets are still huge between urban and rural areas.

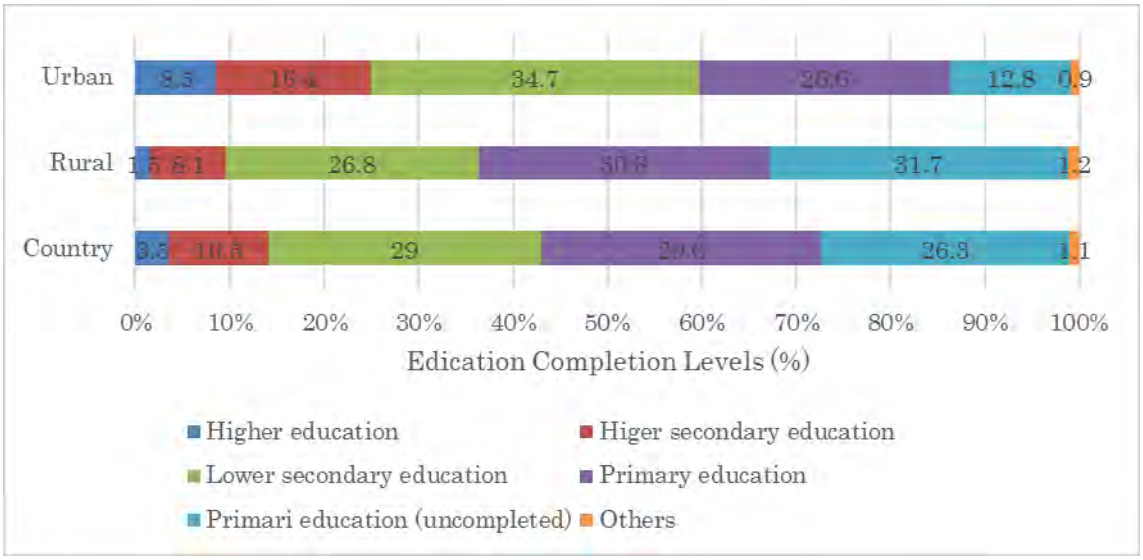
Table 2-4 Comparison of diffusion rate of electrification, water and toilet in urban and rural areas

Item	Area	1991 (%)	2001 (%)	2011 (%)
Electrification rate	Country	12.3	31.5	56.5
	Urban	58.1	70.9	86.8
	Rural	4.6	20.1	47.3
Drinkable water	Country	4.30	6.0	10.7
	Urban	22.5	22.5	38.3
	Rural	0.1	0.3	2.3
Preparation of toilets	Country	25.1	36.9	12.5
	Urban	40.24	67.3	42.4
	Rural	6.09	28.2	19.8

Source: 'Population Monograph of Bangladesh: Population Distribution and Internal Migration in Bangladesh', BBS (2015)

Fifty per cent of students attend secondary education in urban areas, but only 25% of students attend secondary education in rural area. There are huge differences between urban and rural areas in terms of education completion level. The rates of people who did not complete their primary education are only 39% in urban areas, and 62% in rural areas.

[13] The indicator of 1991/1992 is from 'Poverty Profile, People's Republic of Bangladesh', JICA (2012)



Source: 'Labour Force Survey Bangladesh 2013', BBS (2013)

Figure 2-8 Education Completion Levels by Rural Areas and Urban Areas (%)

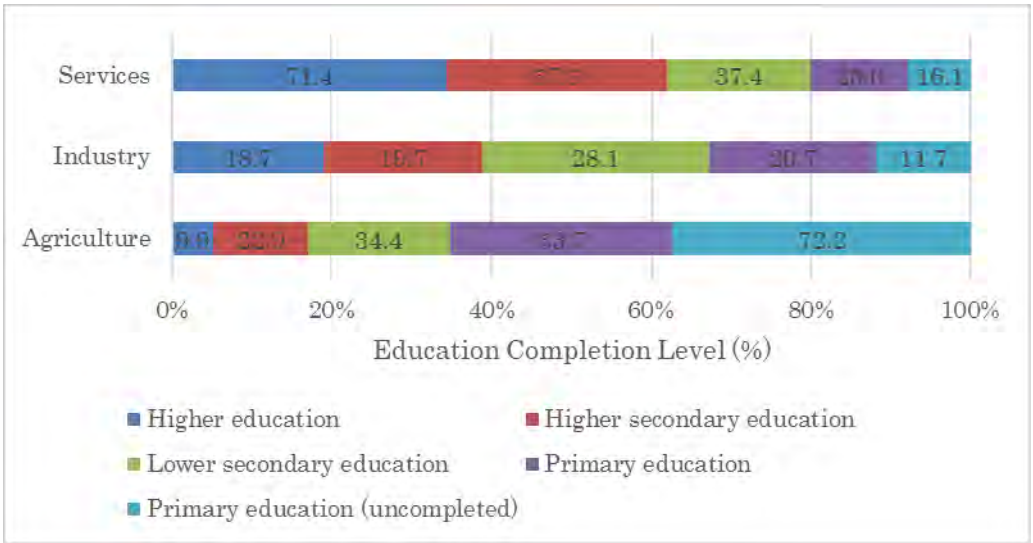
In the case of employment for workers aged 15 years and over, according to the following table, about 84% of workers in urban areas are employed in industry and service sectors and the remaining 16.2% of workers are employed in agriculture. In rural areas, 56.2% of workers are employed in agriculture.

Table 2-5 Employed Fields of Workers Aged 15 Years and over by Rural and City

	Country (%)	Urban （%）	Rural （%）
Agriculture	45.1	16.2	56.2
Industry （Manufacturing）	20.8	28.5	17.8
Services （not Manufacturing）	34.1	55.3	25.9

Source: 'Labour Force Survey Bangladesh 2013', BBS (2013)

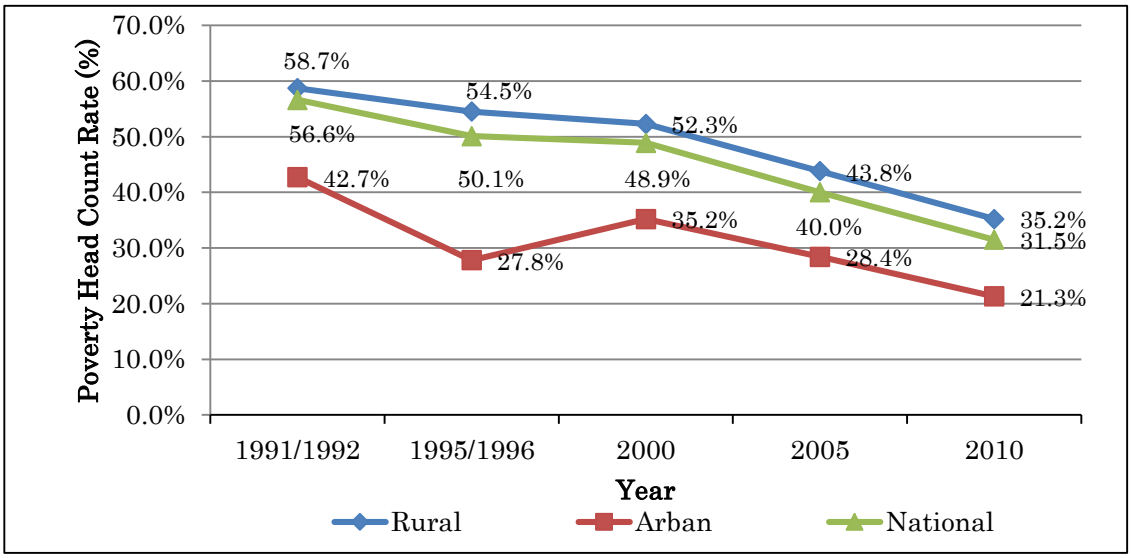
Moreover, when the survey team analyze the employment fields by education completion levels, workers whose education completion levels are relatively low tend to be employed in the agricultural sector, while workers with high education completion levels tend to be employed in the service industry sectors. As urban industrialization progresses, and occupation areas such as finance, distribution, IT, and commerce expand, it usually follows that people in urban areas increasingly achieve higher educational levels and obtain such jobs in the service or industry sector thereafter.



Source: 'Labour Force Survey Bangladesh 2013', BBS (2013)

Figure 2-9 Employment Sectors of Workers by Education Completion Level (%)

While the development of urban areas is progressing, poverty levels remain persistent. Although the poverty head count rate is showing decline in both rural and urban areas, the rate for 2010 is at 35.2% in rural areas and at 21.3% in urban areas.[14] The gap between urban and rural areas is about 14 points, and no significant decrease has been seen in this gap for the past ten years.



Source: 'Report of the Household Income & Expenditure Survey 2010', BBS (2010)[15]

Figure 2-10 Transitions of Poverty Head Count Rate (%)

[14] The Cost of Basic Needs (CBN) approach was applied, whereby the poverty line is set at the level of expenditure necessary for fulfilling basic needs for food and satisfying the standard calorie intake per member of each household and non-foods, etc. Households whose consumption expenditure falls below this line are considered poor.

[15] Data were extracted by accessing to the website of Bangladesh Bureau of Statistics: http://www.bbs.gov.bd/RptHIES6_2.aspx.

The following table shows the poverty head count rate by district. The difference between the highest poverty head count rate (Rangpur) and the lowest poverty head count rate (Chittagong) is as large as 16.1%, which indicates that the gap persists.

Table 2-6 Poverty Head Count Rate by District in 2010 (%)

Division	Poverty rate in 2010 (%)
Dhaka	30.5
Chittagong	26.2
Rajshahi	29.7
Rangpur	42.3
Khulna	32.1
Sylhet	28.1
Barisal	39.4

Sources："Poverty Maps of 2010- Key Findings", WB and BBS

(6) Gender

In Bangladesh, where more than 90% of the people are Muslim, their political advancement of women is progressing. This progress is demonstrated by the fact that the present Prime Minister is female and six female cabinet members were selected in 2012. The percentage of female members of parliament was around 13%: between 40 and 43 people from 1991 to 2001. Moreover, the number of female members reached about 20%, at 69 people in 2011, because of a law introduced in 2009 stating that 50 seats of 350 seats must be reserved for women.[16] In comparison with other countries, Bangladesh is relatively advanced in this aspect. Consider the following percentages of female members of parliament for countries in Asia: 11.6% in Japan, 12.2% in India, 19.7% in Pakistan, 24.3% in Vietnam, 19% in Cambodia, and 4.7% in Myanmar.[17]

Table 2-7 The Number of Female Parliament Members against the Total and the Percentage (%)

Item	1991	1996	2001	2011
No. of female Parliament members	42	43	41	69
Female members' rate of total Parliament members	12.7%	13.0%	12.4%	19.7%

Source: 'The Millennium Development Goals Bangladesh Press Report 2011', Bangladesh Planning Commission (2012)

On the other hand, the economic gender gap remains large. As the employment rate by male and female aged 15 years and over shows in the following table, male employment was 87.4% and female employment was 26.1% between 2002 and 2003, while male employment was 81.7% and female employment was 33.5% in 2013. Although the female employment rate is improving, the gender difference is large, at about 48 points in 2013.

Table 2-8 Transitions of Rates of Employment Aged 15 Years and over by Male and Female (%)

Year	2002-2003	2005-2006	2010	2013
Country	57.3%	58.5%	59.3%	57.1%
Male	87.4%	86.8%	82.5%	81.7%
Female	26.1%	29.2%	36.0%	33.5%

Source: 'Labour Force Survey Bangladesh 2013', BBS (2013)

The following table shows the distribution of male and female workers employed in occupational sectors aged 15 years and over. The percentage of female workers employed in agriculture is 64.8%,

[16] The Study for Basic Law in Bangladesh, Soga legal office (2014)
[17] From 'Human Development Report', UNDP, http://hdr.undp.org/en/composite/GII

while 35.2% are employed in non-agricultural fields (service, other industries, manufacturing). The percentage of female workers employed in non-agricultural sectors is an indicator of the labour market's openness to female workers.[18] The non-agricultural employment rate of female workers improved slightly to 35.2% in 2010 from 31.9% in 2005-2006, but the rate is still low.

Table 2-9 Distribution of Occupational Fields of Workers Aged 15 Years and over by Male and Female in 2010 (%)

	Country（%）	Female（%）	Male（%）
Agriculture	47.6	64.8	40.2
Services	35.4	21.9	41.1
Other industry	5.3	1.6	6.9
Manufacturing	12.4	11.8	12.7

Source: 'Labour Force Survey Bangladesh 2013', BBS (2013)

The following table shows the wage gap between male and female workers aged 15 years and over according to daily wages. Although the gender wage gap was double from 1999 to 2000 as well as from 2002 to 2003 in all categories at the national level, in urban areas, and rural areas, it narrowed in all three areas by 2010. On the other hand, in 2010 the wage gap has been improved in all three areas, and the wage in 2010 became three times from 2002 to 2003.

Table 2-10 Changes of Wage Gap between Male and Female Aged 15 Years and over in Daily Work Job

Year	Country（BDT）			Urban（BDT）			Rural（BDT）		
	Total	Female	Male	Total	Female	Male	Total	Female	Male
1999-2000	61	38	65	59	35	63	80	59	88
2002-2003	62	39	64	60	37	62	70	42	75
2010	183	170	184	179	161	180	200	198	200

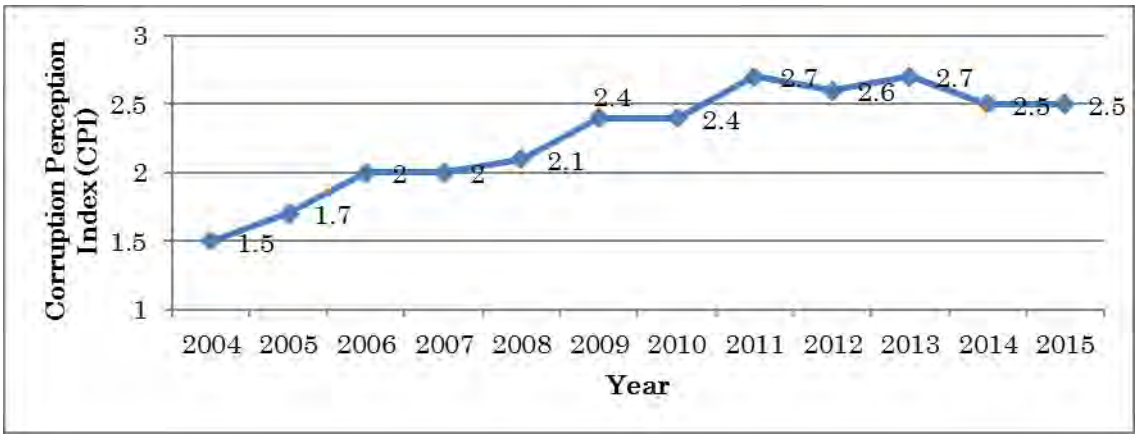
Source: 'Labour Force Survey Bangladesh 2013', BBS (2013)

(7) Corruption Perception Index (CPI)

The Corruption Perception Index (CPI) is an index prepared based on 13 different surveys and measures the degree to which corruption is perceived to exist amongst public officials and politicians. The CPI has been published by Transparency International every year since 1995. The index of Bangladesh scored 2.5 in 2015 and ranked 139th from the top amongst 168 countries. Japan is ranked 18th at 7.5 and Denmark is ranked first at 9.1. In neighboring countries, India stood at 3.8 and ranked 76th, Vietnam stood at 3.2 and ranked 112nd, Pakistan was ranked 117th at 3.0, and Myanmar and Cambodia fell lower than Bangladesh, respectively 147th at 2.2 and 150th at 2.1.

To achieve the goals outlined in the Perspective Plan of Bangladesh (2010–2011) and the sixth Five Year Plan (2011–2015), Bangladesh determined that it would be necessary to improve national integrity and prevent corruption. Accordingly, the country became a member of the United Nations Convention against Corruption in 2007, established the Anti-Corruption Commission, and had its cabinet approve the National Integrity Strategy in 2012.

[18] 'Poverty Profile, People's Republic of Bangladesh' JICA (2012)



Source: 'Annual report 2013', Transparency International (2013)

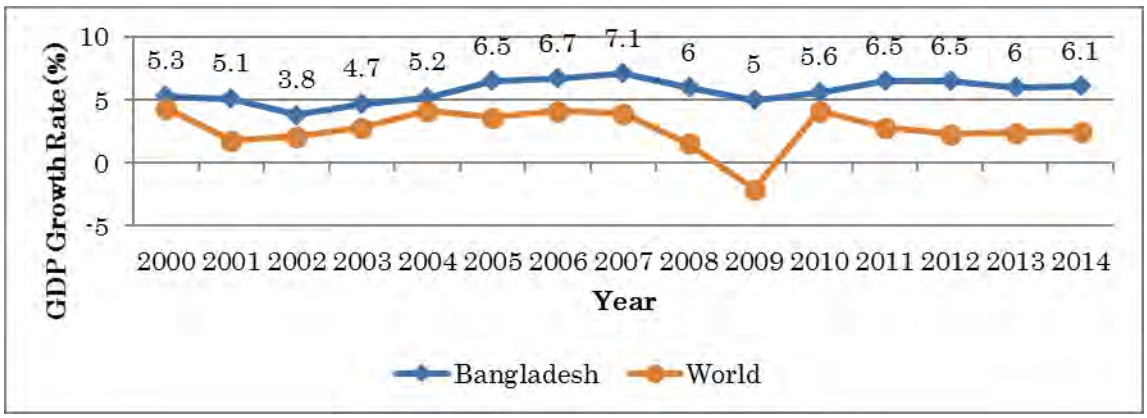
Figure 2-11 Change of Corruption Perception Index in Bangladesh (CPI)

2.3 Economy, Industry, and Employment Situation

As mentioned above, there are significant differences between urban areas and rural areas. However, it was confirmed that the population growth rate has been kept high by early marriage and improvements in healthcare and diet. The economic and industrial situations also support Bangladesh's population growth.

(1) Economic Growth

Bangladesh was once said to be one of the world's poorest countries; however, the annual GDP growth rate has remained constant at approximately 6% in recent years, as shown in the following figure. Thus, the country enjoys a high growth rate.



Source：Prepared by the Survey Team based on WB

Figure 2-12 GDP Growth Rate

Further, according to the following table, the GDP growth rate was 6.6% in 2015 and the estimated values of 2016 and 2017 are 6.7% and 6.9% respectively. In future projections, the difference between the GDP growth rate and the price increase rate is also less likely to widen substantially. So, from a macro point of view, stable economic growth is expected for the people of Bangladesh.

Table 2-11 GDP Growth Rate

Economic indicator	2015	2016 Outlook	2017 Outlook
GDP growth rate	6.6%	6.7%	6.9%
Inflation rate	6.4%	6.2%	6.5%
Current balance	-0.8%	-0.5%	-1.0%

Source: ADB, http://www.adb.org/countries/bangladesh/economy

The following table shows the investment growth rate in the private sector. The rate has remained at around 12% to 13% in recent years and stayed lower than the rate of 2011 and 2011 fiscal year when the growth rate was as high as 17% to 18%. In the public sector, after a substantial decline from 31.0% in 2013 to 10.5% in 2014, the investment growth rate rose again to 18.7% in 2015. As for the public sector, attention must be paid to the work processing speed caused by the system and structure of the planning commission that manages public investment, the inefficiency of work review, and the low budget execution rate.[19] The overall investment growth rate tends to be stable at around 14%. The investment growth rate is an important indicator supporting the growth of Bangladesh, which represents an inroad to becoming a middle-income country. In the future, it will be important for Bangladesh to increase its private-sector investment.

Table 2-12 Investment Growth Rate

Sector	FY10	FY11	FY12	FY13	FY14	FY15
Investment	13.3%	20.0%	18.8%	14.1%	12.8%	14.2%
Private sector	11.5%	18.0%	17.0%	9.8%	13.5%	12.8%
Public sector	22.5%	29.2%	26.3%	31.0%	10.5%	18.7%

Source: 'Medium Term Macroeconomic Policy Statement 2015-16 to 2017-18', Ministry of Finance

As shown in the following table, transitions of recent foreign direct investment (FDI) maintain the growth tendency from 2009 onwards. The FDI in 2013 and 2014 exceeded 1,500 million USD, which is about twice as much as the value of ten years ago in 2005. Thus, FDI shows steady growth.

Table 2-13 Foreign Direct Investment (FDI)

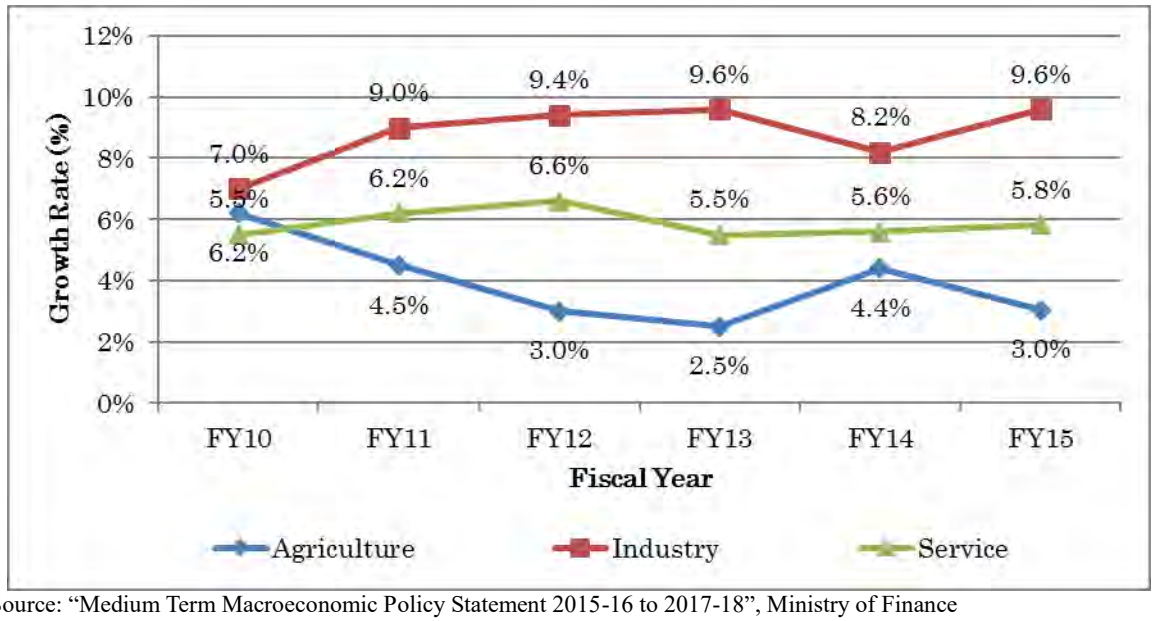
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Amount	845	792	666	1,086	700	913	1,136	1,293	1,599	1,527

Source: Prepared by the Survey Team based on 'Foreign Direct Investment (FDI) in Bangladesh (Survey Report July-December 2014)', Bangladesh Bank (2015)

(2) Growth by Sector

According to the growth rate by sector in the following figure, the primary industry centered on agriculture is declining and shows a low percentage compared to other industries. The tertiary industry centered on service businesses showed a stable transition from 2010 to 2015. On the other hand, the secondary industry centered on manufacturing showed large growth from 2010 to 2011, and then remained stable thereafter. The secondary and tertiary industries are expected to continue this stable growth in the future unless major negative economic impacts are inflicted by other countries.

[19] Referred the Final Report of 'Data collection Survey on Strengthening Public Investment Management System in Bangladesh' JICA (March, 2012)

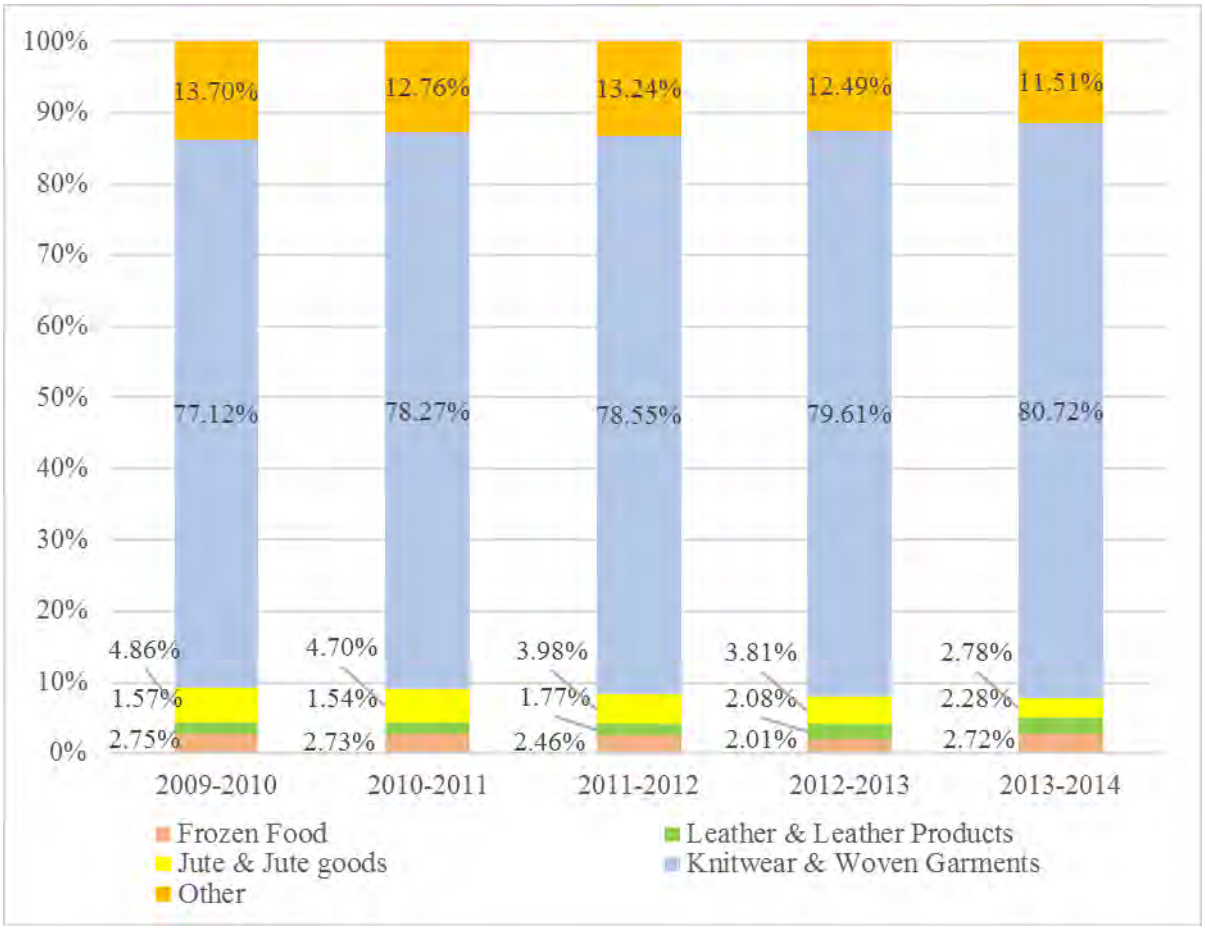


Source: "Medium Term Macroeconomic Policy Statement 2015-16 to 2017-18", Ministry of Finance

Figure 2-13 Growth Rate by Sector

(3) Growth in Manufacturing Industry

The following figure shows secular change in the percentage of export items. The following figure shows export percentage trends. From 2009, most of the export goods have been knitwear and woven garments. Frozen food, leather and leather products, and jute and jute products total less than 10% of exports. The composition of Bangladesh's export industry has not changed in the last five years, and it is difficult to foresee another industry replacing the garment sector as the leading exporter.



Source: Prepared by the Survey Team based on 'Export Commodities of Bangladesh' Dhaka Chamber of Commerce & Industry

Figure 2-14 Trends of export goods rate

In the case of garment products, special skills are not required for the manufacturing process. Furthermore, Bangladesh's low wages attract foreign garment manufacturers to the country. Under these conditions, garment products have become the main export product of Bangladesh. In the case of jute products, the manufacturing process requires the raw materials to first be exported overseas and processed there. Then, they are re-imported to Bangladesh. Although the raw materials are procurable within the country, such materials are exported to India in the middle of the process, and finally the processed materials are re-imported to sell domestically. However, if such work can be done within the country comprehensively for finalization (productization), Bangladesh's economic competitiveness can be strengthened.

(4) Advancement of Japanese Companies

According to the survey of the JETRO Dhaka Office, the number of Japanese companies in Bangladesh was approximately 240 as of April 2016. There were 167 companies in 2013 and 183 companies in 2014, and the number shows signs of increase. However, there exist social and economic factors that make the advancement of Japanese companies in Bangladesh difficult. There is not much local industry and the manufacturing sector, which Japanese companies are good at, is difficult to enter. In addition, in terms of products, repairs, and after-sales services, which represent the common strengths of Japanese companies, quality management and maintenance of products are difficult because of the

low-skill level of the labour force. It is in such situations that the advantages of a low-cost and abundant labour force are difficult to regard as merits.[20]

(5) Employment Situation

According to the following table, the unemployment rate is not high in Bangladesh, which is said to have an abundant, low-cost labour force, and the unemployment rate has remained at the low level of 4% for the past ten years or so.

Table 2-14 Unemployment Rate

	2002/03	2005/06	2010	2013
Unemployment rate	4.3%	4.3%	4.5%	4.26%

Source: 'Quarterly Labour Force Survey, Bangladesh, July-September 2015', BBS (2015)

As shown in the following table, in 2010, the informal sector comprised approximately 87.4% of the labour force and the formal sector approximately 12.6% in Bangladesh. The scope of coverage comprising the basis of the figures of the unemployment rate is not clear and it is conceivable that the unemployment rate is different from the actual unemployment rate. It is also conceivable that the structure of the perceived unemployment rate is different from the real values, as there are workers whose classification of employment is not clear, and there are many latent unemployed people.

Table 2-15 Percentage of Employment Form (Formal Sector and Informal Sector)

	2005/06	2010	2013
Formal sector	21.5%	12.6%	12.6%
Informal sector (Total of male and female)	78.5%	87.4%	87.4%
-Informal Sector (Male)	76.2%	85.5%	86.3%
-Informal Sector (Female)	85.8%	92.0%	90.3%

Source: Labour Force Survey Bangladesh 2013, BBS (2013)

Next, the labour participation rate was 57.1% in 2013. The labour participation rate of females rose to 33.5% in 2013 from 26% in 2002/2003. This indicates that labour participation among females in Bangladesh has risen in conjunction with economic growth; however, a substantial gap still exists when comparing the rates of males and females.

Table 2-16 Labour Participation Rate

	2002/03	2005/06	2010	2013
Country	57.3%	58.5%	59.3%	57.1%
Male	87.4%	86.8%	82.5%	81.7%
Female	26.1%	29.2%	36.0%	33.5%

Source: Prepared by the Survey Team based on Labour Statistics of 2005&2006 and of 2010 prepared by BB

[20] Information from the JETRO Dhaka Office

CHAPTER3 Current Issues in the education sector

In the previous chapter, the political and socioeconomic circumstances of Bangladesh were described. In this chapter, the whole picture of education in Bangladesh will be described from sections 3.1 to 3.3. After section 3.4., the educational situation will be analyzed and several challenges identified.

3.1 History of Education

Islamic education had been provided in Bangladesh prior to British colonization. After Bangladesh became part of British India's Bengal/Assam state in 1765, secondary education was initiated as elite education, and Kolkatta Alia Madrasa and Benaras Sanskrit College were established in 1781 and 1792 respectively. The importance of education was recognized after the promotion of the local language, literature, and dissemination of western scientific knowledge among Indian people was advocated in Article 43 of the Charter Act of 1813 (East India Company Act),[21] and education for the upper classes was supported. Because English became the administrative language in 1837, schools and colleges conducting lessons in English rapidly increased.[22] In the early 19th century, schools that delivered lessons in English opened in East Bengal as well. When Bangladesh was still part of Pakistan, three courses, that is, arts, science, and business study courses were introduced to eighth grade and higher in 1959. Schools and colleges operated by communities and private individuals became public schools in 1984, and regular teachers that were registered were paid in the Monthly Pay Order (MPO).[23] Moreover, the enrolment rate of females had been improved by the Female Secondary Assistance Project (FSAP), which was initiated in 1992 to improve the enrolment rate.

Primary education was prioritized after secondary education, and was initiated in the late 19th century when the levels of education (primary school as an entrance) were introduced.[24] The tax collection that was introduced in India to establish primary schools as public education was not carried out in the Bengal region, but primary schools were expanded by the efforts of the respective local governments.[25] During this period, a system was established where schools were managed by funds that were procured by local governments, subsidies from the central government, and tuition fees paid by students, which was the special feature of the Bangladesh school management system. The enforcement of the Compulsory Education Act was initiated between 1917 and 1927 in some areas. In the Sargent Report issued in 1944, a system was established where pre-primary education was given to three to six year-olds and free primary education was given to six to 14 year-olds (primary basic education is for 6-11 years old, and secondary basic education is for 11-14 years old). Even during the Pakistan era from 1947, it aimed for a complete implementation of free and compulsory primary education, and aimed to achieve it within 20 years in the First Five-Year Plan (1955-1960). However, difficulty was experienced in increasing the enrolment rate. After independence in 1971, Bangladesh established various policies and plans under the powerful centralized regime, including teachers becoming civil servants by nationalizing schools (1973), a primary education (6-11 years old) 100% enrolment initiative under the new First 5-Year Plan (1973-78), the Primary Education Act (1985), and others. However, 100% enrolment failed to be achieved. The Compulsory Education Act was enacted in 1990, and free and

[21] Kumar, K. (1991). A Political Agenda of Education: A Study of Colonist and Nationalist Ideas. New Delhi: Sage.
[22] Ghosh, S. C. (1993). English in Taste, in Opinions, in words and intellect: Indoctrinating the Indian through textbook, curriculum, and education. In J.A. Mangan (Ed), The imperial curriculum: Racial images and education in British colonial experience (pp 175-193). London and New York: Routledge.
[23] Subsidy system for private school and educational institution teachers' salary
[24] Almost at the same time, the Supervision System was established by installing the District Education Offices, and universities were established, the private school subsidy system was introduced, and teacher training institutions were founded. Chanana, K. (1994). Social change or social reform: Women, education and family in pre-independence India. In C. C. Mukhopadhyay and S. Seymour (Eds.), (pp 35-58). Women, Education and Family Structure in India. Boulder, CO: Westview Press.
[25] Banbeis Publication 56(1987). Primary Education in Bangladesh

compulsory primary education was developed under it. Bangladesh signed the Education for All (EFA) agreement at the World Conference on Education for All in the same year. EFA aims at 100% enrolment while seeking assistance from development partners, for example, initiating the Food for Education Program (FFE) in 1992.[26] As a result, the primary education net enrolment ratio increased from 60.5% in 1990 to 86.7% in 2002 and 95.6% in 2010.

In respect to higher education, University of Dhaka was established in 1921, which was in the later stage of the long lasting British colonial era. There was a time gap before the emergence of the second university, Rajshahi University, established in the Pakistan era in 1953. Thereafter, and until its independence in 1971, an additional four schools (Chittagong University, Jahangirnagar University, Bangladesh University of Engineering and Technology (BUET), and Bangladesh Agricultural University (BAU)) were established, total six schools. Under a law enacted in 1973, national universities that played a major role in the independence of Bangladesh in 1971 were granted strong autonomy as a privilege. After independence, the number of schools increased significantly, but there were no private universities established for a long time. Near the end of the military regime, the Private Universities Act of 1992 was enacted and the establishment of private higher education institutions was authorized because of the increasing demand for higher education, the absolute lack of capacity at national universities, and in an effort to prevent students from studying overseas in countries such as India, the United Kingdom, or the United States. The Private Universities Act was revised in 1998, and again in 2010, which is the current version. Technical education began later. Prior to the Pakistan era in 1947, only five training institutions existed. By 1960, during the Pakistan era, four schools[27] offering diplomas were established, but expansion of their capacities did not begin until the 1960s or later.[28]

3.2 The National Policy, Acts and Finance in Terms of Education

3.2.1 Status of Education under the National Policy

Bangladesh stated, in Constitution Article 17, that it shall establish a 'universal system of education' and that it has an obligation to 'provide free compulsory education to all children'. The Compulsory Education Act was established on this basis, and will be examined in the next section. In its development plan, Bangladesh formulated the Sixth and Seventh Five-Year Plans, which align with the Perspective Plan of Bangladesh 2010-2021. The role of the Poverty Reduction Strategy Paper (PRSP) is summarized in the Five-Year Plan after the Second PRSP. In addition, the Industrial Policy 2016, which serves as a basic policy of industrial development, lists the important industries. These important industries will be summarized later in this section.

(1) Constitution

The constitution prescribes education and labour in several articles. Firstly, in Article 15, it describes that basic needs including food, clothing, shelter, education, medical care, and employment are the fundamental responsibility of the state. The state is working to improve productivity in order to perform its responsibility by means of a planned economy. Article 17 describes specialised education matters, and states that the state shall establish a universal system of education and is obligated to provide free compulsory education to all children. Article 19 advocates equal opportunity under the law, and specifies that the state shall take an effective means to dissolve any social and economic unfairness. In respect to labour, Article 20 states that labour is a right and an obligation of citizens. In addition, Article 28 states that the state will not discriminate against any person on the basis of his/her religion, race, social class, gender, or birthplace and that it will not exclude its consideration toward women and children.

[26] Such initiatives continued until 2002. 20% of the total primary schools received benefit thereof.
[27] Dhaka polytechnic Institute, Institute of Textile Technology, Institute of Leather Technology, Institute of Grass and Ceramic
[28] BANBEIS Publication 70 (1988). Technical Education in Bangladesh

(2) Perspective Plan of Bangladesh 2010-2021

This plan is a long-term plan formulated by the Hasina regime (in her second term) based on the manifest 'Vision 2021', with the goal of achieving the status of middle-income country by 2021, which falls on the 50th anniversary of Bangladesh's independence. The plan aims to reduce the poverty rate to 13.5% by 2021 in line with the GDP growth rate, and to increase the GDP growth rate to 10% by 2021 to become a middle-income country. At the same time, it aims to eliminate economic and social disparities and achieve social development and progress so as to realize a society where all people can enjoy a good standard of living. In other words, it has set a goal to build a nation that does not generate extreme polarization between the rich and poor. In the plan, nine policies are listed:

1) Promotion of the nation's growth for which national consensus is obtainable and achievement of stable food security
2) Responding to international competition brought about by globalisation and inter-regional cooperation
3) Stable supply of energy that leads to the development of the nation and its welfare
4) Formation of a knowledge-based society
5) Proper infrastructure facilities
6) Dissemination of appropriate governance
7) Mitigation of the effects of climate change
8) Formation of a well-developed social security system
9) Promotion of innovation by digital Bangladesh

In respect to the development and growth of the economy, the plan aims to optimize tangible aspects such as infrastructure and environmental facilities as well as intangible aspects such as social security systems and human resources in and out of the country so that the entire country can benefit. In the first policy which states that it aims to achieve the growth of the country for which national consensus is obtainable, the government deems it important to govern the country and carry out its policies in a way that obtains national consensus in order to achieve stable social and economic growth. All of the policy initiatives, from 2) to 9), require national consensus.

In addition, the plan states that it will work on the strengthening of the labour force, employment opportunities, and access to various resources. When all of these initiatives are achieved, national growth and poverty reduction can be achieved. The poverty reduction strategy, which is included in the plan, is as follows:[29]

1) Growth of the manufacturing industry and the service sector, which allows continual promotion of labour productivity and employment opportunity
2) Improvement of agricultural income by improving labour productivity
3) Improvement of access by the poor to production funds (fertilizer, seed, water, power, etc.)
4) Creation of employment opportunities through the enhancement of infrastructure equipment investments and investments in human resources
5) Promotion of immigration from impoverished areas by making use of money transfer
6) Promotion of female labour force utilization
7) Continuation of Bangladesh's past success through an increase in production
8) Improvement of poor families' access to educational opportunities, health care, and nutrition
9) Strengthening of participation in social security businesses
10) Improved access to micro-finance
11) Maintenance of stable food prices
12) Reduction of damages caused by climate change

[29] 12.2 Strategies for accelerated poverty reduction (p89)

In parallel with achieving the various goals mentioned above, it is necessary to form a platform that will allow industrial development and industrial human resources development, which in return promotes the growth and development of the country as the next step. To do so, development of the environment and human investment to achieve the strategic items are indispensable for national growth and development.

The human resources development initiative is composed of three activities: improvement of education, improvement and maintenance of health and nutrition, and population planning. In respect to education, it is aimed to establish an education system that is knowledge-intensive, and technology-oriented that is free from any kind of discrimination (including gender-based discrimination) by 2021. Each subsector advocates the following goals:

1) Gender equality at all levels of education
2) Increasing the current public spending on education (which is at 2.4% against the GNP ratio) to 6.0% by 2021

Table 3-1 Perspective Plan of Bangladesh 2010-2021

Sub-sectors	Overview
Literacy	✓ To achieve 100% net enrolment ratio at primary level and 100% literacy ratio by 2014
Primary Education	✓ To extend the length of primary education to eight years from five years. ✓ To achieve 100% net enrolment ratio by 2013 ✓ To improve the quality of all schools ✓ All kinds of schools carry out the curriculum enacted by the government and teach languages, cultures, history, geography, science, math and IT. ✓ Female students shall not be subjected to discrimination, harassment and violence ✓ Compulsory ICT courses by 2021
Non-formal, public education	✓ To provide access to basic education and assist skill development for employment targeting truancy children, dropped out children, street children or other non-privileged children. ✓ This shall be done in relation with the NTVQF.
Secondary education	✓ Initiation of compulsory ICT courses by 2013
Higher education	✓ Achieving to be a Center of Excellence capable of competing in international community ✓ Initiation of compulsory ICT courses ✓ Foundation of the Accreditation Council, so that university evaluation can be performed regardless of whether they are national or private universities
Technical education	✓ Sophistication of skills to be provided ✓ To provide a competency that is required in the industry ✓ To issue qualifications/certificates that can be recognized in the country as well as overseas
Teacher Education	✓ Establishment of the Teacher Recruitment and Development Commission and realization of employment of teachers by the Commission

Source: Prepared by the survey team from Perspective Plan of Bangladesh 2010-2021

(3) The Seventh Five-Year Plan (2016-2020)

In respect to the vision that was raised in the 'Perspective Plan for Bangladesh 2010-2021', specific approaches toward its implementation are explained in the Sixth (2011-2015) and Seventh (2016-2020) Five-Year Plans.

In the Sixth Five-Year Plan, specific goals to be achieved by 2015 were laid down for seven areas, including income and poverty, development of human resources (education, health, and population), water and sanitation, power and infrastructure, gender equality and empowerment, sustainable

environment, and ICT, keeping the achievement of the Vision2021, important policies, and MDGs in mind. In addition, as an important horizontal challenge for smooth implementation of those projects, it highlighted the importance of governance. In the latest plan, which is the Seventh Five-Year Plan, specific goals to be achieved by 2020 are laid down for ten areas, including income and poverty, sector development, macro-economic development, urban development, human resources development (education, health, and population), water and sanitation, power and infrastructure, gender equality and empowerment, environmental sustainability, and ICT (of which, newly added areas are underlined).

Of those areas, areas that are directly related to education include the development of human resources (education, health, and population), gender equality and empowerment, and ICT. The Table below shows the summary of each indicator related to education in the Sixth and Seventh Five-Year Plans.

Table 3-2 Each indicator related to education in the Sixth Five-Year Plan and the Seventh Five-Year Plan

	Base Year-2010	Vision 2021	SFYP2015	Progress under 6th FYP 2015	7th FYP 2020
Human Resource Development (Education, Health and Population)					
Net Enrolment at Primary Level (%)	91		100	97.3	100
Percentage of cohort reaching grade 5 (%)	55		100	80.5	100
Enrolment Rate in 12th Class (%)		100	60		
Net Enrolment at Secondary Level (%)	43			57	100
Net Enrolment at Higher Level (%)	9			12	20
Gender Equality and Women Empowerment					
Ratio of girls to boys in higher education (%)	32		60	70	100
ICT					
Compulsory ICT Education at secondary level		5	12		0
Computer laboratory at the primary government school		20	5		0

Sources: Prepared by the Survey Team from the Sixth and the Seventh Five-Year Plans

In respect of primary education, achievement by 2015 of 100% net enrolment ratio and 100% retention ratio until reaching the 5th grade was aimed in the Sixth Five-Year Plan. But both targets failed to be achieved and were carried over to the Seventh Five-Year plan.

In respect to primary education, achievement by 2015 of a 100% net enrolment ratio and 100% retention ratio until reaching the fifth grade were set as targets in the Sixth Five-Year Plan. However, both targets failed to be achieved and were carried over to the Seventh Five-Year plan.

In respect to secondary education, achievement of a 100% enrolment ratio in 12th grade was set as a target in the Sixth Five-Year Plan, while the indicator was revised to 100% net enrolment ratio in the Seventh Five-Year Plan. However, the Seventh Five-Year Plan still aims for complete enrolment at the secondary level of education, which has remained unchanged.

In respect to higher education, female student enrolment promotion (to increase the ratio to equal that of male students) was the only major target included in the Sixth Five-Year Plan. The Seventh Five-Year Plan includes the target of increasing the net enrolment ratio to 20% by 2020 from 12% in 2015, in addition to the target included in the previous plan.

In respect to ICT, the Sixth Five-Year Plan included goals to install computer rooms in primary schools and to make ICT education compulsory in secondary level education. This goal was achieved in secondary education in 2013. Therefore, it was omitted in the Seventh Five-Year Plan.

In respect to technical education, goals include generating high-quality human resources equipped with skills capable to support economic growth in line with the National Skills Development Plan. It is stated that TVET will be diversified through new courses in order to meet the needs of the human

resources market, encourage the participation of women in technical education, ensure fairness, modernise educational institutions, and work in cooperation with the private sector.

(4) Industrial Policy 2016

Seven top-priority industries are listed in the Industrial Policy 2016, which is the latest national industrial policy. Heavy industry is not considered as an important industry, and the policy only addresses the following light industries:

1) Ready-made Garments
2) Agriculture and Food Processing Industry
3) Leather and Leather Product Industry
4) Pharmaceutical Industry
5) Information and communication technology (ICT) and Software
6) Jute and Jute Products
7) Light Engineering

The ready-made garment industry, which is the main industry of Bangladesh, is listed many times. Moreover, agriculture, which supports Bangladesh's employment, is considered to be one of the most important industries along with the food-processing industry. Leather goods and jute products manufacturing are also industries that symbolise Bangladesh. The industries listed above offer the most regular and irregular employment of all industries in Bangladesh.

Comparison with the preceding survey

The table shows a comparison of the priority industries that were disclosed in the survey on Bangladesh's industrial sectors conducted by the JICA in 2012.

Priority industries disclosed in past surveys and the top priority industries under the current policies

Private Sector Development Program Preparation Survey (Industrial Development, Trade Investment Promotion) Report (August 2012)	Industrial Policy 2016
(1) Ready-made garment and household textile products industry	(1) Ready-made garment
(2) Agriculture and agricultural processed goods industry	(2) Agriculture and food processing industry
(3) Light industry products industry	(3) Light engineering
(4) Leather and footwear industry	(4) Leather and leather product industry
(5) Drug product industry	(5) Pharmaceutical industry
(6) Marine products industry	
(7) Plastic products industry	
(8) Furniture products industry	
(9) Ceramic products industry	
(10) Software industry	(6) ICT and software
	(7) Jute and jute product industry

Source: The Survey Team

(1) Excerpt from Preparatory Study of Private Sector Development Program (Industrial Development, Trade & Investment Promotion) Final Report, JICA (August 2012)

(2) From Industry Policy 2016

The Industry Policy 2016 lists over 20 industries including plastic products and ship related products as industries coming next in priority to the seven top priority industries. This indicates that the Bangladesh Government is considering the potential of various industries, such as the top priority industries, priority industries, and industries with growth potential.

The policy has established a plan for the cultivation of industrial human resources. It aims to properly perform continuous adjustment of supply and demand of labour from the present to the future. The goal is to standardize labour market information and appropriately provide for demand so that companies can secure needed human resources. As for the human resource enhancement measures in the Industrial Policy 2016, the establishment of training facilities for the cultivation of human resources for the garment industry and other priority industries, the cultivation of succeeding entrepreneurs, the strengthening of managerial ability in both the public and private sectors, the provision of incentives to promote leadership in the private sector, and the improvement and promotion of public-private partnerships of the NTVQF for development and securing of human resources have been raised. A concrete action plan has also been developed and is as follows. According to the action plan, some Programs have already been put into effect. The cultivation of human resources has also received high interest as an industrial policy, ability development programs and various trainings have been planned and carried out, and policies for the development and revival of industries are being developed.

Table 3-3 Action Plan of Industry Policy 2016

Factor	Plan	Executing Agency etc.	Time Period etc.	Related Ministries and Departments etc.
Human Resource Database for Industrial World	Write supply-demand situation information on name list published by Tariff Commission	Tariff Commission	2016 years April to December	Ministry of Commerce Board of Investment etc.
Ability Development in Industrial World	Ability development for industrial management	NPO	2016 years April to June	Ministry of Industries MCCI etc.
	Concept ability development for industrial management	NPO	2016 years April to June	Ministry of Industries Ministry of Labour and Employment
	Learning priority factors related to boiler operation	Audit firm	2016 years April to June	Ministry of Industries, Ministry of Commerce Ministry of Labour and Employment etc.
	Strengthening of apprenticeship training of boiler related industries	Audit firm	2016 years April to June	Ministry of Industries, Ministry of Commerce Ministry of Labour and Employment etc.
	Development of education training curriculum fitting NTVQF	DTE	2016 years April to June	Ministry of Labour and Employment MOE, NSDC etc.
	Training and evaluation based on competency	DTE	2016 years April 16, 17	Ministry of Labour and Employment MOE, NSDC etc.
	Learning priority factors	MOE	2016 years April 16, 17	Ministry of Labour and Employment Ministry of Education, NSDC etc.
	Implementation of apprenticeship training	MOE	2016 years April 16, 17	Ministry of Labour and Employment MOE, NSDC etc.

Source: Prepared by the Survey Team based on Ministry of Industries' Industry Policy 2016

(5) Digital Bangladesh Strategy

Digital Bangladesh refers to not only the use of computers, but also the effective utilization of technology in terms of solving issues including education, health, job opportunities, and poverty reduction. The four major components of Digital Bangladesh are as follows:

1) Human Resource Development: Human resource development is an important factor for the realisation of Digital Bangladesh
2) Connecting the Citizens: Ensure that all citizens have access to Digital Bangladesh
3) Pro-Poor Services: Ensure that the poor also benefit from Digital Bangladesh
4) ICT in Business: Access to market, promotion of ICT businesses supporting Digital Bangladesh, and ICT as an export sector

[Reference] Promotion of 'Asia Common Examination' with the Cooperation of Japan to Strengthen ICT

The 'Information Technology Engineers Examination' has been used as the Asia Common Examination since October 2014 with the support of Japan (JICA and Independent Administrative Agency Information-technology Promotion Agency (IPA)). JICA and IPA have been promoting the strengthening of Bangladeshi ICT ability since October 2010 through guidance of examination operation know-how, provision of examination questions, and skill transfer of question preparation know-how. This effort complies with one of the top priority industries raised in the Industrial Policy 2016, 'ICT (Information and Communication Technology), Software', and supports the strengthening of ICT abilities among citizens. Six Southeast Asian countries, including the Philippines, Thailand, Vietnam, Myanmar, Malaysia, and Mongolia, established the council 'ITPEC' in 2005, implemented the Asia Common Examination in 2006 with the cooperation of the six countries, and are developing human resources in the field of information and communication technology in Southeast Asia and South Asia. This enclosure refers to and cites the following URL:
http://www.ipa.go.jp/about/press/20140902.html

(6) National Skill Development Policy 2011

This policy aims for the improvement of employment possibilities and the adaptability of individuals, improvement of the productivity of companies, improvement of the competitiveness of the nation, and system improvement of sustainable TVET. Centered on the National Skill Development Council, 22 ministries and agencies carrying out skill training cooperate to implement the policy. An important goal of this policy is to improve the quality and relevance of skill development. The skill development system consists of the following components:

1) NTVQF
2) Competency-Based Industry Sector Standards and Qualifications
3) Skill Quality Assurance System

3.2.2 Major Acts and Policies related to Education

The government enacted the Compulsory Education Act in 1990, and adopted the National Education Policy (NEP2010) in 2010, and has been proceeding with these education policies. NEP2010 includes goals and strategies for each subsector from primary education to higher education.

(1) Compulsory Education Act (1900)

This act enacted in 1990 specified primary education as compulsory education, and that guardians must enrol children in a primary school in the area of residence[30] unless there are special circumstances.

This act also requires the establishment of an Obligatory Primary Education Committee in each region and describes the roles and penalties of the members of said committee.

[30] Illness, absence of a primary school within 2 kilometres of residence, judgment by a primary education officer of education equivalent to primary education, judgment by a primary education officer that primary education is unsuitable due to intellectual disability

(2) National Education Policy 2010 (NEP2010)

There is no comprehensive law or regulation in Bangladesh equivalent to the Education Acts of other countries, and the only policy document comprehensively handling education is the NEP 2010. Therefore, this policy indicates the direction of the goals and strategies of the following factors.

Table 3-4 List of factors mentioned in the NEP2010

Sl.	Factor	Sl.	Factor
1	Pre-primary and Primary Education	14	Law Studies
2	Adult and Non formal Education	15	Women Education
3	Secondary Education	16	Fine Arts and Crafts Education
4	Vocational and Technical Education	17	Special Education, Health and Physical Education, Scouts, Girls' Guide and Bratachari.
5	Madrasah Education	18	Sports Education
6	Religious and Moral Education	19	Libraries
7	Higher Education	20	Examinations and Evaluation
8	Engineering Education	21	Students' Welfare and Counselling
9	Medical, Nursing, and Health Education	22	Enrolment
10	Science Education	23	Teachers' Training
11	Information and Technology	24	Status, Rights, and Responsibilities of Teachers
12	Business Studies	25	Curriculum, Syllabuses, and Textbooks
13	Agricultural Studies	26	Educational Administration

Source: NEP2010

Many important principles are included in this policy. The largest principle found by the study team in this policy was the change of the current five-year primary education Program to an eight-year Program. All types of primary education, including government schools, non-government schools, and madrasahs, are subject to the policy, and realization by 2018 is aimed for. Due to the shift to an eight-year Program, the development of curriculum and textbooks, the training of teachers, and the reforming of educational administration is planned. Moreover, and there is recognition of the necessity to expand school buildings and increase the number of teachers. For vocational and technical education strategies, strategies for before entering vocational and technical education institutes (pre-primary education, etc.) are described in addition to vocational and technical education institutes. For example, ICT education is said to be included in primary education because it is needed for vocational and technical education. For a period of time, the implementation of the eight-year primary education Program in 2017 was reported by newspapers, and the possibility of its realization has been growing.

In addition, for the cultivation of human resources with competitiveness to support the next generation of the industrial world in the fields of agriculture, electricity, and ICT, technical education is positioned as a priority education. Other than including pre-vocational and ICT subjects in the curriculum of junior secondary education and attempting to spread technical education, access to TVET for those going further than secondary education or dropping out will be improved, and the policy will aim to improve the quality of existing vocational and technical education processes through private and industrial world cooperation.

Box1: Ideal Human Image Aimed for through Education

Descriptions relating to the 'Ideal Human Image Aimed for through Education' Bangladesh cannot be found in the country's constitution, but the course of action is indicated in the curriculum of the new subject 'career education' that has been included in junior and secondary education since 2012.

This curriculum states the purpose of career education as selecting an occupation based on the students' own interests and skills. Furthermore, issues that the country should resolve in order to achieve this goal are that (1) appropriate guidance is not offered for course selection in ninth grade, (2) students cannot judge for themselves even after completion of secondary education whether higher education is necessary for themselves, (3) relevance between the field they want to work in the future and subjects they have studied cannot be found, (4) and that life goal-setting is becoming more difficult for the current young generation because of rapidly developing technology and new working environments.

(3) The Technical Education Act 1967

Under this act, the Bangladesh Technical Education Board was established. The roles of the board are also defined in this act.

(4) Act of National Universities

The establishment of national universities is determined by acts. For example, the establishment of the University of Dhaka was determined by an act in 1920, and a revised edition was issued after independence from Pakistan in 1973. The act specifies the following: (1) the placement of a president, vice-president, and council as the management structure of the school; (2) forming regulations etc. as rights of the school; (3) authority over personnel issues; (4) and course and curriculum decision-making authority.

(5) University Grant Commission Act

This act enacted in 1973 provides the (1) selection method of the UGC committee (assignment by the government) and (2) functions of the UGC (evaluation of operation plans established by universities and budget compilation support, entrustment of grants from the government and distribution to universities).

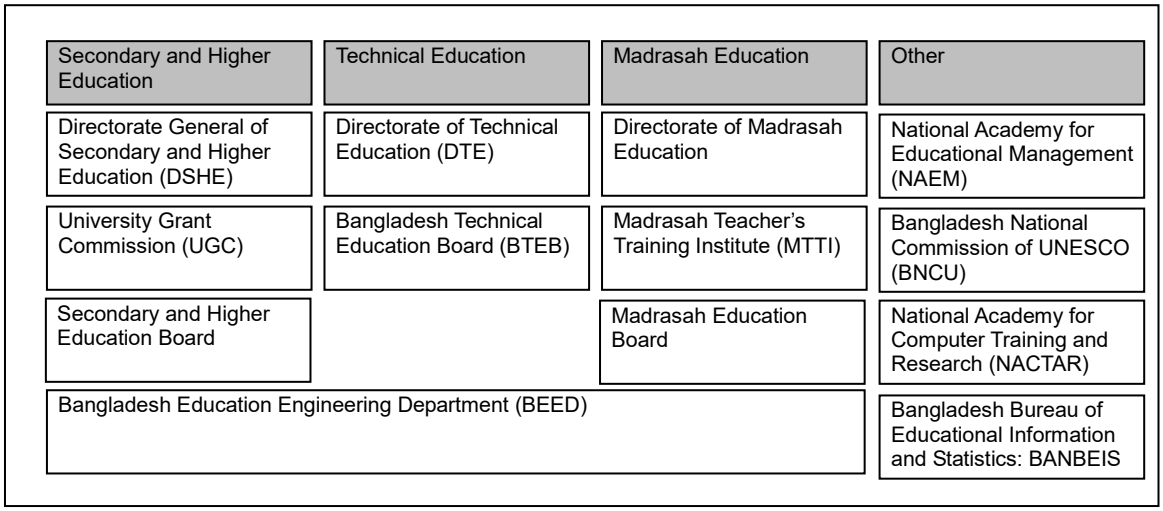
(6) Private University Act

Due to an increasing demand for university education, the Private University Act was enacted in 1992 and a legal framework for the establishment of private universities was developed. The establishment of private universities was approved by this act. It was revised in 2010, and private universities were put under the management of the UGC. Finally, political activity was prohibited.

3.2.3 Government Bodies related to Secondary, Higher, and Technical Education

Bangladesh's national government organization is comparatively more subdivided than those of other countries, as there are more than 40 Ministries/Divisions which are often reorganized. Two ministries handle Bangladesh's current education administration. Primary education, literacy, and non-formal education are under the jurisdiction of the MOPME, and secondary education, technical education, higher education, and madrasa education are under the jurisdiction of the MOE. The Ministry of Education will be examined in this chapter.

The departments within the MOE can be roughly classified into secondary and higher education related, technical education related, madrasa education related, and other cross-sectional departments. The classified departments are as follows.



Source: Prepared by the study team based on Ministry of Education website

Figure 3-1 Departments of Ministry of Education by Classification

Of these departments, this chapter will explain the departments that are directly related to whole education sector, especially secondary education, higher education, and technical education.

(1) National Academy for Educational Management (NAEM)

NAEM provides management and new employee training to executives of educational facilities and administrative officers, and conducts investigational research.

This academy was founded in 1959 as a training facility for in-service secondary school teachers to study teaching methods as the Education Extension Centre. It was promoted to the Bangladesh Education Extension and Research Institute (BEERI) in 1971 and study and training functions for educational administrative officers and college madrasah teachers were added. In 1982, it was combined with the National Institute of Educational Management and Research (NIEMR) and was renamed the National Institute for Education Administration Extension and Research (NIEAER). It was renamed to the National Academy for Educational Management (NAEM) in 1992 and has remained as such to the present day.

(2) Bangladesh Education Engineering Department (BEED)

It is the department of school-related infrastructure. BEED carries out facility planning, design, monitoring, and construction status reports. Regardless of government or non-government, it widely targets secondary schools, colleges, vocational training institutes, polytechnic institutes, and madrasahs.

(3) Bangladesh Bureau of Educational Information and Statistics (BANBEIS)

This is an organisation established in 1971 that collects, organises, analyses, and distributes data concerning education after secondary education in Bangladesh. It issues statistics annually around May.

(4) Directorate of Inspection and Audit (DIA)

The DIA promotes the proper use of public money by supervising, inspecting, and advising management improvement of educational institutions (mainly non-government educational establishments) that receive public money. It was established in 1980 with 7,500 employees, but currently is a huge organisation of 28,000 employees. Because the DIA is an affiliated agency of the MOE, it is not listed in the divisional charts by category of the MOE.

main roles include:

1) Supervising whether pay outs from the government have been used as originally intended
2) Inspecting whether teachers and staff that received government subvention from MPO etc. have the appropriate qualifications for support
3) Planning inspection for quality improvement of non-government educational institutions
4) Supervising the academic activities of government and non-government educational institutions
5) Inspecting the annual audit of non-government educational institutions
6) Taking measures necessary for accounting firm designation for annual audit of non-government educational institutions, and inspection of audit report by said accounting firm
7) Conducting special audits of affiliated institutions of the MOE if instructed as stated

(5) Non-Government Teachers' Registration and Certification Authority (NTRCA)

A new organisation established as an implementing organisation of the Non-Government Teachers' Registration and Certification Act 2005, which was approved by parliament in 2005. The organisation carries out teacher registration examinations of non-government educational institutions (junior secondary schools, secondary schools, colleges, madrasahs, technical schools, and vocational institutions) for the management and improvement of the quality of teachers employed by government subvention at non-government educational institutions.

Establishment Background:
The role of the School Managing Committees (SMCs) involved in the teacher employment process at non-government educational institutions was questioned in local communities. The acquisition of new or young teachers in order to receive government subvention was being prioritized by schools, and there were SMCs that compromised on the quality of teachers, or the teacher was an acquaintance of an SMC member, and these teachers were often not willing to improve their teaching skills through in-service teacher training. As a result, most of the teachers receiving government subventions had not reached the qualifying level, and it was well known that the quality of non-government secondary educational institutions was much worse than that of government schools. In order to counter this, it was decided that teachers provided with government subvention would take a selection examination by the government.

(6) National Curriculum and Textbook Board (NCTB)

The NCTB is in charge of curriculum, textbooks, the development of teaching materials, publication, printing, sending materials to schools, and teacher training. Curriculum, textbooks, and teaching materials have different roles depending on the subject, as listed below. It is the world's largest institution in terms of the number of textbooks printed. Because the NCTB is an affiliated agency of the MOE, it is not listed in the divisional charts by category of the MOE.

Table 3-5 Role of National Curriculum and Textbook Board (NCTB)

Educational Classification	Curriculum • Textbook • Development of Teaching Material	Printing and Distribution of Textbooks (Free Subject)
Preschool Education	Subject	Subject
Primary Education	Subject	Subject
Secondary Education	Subject	Subject
Ebtedayee	-	Subject
Dakhil	-	Subject
Dakhil Vocational	-	Subject

Source: Prepared by the study team based on information from NCTB

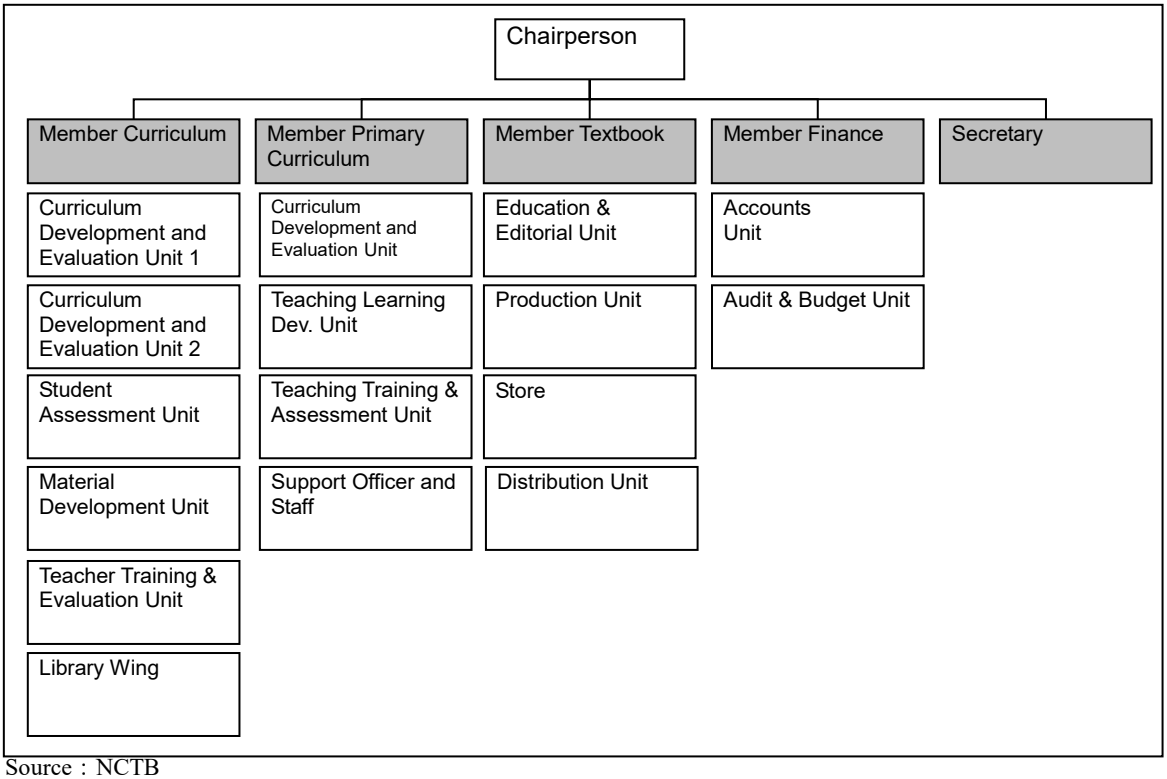
The NCTB currently handles both textbooks and curriculum, but these were done separately until 1983.

Regarding textbooks, after becoming independent from the British in 1947, the East Bengal School Textbook Committee was founded and the textbook development organization was established. The 'School Textbook Board', an independent institution, was established by the textbook act issued in 1954. It was reorganized to the Bangladesh School Textbook Board (BSTB) after gaining independence from Pakistan.

On the other hand, regarding curriculum, the National Curriculum Development Centre (NCDC) was established in 1981.

In order to improve consistency and uniformity of curriculum and textbooks, the BSTB and NCDC were combined to become the NCTB in 1983.

The current organization chart is as follows.



Source : NCTB

Figure 3-2 NCTB Organisation Chart

3.2.4 Education Finance

Public expenditure on education (% of GDP and of whole national expenditure) is shown below by country. In Bangladesh, the ratio of public expenditure on the educational sector to GDP is only 2.0%, which is the second lowest among nine countries, following 1.7% in Sri Lanka. The ratio of national expenditure is 13.8%, which is the third lowest, following Sri Lanka and Pakistan. It can be said that Bangladesh's educational budget is relatively low, compared to neighboring countries.

Table 3-6 Public Expenditure on Education in neighbouring countries (2014/15FY)

Country	Public expense on education	
	GDP ratio (%)	Ratio of national expenditure (%)
Afghanistan	4.6	18.4
Bangladesh	2.0	13.8
Bhutan	6.0	17.8
India	3.8	14.1
Iran	3.1	19.7
Maldives	5.2	15.3
Nepal	4.7	22.1
Pakistan	2.5	11.3
Sri Lanka	1.7	8.8

Source: BANBEIS2015

The following table shows the transition in expenditure ratio in primary and post-primary education of the national budget. The ratio of educational expenditure on primary and post-primary education to the national budget is 10 - 12%, and it has been decreasing since 2011/12.

Table 3-7 Ratio of spending on education to national expenditure

Year	National Budget （10 million BDT）	Educational budget（10 million BDT）			Proportion to national budget (%)		
		Primary	Post-primary	Total	Primary	Post-Primary	Total
2011-12	163,589	8,956	10,850	19,806	5.47	6.63	12.11
2012-13	191,738	9,825	11,583	21,408	5.12	6.04	11.17
2013-14	222,491	11,930	13,163	25,093	5.36	5.92	11.28
2014-15	250,506	13,673	15,540	29,213	5.46	6.2	11.66
2015-16	295,100	14,504	17,114	31,618	4.91	5.8	10.71

Source: BANBEIS2015

The following table shows the amount of expenditure at each educational stage, a comparison of the ratios of operating expenses and investment expenses to expenditure, and the ratio of each educational stage to operating and investment expenses in the education sector. Through primary to higher education, the amount of operating expense is large, which is 76% - 89%, although investment expenses are limited. However, focusing on investment in education as a whole, primary education is 55.95%, which means that the amount of investment expenditure on primary education is large.

Table 3-8 Ratio of operating and investment expenses and educational expenditure at each educational stage

No.	Educational stage	Expenditure（Million BDT）			Ratio of operating and investment expenses (%)		Ratio at each educational stage (%)		
		Operating expense	Investment expense	Total	Operating expense	Investment expense	Operating expense	Investment expense	Total
1	Primary level	104,997	31,768	136,765	76.77	23.23	44.59	55.95	46.8
2	Junior Secondary	39,921	7,590	47,511	84.02	15.98	16.95	13.37	16.26
3	Upper Secondary	50,302	6,452	56,753	88.63	11.37	21.36	11.36	19.42
4	Post-Secondary Non-Higher	4,794	733	5,527	86.73	13.27	2.04	1.29	1.89
5	Higher	35,472	10,234	45,706	77.61	22.39	15.06	18.02	15.64
	Total（(MOE only)	130,488	25,009	155,497	83.92	16.08	0	0	0
	Total	235,485	56,777	292,262	80.57	19.43	100	100	100

Source：Prepared by the Survey Team based on BANBEIS2015

The following table shows the ratio of salary to operating expense at each educational stage. Except for post-secondary and non-higher education, the salary ratio is more than 90% at each educational stage, which means the cost of labour is large and the cost of activity is small.

Table 3-9 Ratio of salary to operating expenditure at each educational stage

No.	Educational stage	Ratio to operating expense (%)		
		Salary	Other than salary	Total
1	Primary level	98.6	1.4	100
2	Junior Secondary	96.1	3.9	100
3	Upper Secondary	95.5	4.5	100
4	Post-Secondary Non-Higher	63.9	36.1	100
5	Higher	91.3	8.7	100

Source：BANBEIS2015

The following table shows the transition of expenditure on salary in MPO (private school) at each educational stage. It reveals that salary expenditure continues to increase every year and the fiscal burden on the educational sector is heavy.

Table 3-10 Salary in private school (MPO) at each educational stage

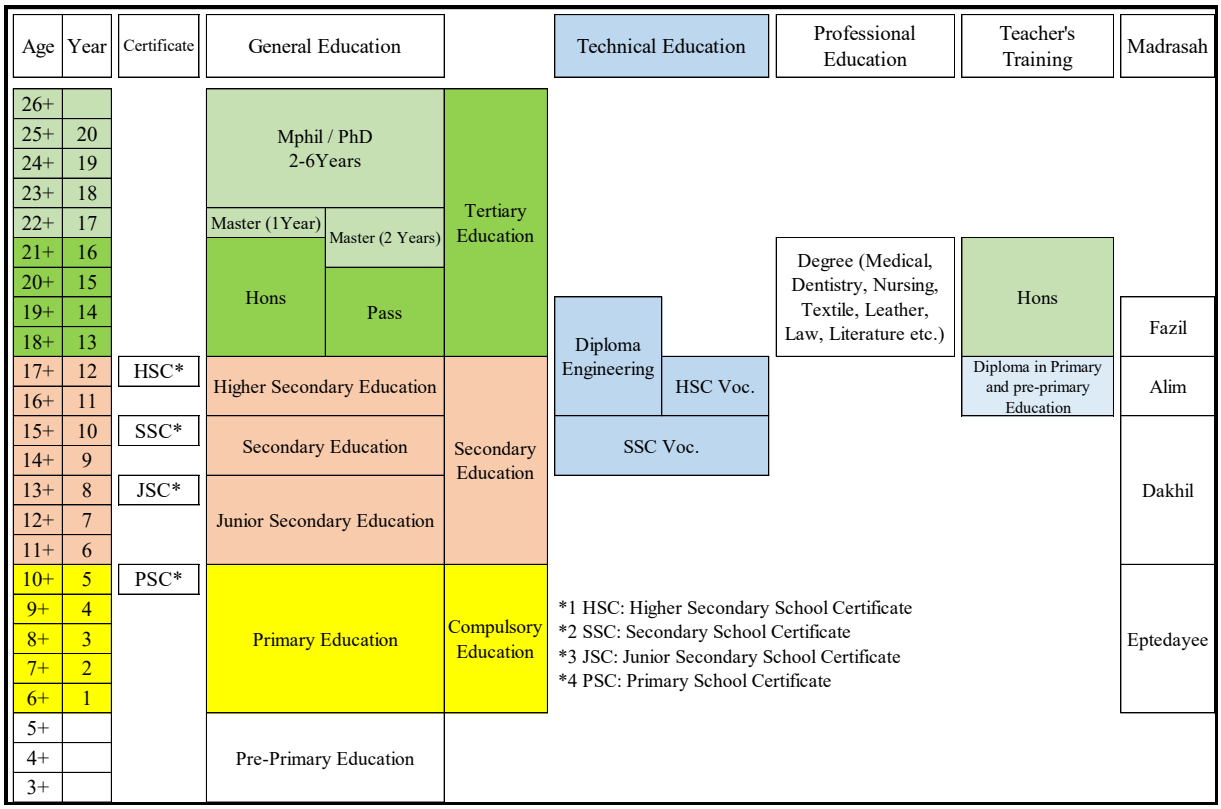
Educational stage	MPO Salary (MPO) (Million BDT)				
	2010/2011	2011/12	2012/13	2013/14	2014/15
School (Jr.& secondary)	24,217	24,734	25,855	32,269	34,427
Madrasah (Dakhil, Alim, Fazil & Kamil)	13,612	15,074	15,847	16,820	20,711
College (Intermediate & Degree)	12,554	12,553	13,673	19,672	17,269
Total	50,383	52,361	55,376	68,761	72,407
Year on year % of growth		3.9%	5.8%	24.2%	5.3%

Source：BANBEIS2015

3.3 Overview of Bangladesh Education

(1) Education System

The education system in Bangladesh can be roughly divided into three types: general education that was strongly influenced by the British, technical education, and the madrasah. In addition to the three types of education, there are professional education programs and teacher training programs. The figure below shows an overview of the system.



Source: The Survey Team

Figure 3-3 Education System of Bangladesh

General Education System

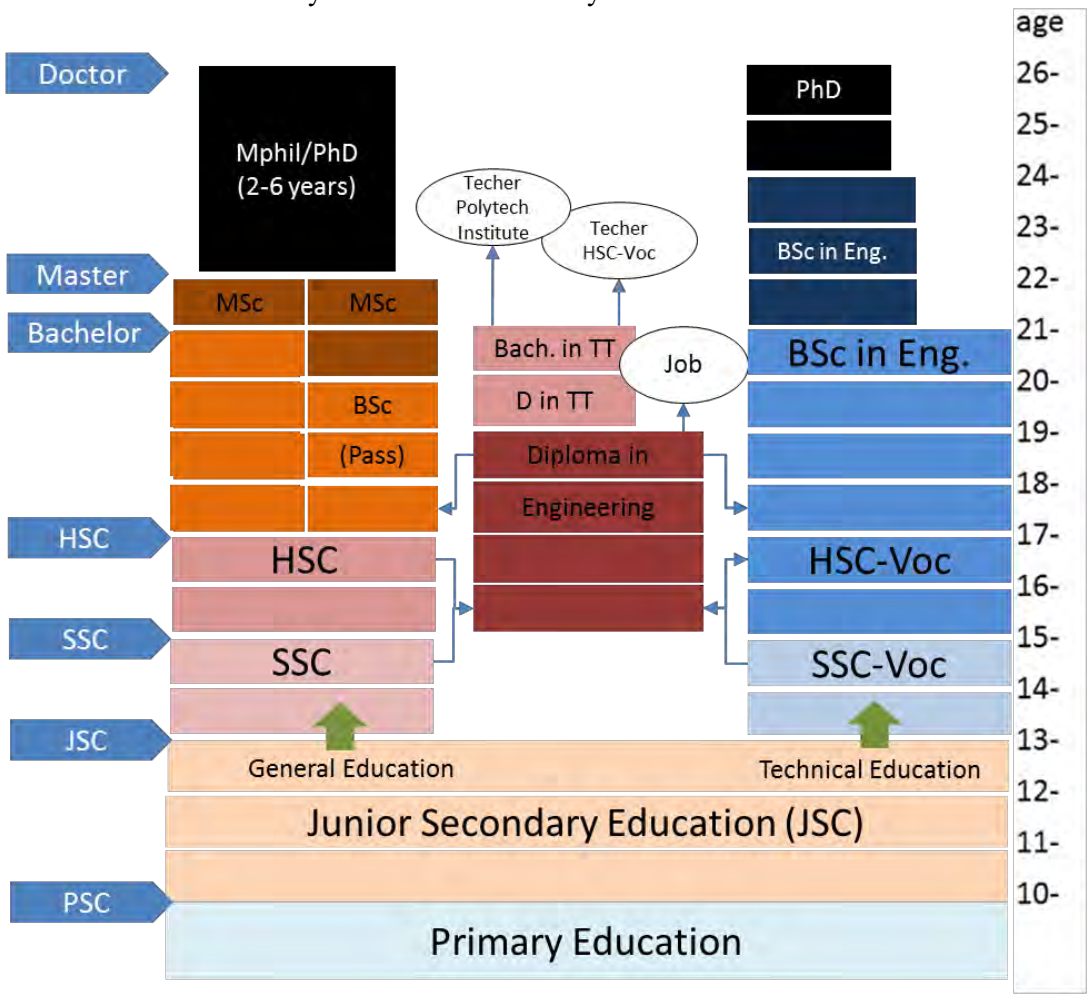
The general education system consists of a 5-3-2-2-year education program. Primary education includes 1st-5th grades, junior secondary education includes 6th-8th grades, secondary education includes 9th and 10th grades, and higher secondary education covers 11th and 12th grades. The years of 13th grade and above are university-level education. Five-year primary education (6-11 years) has been made compulsory. It has been determined that the length of primary education will be extended to eight years (1-14 years old) under NEP2010, so as to extend the length of compulsory education, but the timing of execution has not been determined yet.[31]

Technical Education System

TVET are implemented by several ministries and agencies, including the MOE and the MOEWOE. Technical and vocational education handled by the MOE is divided into four levels: 1) secondary level

[31] The minister of Education stated on 18th May 2016 that the government decided the extension (http://www.risingbd.com/english/primary-education-elevated--up-to-class-eight/34249). The minister of MOPME stated on 1st June 2016 that grade 8 students instead of grade 5 will take PEC after extension. (http://www.theindependentbd.com/post/45811)The cabinet rejected this plan.

for 9-10 grade that provides secondary school certificate vocational; 2) higher secondary level for 11-12 grade that provides higher secondary school certificate vocational; 3) engineering diploma courses for grades 11-14 provided by polytechnic institutes, and engineering degree courses for grades 13-16 as further education after secondary education or secondary technical education.



Source: The Survey Team

Figure 3-4 Educational System of Technical Education in Bangladesh

After completing junior secondary education, students can choose either general secondary education or technical and vocational education.

Students in SSC vocational programs receive the same qualification as those in general secondary education programs, and upon graduation they obtain SSC. However, the number of lessons in vocational education programs is higher than in general secondary education programs because additional technical lessons are added to the general curriculum. After graduating from SSC vocational program, students can continue their studies in three different programs: general higher secondary education, HSC vocational program, or the engineering diploma program. In 2016, there were 64 technical school and colleges (TSCs) providing SSC vocational program and HSC vocational program.[32] Students who complete SSC vocational program can choose to continue to HSC vocational program or engineering diploma program.

[32] Technical subjects in TSCs are categorized as vocational training because the course is designed for students to acquire specific vocational skills. SSC-Voc programs is opened not only in TSC but also Technical Training Centre under BMET.

In HSC vocational program, students are also eligible to take the same completion qualification exam as general higher secondary education. The number of lessons is more than that of general higher secondary education as the lessons of technical subjects are added.

As a minimum entry requirement of an engineering diploma program, it is necessary for candidates to have completed either a secondary general education program or a SSC vocational program. However, some start the engineering diploma program after they have finished HSC vocational program. In this case, there was no advantageous system to start from the third year in this program. However, the MOE introduced a new system with curriculum 2016, and currently graduates from higher secondary education (HSC, or HSC vocational) can start their study from the third semester and the forth semester of diploma engineering course. After completing an engineering diploma program, those who want to become a teacher in a technical education school can enter a Technical Teacher Training College (TTTC). In a TTTC, both a diploma and a bachelor of technical education program are offered. The diploma program is one year and the bachelor program is two years.

Madrasa Education System

The madrasah[33] education curriculum can be divided into several types, including Alia Madrasah, Qawmi Madrasah, and other institutions.

Alia Madrasah offers primary level education up to university level education. It has a system corresponding to the general school system in terms of levels and length of education.[34] To move on to the next level of education, tests are conducted. The Madrasah Education Board of the MOE oversees the madrasahs, including their management and educational activities. As the teachers' salaries are paid by the government, they are responsible for carrying out the national curriculum. Religious subjects such as the Arabic language and hadith are taught, which differs from the general education curriculum. For this reason, students are allowed to transfer to a general education curriculum school from Alia Madrasah, but transferring the other way around is not allowed.

Qawmi Madrasah delivers its own Islamic education in languages such as Arabic, Persian, and Urdu based on its own curriculum, mainly funded by donations by villagers and financial assistance from Bangladeshis who have immigrated to Middle Eastern countries, without receiving subsidies from the MOE. According to an interview survey conducted in 2008 by the Qawmi Madrasah Committee of Dhaka, it controls 5,000 schools, but there are about 10,000 Qawmi Madrasahs across the country.[35] Qawmi Madrasah consists of primary level education called Eptedayee, junior/secondary level education called Dakhil, higher secondary level education called Alim, university level education called Fazilat, and graduate level education called Takhmil. Students go up to the next level of education in accordance with the subjects they have completed, regardless of age. Qawmi Madrasah does not limit the number of students. It is estimated that 1.4 million students attend.[36]

Other than the above schools, there are 24-hour kindergartens called Maktub/Noorani, which are boarding schools where letters and words in languages such as Arabic, Bengali, or English as well as reading the Qur'an are taught through play. Tahfeez, which corresponds to primary level education, is the place for memorization of the Qur'an.

---

[33] According to the report "Education age" and "maracas" by Tatsuya Kusakabe (2010), the definition of the word Madrasah in the Islamic world is quite diverse. Originally, Madrasah refers to higher education facilities to learn about the Islam. They began to be built in Iran's Khorasan province around the 10th century, and then spread in India during the Delhi Sultan era and in Spain in the 14th century. Maracas as a religious education facility spread worldwide accordingly. Until today, facilities called Madrasah have been built around the world, where Islamic education has been provided. Maracas provides Islamic education to a wide range of age groups from pre-primary children to undergraduate students, and there are a wide range of sizes from a small classroom in rural areas to a large university with a vast campus comparable to large universities in Japan. There are cases where maktab which is a small classroom teaching Islam is also called Madrasah in some regions.

[34] With respect to levels of education, Ebtedayee is primary level education (1st - 5th grades), Dakhil is junior /secondary level education (6th - 10th grades), Alim is higher secondary level education (11th - 12th grades), Fazil is university level education and Kamil is graduate school level education.

[35] Tatsuya Kusakabe (2010), " Education era" and "madrasahs"

[36] http://en.prothom-alo.com/bangladesh/news/67081/14-lakh-students-study-in-14-000-Qawmi-madrasahs

Academic years and semesters

The academic year of Bangladesh is complex as it differs depending on the level of education. Let's take a pupil who was enrolled in the first grade of primary school in 2000, for example.

From the primary education level to the secondary education level for 10 years (from first grade to tenth grade), an academic year begins in January and ends in December. In the last month of the fifth grade, an exam the Primary School Certificate (PSC) is conducted, and the final month of the eighth grade, the Junior Secondary Certificate (JSC) is conducted. Right after the exam, she will go up to the next education level. However, the Secondary School Certificate (SSC), which is necessary to join grade 11, will be conducted in February, which is after she completed the tenth grade. In addition, it takes several months before the results are announced in June. For this reason, the academic year of higher secondary level education begins in July and ends in June. On the other hand, the Higher Secondary Certificate (HSC) is conducted in April in the 12th grade. University entrance exams are conducted after the 12th grade is completed. Therefore, students start going to university in April. However, officially, students have enrolled in July 2012 right after the completion of the 12th grade. Students who started studying in universities in January 2013 are allowed to enter in official papers, including curriculum vitae, as enrolment in 2012/2013.

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep	Oct.	Nov.	Dec.
2000	**G1**											
2001	**G2**											
2002	**G3**											
2003	**G4**											
2004	**G5**											**PSC**
2005	**G6**											
2006	**G7**											
2007	**G8**											**JSC**
2008	**G9**											
2009	**G10**											
2010		**SSC**				**Result**	**G11**					
2011							**G12**					
2012				**HSC**		**Result**		**Term for admission exam**			**Admission**	
2013	**G13**					**Exam**						**Exam**
2014	**G14**					**Exam**						**Exam**
2015	**G15**					**Exam**						**Exam**
2016	**G16**					**Exam**						**Exam**

Meanwhile, only primary schools (first - fifth grades) employ a three-semester system. From sixth grade onward, schools employ a two-semester system, which makes the school system of Bangladesh even more complicated. It has been determined that the junior secondary level of education (sixth - eighth grades) are to be incorporated into the primary level education in 2017, and the PSC is to be abolished, but the timing of execution has not been determined yet.

(2) Educational Stages, Statistical Classification and Types of Schools

As mentioned, the general education system of Bangladesh consists of a 5-3-2-2-year education program. Furthermore, it is necessary to understand the educational classifications mainly for educational statistics (primary school, school education, college education, madrasah education, professional education, teacher education, technical and vocational education, and university education). The following chart shows the relationship between each educational stage and types of schools. School

education refers to junior secondary (grade six to eight) and middle secondary (grade nine to ten). College education covers higher secondary (grade eleven to twelve) and higher education (Bachelor). Schools that provide school education are junior secondary school (grade six to eight) and secondary school (grade six to ten). However, the number of teachers in secondary school statistically belongs to school education; it is difficult to distinguish whether they work in junior secondary school or secondary school. Therefore, it is impossible to know the number of students per teacher in junior secondary and middle secondary school. Furthermore, it is very difficult to know the accurate number of students or teachers when madrasah education is included.

Table 3-11 Relationship between Educational stages and classification/ type of education

Classification	Type of school	Secondary			Higher education Other than university education	University Education	
		Junior	Middle	Higher			
		Grade 6-8	Grade 9-10	Grade 11-12		Bachelor	Master
School Education	Junior Secondary School	○					
	Secondary School	○	○				
College Education	School & College			○		○	
	Higher Secondary College			○			
	Degree College					○	
	Master College						○
Madrasah Education		○	○	○		○	○
Professional					○	○	
Teacher Education					○	○	
Technical and Vocational			○	○	○		
University						○	○

Source: The Survey Team

(3) The Number of Students at Each Educational Stage

The number of students including those in madrasah education at each educational stage is shown below. The two main features include: 1) the average number of students per grade[37] decreases as the grade level advances; and 2) the rate of female students is higher than male until the middle secondary stage, and it decreases in the higher secondary stage.

[37] The figure obtained by dividing the number of students at each educational phase by school years is hereby called "the average number of students per school year."

Table 3-12 The number of students at educational stage

Educational stage	Grade	Number of Student	Number of female students	Rate of female students	Average number of students
Primary Education	1-5	19,067,761	9,698,682	50.9%	3,813,552
Secondary Education	6-8	8,247,058	4,488,843	54.4%	2,749,019
Middle Secondary Education	9-10	3,772,249	1,899,602	50.4%	1,886,125
Upper Secondary Education	11-12	2,547,464	1,170,946	46.0%	1,273,732
Higher education other than university education		317,262	64,159	20.2%	-
Bachelor		2,582,558	1,040,496	40.3%	-
Master		267,835	85,724	32.0%	-

Source: Survey Team made based on Bangladesh Bureau of Educational Information & Statistics (BANBEIS) 2015

(4) School Scale and Indicator in Each School Type

The number of schools, teachers, students, and every kind of indicator are shown below. Each indicator shows the Teacher Student Ratio (TSR), Student per Institution (SPI), and Teacher per Institution (TPI) statistics. The TSR is more than 30 in primary education, school education, college education, and university. Apart from university, the SPI rate of college education is 894, which is the highest of all, and 156 in primary education, and 150 in technical-vocational education, which means schools are managed in relatively small sizes. The ratio of female teachers is 60% in primary education, but in other types of education, 80% of teachers are male.

Table 3-13 Number of Schools, Teachers and Students in each type of education

Types of Education	Number of Schools	Number of Teachers			Number of Students	Indicator		
		Total	Female	Female Ratio		TSR	SPI	TPI
Primary Education	122,176	527,798	314,299	60%	19,067,761	36	156	4
School Education	20,297	243,117	61,701	25%	9,743,072	40	480	12
College Education	4,113	111,612	25,803	23%	3,678,869	33	894	27
Madrasah Education	9,319	114,033	14,450	13%	2,409,373	21	259	12
Professional	480	8,242	1,557	19%	122,829	15	256	17
Teacher Education	215	2,679	558	21%	34,734	13	162	12
Technical-Vocational	5,790	30,903	6,244	20%	872,658	28	150	5
University	122	26,319	6,704	25%	872,891	33	7,155	216
Subtotal of post primary	40,336	536,905	117,017	22%	17,734,426	33	440	14
Total	162,512	1,064,703	431,316	41%	36,802,187	-	-	-

Source：Prepared by the Survey Team based on BANBEIS 2015

(5) Private Schools

School information for primary education, in which the schools targeted in this report are included, school education, college education, technical and vocational education, and public vs. private university are shown below. Except for primary education, the number of private schools is much larger than that of public schools; this is because schools have historically been established as community schools in Bangladesh. Concerning the numbers of students, only in university is the number of students in public institutions greater than in private institutions. This is attributed to the large SPI in public schools. With

respect to each indicator, the gap between public and private education is significant, except in school education.

Table 3-14 School Information in Public and Private schools (2015)

Types of Education	Public/Private	Schools	Teachers	Students	Indicators		
					TSR	SPI	TPI
Primary Education	Public	63,546	322,487	13,793,653	43	217	5
	Private	58,630	205,311	5,274,108	26	90	4
	Total	122,176	527,798	19,067,761	36	156	4
School Education	Public	804	8,177	335,320	41	417	10
	Private	19,493	234,940	9,407,752	40	483	12
	Total	20,297	243,117	9,743,072	40	480	12
College Education	Public	302	12,926	1,356,962	105	4,493	43
	Private	3,811	98,686	2,321,907	24	609	26
	Total	4,113	111,612	3,678,869	33	894	27
Technical and Vocational	Public	252	4,957	178,085	36	707	20
	Private	5,538	25,946	694,573	27	125	5
	Total	5,790	30,903	872,658	28	150	5
University	Public	37	12,414	493,110	40	13,327	336
	Private	85	13,905	379,781	27	4,468	164
	Total	122	26,319	872,891	33	7,155	216

Source：Survey Team made based on Bangladesh Bureau of Educational Information & Statistics (BANBEIS) 2015

(6) Teacher-Students Ratio

The Teacher-Student Ratio (TSR) has a great impact on learning environments. TSRs in public and private institutions are shown below. In school education, TSRs in public and private are almost the same, but other than that, the TSR in private schools is smaller than the TSR in public schools. This means that the learning environment in private schools is better than in public schools.

Table 3-15 Comparison of TSR in public and private schools

Types of Education	Public	Private	Public. /Private
Primary Education	43	26	1.7
School Education	41	40	1.0
College Education	105	24	4.4
Technical and Vocational	36	27	1.3
University	40	27	1.5

Source：Survey Team made based on Bangladesh Bureau of Educational Information & Statistics (BANBEIS)

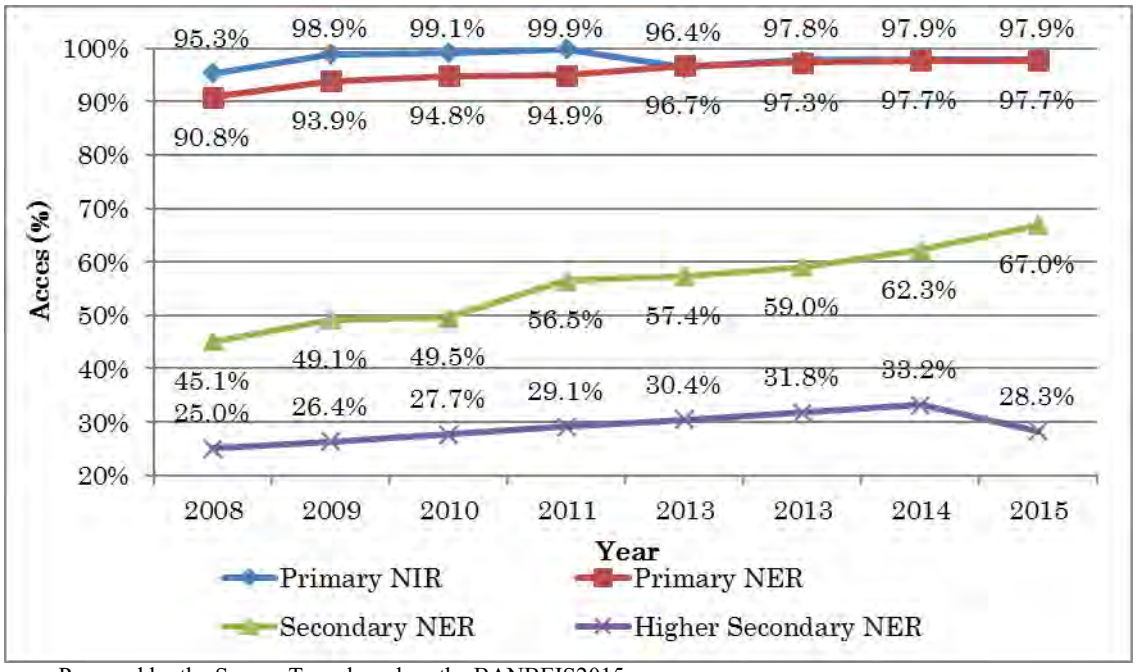
(7) Access

The diagram below shows the changes in access to education from primary education to higher secondary education. The diagram shows the net intake ratio (NIR) and the net enrolment ratio (NET) at the primary level (primary: six-ten years old), the net enrolment ratio at the junior/secondary level (secondary: 11-15 years old), and the net enrolment ratio at the higher secondary level (higher secondary: 16-17 years old). The ratios of both primary education and secondary education include the madrasah education curriculum under the umbrella of the MOE.

Primary schools' net intake ratio increased to 97.9 % in 2015 from 95.3% in 2008 and the net enrolment ratio also increased to 97.7% in 2015 from 90.8% in 2008. However, the growth rates for both ratios have been stagnant recently. This is because an improvement of an additional 5% is difficult in general, and there are a certain number of pupils enrolled in Qawmi Madrasahs, which is not considered as public education.

Although the enrolment ratio at the junior/secondary level increased significantly to 67.0% in 2015 from 45.1% in 2008, the gap between the net enrolment ratios of primary education is large.

The enrolment ratio at the higher secondary level increased to 33.2% in 2014 from 25.0% in 2008, then fell to 28.3% in 2015.



Source: Prepared by the Survey Team based on the BANBEIS2015

Figure 3-5 Access to primary education and higher secondary education

Lastly, with regard to higher education, according to the 2015 statistics published by the MOE, there are 4,133 colleges (302 national schools and 3,811 private schools), other than universities. Additionally, there are also technical schools such as engineering diploma courses and professional schools authorized by ministries other than the MOE. The total number of students enrolled in higher education institutions exceeded 2.03 million in 2015, with the gross enrolment ratio at 13.4%, as shown in the table below. Of the total number of students enrolled, female students accounted for 41.4%, which is the lowest among the neighboring countries, and the same level as that of Bhutan. The table also shows the gross enrolment ratio of the neighboring countries in accordance to the higher GNI per capita. The higher education gross enrolment ratio of Bangladesh is higher than that of Pakistan and Bhutan, even though the GNIs of both countries are higher than that of Bangladesh. On the other hand, the higher education gross enrolment ratio of India is 23.9%, which is more than twice that of Bangladesh. But the primary education net enrolment ratio of India is 90%[38], which is lower than that of Bangladesh. This is a distinctive feature.

[38] From the World Development Indicator, WB (2013)

Table 3-16 Higher education gross enrolment ratios of Bangladesh and its neighbouring countries (2014)

Country	Students		Proportion of private universities	Gross enrolment ratio (GER)	GPI	GNI (* 1) per capita
	People (thousand)	Proportion of female students				
Iran	4,685	47.3%	41.5%	66.0%	0.9	$7,120
Sri Lanka	324	60.4%	-	20.7%	1.5	$3,440
Bhutan	9	41.4%	-	10.9%	0.7	$2,370
India	28,175	45.9%	53.9%	23.9%	0.9	$1,570
Pakistan	1,932	50.1%	15.1%	10.4%	1.1	$1,400
Bangladesh	**2,037**	**41.4%**	**43.0%**	**13.4%**	**0.7**	**$1,080**
Nepal	459	-	-	15.8%	m	$730

Sources: Prepared by the Survey Team based on the BANBEI 2015 (However, *1 is obtained from the World Development Indicators 2014)

(8) Education Continuance Rate

There was a significant gap between the primary school net enrolment ratio in 2015 of 97.7%, and the junior/secondary education net enrolment ratio of 67.0%. However, this does not mean that primary school graduates did not enroll in junior secondary level education. The table below shows the number of primary school graduates and the number of junior secondary education intake in comparison. Assuming that students enrolled in junior secondary schools right after graduating from primary schools, more than 95% of primary school graduates enrolled in junior secondary schools between 2011 and 2014 consistently.

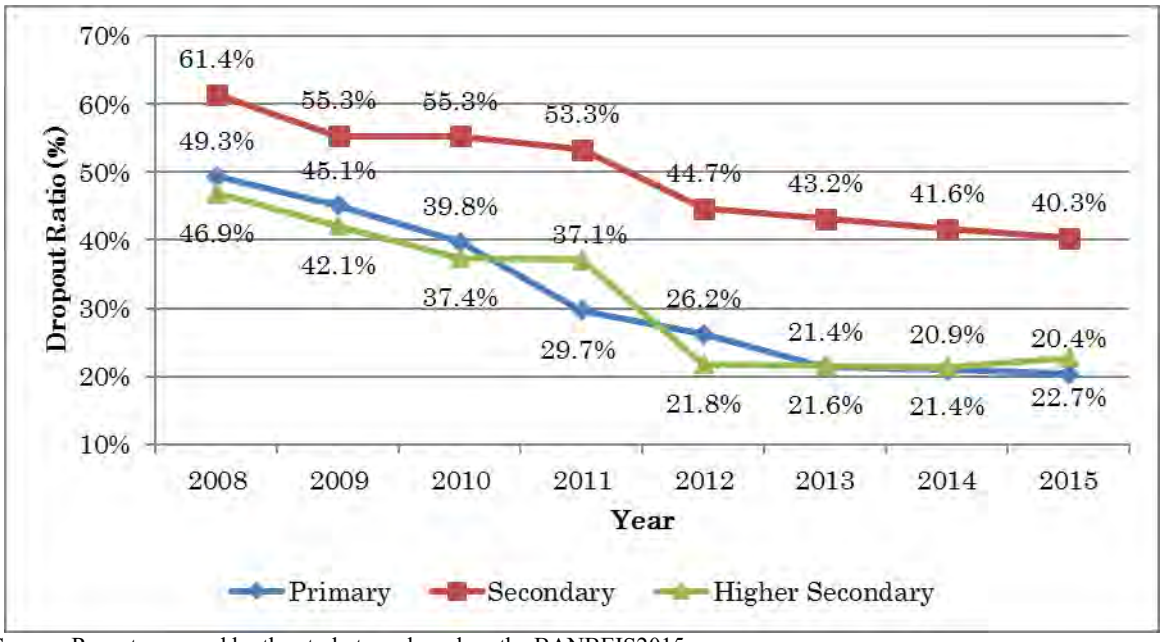
Table 3-17 Comparison of numbers between the primary school graduates and the students enrolled in junior secondary schools

Year	Number of students completed primary & ebtedayee education	Number of students entered secondary education (School & Madrasah Grade VI)	% entered secondary education
2010	2,056,568	2,025,402	-
2011	2,398,903	1,954,768	95.05%
2012	2,535,219	2,281,117	95.09%
2013	2,638,932	2,412,261	95.15%
2014	2,750,326	2,523,083	95.61%

Source: Report prepared by the study team based on the BANBEIS2015

(9) Dropout Rate

The gap between the net enrolment ratio at the primary level and that of the junior secondary level is attributed to the dropout ratio after admission. The figure below shows changes in the dropout ratios of primary education, junior/secondary education, and higher secondary education. The dropout ratios of primary education, junior/secondary education, and higher secondary education have continued to decrease. However, the gap between primary education and junior/secondary education dropout ratios has remained between 15 and 20%. The dropout ratio of junior/secondary education is 40.3%, which is still high, and means that only six out of ten students in the 10th grade graduate. This has become a cause of the gap between the primary level net enrolment ratio and the junior/secondary level net enrolment ratio. The dropout ratio of higher secondary education is presumed to be lower than that of junior/secondary education because higher secondary education is only two years, which is short.



Source: Report prepared by the study team based on the BANBEIS2015

Figure 3-6 Changes in the dropout ratio of primary education, junior/secondary education and higher secondary education

The table below shows grades in which students dropped out for each education level of primary education through to secondary education. The dropout ratios of junior secondary education and secondary education of students in their final year recorded 19.1% and 13.7% respectively, which are significantly higher than that of other grades, while the dropout ratio of primary education of students in the fourth grade recorded 10.1%, which is the highest. In other words, if students reach the fifth grade of primary education, most of them will graduate, and go to junior secondary schools. However, it is inferred that some of them who fail to keep up with their studies for the preparation of exams in the final year will drop out.

Table 3-18 Drop-out ratio of primary education and junior/secondary education for each grade (2015)

Grade	Primary education (%)					Junior secondary education (%)			Secondary education (%)	
	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10
Dropout ratio	1.6	3.2	3.4	10.1	2.1	6.0	4.4	19.1	4.7	13.7

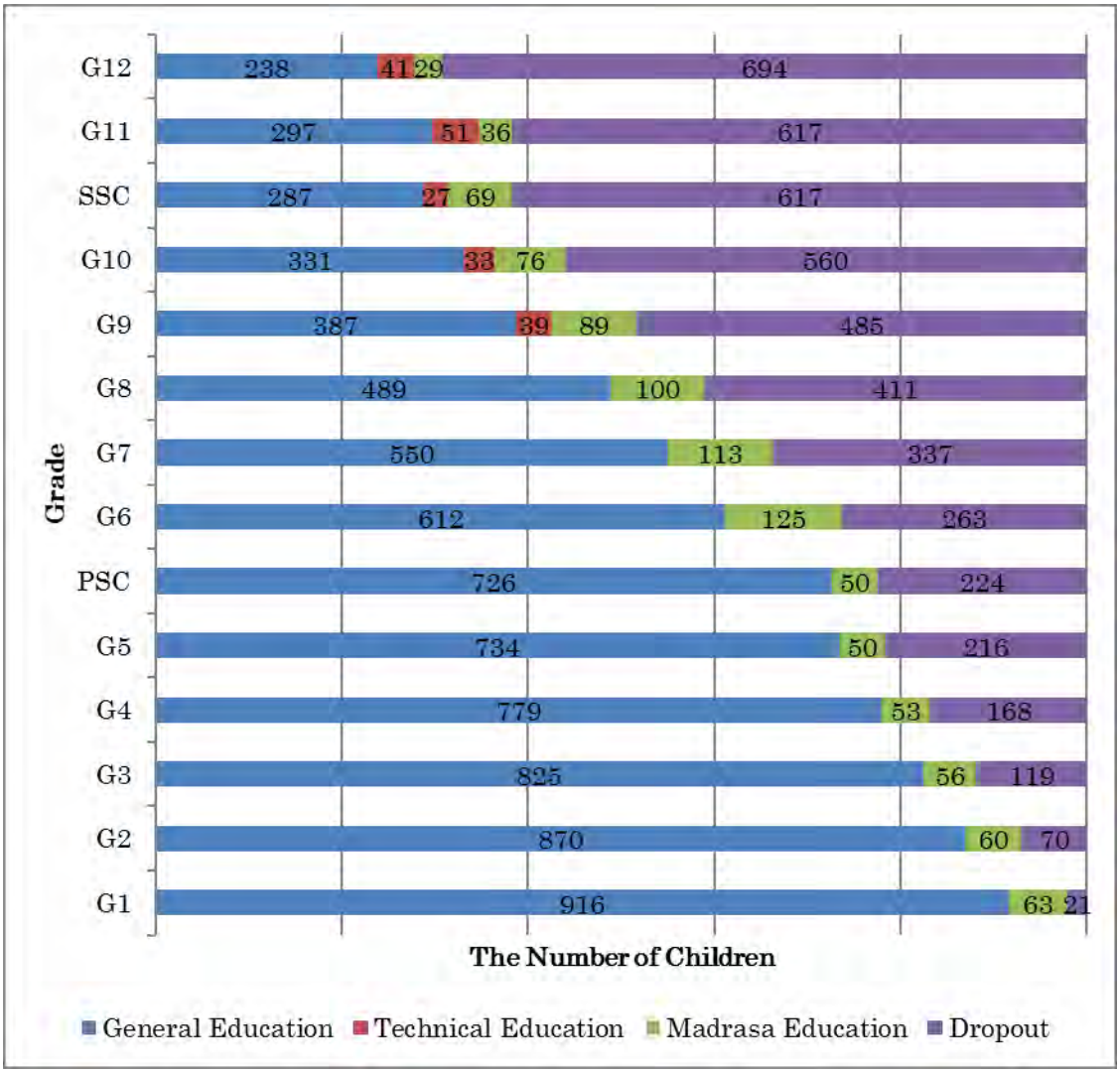
Source: Report prepared by the Survey Team based on the BANBEIS 2015

(10) Distribution of Pupils and Students

The education system of Bangladesh is complex. Further, data is not unified between the different levels of education. For that reason, it is difficult to capture the entire picture. This section assumes how many children out of 1,000 who enrolled in the first grade (six years old) of primary education in 2015 will continue their education until the 12th grade, under the conditions that the current education situation will be maintained (net enrolment ratio or PSC pass ratio, etc.[39]) based on multiple data sources.

[39] All the data used for assumption are those from 2015. Between the 1st - 5th grades, NIR = 97.4%, l Retention ratio = 80.1%, the Madrasah education (Ebtedayee)(=6.4%) ratio, and other groups against the total primary school enrolled students, and PSC pass ratio = 99%, The enrolment ratio into JSCs from elementary schools. 95%, The 6th - 8th grades madrasah enrolment ratio

According to the census conducted in 2011, there are 3.19 million children who reached the sixth grade in 2015 (Born in 2009). The actual number can be obtained by multiplying the numbers in the table 3,190 times. 'Going to school' is defined as going to school at the school-going age.



Source: Report prepared by the study team based on the BANBEIS2015

Figure 3-7 Assumption of education completion of 1,000 children of 6-year-old as at 2015

The number of children who will enrol in the first grade of primary school is 979. Of this number, 63 children will choose to go to madrasahs. 21 children will not go to school or will not enrol at the school-going age. 49 children will drop out of school or repeat one more year as the grade goes up. A total of 784 children, 734 from general schools and 50 from madrasahs, will reach the fifth grade without repeating a year. Eight students will fail their primary education completion exams. A total of 776 students from both general schools and madrasahs will earn a primary school diploma. 39 of them will not continue their education for various reasons. A total of 737 students will continue their education in the sixth grade.

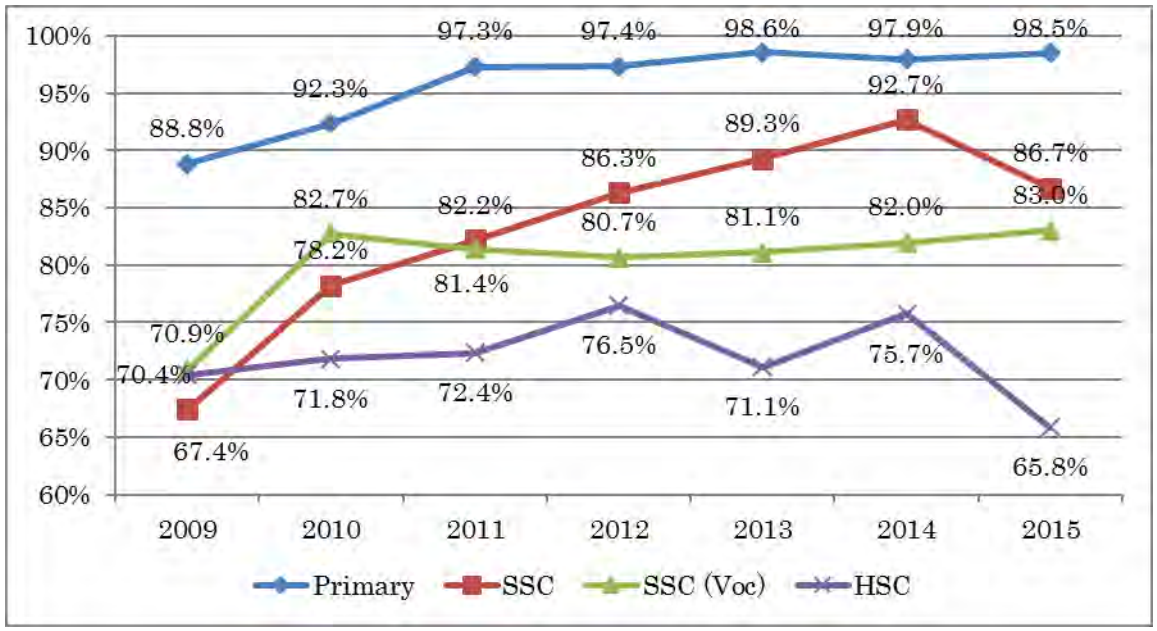
17%, The 9th and 10th grades exam applicants' ratio taken by the 10th graders (SSC, SSC-Voc, Dakhil) and NER, the 11th and 12th grades Completion ratio = 79.3% and the Exam applicants ratio taken by the 12th graders (HSC, HSC-Voc, Aliml) and the enrolment ratio are used.

Of the 737 students, students studying in madrasahs will increase to 125, and students studying in general schools will be 612. The total number of students will decrease, but the increasing number of students will fail to continue education every year, which will reach 74 people. When they reach the eighth grade, the total number of students will decrease to 589. Only 39 students will enter technical and vocational schools from the ninth grade, which is very few compared to the total number of 515 ninth grade students. When they reach the 10th grade, the total number of students will decrease to 440. Of this 440, 383 students will pass the secondary education exams. (Assuming that all the students who passed the secondary education exams will continue their education.) The number of 11th grade technical and vocational school students will increase to 51, from 27 students when they were in the 10th grade because of the inflow from general schools. Of this number, about 80% of them will complete the 12th grade, that is 238 from general schools, 41 from technical schools, and 29 from madrasahs. Ultimately, 65% of them, that is, 155 students from general schools, 27 from technical and vocational schools, and 19 from madrasahs will pass their exams and obtain a qualification of higher secondary education.

(11) Test Results

The figure below shows recent changes in graduation exam results of primary education, secondary education, secondary vocational education, and higher secondary education. The pass ratio in primary education increased 9.7%, to 98.5% in 2015 from 88.8% in 2009. The pass ratio in secondary education increased to 92.7% in 2014 temporarily from 67.4% in 2009. In 2015, it fell to 86.7%, but it shows a generally improving trend. On the other hand, the pass ratio in secondary technical education shows a flat trend from 2010, while the pass ratio in higher secondary education has started to decline.

The pass criterion of the graduation examination for primary education is 30% correct answers. According to this, a great number of students who failed to acquire the knowledge that is supposed to be learned in primary education pass the graduation examination of primary education. When they continue onto secondary education, they tend to drop out of school. On the other hand, for the reason that a large number of students drop out of school in junior/secondary education, the pass ratio of the graduation exam in secondary education (SSC) has been maintained at about 90%, which is relatively high. But when it comes to higher secondary education with a study period of two years, which is short, the dropout ratio is low; as a result, the pass ratio of the graduation exam (HSC) decreases. In any case, it is inferred that such a situation is caused by the fact that students are allowed to continue on to the next level of education without acquiring the knowledge that they are supposed to learn.



Source: Report prepared by the study team based on the BANBEIS2015

Figure 3-8 Changes in graduation examination results in primary education, secondary education, secondary vocational education and higher secondary education

(12) Fairness

Gender Gap

Next, in order to analyses the fairness between the genders for each level of education, the two tables below show the enrolment ratio for each level of education and gender, and the dropout ratio for each grade and gender.

Table 3-19 Enrolment ratio for each level of education and gender and GPI (2015)

Level of education	Net enrolment ratio (%)		Gender equality index (GPI)[40]
	Male	Female	
Primary Education	97.1	98.8	1.02
Junior/secondary education	62.2	71.9	1.16
Higher secondary education	30.3	26.2	0.87
Higher education (Gross enrolment ratio)	17.8	12.1	0.68

Source: Prepared by the Survey team based on the BANBEIS2015

[40] The World Bank's calculation method (Female ÷ male) was used.

Table 3-20 Drop-out ratio for each grade and gender and GPI

Level of education	Grade	Drop-out ratio (%)		Gender equality index (GPI)
		Male	Female	
Primary Education	1st grade	2.3	0.8	0.35
	2nd grade	4.0	2.5	0.63
	3rd grade	4.0	3.0	0.75
	4th grade	11.8	8.5	0.72
	5th grade	2.2	2.0	0.91
Junior secondary education	6th grade	6.6	5.5	0.83
	7 years	1.9	6.4	3.46
	8 years	16.8	21.1	1.25
Secondary education	9 years	4.6	4.8	1.03
	10 years	8.8	18.5	2.11
Higher secondary education	11th -12th grades	16.8	24.6	1.46

Source: Report prepared by the Survey team based on the BANBEIS2015

As shown in the above table, the enrolment ratio of female students is higher than that of male students in primary education and junior/secondary education; however, it is reversed in higher secondary education and higher education (i.e. the enrolment ratio of male students is higher than that of female students). (In respect to higher education, a gross enrolment rate is used). This is because the dropout rate of male students is higher than that of female students until the sixth grade. However, this reverses from the seventh grade onward, as the dropout ratio of female students increases greatly. As shown in Chapter 2 of Section 2, early marriage for female students is considered to be a major factor.

Regional disparities

In respect to regional disparities, there are no indicators available for us to view the entire education sector. Therefore, the survey team used the available information qualitatively. The table below shows the dropout ratios for each district and gender. The dropout ratios of male, female, total, and gender difference absolute values are provided for each district. For the three items of male, female, and total, the divisions with higher dropout ratios are colored in grey, and as dropout ratios get smaller, they are colored in white in a gradual manner. For gender difference absolute values, the larger the gap gets, the darker such prefectures are colored.

For primary schools where the dropout ratio is higher, the dropout ratio of male students is higher than that of female students, as shown in Table 3-10. In the table below, there are only six districts in 64 prefectures where the dropout ratios of female students are higher than that of male students. In 58 prefectures, the dropout ratios of males are higher than those of females. The same can be said for the national average.

The prefecture with the highest male and female average dropout rate is Bhola, which is 44.6%, and the prefecture with the lowest ratio is Chittagong, which is 8.1%. The gap between the two prefectures is 36.5%. In this regard, bridging the regional gap is an extremely important issue.

Table 3-21 Primary school dropout ratios for each region and gender

Division	District	Boys	Girls	Total	Gender difference absolute value
Barisal	Barguna	22.0	16.2	19.1	5.8
	Barisal	18.1	12.0	15.0	6.1
	Bhola	50.9	38.2	44.6	12.7
	Jhalkathi	12.6	12.6	12.6	0.0
	Patuakhali	19.0	14.2	16.6	4.8
	Pirojpur	20.3	16.6	18.4	3.7

Division	District	Boys	Girls	Total	Gender difference absolute value
Chittagong	Bandarban	26.6	23.1	24.8	3.5
	Brahmonbaria	26.7	29.0	27.8	**2.3**
	Chandpur	18.0	8.8	13.4	9.2
	Chittagong	8.6	7.6	8.1	1.0
	Comilla	16.6	11.2	13.9	5.4
	Cox'sBazar	45.3	29.2	37.3	16.1
	Feni	14.2	11.4	12.8	2.8
	Khagrachari	22.1	21.5	21.8	0.6
	Lakshimpur	27.6	41.0	34.3	**13.4**
	Noakhali	21.4	15.0	18.2	6.4
	Rangamati	14.4	18.5	16.5	**4.1**
Dhaka	Dhaka	17.5	13.5	15.5	4.0
	Faridpur	27.7	19.1	23.4	8.6
	Gazipur	21.1	18.7	19.9	2.4
	Gopalganj	16.9	13.5	15.2	3.4
	Jamalpur	30.5	26.0	28.2	4.5
	Kishorganj	38.4	25.0	31.7	13.4
	Madaripur	25.2	18.0	21.6	7.2
	Manikganj	17.6	19.9	18.8	**2.3**
	Munshiganj	17.1	17.0	17.0	0.1
	Mymensing	27.7	19.9	23.8	7.8
	Narayanganj	19.7	17.2	18.4	2.5
	Narsingndi	25.6	19.7	22.7	5.9
	Netrokona	26.3	19.0	22.6	7.3
	Rajbari	20.3	13.8	17.1	6.5
	Shariatpur	30.9	19.9	25.4	11.0
	Sherpur	38.2	27.0	32.6	11.2
	Tangail	25.1	15.2	20.2	9.9
Khulna	Bagerhat	19.6	18.4	19.4	1.2
	Chuadanga	18.8	20.2	19.5	**1.4**
	Jessore	17.6	14.2	15.9	3.4
	Jhenaidah	23.4	18.6	21.0	4.8
	Khulna	19.9	19.4	19.6	0.5
	Kushtia	31.3	17.7	24.5	13.6
	Magura	19.8	19.1	19.5	0.7
	Meherpur	17.4	16.9	17.2	0.5
	Narail	15.0	14.7	14.9	0.3
	Satkhira	23.0	17.6	20.3	5.4
Rajshahi	Bogra	25.1	24.2	24.7	0.9
	Joypurhat	19.8	17.3	18.5	2.5
	Naogaon	23.8	20.3	22.0	3.5
	Natore	19.2	11.2	15.2	8.0
	Nawabganj	27.0	18.8	22.9	8.2
	Pabna	26.6	18.5	22.6	8.1
	Rajshahi	20.6	15.7	18.2	4.9
	Sirajgonj	26.0	21.0	23.5	5.0
Rangpur	Dinajpur	22.2	20.0	21.1	2.2

Division	District	Boys	Girls	Total	Gender difference absolute value
	Gaibandha	48.7	45.9	47.3	2.8
	Kurigram	30.1	29.5	29.8	0.6
	Lalmonihat	27.5	29.3	28.4	**1.8**
	Nilphamari	27.2	21.8	24.5	5.4
	Panchagar	25.0	20.0	22.5	5.0
	Rangpur	26.8	16.4	21.6	10.4
	Thakurgao	26.8	18.9	22.8	7.9
Sylhet	Habiganj	23.9	17.0	20.4	6.9
	Moulvibazar	20.2	13.6	16.9	6.6
	Sunamganj	34.4	21.7	28.0	12.7
	Sylhet	27.7	19.0	23.3	8.7
	National	23.9	17.0	20.4	6.9

Source: Prepared by the Survey Team based on the BANBEIS2015

*In respect of gender absolute values, districts indicated in bold letters or underlined indicate a high drop-out ratio of female students.

Exam Results for Each School Type

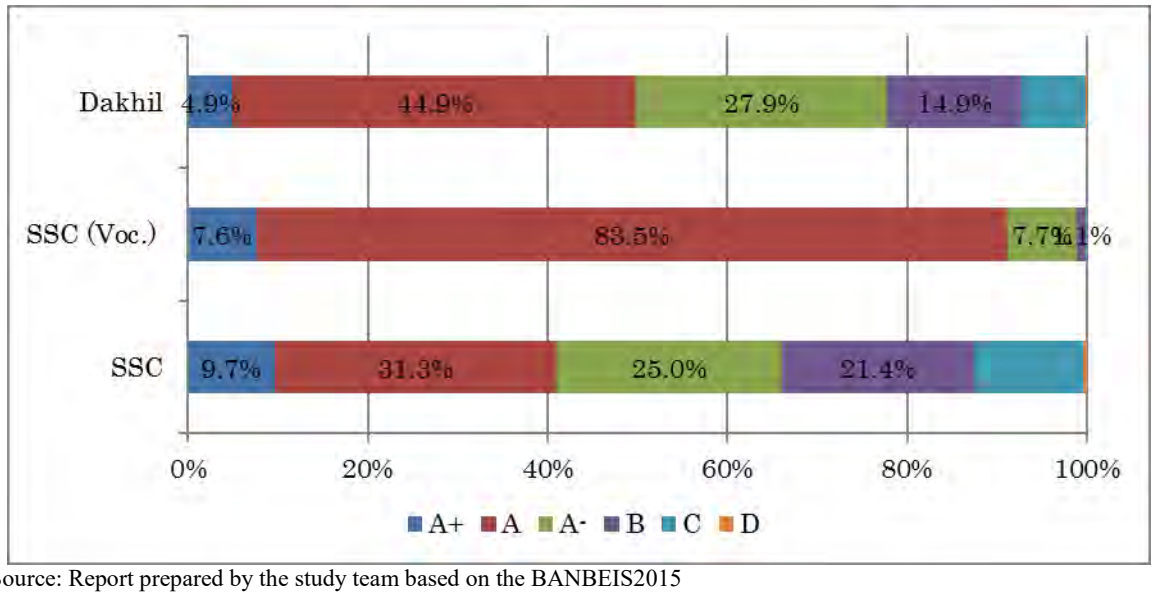
The table below shows the numbers of applicants, successful applicants, pass ratios, and proportions of applicants for each group against the total applicants, and the pass proportion of 10th graders in secondary education (three courses, i.e. art course, science course, and business study course), secondary technical education, and the Dakhil examination. The pass ratio of students in secondary education (science) is 96.4%, which is the highest, followed by Dakhil students at 90.2%, then business study course students at 86.9%, technical and vocational education students at 83.0%, and art students at 79.3%. The gap between the pass ratio of science students, which is the highest, and that of art students, is 17.1%. From this fact, the gap between the different majors is significant. Additionally, the pass ratio of technical students is the lowest among secondary general education students, secondary vocational students, and Dakhil students. It seems that there may be an issue in the quality of education.

Table 3-22 Exams at the end of 10th grade

Classification	Number of applicants	Number of successful applicants	Pass ratio	Proportion of applicants	Proportion of successful applicants
Secondary education					
Humanities	429,302	340,539	79.3%	29.1%	26.6%
Science	321,214	309,495	96.4%	21.8%	24.1%
Business studies	358,167	311,371	86.9%	24.3%	24.3%
Secondary Education sub total	1,108,683	961,405	86.7%	75.2%	75.0%
Secondary technical education curriculum	110,289	91,547	83.0%	7.5%	7.1%
Dakhil Exam	254,622	229,666	90.2%	17.3%	17.9%
Total	1,473,594	1,282,618	87.0%	100.0%	100.0%

Source: Report prepared by the study team based on the BANBEIS2015

However, the grades of successful candidates, as shown in the following diagram, provide a different perspective. In respect to the total of number of A+'s and A's of successful applicants, secondary technical education students recorded 91.1%, which is higher than that of secondary general education students at 41.0% and that of Dakhil students at 49.8%.



Source: Report prepared by the study team based on the BANBEIS2015

Figure 3-9 Distribution of scores of successful applicants in the tenth grade

3.4 Primary Education

Some achievement and challenges in primary education are mentioned using the existing information in this section.

(1) Challenges

Primary education begins at the age of six and lasts five years. The following table shows the number and ratio of schools, teachers, and students in public and private schools. The number of teachers and students in public schools is greater than those in private schools, although the number of schools is almost the same. This feature differs after primary education because the number of teachers and students in private schools becomes greater than those in public schools.

Table 3-23 Number and Ratio of schools, teachers and students in public and primary schools

Types	Number			Ratio		
	Schools	Teachers	Students	Schools	Teachers	Students
Public	63,546	322,487	13,793,653	52.0%	61.1%	72.3%
Private	58,630	205,311	5,274,108	48.0%	38.9%	27.7%
Total	122,176	527,798	19,067,761	100.0%	100.0%	100.0%

Source：Survey team made based on BANBEIS2015

The Net Enrolment Rate (NER) has improved greatly, from 87.2% in 2005 to 97.7% in 2015, and it is mainly because of the double-shift education system introduced in the 1990s, which aimed at achieving the objectives of EFA. Ninety per cent of public primary schools, which accounts for 52% of all primary schools, have introduced the double-shift education system. Although the double-shift education system has contributed to great improvement in enrolment, it has adversely affected hours of instruction. For example, the hours of instruction in general school are 38 hours 25 minutes per week; on the other hand, the hours of instruction in a double-shift school are 22 hours 30 minutes, which is only 58 % of the amount in general school.[41] It is difficult to solve this problem because the

[41] Mark Bray, UNESCO (2008), 'Double-Shift Schooling: Design and operation for cost-effectiveness'

same teachers teach in the morning and afternoon, which would cause a shortage of teachers and classrooms if the double-shift system were abolished.

With respect to internal efficiency in school, the dropout rate almost halved, from 47.2% in 2005 to 20.4% in 2015. The repetition rate also improved from 10.2% in 2005 to 6.2% in 2015. The survival rate at grade five improved, from 53.9% in 2005 to 81.3% in 2015. Internal efficiency has improved greatly, but there still remain great challenges. High absenteeism is still a crucial issue, as it can lead to dropouts or grade repetition. However, it improved from 23% in 2005 to 13.1% in 2015.

Focusing on the dropout rate in each region, there are huge regional disparities, for example, 8.1% in Chittagong and 44.6% in Bhola.

As the curriculum policy is shown below, the instruction hours of each subject are the same, apart from elementary science and Bangladesh and global studies in grades one to two and three to five. The subjects are Bengali, math, English, science, social studies, religion and ethics, physical education, arts and crafts, and music. The academic year starts in January and ends in December. Regarding the school term, public schools have a semester system and some private schools have a trimester system.

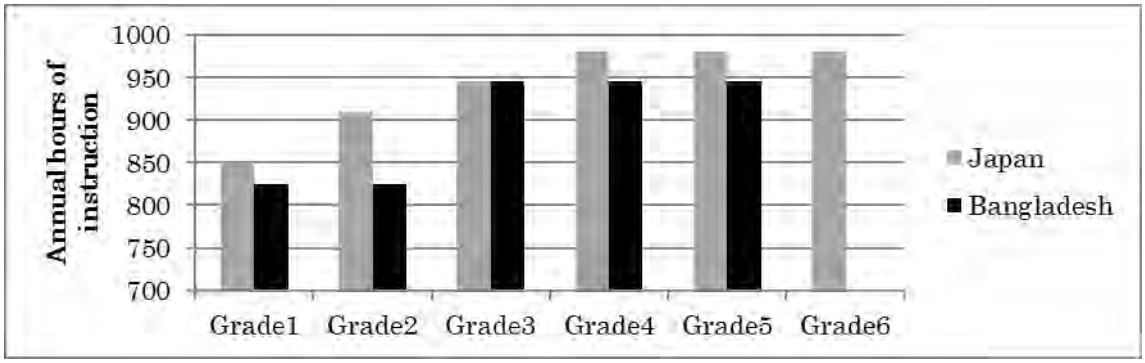
Table 3-24 Hours of Instruction in each subject in primary school

Subject	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Total
Bengali	185	185	185	185	185	925
Mathematics	185	185	185	185	185	925
English	185	185	185	185	185	925
Science	60	60	**120**	**120**	**120**	480
Social Studies	60	60	**120**	**120**	**120**	480
Religion and Ethics	60	60	60	60	60	300
Physical Education	30	30	30	30	30	150
Arts and Crafts	30	30	30	30	30	150
Music	30	30	30	30	30	150
Total	825	825	945	945	945	4,485

Source: Primary Curriculum-2011 Class 1-5, National Curriculum and Textbook Board

The following chart shows the comparison of hours of instruction between Japan and Bangladesh.

In Japan, one lesson is 45 minutes long. In Bangladesh, one lesson lasts less than 45 minutes, although the length can differ depending on each period of time. Furthermore, in double-shift education, some lessons only last 30 minutes. Therefore, in Bangladesh, the hours of instruction at all grades in primary education are shorter than in Japan, so sufficient hours of instruction should be encouraged in Bangladesh.



Source: Bangladesh - Primary Curriculum-2011 Class 1-5, National Curriculum and Textbook Board、Japan – Course of Study in Primary Education (Hours of instruction in each subject, Chart no.1 in School Education Law)

Figure 3-10 Annual hours of instruction

There are various kinds of challenges for teachers, including: 1) the shortage of teachers, 2) the quality of teachers, 3) the method of teaching, and 4) the working hours. With respect to the shortage of teachers, the average number of students per teacher is 43 in public schools (2015), which is higher than the South Asian average of 39 students (2013) and the sub-Saharan African average of 42 (2013). Regarding the quality of teachers, the percentage of teachers with no teaching qualification is still high – 27.1%. As for methods of teaching, instructions emphasize memorization to prepare students for the primary education certificate exam, which is composed of multiple-choice questions taken from the textbooks. Moreover, the quality of teachers is typically low. Regarding the working hours, many schools have adopted the double-shift education system, so teachers have to teach both in the morning and afternoon sessions without enough rest, which makes it difficult for teachers to adequately prepare for each lesson.

Table 3-25 Qualification of Primary school teachers (2015)

Types of primary education	Teachers	Number of regular teachers	Ratio of qualified teachers	Ratio of unqualified teachers
Government school	225,659	168,841	74.8%	25.2%
New nationalized primary school	96,828	71,380	73.7%	26.3%
Registered Non-Government Primary School (RNGPS)	520	91	17.5%	82.5%
Non-Registered Non-Government Primary School (NRNGPS)	7,140	472	6.6%	93.4%
Experimental School	279	212	76.0%	24.0%
Community school	381	71	18.6%	81.4%
Total	330,807	241,067	72.9%	27.1%

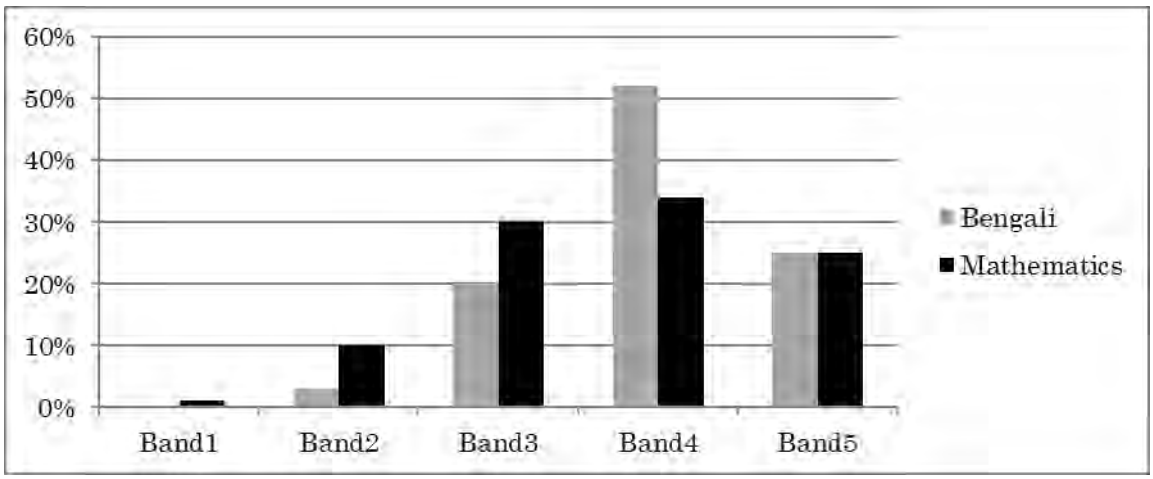
Source: Survey team made based on BANBEIS2015

NAPE (National Academy for Primary Education) makes the PSC (Primary School Certificate) examination, which was introduced in 2010 and is conducted at the end of grade five under the control of the DPE (Directorate of Primary Education). All students at grade five in public and private schools take this exam, which consists of six subjects – Bengali, English, chemistry, science, mathematics, and religion and ethics. The exam is conducted in the schools in each upazila at the end of November or at the beginning of December every year, and principals and teachers in each upazila check the answers and the results of the exam are published on the web.

The questions on the exam are multiple-choice and exactly the same as those in the textbook. This promotes simple memorization to solve the test questions, and thus has a harmful influence on the students' study habits. However, the quality of the exam has improved with World Bank (WB) support since 2014, by introducing questions that require explanation or careful consideration. However, the exam pass rate is extremely high – the pass rate in 2015 was about 98.52% (the female pass rate is 98.58%). This is because the minimum score required to pass the exam is very low: students can pass the exam with only 30% correct answers. It is said that many students are on or around that 30% mark, so the achievement level of students is estimated to be really low.

This estimation is confirmed by information from the National Student Assessment (NSA). The PSC exam started in 2006 to investigate students' understanding levels and has been used as baseline date for PEDP3 since 2011. The NSA conducts sample studies of grade three and five students regarding Bengali and mathematics. The following chart shows a comparison of NSA (2013) results at grade five between Bengali and mathematics. The highest achievement group is Band 5 and the achievement level decreases as the Band number decreases. Band 5 is the ideal achievement level at each grade. The ratio of Band 5 is 25% in Bengali and mathematics, which means that only 25% of the students reach the desirable achievement level. Furthermore, only 59% of the students are in Band 4 or 5 in mathematics, while 77% are in Band 4 or 5 in Bengali, which means that students have more difficulties in mathematics than Bengali. As the National Curriculum and Textbook Board (NCTB)

makes the questions of the NSA, it is expected that the results of the NSA are reflected in the curriculum because NCTB is in charge of the development of curricula and textbooks. However, the implementation system in the NCTB has several challenges, such as the lack of experience of making questions to test thinking abilities, and the management of problems between DPE under MOPME and NCTB under MOE, so technical support from DPs are provided in making exams, implementation, and analysis of the results.



Source：Prepared by the Survey Team based on "National Student Assessment 2013 for Grades 3 and 5"

Figure 3-11 Comparison of Bengali and Mathematics achievement at grade 5

(2) Achievement of cooperation so far

As mentioned, many improvements can be seen as a result of the support from DPs and efforts by the government of Bangladesh, although many challenges still remain. Cooperation with DPs has been promoted by a subsector-wide approach since the Primary Education Development Program was implemented from 1997 to 2003. When the second Primary Education Development Program (PEDP2) was implemented from 2004 to 2011, 11 DPs cooperated and worked on the improvement of the quantity of education, such as the Net Enrolment Ratio. PEDP3 was implemented from 2011 to 2017. Through PEDP1 to PEDP3, the approaches that each program adopted have been changed considering the lessons from each phase. In this section, achievement supported by JICA on quality improvement of the basic education program (July 2015) in PEDP3 is examined.

In PEDP1, several projects were implemented with the supports from eight DPs. These projects have ten objectives, such as improvement of enrolment and completion rates and improvement of the monitoring system. In particular, the establishment of primary schools and Upazila Resource Centers (URC), the training of teachers and executive officers, the development of teaching resources, and the establishment of an information management system have been conducted. However, as these activities were conducted within each project, the achievements of each project were restricted to the subsectors and were not utilized for the improvement of the whole sector.

Therefore, the following program, PEDP2 (budget amount is approximately 11 billion USD), adopted the principles of the Sector-wide Approach (SWAp)[42], which focuses on primary education, and emphasizes cooperation with DPs. PEDP2 is supported by 11 DPs and consists of four components: 1) the improvement of the quality of education though development of organization and reinforcement of capacity; 2) the improvement of the quality of education within school and classroom; 3) the improvement of the quality of education through maintenance facilities; and 4) the improvement of educational access for the poor or the socially vulnerable. As the indicators to

[42] Although it is conveniently called a "Sector" Wide Approach, it does not actually cover the whole education sector in the case of PEDP3. In fact, it is a subsector-wide approach as it only covers primary education.

measure the outcomes, 14 Key Performance Indicators (KPIs)[43] were set. There are many achievements of PEDP2, such as the employment of 45,000 new teachers and the establishment of 30,000 new classrooms. As the enrolment rate reaches 93.9% in 2009, it can be said that PEDP2 contributed to the improvement of the quantity of education. On the other hand, the completion rate is still low at 54.9%, the repetition rate for grade one and two remains at 11%, and for grade three and four it is worse at 15%. Inside efficiency, how many years it would take until graduating from primary school is over eight years and it has not improved so much. In the assessment of achievement around the country, the ratio of grade five students who reached the desirable achievement level of each subject is low in mathematics (3.22%), science (2.38%), and English (2.24%). The quality was not improved much while the enrolment rate was improved greatly.

PEDP3, which followed PEDP2, works on several challenges that have not improved in PEDP2 and embodies and reinforces the approaches for improvement of the quality of education. The features of design of PEDP3 is the introduction of results-based management (RBM), and estimating achievement in each area is clarified by Disbursement Linked Indicators (DLIs). The funding is provided according to the level of achievement of DLIs. The basic framework of the current PEDP3 is shown in the figure below.

[43] The fourteen indexes are as follows: (1) enrolment rate, (2) net enrolment rate, (3) graduation rate, (4) number of students with a scholarship, (5) continuance rate from primary school (5th grade) to secondary school (6th grade), (6) ratio of the educational budget to GNP, (7) ratio of educational expenses to public expenditure, (8) absence rate of students, (9) number of students per teacher, (10) holdover rate, (11) internal efficiency, (12) dropout rate, (13) rate of students who meet the national learning competencies, and (14) number of school-age children in an unfavourable situation. To contribute to the improvement of the operation and environment of schools separately from KPIs, DPE established items and standards regarding the primary school quality level (PSQL). The PSQL consisted of 20 items in total, each of which had qualitative and quantitative standards (Japan International Cooperation Agency, 2009). The PSQL also has 18 items in the PEDP3 following the PEDP2.

Table 3-26 Framework of PEDP3

Impact	**Quality Education for All Our Children**	
Outcome	Establish an efficient, inclusive and equitable primary education system delivering effective and relevant child friendly learning to all children from pre-primary through grade 5 primary education	
Results Area	1. Learning 2. Universal Access and Participation: 3. Reducing Disparities 4. Decentralization 5. Effectiveness 6. Planning and Management	15 KPIs Result Area1: 3KPIs (e.g. Grade 5 Primary Education Completion Examination pass rate (boys, girls and all).) Result Area2 : 3 KPIs (e.g. Net enrollment rate) Result Area3: 3KPIs (e.g. Gender parity) Result Area4: 2 KPIs (e.g. Expenditure of unconditional block grants (UPEP & SLIP) by Upazillas and schools) Result Area5:4 KPIs (e.g. drop-out rate)
Components	1. Learning and Teaching 2. Participation and Disparities 3. Decentralization and Effectiveness 4. Planning and Management	
Sub-components	29 sub-components: ・ 6 sub-components under component 1 (e.g. Curriculum Development) ・ 9 sub-components under component 2 (e.g. Mainstreaming Gender & Inclusive Education) ・ 8 sub-components under component 3 (e.g. Decentralized School Management and Governance, National Student Assessment) ・ 6 sub-components under component 4 (e.g. Strengthening Monitoring Functions)	9 Disbursement Linked Indicators (DLIs) 1. Textbook Printing and Distribution 2. Teacher Education and Development 3. Pre-Primary Education 4. Need-based Infrastructure Development 5. Decentralized School Management and Governance 6. Grade V terminal Examination 7. Teacher Recruitment and Deployment 8. Annual School Census 9. Sector Finance

Source: "Third Primary Education Development Program (PEDP-3)" (2015) Ministry of Primary and Mass Education, Directorate of Primary Education

The whole budget of PEDP3 is approximately 83 billion USD, which is much greater than that of PEDP2. Approximately 1 billion USD out of 83 billion USD comes from DPs, including JICA. The following table shows the contribution amounts from each donor. The whole budget of PEDP is 8,337 million USD (DPE, 2011 p.23) and money from all DPs accounts for about 13%.

Table 3-27 Contribution from DPs to PEDP3

	Organization	Amount	Ratio of the whole budget
1	ADB	320. million USD	30.32%
2	WB	300.0 million USD	28.42%
3	DFID	190.0 million USD	18.00%
4	EU	70.0 million USD	6.63%
5	CIDA	65.0 million USD	6.16%
6	SIDA	45.0 million USD	4.26%
7	AusAID	35.0 million USD	3.32%
8	JICA	30.0 million USD	2.84%
9	UNICEF	0.5 million USD	0.05%
	Total	1,055.5 million USD	100.00%

Source: Prepared by the Survey Team based on the 'Analysis of the outcome of JICA quality enhancement Program for basic education under education sector program "PEDP3"', JICA (July, 2015)

Apart from these financial supports, some DPs including JICA have provided technical cooperation for implementations and planning for projects and PEDP3, for example, the English education project by DFID (English in Action: EIA) and support for revising the textbooks of Bengali and social studies, a pilot implementation of Each Child Learns (ECL) by UNICEF, and formulation of communication strategies and development of Diploma in Primary Education and Pre-Primary Education (DPEd). The WB has provided technical cooperation for National Student Assessment (NSA) and AusAID has provided financial support for it.

PEDP3 consists of four basic components: 1) learning and teaching, 2) participation and disparities, 3) decentralization and effectiveness, and 4) planning and management. Several programs have been implemented under these components. According to the final report (June 2015) of an interim appraisal of PEDP3 2013-14, remarkable achievements so far include: 1) delivery of textbooks by revising the curriculum, textbooks, and teacher's guides and improving ways of printing and distribution; 2) the initiative of Diploma in Primary Education (DPEd) in some PTI to reinforce teachers' abilities; 3) ensuring the improvement of learning achievement by introducing PSC and National Student Assessment (NSA); 4) the initiative of kindergartens in GPS; 5) the improvement of teacher employment and disposition; and 6) the implementation of an annual school study. PEDP3 will finish in 2017, and PEDP4 is currently being planned.

Japan has provided substantially supported through providing the PRS grant aid experts and primary education advisor at the governmental level, by providing technical cooperation project at the institutional level, and by dispatching volunteers at the grass roots level. The financial support grant (former PRS) provides financial support for PEDP3 by providing 500 million yen (JPY) to the pool fund of PEDP3 and the outcome leads the whole achievement of PEPD3.

Since an expert as an advisor of primary education is always sent to DPE to make some adjustments to JICA's cooperation Programs and implement various kinds of projects for decision making in PEDP3, or to implement the projects with PEDP3 as a chairman in a DPs consortium, the position of JICA has been strengthened.

A technical cooperation project, 'Strengthening the Capacity of Teacher Training in Primary Teacher Training Institutes (PTIs) to Improve Classroom Teaching', was implemented between 2010 and 2017 as the successor project of 'Strengthening Primary Teacher Training on Science and Mathematics'. The project in its previous phase was implemented out of the framework of PEDP2, although consistency with PEDP2 was kept. However, in phase 2, the project becomes TA of PEDP3 officially. In this technical project, mainly three things are targeted: 1) the revision of science and mathematics textbooks and teacher's guides; 2) the quality of teacher's training (making action plans, improvement of DPEd curriculum and teaching materials, planning and providing supports for various kinds of training, providing a lesson study through them); and 3) encouragement for raising awareness of all concerned.

In volunteer activities, 10 Japan Overseas Cooperation Volunteers (JOCVs) have been dispatched as primary school teachers in PTIs around the country and volunteers customize the support for each teacher and trainee in PTIs and develop their capacities. However, as a Japanese citizen was murdered in the north of Bangladesh in October 2015, the JOCVs were sent back to Japan and the deployment of JOCVs has been suspended.

3.5 Secondary Education

Secondary education in Bangladesh consists of (1) junior secondary education, (2) secondary education, and (3) higher secondary education. This section will focus on secondary education.

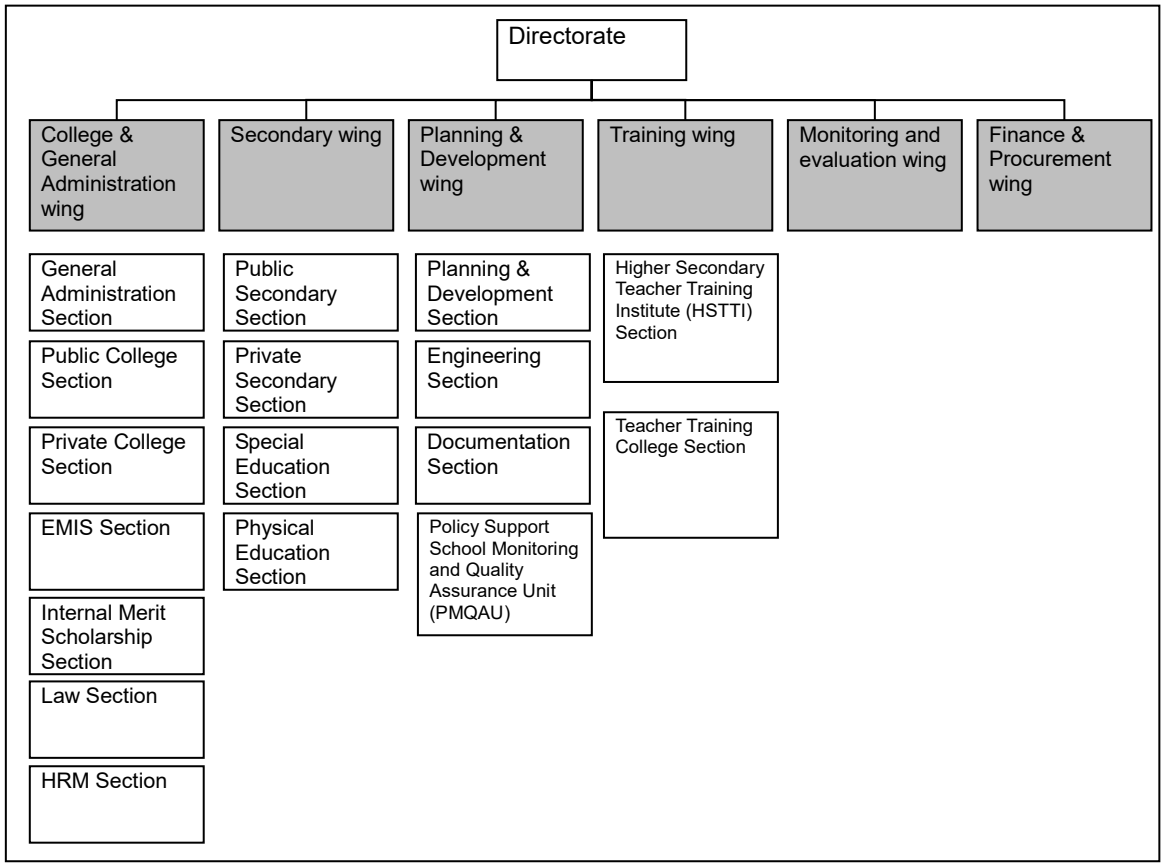
3.5.1 Government Bodies related Secondary Education

(1) Directorate of Secondary and Higher Education (DSHE)

The DSHE manages and supervises secondary education and higher education other than universities, as well as local education offices. Universities are managed by UGC. The following categories fall under its area of responsibility:

1)Government • Non-Government Colleges
2)Government • Non-Government Secondary Educational Institutions
3)Government Commercial Institutions.
4)Teacher Training Colleges.
5)Division Education Offices • District Education Offices • Upazilla Education Offices

The organisation chart is shown in the figure below.



Source: DSHE

Figure 3-12 Directorate of Secondary and Higher Education Organisation Chart

(2) Local Administration In Secondary Education

Bangladesh's administrative districts are divided into divisions (8), districts/zillas (64), and sub-districts/upazillas (489). In rural areas, under those are unions (4,572), and in urban areas are city corporations (11) and paurashavas (324). The number of local governments changes often because of factors such as division and transitions in urban governments. It is stated in the Upazilla Act 2013 that a decentralization of power will be carried out in Bangladesh, but as there is no such movement at the moment. There is a strong possibility that the current situation will continue until the next election in 2020.

Local administration of secondary and college education is the role of local education offices of divisions, districts, and upazillas. Each administrative division has a board, which conducts a completion exam.

There are public and private secondary schools. There are 330 public secondary schools that constitute only 1% of the total number of the schools. Private schools include those that are recognized by the MPO and those that are not. To the MPO-recognized schools (hereinafter 'MPO schools'), the governments provide the salaries of teachers. Other private schools (hereinafter 'non-MPO schools') must run the school budget by themselves

3.5.2 System

(1) Outline of System

Secondary education in Bangladesh comprises (1) three-year junior secondary education, (2) two-year secondary education, and (3) two-year higher secondary education. In the course of junior secondary education, all the subjects are compulsory. By contrast, after the course of secondary education, there

are three courses, i.e., humanity course, business course, and science course, and the students must choose the optional subjects based on their course. There is also a vocational and technical course after secondary education.

There are public and private secondary schools. There are 330 public secondary schools that constitute only 1% of the total number of the schools. Private schools include those that are recognized by the MPO and those that are not. To the MPO-recognized schools (hereinafter 'MPO schools'), the governments provide the salaries of teachers. Other private schools (hereinafter 'non-MPO schools') must run the school budget by themselves.

(2) Syllabi and Curricula

All public schools and private schools, except internationals school, follow the syllabi and curricula made by the NCTB. The syllabi provide relevant information such as the names of the subjects, the optional subjects in selected courses, subject outlines, and required number of credits.

National Curriculum 2012

The NCTB implemented a new National Curriculum in 2012. This curriculum is based on the NEP2010, and is the first revision in 17 years since the curriculum was developed in 1995.

This curriculum was implemented with the support of the Secondary Education Sector Development Program (SESDP) of the Asian Development Bank (ADB). First, in evaluating the current curriculum, a nationwide study was conducted with the cooperation of 192 schools (128 middle schools, 64 high schools) of 16 regions. Studies were conducted with the industrial sector and NGOs as well, and a workshop for the improvement of the curriculum with the development of the NEP2010 was held. Prior to this workshop, the curricula of India, Sri Lanka, Malaysia, New Zealand, Australia, and Canada were studied, and after two years of discussion, the new National Curriculum 2012 was developed.[44]

A characteristic of this curriculum is that the cultivation of '21st century skills'[45] is emphasised. Because of the need to acquire skills that were not in the existing curriculum, skills such as 'learning and innovation skills', 'life and career skills', and 'information, media, and technology skills' were added. Moreover, ICT lessons from Class 6 to Class 12 became compulsory subjects, and two new subjects for career education, 'Work and Life Oriented Education' for three years from Class 6 to Class 8 and 'Career Education' for two years from Class 9 to Class 10, were implemented as compulsory subjects.

(3) Requirement for Enrolment

The minimum requirement to be eligible for secondary education is to pass the previous course certificate examination (PSC, JSC, and SSC). Students usually enrol in the nearest school and some students enrol in prestigious schools. The minimum requirement to be eligible for a prestigious high school in Dhaka is to get more than 3.0 in SSC. Also, a few international schools and prestigious private schools have their own admission tests for enrolment.

(4) Tuition and Scholarships

The tuition fees of non-MPO schools are higher than those of MPO schools. The tuition of a non-MPO school is more than 50,000 BDT per year, an unaffordable amount for poor students. The tuition fees of MPO schools are less expensive because the government provides the teachers' salaries. There are tuition gaps between urban and rural areas. While the annual tuition is around 1,000 to 1,500 BDT in rural schools, it is more than 5,000 BDT in urban ones. Other school costs include those for school lunch and uniform, and poor students in rural areas cannot afford them.

Scholarship programs are as follows. At SEQAEP, the provision of scholarships to poor families is put

[44] Mohammed Zakir Hossain (2015) "National_Curriculum_2012_Moving_Towards_the_21_Century"

[45] "21st century skills" is a concept put forward by "ATC21s" (The Assessment and Teaching of 21st-Century Skills), an international organization established by education-related people of the world, and refers to the general abilities required to survive in the coming global society. [Reference] http://www.p21.org/

forward, and scholarships are sent to high achievers and benefits to schools and teachers, in accordance with the improvement of education continuance rates.[46]

Table 3-28 Scholarship Program

Program Name	Subject	Period	Fund Source
Higher Secondary Female Stipend Project (Phase-3)	HSC Female Students	2005-2008	Bangladesh Government
Secondary Education Quality and Access Enhancement Project (SEQAEP)	Grade 6 to Grade 10	2008-2014	WB
Secondary Education Sector Investment Program (SESIP)	Grade 6 to Grade 10	2013-2023	ADB

Sources: Report prepared by the Survey team

(5) Academic assessment system Graduation

The criteria below are used for assessing academic achievement in all stages of secondary education.

Table 3-29 How to Express Results of Secondary Education Completion Examinations (List of Examinations)

Numerical Grade	Letter Grade		Grade Point
80% and above	A+	A plus	5.0
70% to less than 80%	A	A regular	4.0
60% to less than 70%	A-	A minus	3.5
50% to less than 60%	B	B	3.0
40% to less than 50%	C	C	2.0
33% to less than 40%	D	D	1.0
0% to less than 33%	F	F	0

Source: DSHE

The requirements for promotion to the next grade and graduate are attendance in classes and a good result in the end-of-the semester test. The end-of-the-semester test is made by the Education Board in nine divisions for education sector. There are tests for the students who fell the test above, but no additional tests in the final grade in each course (JSC, SSC, HSC). Thus, many schools provide special lessons and model tests for SSC and HSC.

Certificate examinations

The secondary education in Bangladesh has the following three certificate examinations: JSC, SSC, and HSC. SSC and HSC are more important than JSC because the scores of the former two are the requirement for enrolling in universities and obtaining employment at companies.

In 2015, Bangladesh's MOE announced the plan to integrate PEC with JSC. However, the plan has not been implemented as of the end of 2016.

[46] As per SEQAEP Compnet1.2 http://www.seqaep.gov.bd/component_1_2.php

Table 3-30 Outline of Secondary Education Completion Examinations

Name	Junior Secondary Certificate (JSC)	Secondary School Certificate (SSC)	Higher Secondary Certificate (HSC)
Timing of implementation	End of Grade 8	End of Grade10	End of Grade12
Compulsory Subject	12 subjects	4 subjects	3 subjects
Optional Subject	0 subject	3 subjects	3 subjects
Spontaneous Subject	0 subject	2 subjects	2 subjects
Consideration for university entrance	No	No	Yes
Compatible with the new curriculum	Partly compatible	Partly compatible	Compatible

Source: Survey Team

These examinations are created by the examination-creating committees from seven districts (Dhaka, Rajshahi, Comilla, Jessore, Chittagong, Barisal, and Sylhet). The examination timing and range of possible questions are unified, but the actual questions differ in varying degrees between districts and create gaps in the pass rates and average marks.

(6) Current situation of secondary educational institutions

While the ratio of private schools at the compulsory primary education level is recorded at 41.9%, the ratio of private schools at the secondary education level, which falls outside of compulsory education, is extremely high at 98.3%. While the NCTB has a policy of requiring 12 teaching staff per school in order to teach all subjects in the secondary education curriculum, the current statistics show an average of 11.7 teaching staff per school. Students in those short-staffed schools are deprived of opportunities to pursue specific courses such as science in such circumstances.

The number of schools, teachers, and students at the secondary education level are as follows. (A move to an accessible location is under consideration.)

Table 3-31 Number of schools, teachers, and students at secondary education level

Secondary Education	Institution		Teachers		Students	
	Number	% of total	Number	% of total	Number	% of total
Junior secondary school, private	2,989	16	22,235	10	444,751	6
Secondary school, private	15,085	79	179,156	80	6,381,472	85
Secondary school, public	306	2	7,110	3	215,415	3
School and college, private	679	4	14,602	7	455,753	6
School and college, public	11	0	452	0	12,827	0
Total	19,070	100	223,555	100	7,510,218	100

Source：Bangladesh Education Sector Review 2013, WB

The survey team researched the facilities and equipment of five schools in urban and rural areas. Few schools have a canteen and a PC room, but some have a library for students. The table below shows the research results.

Table 3-32 School facilities and equipment in secondary education

Item	School1	School 2	School 3	School 4	School 5
Place	Dhaka	Chandpur	Chandpur	Chandpur	Chandpur
Type	Grade 1 to 15	Grade 1 to 15	Girls' school Grade 1 to 10	Girls' school Grade 1 to 15	Grade 6 to 15
Student	975	700	388	388	742
Teacher	26	26	14	14	11
Classroom	14	18	11	16	10
PC room	1	1	None	None	None
PC	12	18	None	None	1
Projector	1	1	None	None	1
Canteen		None	None	None	None
Library	1 (a small number of book)	1 (2,500 books)	None	1 (2700 books)	None
Playing Field	None(Public space is used)	Exist (small)	None (Public space is used)	None	Exist
Dormitory	16rooms (for 180students)	None	None	None	None
Auditorium	None	None	None	None	None

Source: The Survey Team

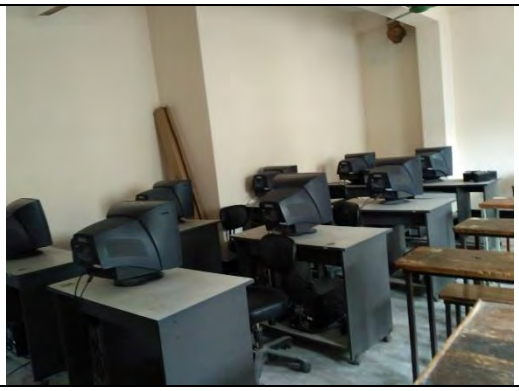
Here are the names of five schools investigated.
School1: Gausia Islamia Fazil Madrasah School
School2: Bagadi Ahmadia Fazil Madrasah School
School3: Sapdi Abediya Jaliliya Mohila Madrasah School
School4: Dhanua Salehia Fazil Madrasah School
School5: GM Fazlul Haque High School

Classroom

Classroom

Desk

Blackboard



PC room

Playing field

Each class has 50 to 60 students in secondary education and 35 to 40 students in higher secondary education. There are some student organizations in urban schools but not in rural schools.

(7) School Hours

The table below is a benchmark to set the total number of classes in all levels of secondary education.

Table 3-33 Annual School Hours by Subject in Junior Secondary Education

	Compulsory/ Elective	Class6	Class7	Class8	Total
Bengali	Compulsory	174	174	174	522
Mathematics	Compulsory	174	174	174	522
English	Compulsory	140	140	140	420
Bangladesh and Global Studies	Compulsory	106	106	106	318
Science	Compulsory	140	140	140	420
ICT	Compulsory	70	70	70	210
Religion and Moral Education	Compulsory	106	106	106	318
Physical Education	Compulsory	70	70	70	210
Work and Life Oriented Education	Compulsory	70	70	70	210
Art & Crafts	Compulsory	70	70	70	210
Ethnic Language & Culture / Agriculture / Home Science / Arabic / Sanskrit/ Pali / Music / Dance / Dramaturgy	Elective	70	70	70	210
Total		1,190	1,190	1,190	3,570

Source: NCTB

Table 3-34 Annual School Hours by Subject in Secondary Education

Classification	Subject	Class9	Class10	Total
In All Courses	Bengali	160	160	320
	English	160	160	320
	Mathematics	128	128	256
	Religion & Moral Education	64	64	128
	ICT	64	64	128
	Career Education	32	32	64
	Physical Education, Health Science & Sports	64	64	128
Course-specific subjects	Compulsory Subject A by Course	96	96	192
	Compulsory Subject B by Course	96	96	192
	Compulsory Subject C by Course	96	96	192
	Compulsory Subject D by Course	96	96	192
	Elective Subject by Course	96	96	192
	Total	1,152	1,152	2,304

Source: NCTB

Table 3-35 List of course-specific subjects for Secondary School Certificate

	Science Course	Business Course	Liberal Arts Course
Compulsory Subject A by Course	Physics	Business Entrepreneurship	Bangladeshi History & Global Civilization
Compulsory Subject B by Course	Chemistry	Accounting	Geo. &Environment
Compulsory Subject C by Course	Biology/Higher Math	Finance & Banking	Economic / Civic & Pronunciation
Compulsory Subject D by Course	Bangladesh & Global Studies	Science	Science
Elective Subject by Course	Biology/Higher Math/Ethnic language &culture/Agriculture/ Home Science /Geography and Environment/Arts and Crafts/Music/Basic Trade/Physical Education and Sports	Geography &Environment/Bangladesh & Global Studies/Art & crafts/Basic Trade	Economic/Civic & Pronunciation/Art & crafts/Agricultural Science/Ethnic language &culture/

Source: NCTB

Table 3-36 Number of classes per year for subjects at Higher Secondary Certificate level

Classification	Subject	Class11	Class12	Total
Core subjects	Bengali	80	80	160
	English	80	80	160
	ICT	64	64	128
Course-specific subjects	Compulsory Subject A by Course	140	140	280
	Compulsory Subject B by Course	140	140	280
	Compulsory Subject C by Course	140	140	280
	Course-specific electives 1	140	140	280
	Course-specific electives 2	140	140	280
	Total	924	924	1,848

Source: NCTB

Table 3-37 List of course-specific subjects for Secondary School Certificate

	Science course	Business course	Liberal Arts Course
Compulsory Subject A by Course	Physics	Business Entrepreneurship	History/Islamic history& culture
Compulsory Subject B by Course	Chemistry	Accounting	Geography/Sociology /Social work
Compulsory Subject C by Course	Biology/Higher Math	Finance, Banking & Insurance/Production management & Marketing	Civics and Good governance/Economics /Logic
Course-specific compulsory subjects1	Select one subject from Home Science, Music, or Islamic Studies	Select one subject from Home Science, Music, or Islamic Studies	Select one subject from Home Science, Music, or Islamic Studies
Course-specific electives2	Biology, Higher Mathematics, Agriculture Education, Geography, Psychology, Statistics, Engineering Drawing & Workshop practice, Sports (only for BKSP)	Finance, Banking & Insurance, Statistics, Economics, Production management & Marketing & Geography	History/Economics/ Civics and Good governance, Geography, Islamic History & Culture, Sociology, Social work, Logic, Islam Studies, Psychology, Statistics, Home Science, Arts & Crafts, Military Education, Light Music, Arabic, Sanskrit, Pali, Drama, Higher Mathematics & Agriculture Education

Source: NCTB

Comparison with Japan

The school hours and lists of subjects in Bangladesh differ from those in Japan in several ways. First, the secondary education in Japan does not provide such subjects as Work and Life Oriented Education, Career Education, and ICT. Second, there are no English classes in primary education in Japan. Third, there are no the period of integrated study in Bangladesh.

On the other hand, the total school hours are almost the same between Bangladesh and Japan. However, the academic achievements are different between the two countries.

As shown in the table below by Naruto Education University in 2005, there are a few gaps in academic achievement in science in grade 8. Although Bangladesh's students have higher motivation for learning than their Japanese counterparts, their academic achievement is lower. This research suggests that the skills of teachers and the content of studies are the main issues in secondary education in Bangladesh.

Table 3-38 Comparison Table of Study Hours between Japan and Bangladesh

Item	Grade	1	2	3	4	5	6	7	Total (Hour)
Yearly study hour (All subject)	Japan	850	910	945	980	980	980	1015	7,675
	Bangladesh	825	825	945	945	945	1,190	1,190	8,055
Yearly Study hour (Science)	Japan	102	102	90	105	105	105	105	854
	Bangladesh	60	60	120	120	120	140	140	900

*Study hours of subject 'Life' for first grade and second grade at Japanese schools is circulated as the study hours of subject 'Science'.

Source: Excerpts from the above table of study hours in Bangladesh and the current government curriculum guidelines, prepared by the survey team

(8) Teaching Staff

Recruitment Process

Recruitment processes for teaching staff differ between government schools and non-government schools. Teaching staff for government schools are selected and recruited by tests conducted by the DSHE. On the other hand, teaching staff for non-government schools must first satisfy certain requirements, then pass the teacher registration examination conducted by the Non-Government Teachers' Registration and Certification Authority (NTRCA).[47] All university graduates are eligible to take the teacher registration examination.

The teacher registration examination conducted by the NTRCA has three parts. They are (1) an online registration assessment, (2) a multiple-choice test (first-stage standard examination), and (3) a written test (subject-based second-stage examination). Applicants must pass all three tests to obtain their teacher's registration. In the case of an unsuccessful result, an applicant is permitted to re-take the examinations multiple times. However, the applicant will always have to start the process over from the online registration assessment. The description of each examination is as follows.

1) Online registration assessment

An applicant must first register online on the NTRCA website. At the time of the registration, the applicant must satisfy the minimum requirement of a GPA of 2.5. Based on the address used on the online registration, an examination centre will be allocated to the applicant. Together with the result of online registration assessment, the applicant will be notified of the examination centre.

2) Multiple-choice test (first-stage standard examination)

Successful applicants from the online registration assessment will proceed to the multiple-choice test at the designated examination centre. Applicants who score 40 points or more out of 100 points will proceed to the second-stage examination, which is a written test. The multiple-choice test is a standard for all applicants regardless of the subjects an applicant will teach. The test encompasses Bengali, English, basic mathematics, and basic science and includes 25 questions from each subject.

3) Writing test (subject-based second-stage examination)

Successful applicants of the multiple-choice test will proceed to the written test at the designated examination centre. To be successful, an applicant must pass all subjects. The test is scored out of 300 points. In 2015, there were 23 variations of the examination. The selection of examination content was made based on the subjects and grades (Grade 6-8/Grade 9-10/Grade 11-12) an applicant intended to teach. However, the examinations are created in line with the old curriculum and do not fully correspond to the new curriculum. The examinations for new subjects such as ICT and career education are planned to commence in 2017. The test results have been published online since the start of the NTRCA in 2005 until 2013. The details are as follows.

[47] http://ntrca.gov.bd/about/

Table 3-39 The Test Result of the Teacher Registration Examination

Exam	Year	Total Applicant	Total Participants	Passed	% of Pass
1st Registration Exam	2005	76,185	59,000	33,788	57.27%
2nd Registration Exam	2006	131,759	99,807	22,318	22.36%
3rd Registration Exam	2007	113,975	83,899	16,020	19.09%
4th Registration Exam	2008	127,074	96,027	31,093	32.38%
5th Registration Exam	2009	141,082	102,348	39,225	38.33%
6th Registration Exam	2010	283,314	220,517	42,641	19.34%
7th Registration Exam	2011	321,301	259,114	57,203	22.44%
8th Registration Exam	2012	313,145	248,001	56,046	22.59%
9th Registration Exam	2013	314,887	242,451	75,898	31.30%

Source：NTRCA website

Teacher Training

As described above, all university graduates are eligible to undergo the teacher registration examination. Those who did not complete a university course can become eligible by completing a four-year course at the Teacher-Training College (TTC) after graduating from secondary school (after passing the SSC). In addition to the four-year course, the TTC offers a one-year short program for those who need credits for a particular subject to satisfy the eligibility criteria.

The below table is a sample curriculum for the first year in the four-year course. A student in the short program is able to select a combination of 32 credits for the year within the rules set by the TTC.

Table 3-40 Sample Curriculum for the first year

Paper Title	Marks	Credits
First Semester		
History of the Emergence of Independent Bangladesh	100	4
Bangle -1	100	4
English -1	100	4
Introduction to Education	100	4
Total =	400	16
Second Semester		
Bangle -2	100	4
English -2	100	4
Education in Bangladesh	100	4
Foundations of Education	100	4
Comprehensive Viva (Satisfactory/non-satisfactory)		
Grand Total=	800	32

Teacher In-Service Training

The NTCB creates in-service training programs and implements the training in cooperation with the DSHE and educational institutions from each district. The duration of the training varies between one and a few days. Presently, the NTCB is creating a training program for the dissemination of the new curriculum created in 2012. Its implementation is to commence in September – October 2016 (details on the date and content were unknown as of the end of June 2016).

In addition, apart from the nationwide training programs conducted by the NTCB, three types of teacher in-service trainings are being offered by the TTC. They are:

1) Subject Based CPD (Continuing Professional Development)
2) ICT Training
3) LSBE Training

The above-mentioned points 1) and 2) are being implemented as part of the Asian Development Bank (ADB)'s loan program, Teaching Quality Improvement (TQI) in Secondary Education. The improvement of the program design and operation method was undertaken from December 2002 until July 2004 as part of its technical assistance project. However, the above in-service training does not correspond with the new curriculum established in 2012. Therefore, the TTC conducts their original training program with some improvements.

Point 3) is part of the on-going UNICEF technical cooperation project, which started in 2004. Twenty districts were selected as target districts, and technical training was provided to the TTC and Higher Secondary Teachers Training Institute (HSTTI) teachers. By June 2014, 445 Master Trainers had been created and more than 20,000 teachers had been trained.[48] Presently, a plan is under way to incorporate the LSBE training in the NCTB and DSHE nationwide in-service training.

(9) Graduates' Career Paths (University Entrance Ratio, Name of Universities, Employment Ratio, and Name of Employers)

As described above, the gross enrolment ratio to higher education is recorded as 13.4%. The net enrolment ratio is unknown. A survey was carried out by interviews at multiple secondary schools regarding university entrance and employment of graduates. Whilst the survey aimed to conduct standard analysis, no statistics were available from either the schools or local educational offices. However, large gaps are assumed to exist between districts. The university entrance ratio in Chandpur district was recorded below 5% in 2015.

In this survey, the survey team interviewed five students in Gausia Islamiya Fazil Madrasah with regard to their future career. The results are as follows.

Table 3-41 List of Interviewees about Course Selection and Desired Courses

No	School	Grade	Group
1	Gausia Islamiya Fazil Madrasah	9	Science
2	Gausia Islamiya Fazil Madrasah	10	Science
3	Gausia Islamiya Fazil Madrasah	12	General Arts
4	Gausia Islamiya Fazil Madrasah	9	Science
5	Gausia Islamiya Fazil Madrasah	10	General Arts

1) How to decide the course of secondary education

Two students chose the Science course on their own while other students decided the course based on the recommendation from teachers and their parents. Teachers judged the student's course based on the math and science scores. Students who did not score well in math and science are recommended to choose the Humanity course, and students who get average score in math and science are recommended to choose the Business course.

2) How to decide the university and the department

All students chose the university based on the results of SSC and HSC. They also picked the department based on their favorite subjects, except the medical course or department. Some of the students have various options. For instance, the students in the Science course plan to try both courses of medicine and engineering.

3) Expectations on university education

Two students answered that getting a good career is the most important through a university education. Two other students answered that studying in quality lessons is the main purpose to go to university. The remaining student expected both purposes above in university.

[48] http://www.unicef.org/bangladesh/LSBE_Fact_Sheet_v1.2_140204.pdf

4) The career after graduated the university

The three students in the Science course planned to be doctors but to be engineers if it is difficult to be doctors. The two students in the Humanity course planned to be teachers but seemed to have few other career options.

(10) Details of Existing Assistance from other Developmental Aid Organizations

The Secondary Education Quality and Access Enhancement Project (SEQAEP: 2008-2017) began implementation in 2008 with support from WB. The project focuses on four activities, including providing scholarships to poor families, improving school facilities, sending teachers to areas of teacher shortage, and introducing a new education evaluation system.[49] Moreover, various international aid organizations, including ADB and the Korea International Cooperation Agency (KOICA), started the implementation of the Secondary Education Sector Investment Program (SESIP) in 2013. Activities under the program include providing scholarships to poor areas in order to improve the university entrance ratio, improving classroom and laboratory facilities, extending the length of teacher training and improving its quality, disseminating ICT learning in schools, and revising the examination systems to meet the demands of industries.[50]

Table 3-42 Trends in aid from other DPs

Year	Organization	Project name	Amount	Aid type	Overview
	ADB, WB, Korea	Secondary Education Sector Investment Program		Loan	
2012-2013	ADB	Second Secondary Education Sector Development Project (SESDP II)	US$ 775,000	TA	SESDP II builds on the good practices and lessons learned from the on-going Secondary Education Sector Development Program and Teaching Quality Improvement Project in Secondary Education Project. The project will assist the Government of Bangladesh in improving the quality, equity and efficiency of secondary education, following the modality of multi-tranche financing facility (MFF). SESDP II will support implementing and mainstreaming the reforms proposed in the Sixth Five Year Plan and the NEP2010 with phased approach. The project will be implemented in a Sector Wide Approach (SWAp) to ensure that the sector moves from project based reforms to a more holistic government led reform process.
2006-2015	ADB	Secondary Education Sector Development Program	TOTAL:113M$ ADB85M$ CPs:28M$	Loan	The overall objective is to contribute to poverty reduction in Bangladesh by improving the quality of and increasing access to secondary education. Relevant and quality education will support the continued social and economic development of Bangladesh and expand employment opportunities for its

[49] http://www.seqaep.gov.bd/
[50] http://sesip.gov.bd/

Year	Organization	Project name	Amount	Aid type	Overview
					population. The three major components: (i) increasing accountability and transparency in secondary education management, (ii) improving the quality of education, and (iii) improving equity of access to secondary education.
	USAID UNDP	Access to Information (a2i) Program			Provide an online open learning platform for teachers of general, Madrasah and vocational education system in Bangladesh.
2013-2023	ADB	Secondary Education Sector Investment Program (SESIP)	185M$	Loan	The SESIP, scheduled to be completed in 2023, is supporting the government's 10-year secondary education reform plan. This plan projects an increase of about 3.5 million students by 2023, requiring an additional 145,000 teachers and 10,000 more schools.
2008-2017	WB	Secondary Education Quality and Access Enhancement Project (SEQAEP)	155.7M$	Loan	The objectives of the SEQAEP are to improve the quality of secondary education, systematically monitor learning outcomes, and to increase access and equity in project upazillas. This project, covering 121 upazillas, will consist of:(a) improving education quality and monitoring learning levels in project areas; (b) improving equity and access in project areas through provision of stipends to poor girls and boys; (c) strengthening the institutional capacity of the MOE both at central and local levels; and (d) establishing an effective monitoring and evaluation system.

3.5.3 Recent Educational Trends

(1) Career Education

Background

As described above, the current curriculum, which was established in 2012, places importance on developing '21st century skills', which is underscored by the addition of 'learning and innovation skills', 'life and career skills', and 'information, media, and technology skills'. This move has made ICT a compulsory subject for Grade 6 to Grade12, and introduced two new compulsory subjects, 'work and life-oriented education' for Grade 6 to Grade 8, and 'career education' for Grade 9 to Grade 10.

Objectives

In the subjects of both Work and Life Oriented Education and Career Education, the following seven objectives were set based on NEP 2010.

1. For building a beautiful future with a creative, imaginative, inquisitive attitude, observation capacity, and an interest in lifelong education
2. Be conscious about developing a future career by gaining notion regarding oneself.
3. Be careful about the necessary qualities and skills for developing a career, and achieve them.
4. Know the importance of personal behaviour and effective communication for developing a career, and be interested in expected behaviour.
5. Achieve notions on the present and future workplace.
6. Be interested in ethical and responsible behaviour in education and workplace.
7. Be interested in showing qualities of leadership and assistance for success in a career.

The personnel in the NCTB stated that the main objective of career education is to reduce mismatched careers for students. It is especially important for Grade 9 students because they need to choose the course from Science, Humanity, and Business, and only the subject of Work and Life Oriented Education provides the opportunity for students to consider their career and course after Grade 9. The subject of Career Education is also important because the students from Grade 11 to Grade 12 need to think more concretely about what they will do after graduating from higher secondary education.

Arrangement of Chapters and Time Distribution

The NCTB set the period of Work and Life Oriented Education and Career Education as shown in the table below. There are a few practical lessons such as visiting a company and local government.

Table 3-43 Chapters in Work and Life Oriented Education

Chapter	VI	VII	VIII
1	Pleasure in work	Work & Humanity	Merit
2	Our necessary tasks	Family tasks & Occupation	Our work: those others do
3	Success in education	Planning in education & Success in workplace	Our education & work

Source: Extracted from the syllabus and textbook in NCTB

Table 3-44 Time distribution of Work and Life Oriented Education

Chapter	Period					
	VI		VII		VIII	
	Theoretical	Practical	Theoretical	Practical	Theoretical	Practical
1	15		15		15	
2	10	25	10	25	10	15
3	10	10	10	10	10	20
(Total)	35	35	35	35	35	35

Source: Extracted from Syllabus and textbooks in NCTB

Table 3-45 Chapters and Time distribution in Career Education

Serial	Name of the chapter	Period
Chapter 1	I and my career	15
Chapter 2	Development of career: Quality & skill	20
Chapter 3	Connection & Behavior in developing career	15
Chapter 4	I & My workplace	20
	(Total)	70

Source: Extracted from Syllabus and textbooks in NCTB

Necessary Things for Career Education

The syllabus by the NCTB recommends the use of special equipment items such as digital materials and access to the Internet. However, there is little budget to purchase such items. The DEHE and the NCTB provide only the textbooks and the schools must manage the environment of career education by their own budget. In addition, it seems difficult for the schools to make practical lessons because there is no support from the government and many teachers are confused about how to manage classes.

Comparison with Japan

The objective of career education is the same in Japan but the approach is different. In the Japanese education system, there is no subject on career education but there are many components of career education in all subjects from primary education. Also, schools provide students with the opportunities to study career through not only classes but also extracurricular activities.

In 2000, the new subject named "period of integrated study" started from primary education in Japan. This subject provides students with more activities to master problem solving skills and more opportunities to link with local communities. Through these activities, students learn by themselves teamwork and group work as a basic manner of society.

In Bangladesh, there are few relations between career education and other subjects. In addition, students do not have enough chances to study through group work because of the shortage of extracurricular activities. After stating the subjects of Work and Life Oriented Education and Career Education, students have more opportunities to think of their own career, but there is still much room for improvement.

(2) ICT Education

As mentioned above, the following three new subjects became compulsory based on National Curriculum 2012: (1) Work and Life Oriented Education (Grade 6 to 8), (2) Career Education (Grade 9 to 10), and (3) ICT (Grade 6 to 12).

However, many schools cannot provide quality lessons on the subjects above because of lack of equipment and teacher training. The NCTB plans to launch between 2016 and 2017 a teacher's guide and special teacher training for the new subjects.

(3) Review of the SSC and HSC and Abolition of Individual Entrance Examinations for National Universities

Amongst the examinations above, marks from the Secondary School Certificate (SSC) and the Higher Secondary Certificate (HSC) are used in the scores of university entrance examinations. For the entrance examination of the University of Dhaka, the most prestigious university in the country, out of the full mark of 200 points, up to 80 points can be used from the SSC and the HSC results in addition to the individual entrance examination, which is worth 120 points, creating a growing trend of further valuing the SSC and HSC. At the Education Sector Review Workshop held by the WB in March 2014, Nurul Islam Nahid, the Honourable Minister of Education, emphasized the need for review the examination system in order to improve the quality of the Secondary School Certificate (SSC) and Higher Secondary Certificate (HSC). Reform of the examination system is currently conducted by the SESIP. As a result, individual entrance examinations for national universities were abolished in 2015[51]. The university entrance is now determined by the results of the SSC) and the HSC. As a result, the numbers of preparatory schools and private tutors are increasing, widening the educational gap between cities and rural areas.

[51] http://bdnews24.com/bangladesh/2015/09/06/national-university-to-take-in-students-based-on-ssc-hsc-results

3.5.4 Challenge in Secondary Education

As shown in the table below, in 2014, the primary education completion rate was 79.1% while the secondary education completion was 58.1%. Also, from 2010 to 2014, the primary education number of children per teacher decreased while the secondary education number of children per teacher increased. The table suggests that both shortage and skills of teachers are important issues in secondary education.

Table 3-46 Index of Quality of Primary and Secondary Education

Index	Sub index	2010	2014
Index of Internal Efficiency	Primary Education Completion Rate	60.2%	79.1%
	Secondary Education Completion Rate	42.9%	58.1%
Index of Education Quality	Primary Education Number of Children Per Teacher	1:48	1:42
	Secondary Education Number of Children Per Teacher	1:35	1:37

Source: 7th Five Year Plan, Part II, Chapter 11 (Education Sector Strategy) and Bangladesh Education Statistics 2014, BANBEIS Publication No. 435

(1) Teacher capability

To check the teaching capability of secondary teachers, the survey team used the class monitoring framework made by a JICA technical assistance project in Ghana. The survey team monitored and researched eight lessons from four schools in Chundpur and one school in Dhaka.

This survey covered 15 categories on teacher capability. Each category was evaluated at five levels. The details of the survey were as follows.

Table 3-47 Target schools for teacher capability survey

Number	School	Place	Grade	Teacher's age
1	Sapdi Abediya Jaliliya Mohila Madrasah	Chundpur	English: Grade Science: Grade 9	45
2	Bagadi Ahmadia Fazil Madrasah	Chundpur	Mathematics: Grade10	40
3	GM Fazlul Haque High School	Chundpur	Mathematics: Grade 8 English: Grade	45
4	Dhanua Salehia Fazil Madrasah	Chundpur	Mathematics: Grade 9	40
5	Gausia Islamia Fazil Madrasah	Dhaka	Mathematics: Grade 9 English: Grade 10	45

The tables below show the survey results. The main issues of classes are as follows: (1) shortage of interactive session in the class, (2) No teachers guide based on new syllabus after National Curriculum 2012, (3) the shortage of experiment materials in science lab.

Table 3-48 Evaluation Table of Secondary Education Teachers' Teaching Ability

Item	Average (out of 5)	Description
Lesson plan	1.97	In the Math and Science classes, the teachers prepared a one-page lesson plan in their notebooks. However, few teachers used the teacher guide or knew how to make a lesson plan because no teacher training was provided outside of schools.
Method of teaching	1.80	Teachers were unable to make interactive questions to students. In addition, the teachers did not give students one more chance when the students wrote the wrong answer on the blackboard. In the English class, the teacher's pronunciation was not clear and it seemed difficult for the students to hear it. In the Science class, there was only one piece of equipment for experiment and the teachers did not allow students to touch the equipment.
Classroom management	2.06	In the English and Math classes, the desks were arranged in the share of the letter "U", and it seemed difficult for a few students to see the blackboard. In the Math class, a few students lost their concentration because of the difficulty of the topics. In the Science class, the teacher arranged the students into small groups to see an experiment smoothly

Source: The Survey Team

Table 3-49 Evaluation Table of Teaching Ability in Each Subject in the Secondary Education Curriculum

Questions		School 2	School 3	School 4	School 5	School 1	School 3	School 5	School 1	
Large category	**Small category**	Math	Math	Math	Math	English	English	English	Science	Average
Lesson Plan	Objectives	2	2	2	3	2	2	2	4	2.38
	Core points	2	2	2	2	2	2	2	4	2.25
	Teacher Leaner Activities（TLAs）	2	1	2	2	2	2	2	2	1.88
	Use of Teaching Learning Materials（TLM）	1	1	1	2	1	1	1	2	1.25
Method of teaching	Use of Language	3	3	2	3	2	2	2	2	2.38
	Use of Generic Skills	3	2	1	2	2	2	2	2	2.00
	Use of Chalkboard	2	2	1	2	2	2	2	2	1.88
	Questioning Skills	2	2	1	3	2	2	2	1	1.88
	Feedback to Pupils	2	2	1	3	3	2	2	2	2.13
	Use of TLMs	1	1	1	1	1	1	1	2	1.13
	Pupil's Participation	2	2	1	2	2	2	2	1	1.75
	Use of TLAs	2	1	1	1	1	2	2	2	1.50
	Evaluation of Lessons	2	2	1	2	2	1	1	2	1.63
Classroom management	Classroom Setting	2	3	1	3	2	3	3	2	2.38
	Class Control	2	1	1	1	2	2	2	3	1.75

Source: The survey team

(2) Issues caused by the educational system, the educational institutions' structure, and the quality of education

The survey team will summarize the issues caused by the educational system, the educational institutions' structure, and the quality of education.

According to NCTB policy, 12 teachers per school are required to teach all subjects in the secondary education course. However, the average number of teachers per school is only 11.7. This means that there are schools where students cannot choose some courses because teachers are not available to teach the selected subject or courses.

One issue is that the number of class hours is relatively small. Students spend 825 yearly class hours in elementary school, 1,190 hours in lower secondary education, 1,152 hours in intermediate secondary education, and 924 hours in higher secondary education. These differences are due to the varying periods to implement end-of-course examinations. There may be room for changing the periods for end-of-course examinations.

Another issue related to social advancement and employment is that, according to the interviews in this survey, neither teachers nor the local education office was aware of students' job prospects after graduation. This means that neither teachers nor the local education office can measure the effect of education on the students. For human resource development, it is important to understand the student's career path after graduation.

One problem with the completion of secondary education is that a student can take the completion exam only one time. As there is no relief measure if the student fails, a student's education may end without a graduation or qualification certificate.

It has been emphasized that career education helps prevent a mismatch between the student and his or her career, but it faces challenges in implementation. Although multimedia teaching materials and personal computers (Internet) are recommended for career education, in reality only textbooks are distributed as teaching materials. Schools must develop supplementary teaching materials and organize infrastructural environment on their own. In addition, there is little cooperation from local governments or companies, and the quality of education heavily depends on teacher's discretion and lesson plans. The effect of career education is a concern because the government has not prepared teachers' guidebooks and training for teachers has not been implemented.

ICT education is a compulsory subject under the current curriculum. However, the infrastructure development for ICT lessons has not yet progressed, and in-service teacher training for introducing a new curriculum has not been implemented.

As summarized above, there are challenges in securing and improving the quality of the educational system, organizational structure and facilities, and human resource development.

(3) Issues in the fairness of education

One issue in secondary education is that the tuition fee of MPO non-accredited schools is very expensive. Even in rural areas, MPO non-accredited schools cost more than 50,000 BDT per year, and only wealthy families can afford to have their children attend them. In secondary education, the ratio of private schools is very high because it is not compulsory, and this possibly hinders students from receiving education. In rural areas with many poor families, children are close to home and have lunch there, but many of these students need stipends or scholarships. On the other hand, students in urban areas have additional expenses such as transportation and food. Both urban and rural areas have problems that can affect the fairness of education as a result of economic status.

3.6 Technical Education

Technical education under the MOE is classified broadly into four courses, namely, SSC and HSC vocational courses , diploma engineering course, and engineering degree course.

This section covers secondary technical education, excluding engineering degree courses in higher education (SSC vocational/ Dakhil vocational), HSC vocational, and engineering diploma course.

3.6.1 Government Bodies Related Technical Education

(1) Directorate of Technical Education (DTE)

The DTE is a department that controls technical schools and colleges (TSCs), provides SSC vocational courses and HSC vocational courses, polytechnic institutes that provide engineering diploma courses, and technical teacher training colleges, etc. In addition, it conducts personnel distribution and budget management. It does not have operation and management control over non-government educational institutions, but to some non-government educational institutions, teacher payment by the MPO is distributed from the government budget, standard curriculum for quality improvement of technical education, overseas training for teachers as a part of the technical education reform currently underway with support from DPs, and learning resources are provided. Currently, the following educational institutions are under its jurisdiction:

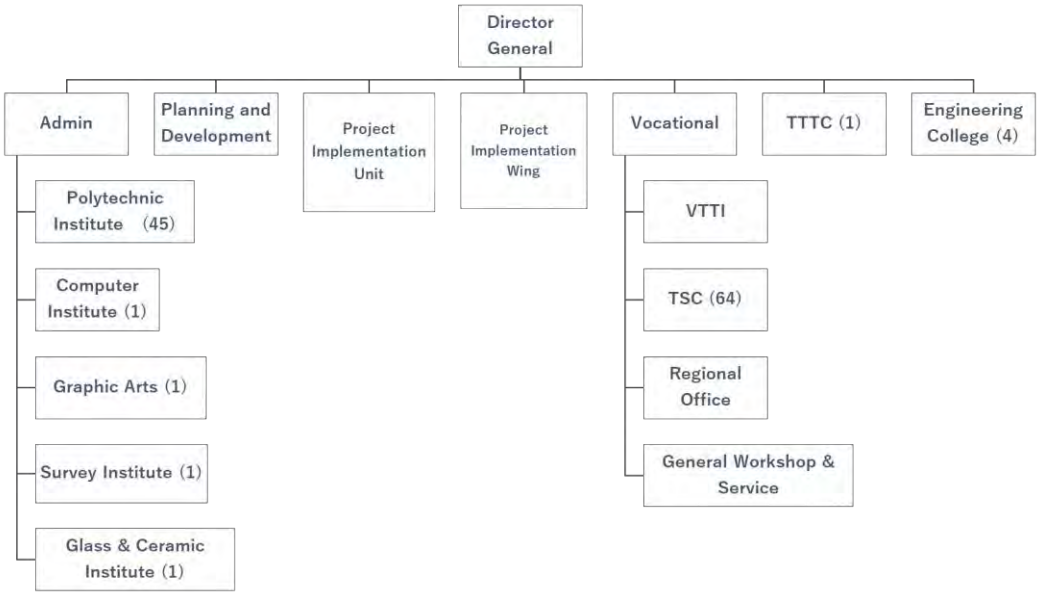
Table 3-50 Technical Education Institutions under Jurisdiction of DTE

Educational Institution Category	Number of Facilities (Schools)
Technical Teachers Training College (TTTC)	1
Engineering College	3
Vocational Teacher's Training Institute (VTTI)	1
Polytechnic Institute	49
Technical School and College	64
SSC Vocational with MPO	856
HSC Business Management with MPO	728
Madrasah with MPO (Vocational & Business Management)	18
Non-Government Diploma Institute	977
Non-Government Secondary Level and Others Institute	4,192
Total TVET Institutes	6,889[52]

Source:" Technical Education Prosperous Bangladesh", DTE

The organization chart is shown in the figure below.

[52] The total number of TVET institutes is written "7,700" on Technical Education Prosperous Bangladesh.



Source: Prepared by the Survey Team based on the Website of DTE

Figure 3-13 DTE Organization Chart

The functions of the DTE are listed below. With these functions, its goals include spreading technical education, the development and acquisition of specialized knowledge and skills, as well as character building of the people.

1) Conducts and evaluates projects necessary for the improvement of TVET as a whole.
2) In the field of TVET, establishes a scholarship system, taking demand into account.
3) Cultivates and improves skills, knowledge, and attitudes of teachers.
4) Evaluates TVET based on the labour market situation both inside and outside of the country.
5) Implements a monitoring and evaluation system that contributes to the improvement of efficiency of economic activities as well as expertise in the field of TVET.
6) Plans and conducts various training courses based on the labour market demand situations of different regions and overseas.
7) Plans and conducts teacher training for improvement of teacher quality based on demand.
8) Holds workshops and seminars themed on issues relating to teachers and staff of the TVET field.
9) Establishes a polytechnic institute for women to promote gender parity and efforts of women to TVET.
10) Researches and investigates to grasp employment market of TVET field.
11) As a public institution that promotes TVET, the DTE leads relationship building in cooperation with related domestic organisations and supporting overseas organisations.
12) Conducts technical updates for TVET facilities.

Among educational policies, the cultivation of technical human resources through technical education is a priority issue. TTTC and engineering colleges are treated at the section-level, while the VTTI and polytechnic colleges are positioned under the vocational training section.

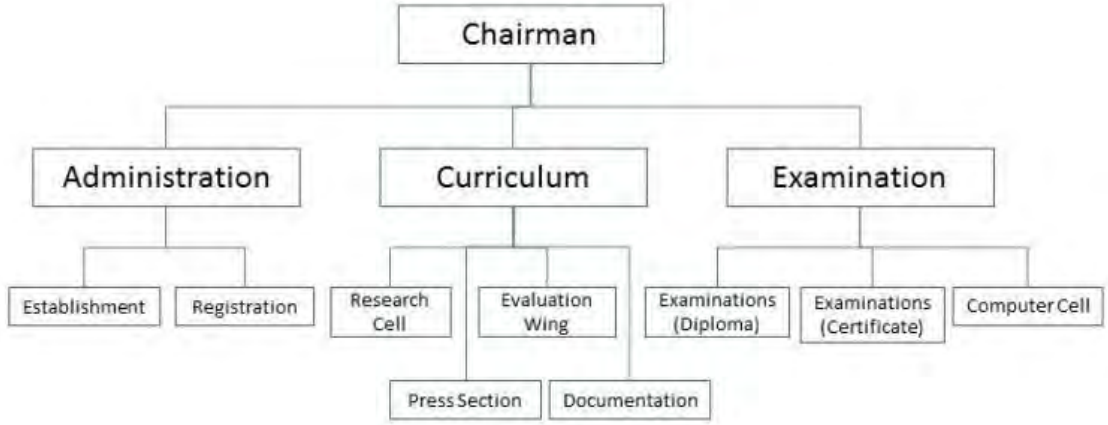
(2) Bangladesh Technical Education Board (BTEB)

BTEB is an independent administrative institution under the jurisdiction of the MOE. It takes on the role of standardization of technical education-related curriculum and teaching material, teacher training,

etc. Its operating budget is not distributed from the Ministry of Education, and the source of its operating funds is the examination fees of students taking TVET institution examinations, student registration and entrance fees, registration and administrative costs collected from educational institutions, and bank interest. The main functions of the BTEB are as follows:

1) Sets TVET-related curriculum
2) Arranges the development of teaching materials
3) Approves grants for institutions that conduct technical and vocational education
4) Sets entrance qualifications for students
5) Monitors teaching-learning activities
6) Conducts examinations of affiliated schools and institutions
7) Issues certificates for students meeting graduation qualifications

Currently, in development of the technical education curriculum by the Bangladesh government, the BTEB also handles the preparation of the National Skill Standard, with cooperation of each industry sector. It is an organisation independent from the Ministry of Education and DTE, but has a close relationship with the DTE.



Source: Prepared by the Survey Team from BTEB Annual Report 2013-2014

Figure 3-14 Bangladesh Technical Education Board (BTEB) Organization Chart

3.6.2 Outline the system

(1) Institutions offering SSC and HSC vocational courses

In 1965, the Vocational Training Institutes (VTIs) were established in 51 locations nationwide. The SSC and HSC vocational educational Programs were developed in 1995 against the backdrop of modernisation and institutional reform; at the same time, VTIs were transformed as Technical School and Colleges (TSCs). Currently in Bangladesh, these Programs are offered at TSCs, which are located in each of the 64 districts. Outside of TSCs, SSC vocational courses are also offered at MPO-approved and unapproved private TVET institutions and Technical Training Centres (TTC) under the jurisdiction of the Bureau of Manpower, Employment and Training (BMET). HSC vocational courses, however, are only available at TSCs.

(2) Polytechnic Institutes

After passing SSC or SSC vocational courses, students entering a polytechnic institute will receive technical education that runs parallel to HSC vocational courses. After a successful completion of a four-year diploma engineering course, graduates are awarded a diploma in engineering. Forty-nine polytechnic institutes were established all over the country. Formally, a polytechnic institute is equivalent to a Japanese college of technology, which is called KOSEN.

The ideal human resource for educating at a polytechnic institute is not stated explicitly in any educational policies or development plans. However, graduates of polytechnic institutes are regarded as having skills equivalent to middle-level managers in industry and designated as equivalent to top level of the National Training and Vocational Qualification Framework (NTVQF), specifically Level 6. People at NTVQF Level 6 have theoretical and practical knowledge, practical skills, and can perform management-level duties at workplaces[53].

(3) Admission requirement

The admission requirement for each technical education courses are presented in the following table.

Table 3-51 Types of Technical Education Courses

Educational stage	Period	Admission Requirements	Remarks
Secondary Technical Education (SSC-Voc / Dakhil vocational)	2 years	Completion of Junior Secondary Education or Junior Secondary Madrasah Education (Dakhil)	
Higher Secondary Technical Education (HSC-Voc)	2 years	Meet any of the following requirements: (1) Pass a qualification test to determine completion of secondary education (SSC/ SSC-Voc, or Dakhil vocational); (2) Pass a test administered by BTEB or Open University; (3) Have a GPA of 3.50 (GPA of 3.00 in math in advanced math)	Equivalent to specialised upper secondary school in Japan (technical high school, commercial high school)
Engineering Diploma Course (Diploma in Engineering)	4 years		Equivalent to Japanese National Institute of Technology
Engineering Degree Course (BSc. in Engineering)	4 years	Pass a qualification test determining completion of higher secondary education	Equivalent to Japanese Bachelor of Engineering

Source: Survey Team

(4) Technology and Trade

Trade- and technology-related Programs of SSC and HSC vocational courses and diploma engineering courses are shown in the following table. A number of these Programs are not linked to other educational level of TVET. For example, in the area of food and agriculture, most trade- and technology-related Programs are set as SSC and HSC vocational courses mainly. The possible reason could be people with lower educational background tend to engage in agricultural area of study.

[53] From 'SKILL STANDARDS OF BMET' (2014) P.2 and NTVQF 'Competency Standards for TVET Trainers/Teachers and Assessors'

Table 3-52 Courses established in Study Program

Category	SSC vocational	HSC vocational	Diploma engineering course
Food and agriculture	・ Agro based food ・ Fish Culture and breeding ・ Food processing and preservation ・ Livestock Rearing and farming ・ Shrimp Culture & Breeding ・ Poultry Rearing and farming ・ Flower, Fruit & Vegetable Cultivation	・ Fish Culture and Breeding ・ Poultry Rearing and Farming ・ Wet Processing	・ Food
Civil and architecture	・ Civil Construction ・ Architectural Drafting with Cade ・ Civil Drafting with cade ・ Pumping & Pipe fitting ・ Building Maintenance	・ Building, Maintenance and Construction ・ Drafting Civil	・ Construction ・ Architecture and Interior Design ・ Civil ・ Civil (Wood) ・ Surveying ・ Architecture
Electrical and electronics	・ General Electrical works ・ Electrical Maintenance works	・ Electrical Works and Maintenance ・ Electronic Control and Communication	・ Electrical ・ Electronics
Materials	・ Ceramic ・ Glass		・ Ceramic ・ Glass
Automobile	・ Automotive	・ Automotive	
Mechanical engineering	・ General Electronics ・ Firm Machinery ・ General mechanics ・ Machine Tools Operation ・ Welding, and Fabrication ・ Mechanical Drafting and finishing ・ Refrigeration and Air-conditioning	・ Agro-Machinery ・ Machine Tools Operation and Maintenance ・ Welding and Fabrication ・ Refrigeration and Air-conditioning	・ Mechatronics ・ Ship Building ・ Mechanical ・ Power ・ Refrigeration and Air-conditioning ・ Aircraft Maintenance (Aerospace) ・ Aircraft Maintenance (Avionics) ・ Automobile ・ Marine
Wood working	・ Wood working	・	
Apparel	・ Dress Making ・ Dying, Printing and finishing ・ Weaving ・ Knitting	・ Clothing and Garments Finishing	・ Footwear ・ Leather ・ Leather Product and Accessories
Mining			・ Mining and Mine Survey
Telecommunications	・ Computer and Information Technology	・ Computer Operation and Maintenance	・ Telecommunication ・ Computer ・ Graphic Design ・ Data Telecommunication and Networking ・ Computer Science & Technology ・ Instrumentation and Process Control
Medical	・ Patient care		・ Electro-Medical

Category	SSC vocational	HSC vocational	Diploma engineering course
Other			・ Printing ・ Environmental ・ Chemical

Source： The survey team with referring A Report on enrollment analysis in TVET under Bangladesh Technical Education Board

(5) Curriculum and syllabus

BTEB is the governmental organization responsible for developing the curriculum and syllabus of SSC and HSC vocational courses, and diploma engineering courses. BTEB's seven to eight members include BTEB officials, DTE officials, representatives of polytechnic institutes, TSCs, and the industrial sector. Under a certain guideline for development curriculum, the committee headed by BTEB conducts workshops to develop the curriculum and syllabus every five years to ensure that they are comparable with the curricula and syllabi of other foreign countries.

(6) Textbooks

BTEB is also responsible for developing textbooks used in SSC vocational course, HSC vocational course, and diploma engineering courses every time the curricula and syllabi are developed. Under a certain guideline, the committee headed by BTEB conducts workshops to develop the textbooks to ensure that their contents are comparable with that of the textbooks of other foreign countries.

The textbooks for SSC vocational courses are developed regularly, and BTEB has completed the renewed textbooks in December 2015 to be applied to the 2013 curriculum. Moreover, BTEB planned to prepare an e-textbook for SSC vocational courses and proposed a four- to five-year plan to the MOE for approval. When the proposal is approved by the MOE, BTEB will start to prepare 21 kinds of textbooks, or a total 61 textbooks, during the first year of the implementation.[54]

In contrast, the textbooks for HSC vocational and diploma engineering course are not reviewed regularly and developed by BTEB for recent years; in their classes for technical subject, teachers and students do not use the textbooks practically. According to the director of curriculum who is working for BTEB, the textbooks of diploma engineering courses were developed in the 1990s by BTEB. Nevertheless, high-quality reference books became available in the market and those were considered as teaching materials for students. Consequently, BTEB had not continued to review and develop textbooks until recently when it already considers such condition as one of the problems in their educational system. Recently, students seek guidebooks for their study in the market, but the quality of some of these books is not guaranteed and they even provide the wrong information at times. Therefore, BTEB has started to revise the textbook for the new 2016 curriculum, with the financial support of the International Development Assistance (IDA) under the Skills and Training Enhancement Project (STEP). BTEB is targeting to revise the textbooks in 2017 and planning to develop an e-textbook for diploma engineering and SSC vocational courses. The revising process is preceded by BTEB under its guideline; meaning, the WB does not provide technical support for the revision.

(7) Academic fee

Admission and necessary fees for one semester at TSCs range from BDT 1,000 BDT to 1,300 BDT; and admission and necessary fees for one semester at public polytechnic institutes range from 1,000 BDT to 1,900 BDT. The total academic fees include tuition (60 BDT), internal examination fee, registration fee, a guarantee deposit, and miscellaneous fee[55].

(8) Scholarship System

The DTE is expanding the scholarship system and opportunities for scholarships for students in

[54] Based on the interview to BTEB officials
[55] Admission fees for Polytechnic Institute 2014-2015, DTE

technical education institutions. In the assistance Program provided by the government, the monetary amounts granted to SSC-Voc, HSC-Voc, engineering diploma, and higher education Programs in engineering increased in 2016. The DTE grants scholarships to the top 65% students based on attendance rates and scholastic performance. For students in their first semester, the top 65% are able to receive scholarships based on their performance on the entrance examination. For scholarship payments after the government increase, TSC and polytechnic institute students receive 700 BDT and 1,650 BDT per semester, respectively. From second semester onwards, scholarships are granted to the top 65% students based on final exam results of the previous semester. In other words, students who are granted with scholarships change every semester based on their exam results. In addition, scholarships are also paid to students and learners separately when they participate in an internship at a company. Scholarship amounts for internship participants are 1,700 BDT and 13,000 BDT per semester for TSC and polytechnic institute students, respectively.

In addition to the above scholarships, opportunities for financial assistance intended to promote pursuing an education at TVET institutions are also provided through the STEP implemented by the WB. In the STEP Project, a total of 93 polytechnic institutes consisting of 43 government-affiliated and 50 private schools are eligible to receive financial assistance. The Program grants scholarships of 800 BDT per month to approximately 69,000 students who meet the requirements of attendance and academic performance. Moreover, recipients of the scholarship are expected to increase because of the 63 institutions being newly selected as eligible recipients.

(9) Budget

The budget for technical education (2015-2016FY) is shown as following table.

The whole budget of the DTE is about 4,823 million BDT, the budget of 49 government-affiliated polytechnic institute is 1,652 million BDT, that of secondary technical schools is 634 million BDT, that of TTTC is 25 million BDT, and that of other technical education institutions is 62 million BDT, which totals 7,200 million BDT. Meanwhile, only middle secondary technical education institutions recognised as MPO schools among non-government education institutions are provided with the budget by the DTE. The budget provided for non-government education institutions in 2015-2016 through the MPO system was 80,000 million BDT (including the whole of secondary and higher education)

Table 3-53 Yearly Budget for Technical Education (2015-2016FY)

Category	Budget 2015-2016 FY (BDT)
DTE	4,822,800,000
Polytechnic Institutes	1,652,324,000
TSCs	634,509,000
TTTC	24,939,000
Other TVET institutions	62,038,000
Total	7,196,610,000

Source: The survey team based on the documents about the budget plan 2016 of Ministry of Education

(10) Establishment process

Government-affiliated TSCs and polytechnic institutes are established in accordance with governmental policies and development plans of the DTE. Private TVET institutions with SSC-Voc courses are established by their own and are approved by BTEB. No information was received during this survey regarding the establishment process of private polytechnic institutes.

(11) Monitoring the school environment and management

In TSCs and polytechnic institutes, the principal or department heads monitor classes every day and conduct regular meetings such as monthly ones to discuss concerns over their class and school environments with a goal to improve them.

Moreover, TSCs and polytechnic institutes are administrated under the DTE; hence, DTE officials visit the schools and institutes regularly to monitor the progress of their plan and activity. BTEB also has an inspection and monitoring section that is responsible for visiting the schools and institutes regularly for monitoring.

3.6.3 State of educational institutions

(1) Enrolment Numbers

The following table shows the capacity of and enrolment in technical education facilities from 2013 to 2014 under the DTE's jurisdiction.

Table 3-54 Student Enrolment in Technical Education Facilities (2013–2014)

Course name	Capacity	Enrolment	Fill rate	Number of technical fields
SSC Vocational	175,710	142,919	81%	31
HSC Vocational	8,370	7,590	91%	14
Dakhil Vocational	16,860	4,022	24%	31
Diploma in Engineering	72,920	57,837	79%	34

Assessing student needs for technical education based on fill rates indicates that there is a high demand for both SSC-Voc courses (81%) and HSC-Voc courses(91%) . Dakhil vocational courses had the lowest fill rate at only 24%. Polytechnic diploma courses were also high at 79%, demonstrating high fill rates for technical education. The table below shows changes in student enrolment and increase rates for SSC-Voc, HSC-Voc, and diploma in engineering courses.

Table 3-55 Changes in Student Enrolment and Increase Rates for SSC Vocational Courses, HSC Vocational Courses, and Diploma in Engineering Courses

	Course	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
No. of students	SSC Vocational	109,482	120,119	120,828	135,546	141,102	142,919	161,500
	HSC Vocational	5,693	5,557	7,038	7,156	8,536	7,590	10,770
	Diploma in Engineering	24,434	27,640	30,475	44,111	58,472	57,837	76,253
	Total	139,609	153,316	158,341	186,813	208,110	208,346	248,523
Year-on-year increase	SSC Vocational		9.7%	0.6%	12.2%	4.1%	1.3%	13.0%
	HSC Vocational		-2.4%	26.7%	1.7%	19.3%	-11.1%	41.9%
	Diploma in Engineering		13.1%	10.3%	44.7%	32.6%	-1.1%	31.8%
	Total		9.8%	3.3%	18.0%	11.4%	0.1%	19.3%

Source: Prepared by the JICA Survey Team based on 'TVET Status of Bangladesh (2016)', DTE

Only student enrolment in HSC-Voc courses declined in the 2009/2010 and 2013/2014 academic years. Nevertheless, the number of students increased in the last six years, from the 2008/2009 to the 2014/2015 academic years. The student increase rate from the 2008/2009 to the 2014/2015 academic years was approximately 1.5 times for SSC-Voc, 1.89 times for HSC-Voc, and 3.12 times for diploma in engineering courses.

(2) School Hour (SSC- and HSC- Voc Programs)

SSC- and HSC-Voc Programs run for two years from grades 9 to 10 and grades 11 and 12, respectively. In both cases, courses run for 36 weeks.

Students in SSC-Voc Programs study six days per week, with a maximum of 48 45-minute classes. Of the total 48, 45 are common compulsory subjects and the remaining three are electives. Students in HSC-Voc Programs take 46 classes. The class structure, which was established in 1997, for both Programs has remained today.

Secondary education has courses related to the workforce development, such as physical education, and religion and ethics. A notable characteristic is that these courses are not taught after the students enter the higher secondary level.

Table 3-56 Weeks of Class by Subject in SSC- and HSC- Voc courses

Category	Item	SSC		HSC	
		G9	G10	G11	G12
Compulsory subjects	Bengali	3	3	4	4
	English	3	3	4	4
	Mathematics	3	3		
	Higher Mathematics			5	5
	Introduced Bangladesh & the world	2	2		
	Physics	6	6	5	5
	Chemistry			5	5
	Computer application	2	2	1	-
	Engineering drawing	2	2		
	Physical Education, health science and game	1	1		
	Religious (Islam) and ethics	1	1		
	Self-employment and Initiative for Business			-	1
	Subtotal	23	23	24	24
Compulsory subjects by course	Trade1	11	11	18	18
	Trade2	11	11		
	Industrial Training (6weeks)	0	0	-	0
	Subtotal	22	22	18	18
Elective subjects	Subtotal	3	3	4	4
Total		48	48	46	46

Source: Prepared by the Survey Team based on 'S.S.C Curriculum 2013 and H. S. C Curriculum 1997 (BTEB)'

The diploma engineering courses run for four years from grades 11 to 14, with eight 16-week semesters. Students in diploma engineering courses study six days per week, with a maximum of 30 to 40 50-minute classes, and must garner 140 to 150 credits before their graduation. Compulsory subjects are different among each technological course, but some general subjects, such as English and Math, engineering drawing, and basic and practical workshops are common subjects for most of technological courses. Moreover, during the eight semesters of grade 14, students participate in internship Programs, consisting of a 12-week work with an industrial company and four-week internal study. This internship Program is also compulsory for students of all technological courses.

Table 3-57 Weeks of Class by Subject in Diploma engineering course (In case of Electrical technology)

Category	Subject	Diploma engineering course							
		G11		G12		G13		G14	
		S1	S2	S3	S4	S5	S6	S7	S8
General Subject	Bangla			4					
	English	2	4						
	Social Science			2	2				
	Physical Education & Life Skill Development	2							
	Environmental Management						2		
	Business Organization & Communication				2				
	Book keeping and Accounting					2			
	Industrial Management						2		
	Entrepreneurship							2	
	Mathematics	6	6	4	4				
	Physics		6	6					
	Chemistry	6							
Technical Subject	Engineering. Drawing	6							
	Engineering. Materials	5							
	Computer Application		6	6	2				
	Programming in C							5	
	Basic Electricity	6		4					
	Electrical Circuit		6	6					
	Advanced Electricity		6	0					
	Electrical Appliances			0	8				
	Elec Installation, Planning & Estimating				8				
	Electrical Engineering Drawing				6				
	Generation of Electrical Energy					6			
	DC Machine					6			
	Electrical and Electronic Measurements					5	6		
	AC Machine						6	6	
	Transmission and Distribution of Electrical Energy						6	6	
	Electrical Engineering project							6	
	Switch gear & project							6	
	Basic Electronics			5					
	Adv. Electronics				6				
	Industrial Power Electronics					5			
	Instrumentation and process control							6	
	Digital Electronics & Microprocessors						6		
	Communication Engineering						6		
	Basic Workshop Practice		6						
	Applied Mechanics					5			
	Hydraulics & Hydraulic Machinery					6			
Internship Program	Industrial Training								N/A
Total		33	40	37	38	35	34	37	

Source: Prepared by the Survey team based on the BTEB Probidhan2010 and Syllabus 2010 for Diploma in Engineering

Under the governmental policy and the target, which is to increase TVET enrolment, TSCs and polytechnic institutes started a double-shift system (morning and afternoon shifts) starting in 2015. In

TSCs, the morning shift is from 7:30 to 13:30, and the afternoon, from 13:30 to 19:30. In polytechnic institutes, the morning shift is from 8:00 to 13:15, and the afternoon, 13:15 to 18:30.

The number of classes required for students in TSCs and polytechnic institutes was not changed after introducing the double-shift system. The number and length of classes in the morning shift are the same as in the afternoon. Most of the instructors handle more number of classes in the double-shift system compared with the previous one, and the volume of other management or preparatory tasks increases at the same time. Therefore, instructors recently cannot spare their enough time to prepare and study for their own classes daily. Some instructors expressed concern over the deterioration of performance of instructors and, thus, the quality of education they provide to students.

(3) Using the state teaching materials

BTEB issues textbooks for technical subjects in SSC vocational curriculum, and each student is allocated with their own set of textbooks. In contrast, students of HSC vocational and diploma engineering courses do not have government-issued textbooks for technical subjects. Some students of these courses bring guidebooks that are available in the market but not the prescribed ones. Most instructors at times distribute copies of reference books that are introduced in the BTEB syllabus as alternatives. They also use PowerPoint slides, demonstrations, activity sheets, and charts as their teaching materials.

(4) Students in TSCs expectation after graduation

A total of 55 students of Gazipur TSC were interviewed for this survey. Information on the students is provided below.

Table 3-58 List of Interviewees of TSC

Name of School	Trade	Grade	Shift	Sex	Number
Gazipur TSC	Electrical	9（SSC Voc）	1st shift	Male	10
		11（HSC Voc）	1st shift	Male	8
		12（HSC Voc）	1st shift	Male	6
	Building Maintenance	9（SSC Voc）	1st shift	Male	4
		11（HSC Voc）	1st shift	Male	3
		11（HSC Voc）	2nd shift	Female	2
		12（HSC Voc）	1st shift	Male	4
		12（HSC Voc）	1st shift	Female	1
	Poultry	9（SSC Voc）	1st shift	Male	5
		9（SSC Voc）	1st shift	Female	3
		11（HSC Voc）	2nd shift	Female	4
		12（HSC Voc）	1st shift	Male	5
Total					55

Source：The Survey Team

Reasons for choosing the TSC (Multiple choice)

Table 3-59 Reasons for choosing the TSC

Reason	Number
Because I think I can get job easier.	49
Admission exam is easier than that of general school.	6
Tuition fees are cheaper than those of general school.	8
My parents recommended me to do it.	10
My teachers recommended me to do it.	2

Source: The Survey Team

Among the answers of the interviewees, 'Because I think I can get a job easier' is the most frequent answer. The second one is the recommendation from their parents. Other students stated that they considered the academic fees of TSCs to be cheaper and the admission or course level is easier than general schools, and their teachers recommended these schools.

Expectation after graduation

The following table shows the expectations of students after graduating. Students answered not only their own expectations but also their parents' expectation. Getting a job and work and going to a higher study are the two most frequent answers of the students of SSC and HSC vocational courses. Similarly, answers from their parents seem to express the same considerations.

Table 3-60 Expectations of Students and Parents after graduations

Expectation after graduation	SSC Vocational (Number)		HSC Vocational (Number)	
	Students	Parents	Students	Parents
To go to higher study	2	5	11	7
To get job and work		2		2
To get job and work and to go to higher study	19	14	24	22
To help his/her home business				
To help his/her home business and to go to higher study.	1			3
He/ she/ they do not know.				
Others				1
N/A (Blank)		1		
Total of the number	22	22	35	35

Source: Survey Team

Among the students who expected 'to go to higher study', 'to get a job and work', and 'to go to higher study or help his/her in their home business and go to higher study', 15 students of SSC vocational courses targeted to go to a university, whereas two aimed to go to a polytechnic institute for their future study; meanwhile, 28 students of HSC vocational courses target to go to a university, whereas five aimed to go to a polytechnic institute. Among the students who expected 'to get a job and work' and 'to get a job and work and go to higher study', 11 students of SSC vocational courses expected to get a job in private sectors, whereas seven wanted to work in the civil service; meanwhile, 23 students of HSC vocational courses expected to work in the civil service, whereas six, in private sectors. It means that the trends of their expectations of working in the public or private sector were opposite between students in SSC and HSC vocational courses.

(5) Expectation for the institutions and after graduation

Thirty-seven students of Dhaka Polytechnic Institutes and 31 students of Dhaka Mohila Polytechnic Institutes were interviewed for this survey. Information on the students is provided below.

Table 3-61 The Number and Inforamtion of interviwees of Polytechnic Institutes

	Technology	Semester	Shift	Sex	Number
Dhaka Polytechnic Institutes	Civil	1st Semester	2nd Shift	Male	3
	Electrical	1st Semester	1st Shift	Male	3
	Electrical	3rd Semester	1st Shift	Male	2
		3rd Semester	1st Shift	Female	1
	Mechanical	1st Semester	1st Shift	Male	3
	Chemical	5th Semester	2nd Shift	Male	3
		5th Semester	2nd Shift	Female	4
		6th Semester	1st Shift	Male	7
	Food	5th Semester	1st Shift	Male	1
		5th Semester	2nd Shift	Male	7
		5th Semester	2nd Shift	Female	3
	Total				37
Dhaka Mohila Polytechnic Institutes	Electronics	1st Semester	1st Shift	Female	3
		6th Semester	1st Shift	Female	4
	Computer	1st Semester	1st Shift	Female	6
		6th Semester		Female	3
	IPC	3rd Semester	1st Shift	Female	3
	Architecture	1st Semester	2nd Shift	Female	3
		6th Semester	1st Shift	Female	3
			2nd Shift	Female	2
	Electromedical	1st Semester	1st Shift	Female	1
			2nd Shift	Female	4
	Total				31

Source: The Survey team

Reason for choosing the polytechnic institute (Multiple choice)

Table 3-62 The reason to choose the polytechnic Institutes

Reason	Dhaka Polytechnic Institute (Number)	Dhaka Mohila Polytechnic Institutes (Number)
Because I think I can get job easier.	30	29
Admission exam is easier than that of general school.	2	1
My parents recommended me to do it.	7	12
My teachers recommended me to do it.	2	1

Source: The Survey Team

Among the answers from the interviewees, 'Because I think I can get a job easier' is the most frequent answer, followed by 'My parents recommended me to do it'. Other answers include 'my teachers recommended me to do it' and the admission or course level is 'easier than a general school'.

Expectation after graduation

The following table shows the expectations of students after graduation. Students answered not only their own expectations but also their parents'. 'Getting a job and work to go to higher study' is the most frequent answer. Answers from their parents are the same. Moreover, many students said that they wanted not to get a job after graduation and go to a university first. They aimed to be an engineer with a completed of degree level of education. Not many students and parents expected to get a job directly without going to higher education or to help their home business after graduation compared with others.

Table 3-63 Expectations of Students and Parents after graduations

Expectation after graduation	Dhaka Polytechnic Institutes (Number)		Dhaka Mohila Polytechnic Institutes (Number)	
	Students	Parents	Students	Parents
To go to higher study.	9	10	2	8
To get job and work.	3	6	1	1
To get job and work with to go to higher study	22	19	28	22
To help his/her home business				
To help his/her home business with to go to higher study.	2	1		
He/She does not know.	1			
Others		1		
Total (Number)	37	37	31	31

Source: The Survey Team

(6) Career tracks for polytechnic institute graduates

The DTE has no system or mechanism to provide guidance or support for graduate career tracks. It also does not have data related to employment or career tracks. As it stands now, public educational institutions have inadequate career track guidance and employment support, and the survey team can infer that there is room for improvement with regard to providing employment support as an educational institution. The WB recognized this situation as a clear problem, and offered support by setting up a career support office in 2015 as part of its STEP Program. Polytechnic institutes have begun collecting company information, arranging meetings with prospective graduates, holding job fairs, and conducting other related efforts for students. Some private schools are also providing employment support and have built up a record of achievements. The following section shows some case examples.

Good Practices for Employment Support: Bangladesh Institute of Information Technology (BIIT, private institution).

The Bangladesh Institute of Information Technology (hereinafter, 'BIIT') is a private polytechnic Institute located in Bogra, Rajshahi Division. BIIT was founded in 1999 and registered with the BTEB in 2002. The institute's vision is to provide the support that enables students to have satisfying careers through technical education services. BIIT provides high-quality lectures and practical training to young people and it has produced a large number of practically skilled engineers with diplomas for the production industry. It cites supporting students in gaining employment as an important activity in the role of an educational institution.

BIIT has a total of 10 courses, which include computer courses; electronics and other courses related to precision equipment; automotive, mechanical courses, and other courses related to manufacturing fields. As for student gender ratio, computer courses have the largest percentage of female students. 15% of students are female, comprising 187 males and 33 females. There are no female students in automotive or mechanical courses.

A career support department, designated 'Placement Cell', has been established to help students gain employment, and students' employment records are kept. The school holds regular meetings and proactively interacts with the production industry in an effort to support students' employment externally. It also invites guest speakers to provide lectures that help build professionalism and ethics. The institution has been collaborating with local industry, entering into MOUs with industry groups and companies relevant to course material. Examples of career destinations include leather shoemaker 'Apex', food processor 'Pran', and financial concern 'Islamic Bank'. The school sends graduates over a wide area, including career destinations in Bogra as well as several other destinations in Dhaka. There is a diverse range of students—in addition to job seekers, there are also those continuing to higher education as well as others who will go on to pursue self-employment. The table below shows a summary of career tracks for

graduates

Year	No. of graduates	Job seekers	Pursuing higher education	Entrepreneur/ self-employed
2011	125	83 (66%)	26 (21%)	16 (13%)
2012	142	98 (69%)	39 (27%)	5 (4%)
2013	146	105 (72%)	34 (23%)	7 (5%)
2014	247	190 (77%)	38 (15%)	19 (8%)

Source: cited from school guide PPT created by BIIT.

Approximately 70% of students will seek employment. One of BIIT's advantages in career support is its network of BIIT alma mater and graduate students. In many cases, graduate students will inform alma mater directly of job openings at their workplace, and BIIT has the advantage of being able to secure job offers on a priority basis. Many companies have praised the performance of BIIT graduates. This also contributes to the probability of students gaining employment. BIIT's career support is not limited to schools and industry—graduate student activities also contribute—it is presumed that this translates into an outstanding, comprehensive environment for supporting students in finding jobs.[56]

PC Course (learning PC operation)

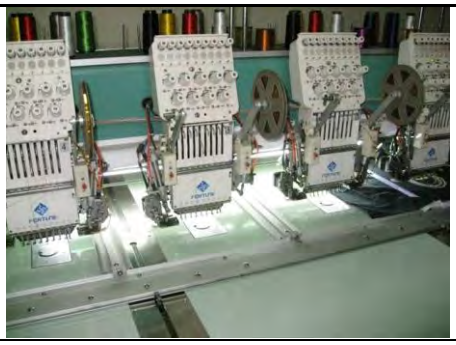
Library

Learning to operate a lathe (wearing training clothes, helmet)

Practicum (learning sewing machine operation)

[56] Cited from comments from Principal during visit and tour on May 2, 2016

Electrical course wiring diagram (indoor wiring)



Equipment for learning sewing

3.6.4 Teaching staff

(1) Number of teachers

The table below shows changes in the number of teaching staff in TSCs for a combined SSC/HSC vocational curriculum, SSC vocational, HSC vocational, and polytechnic diploma Programs.

Table 3-64 Numbers of Teachers

Category	Type of school	Public/ private	2009	2010	2011	2012	2013	2014	2015
Combined SSC/HSC vocational	Technical School & College	Public	1,132	1,135	1,132	1,132	2,245	2,306	1,142
		Private	238	242	244	1,681			1,168
Secondary education	SSC/HSC (Voc)	Public	235						
		Private	1,806						
	SSC (Voc) (Independent)	Public		266	267	267	1,976	1,976	268
		Private		1,808	1,812	1,709			1,710
	S.S.C (Voc) (Attached)	Public		-	-	-	5,698	5,959	-
		Private		6,109	6,112	6,216			5,712
Higher Secondary Education	H.S.C Business Management	Public	142						
		Private	4,935						
	H.S.C (Voc)/B.M (Independent)	Public		143	144	144	5,626	5,710	145
		Private		4,937	4,945	5,151			5,818
	H.S.C (Voc)/B.M (Attached)	Public		5	6	8	4,430	4,922	71
		Private		2,317	2,318	2,325			4,852
Polytechnic diploma	Polytechnic Institute	Public	1,277	1,285	1,303	1,481	3,839	4,665	1,487
		Private	1,583	1,592	2,007	2,971			4,270
Total	Combined SSC/HSC		1,370	1,377	1,376	2,813	2,245	2,306	2,310
	SSC Vocational		2,041	8,183	8,191	8,192	7,674	7,935	7,690
	HSC Vocational		5,077	7,402	7,413	7,628	10,056	10,632	10,886
	Polytechnic diploma		2,860	2,877	3,310	4,452	3,839	4,665	5,757
	Total		11,348	19,839	20,290	23,085	23,814	25,538	26,643
Proportions among private schools	Combined SSC/HSC		17.4%	17.6%	17.7%	59.8%	Unknown	Unknown	50.6%
	SSC Vocational		88.5%	96.7%	96.7%	96.7%	Unknown	Unknown	96.5%
	HSC Vocational		97.2%	98.0%	98.0%	98.0%	Unknown	Unknown	98.0%
	Polytechnic diploma		55.3%	55.3%	60.6%	66.7%	Unknown	Unknown	74.2%

Source: Prepared by the Survey Team based on BANBEIS information

Notable characteristics of the table include the following: the number of teachers is increasing gradually regardless of the format; and private schools employ the greater number of teachers. In TSCs' combined SSC/HSC vocational curriculum, there were more teachers in public institutions in 2009, but this trend reversed in 2012 as the number of teachers in private institutions climbed gradually. It is presumed that the increase in teacher hiring is because of the increased demand resulting from the growing number of private schools.

Despite an increasing staff, it has been pointed out that there is a substantive shortage of technical teachers to handle these Programs. Caution is in order regarding courses with substantive teacher shortages in fields with a high demand. The DTE has prioritized the elimination of technical teacher

shortages in TTTCs and VTTIs, where vocational teachers receive training, and is working towards improving ease of access to learners and applicants of technical education.

(2) Employment System

The minimum requirement for becoming a technical teacher at a TSC or a polytechnic institute is the completion of a polytechnic diploma. For example, the teaching positions at a polytechnic institute include Chief Instructor (technical/non-technical), Instructor (technical/non-technical), Workshop Superintendent, Junior Instructor (technical/non-technical), and Physical Education Teacher. To be hired as a Technical Instructor, the minimum requirement is the completion of a Bachelor's degree in technical education at a technical teacher training college or a Bachelor's degree in education at a university. In contrast, no academic degrees are imposed on the minimum qualification required for becoming a Junior Instructor, which is the lowest ranking technical job title. The minimum qualification to become a Junior Instructor (technical) is the completion of an engineering diploma Program. However, the government has decided to make it compulsory for teachers, who do not have a degree in education or technical education, to acquire degrees after being hired. In fact, the Education Act 2013 states that 'new teaching hires must acquire either a B.Sc. in Technical Education or a Bachelor of Education within two years of being hired'. The trend is moving towards making it compulsory for those being hired as a Junior Instructor (technical) to enter school to acquire a Bachelor's degree in education or technical education, or to attend a training on teaching methodologies.

Depending on an employment position, Bangladeshi civil servants used to be divided into four classes, but they are sorted into 20 grades in 2015. Table below shows the employment positions of teachers at polytechnic institutes as well as their class, grade, posting process, and requirements in hiring, reassignment, and promotion.

Table 3-65 Dhaka Polytechnic Institute Faculty Job Titles and Posting Process

Position	Grade	Class	Posting process	Promotion requirements	Hiring requirements (transfer requirements shown for Principal only)
Principal	Grade4	I	Promotion, transfer	Persons with at least three years' experience as a vice principal at a polytechnic institute, or alternatively a total of at least 12 years' experience in a first-class position including experience as a vice principal at a polytechnic institute.	Persons with at least three years' experience working as an Associate Professor at a technical teacher training college.
Vice Principal	Grade5	I	Promotion	Persons with at least five years' experience as a Chief Instructor at a polytechnic institute, or as an Assistant Director or Project Director at DTE, and is at least at a grade 6 pay level.	
Chief Instructor (Tech.)	Grade6	I	Promotion, hiring	Persons with at least five years' experience as an Instructor at a polytechnic institute, Project Officer at the DTE, or Equipment Officer in a related department.	Persons who have completed a bachelor's degree in engineering or technical education and have at least five years' experience as a Lecturer, Instructor, or Workshop Supervisor any polytechnic or equivalent educational institution.

Chief Instructor (Non Tech.)	Grade6	I	Promotion, hiring	Persons with at least five years' experience as an Instructor (Non Tech.) at a polytechnic institute.	Persons with at least five years' experience as an Instructor (Non Tech.) or equivalent position at a polytechnic institute.
Instructor (Tech.)	Grade9	I	Promotion, hiring	Persons with at least five years' experience as a Junior Instructor (Tech.) at a polytechnic institute.	Persons who have completed a bachelor's degree in engineering or technical education at a recognized university. Alternatively, persons who have completed an engineering diploma program with outstanding academic results and have at least five years teaching experience.
Workshop Superintendent	Grade9	I	Promotion, hiring	Persons with at least five years' experience as a Junior Instructor (Tech.) at a polytechnic institute.	Persons who have completed a bachelor's degree in engineering or technical education at a recognized university. Alternatively, persons who have completed an engineering diploma program with outstanding academic results and have at least five years teaching experience.
Instructor (Non Tech.)	Grade9	I	Promotion, hiring	Persons with at least five years' experience as a Junior Instructor (Non Tech.) at a polytechnic institute.	Persons who have completed a master's program at a recognized university with outstanding academic results, completed a master's and bachelor's program at the recognized university with a specific level of academic results, or alternatively have completed a master's program at a recognized university and have a specific level of academic results in a four-year program.
Junior Instructor (Tech.)	Grade10	II	Hiring		Persons who have completed an engineering diploma program with outstanding academic results and have at least five years teaching experience.
Junior Instructor (Non Tech.)	Grade10	II	Hiring	.	Persons who have completed a bachelor's degree at a recognized university with a specific level of academic results.
Physical Education Instructor	Grade10?	II	Hiring		Persons who have completed a four-year program at a recognized university or institute with a specific level of academic results.

Source: The Survey Team

In order to be hired to a proper teacher, applicants need to take and pass a civil service examination administered by the Public Service Commission (PSC). The examination includes verbal and writing test, and the difficulty depends on the position and the grade. The proportion of hiring versus promotion is generally 50-50 for Chief Instructor (technical/non-technical), Instructor (technical/non-technical), and Workshop Superintendent.

On the other hand, some teachers are adopted on a contract basis through development projects. If they would like to become regular teachers after the project, but in that case the Ministry of Education need to get approval from several ministries and department such as PSC, the Prime Minister's Office, the Cabinet Office and Ministry of Finance, and it may take a long time of about several years to ten years.

(3) In-service teacher training

At present, the mandatory in-service teacher training comprises a four-month basic civil service training provided at the NAEM and a five-day teaching methodology training provided by TTTC. For the NAEM course, the examination is taken at the BCS office, and when it has been decided to hire the applicant, they must attend the lectures. If being hired as a Junior Instructor (technical/ non-technical), the applicant must participate in a relevant training after advancing to the level of instructor. The timeframe for a teaching methodology training is not specifically set. Aside from mandatory trainings, other in-service teachers' trainings are also provided under the DTE and other DPs project irregularly. The contents of those training vary. For example, some of them aim to develop technical skills of teachers, whereas others on focus pedagogy. The duration of those training is also varied, from a few days to weeks.

3.6.5 Technical teacher training institutions

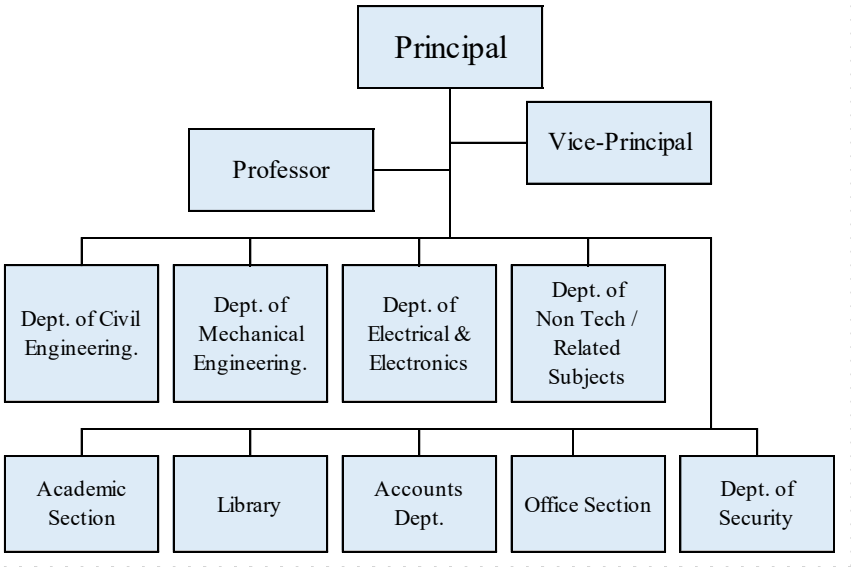
Training of technical teaching staff should progress in step with the above-mentioned technical education. Without this, it is impossible to establish a sustainable and a consistent technical education. Teacher training is carried out on a limited basis in Bangladesh owing to the constraints on resources. This section discusses TTTC, which is an institution that train the teachers of polytechnic institutes and TSCs, and VTTI; the latter used to have a similar function as that of TTTC.

(1) Technical Teachers Training College (TTTC)

TTTC conducts technical education diploma Programs, technical education bachelor's Programs, and short-term training courses for current teachers and people aiming to become technical teachers at polytechnic institutes, TSCs, and similar institutions.

History

TTTC began in 1960 as the teachers' wing of Dhaka Polytechnic Institute, but later separated as Technical Education College (TEC) in 1964 owing to its growth and development. After receiving the Official Development Assistance from the United Kingdom, the facility was renamed to Technical Teachers Training College or TTTC in 1967. As a result of further organizational change, it operated as a development department for the Dhaka University of Engineering & Technology between 1981 and 1985. Finally, in 1986, it emerged in its current form.



Source: Prepared by the Survey Team based on interviews

Figure 3-15 TTTC Organizational Chart

Departments and courses

As described above, the college has two Programs: a diploma and a bachelor's Program. Each of the Program is divided into the three Departments of Civil Engineering, Mechanical Engineering, and Electrical & Electronics Engineering. In addition to these three technical departments, there is a fourth department providing a basic non-technical undergraduate course, as well as an academic section, library, an accounts department, an office section, and a department security. Upon completion of the one-year diploma course, students acquire a diploma in technical education. A completion of the two-year bachelor's Program yields a bachelor's degree. The college also offers a short-term training, with subjects that include teaching methodology, electrical and electronics engineering, computer training, and information and communication technology (ICT) development. These are offered on a regular basis and run from three days to two weeks.

Admission requirements

Fresh graduates from polytechnic institutes and active teachers can learn together at TTTC. The graduates are designated 'Pre-Service', whereas the effective teachers, 'In-Service'.

Its annual capacity is 80 students for a diploma course in technical education and 40 students for a degree course in technical education. The exact number changes every year as per the requirement of the DTE. Students studying 'In-Service' have been selected out of active teachers working for the DTE. Meanwhile, in 'Pre-Service', students who passed the admission requirements are selected according to the rules of TTTC. The following table shows the requirements of various Programs. All require a minimum grade point average (GPA) of 2.5 and a successful completion of a diploma Program in a technical discipline.

Table 3-66 Admission Requirements and Capacity of Diploma Program

Department	Annual capacity (Year)	Admission requirements (common)	Admission requirements (by dept.)
Electrical and electronics	15	Minimum GPA of 2.5	Completion of an engineering diploma in electrical, electronics, or computer science disciplines
Mechanical Engineering	15		Completion of an engineering diploma in mechanical, energy, food, chemical, automotive, refrigeration, AC, or ceramics disciplines
Civil Engineering	15		Completion of an engineering diploma civil engineering or architecture disciplines

Source: TTTC, Diploma in Technical Education Admission Circular 2016-2017

Table 3-67 Undergraduate Admission Requirements

Department	Annual capacity (Year)	Admission requirements (common)	Admission requirements (by dept.)
Electrical and electronics	15	Completion of an engineering diploma course	Completion of an electrical & electronics engineering technical diploma course or equivalent
Mechanical Engineering	15		Completion of a mechanical engineering technical diploma course or equivalent
Civil Engineering	15		Completion of a civil engineering technical diploma course or equivalent

Source: TTTC, Diploma in Technical Education Admission Circular 2016-2017, and the Survey Team based on the hearing from TTTC lectures.

Faculty staff

In June 2016, there was a total 45 faculty staff; 17 of which (38%) were teaching staff. Technical teachers accounted for the majority of the teaching staff, with long standing at a polytechnic institute. The following table shows information on teacher positions and academic background of TTTC.

Table 3-68 Teacher Positions and Academic Background

Position			Academic background		
Category	Number	Ratio	Category	Number	Ratio
Associate Professor (Tech.)	8	17.6%	PhD	11	23.5%
Associate Professor (Non Tech.)	3	5.9%	Master's	18	41.2%
Assistant Professor (Tech.)	13	29.4%	Bachelor's	16	35.3%
Assistant Professor (Non Tech.)	8	17.6%			
Instructor (Tech.)	3	5.9%			
Instructor (Non tech.)	5	11.8%			
TT Instructor (Tech)	5	11.8%			
Total	45	100%		45	100%

Source: The Study Team

Number of students and male-to-female ratio

The total capacity of the Programs is 160 students: Diploma Program, 80 students; Bachelor's Program, 40 students; and Short-term Training Course, 40 students. Student enrolment is under full capacity. Reasons given for this are that the bachelor's Program is less socially valued than the same in a regular university, and the career track after graduation is limited to becoming a technical teacher

because of the Programs' specialisation. Thus, it lacks appeal to students as an educational track.[57] The table below shows student enrolment for five years, from FY 2011 to FY 2015, by course.

Regarding the trend in enrolment in the diploma Program, Electrical & Electronics Engineering had eight students for the 2011/2012 academic year; it increased threefold to 24 students for the 2015/2016 academic year. As for female students, there were six students for the 2011/2012 academic year in Pre-Service, which shifted to nine students for the 2015/2016 academic year. There was only one student for the 2012/2013 academic year, and no significant change thereafter. There were only five students in mechanical engineering for the 2011/2012 academic year; however, this increased nearly eight times to 39 students for the 2015/2016 academic year. For female students, there was one student for the 2011/2012 academic year in Pre-Service and four in the 2014/2015 academic year. Aside from this, no significant increase was observed. There were only five students in civil engineering for the 2011/2012 academic year; however, this increased by 400% to 19 students in the 2015/2016 academic year. For female students, there was a relatively large number, six students, in the 2015/2016 academic year in Pre-Service. However, there is little difference in the 2011/2012 to 2014/2015 academic years, with one student increasing to two students. Although all three departments have increased gradually their number of students each year, it is obvious that there is no increasing trend of female enrolment in technical education.

Table 3-69 Numbers of Students in Diploma Programs

Department	Year	Actual number of students				
		Pre-Service		In-Service		Total
		Male	Female	Male	Female	
Electrical and electronics	2011-2012	1	6	1	-	8
	2012-2013	8	1	-	-	9
	2013-2014	11	8	1	-	20
	2014-2015	9	6	2	-	17
	2015-2016	13	9	-	2	24
Mechanical Engineering	2011-2012	4	1	-	-	5
	2012-2013	6	1	-	-	7
	2013-2014	9	1	2	-	12
	2014-2015	4	4	4	1	13
	2015-2016	21	-	17	1	39
Civil engineering	2011-2012	2	1	1	1	5
	2012-2013	6	2	-	1	9
	2013-2014	8	2	-	2	12
	2014-2015	6	2	1	1	10
	2015-2016	11	6	-	2	19

Source: The Survey Team

Regarding the enrolment trends in undergraduate Programs, the Department of Electrical & Electronics Engineering had four students in the 2011/2012 academic year, and then the number increased to 11 in the 2014/2015 academic year, but reverted to 4 in the 2015/2016 academic year. For female students, six students enrolled in the 2014/2015 academic year in Pre-Service, but the number of female enrollees fluctuated from two to three in other years. Only one student enrolled in mechanical engineering in the 2011/2012 academic year, and then became nine in the 2015/2016 academic year. There were almost no female students, with only one between the 2011/2012 and the 2015/2016 academic years. The number of students enrolled in civil engineering in the 2011/2012 academic year was one, and then increased each year to eight in the 2015/2016 academic year. There was little change in female students, which fluctuated between one and two students between the 2011/2012 and the

[57] Based on information from the DTE and TTTC

2015/2016 academic years. Although the number of students in all three departments had increased gradually, it is obvious that there is no increasing trend in female enrolment in technical education.

Table 3-70 Numbers of Students in Undergraduate Programs

Department	Year	Actual number of students				
		Pre-Service		In-Service		Total
		Male	Female	Male	Female	
Electrical and electronics	2011-2012	1	3	-	-	4
	2012-2013	-	2	1	-	3
	2013-2014	1	-	2	-	3
	2014-2015	3	6	1	1	11
	2015-2016	-	2	2	-	4
Mechanical Engineering	2011-2012	1		-	-	1
	2012-2013	1	1	5	-	7
	2013-2014	4	1		-	5
	2014-2015	6	-	2	-	8
	2015-2016	0	1	7	1	9
Civil engineering	2011-2012	1	1	-	-	2
	2012-2013	-	1	6	-	7
	2013-2014	1	1	2	-	4
	2014-2015	5	1	1	2	9
	2015-2016	4	2	1	1	8

Source: The Survey Team

Budget

The operating budget is allocated by the DTE. The following table shows annual budgets for the past five years. Since the formation of the NEP2010, the budget was approximately 15 million BDT in 2011/2012 fiscal year, and dropped to about 13 million BDT in the following year. The budget continued to rise each year, reaching approximately 30 million BDT in the 2015/2016 fiscal year or twice the budget in 2011/2012. This illustrates the increase in funding for technical education and technical human resource development.

Table 3-71 TTTC annual budget (fiscal 2011 -2015)

FY	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
Budget (BDT)	15,362,000	13,518,000	21,939,000	25,010,000	30,878,000

Source: The Survey Team based on budget data provided by TTTC

Tuition fees

Tuition and other fees for diploma Programs for the first semester amount to 4,645 BDT , which include 150 BDT(25 BDT/month for six months) for tuition, 700 BDT for lab improvement fee, BDT 1,000 for library improvement fee, and 500 BDT for practical exam fee.[58] Tuition and other fees for undergraduate Programs for the first semester amount to 7,245 BDT.[59]

Scholarships and financial assistance

The government maintains a financial assistance Program that grants students in diploma Programs up to 3,300 BDT in financial assistance per annum. Students in undergraduate Programs may likewise receive up to 3,900 BDT per annum. Eligibility for financial assistance depends on academic achievement and assessment; however, the top 65% and 50% academic achievers among diploma and undergraduate Programs, respectively, receive automatically the assistance.

[58] Referenced from 'Diploma in Technical Education Course, Admission Circular', obtained from VTTI
[59] Referenced from 'Diploma in Technical Education Course, Admission Circular', obtained from VTTI

Curriculum and syllabus

The formulation and revision of the curriculum is supervised by the competent body responsible for each Program. BTEB and Institute of Education and Research (IER) have jurisdiction over the formulation and revision of curriculum for diploma and undergraduate Programs, respectively. However, the role of University of Dhaka in this regard is only to give approval after an inspection and a practical work upon the implementation of developing the curriculum by the committee headed by the principal of TTTC. The 15-member committee is composing of professors or experts from the University of Dhaka, BUET, and DUET; principals of polytechnic institutes; and experts from the industry.

The curriculum of TTTC had been revised regularly in the 1990s when TTTC received an Official Development Assistance from the United Kingdom, but no major revisions were made since after the assistance ended. Suitable investment is needed to carry out curriculum revisions, but there are relatively few students compared with the many polytechnic institutes and technical high schools. This is coupled with the fact that it is the only technical teacher training college in the country. As a result, there is little priority placed on revision work.

The curriculum of diploma Programs comprises compulsory and specializations subjects on electrical and electronics, mechanical, and civil engineering. The first semester compulsory subjects for teacher training include 'Instructional Planning and Methodology', 'Educational Psychology', and 'Educational Technology'. Students are expected to learn the basics of educational theory and teaching methodologies. Teacher training Programs in Japan also have courses similar to 'Educational Psychology' and 'Teaching Plans'. In the second semester, students take courses, such as 'Communication in Teaching and Learning' and 'Testing and Evaluation Methods'. There is also a course titled 'Technical Education in Bangladesh', a 200-hour course that is worth four credits and positioned as among the most important compulsory subjects in technical education. Teaching practice is also a part of the curriculum. In a similar manner as in Japan, students apply what they learned at the teacher training facility to real-world settings.

Three fields of specialization have been developed, with courses presumed to reflect the demands of the local industry and human resource development. Most subjects in the three disciplines are configured with 50 points for practicum and 100 points for theory. The allotment of points is the same for both compulsory and regular subjects. All courses have an elective subject system that deals with basic content. A total of 16 credits must be obtained in compulsory subjects in the first semester and 19 credits in the second semester. There are three credits of elective subjects in the student's field of specialization in each first and second semester. Although there are fields of specialization, in actuality, the subjects focus on teacher training, and there is little highly specialized content.

Similar to the diploma Programs, the curriculum for the bachelor's Programs consist of compulsory and specialization subjects on electrical and electronics, mechanical, and civil engineering. The first-year compulsory subjects for teacher training include 'Theories and Principles of Education', 'Curriculum Studies', and 'Educational Measurement & Guidance'. Students are expected to learn the basics of educational theory and curriculum development. A well-developed curriculum is extremely important in education and, accordingly, subjects are configured with an emphasis on curriculum. Subjects, such as 'Technical Education in Bangladesh', in first semester of the diploma Program connect with 'Modern Trends in TVET' in second year. Compulsory subjects are configured with two to three credits per subject, which is the same as in the diploma Program.

With the same goal as in the diploma Program, three subjects in the field of specialization reflect the demands of the local industry and human resource development. Most subjects in the three disciplines are configured with 50 points for practicum and 100 points for theory. The allotment of points is the same for both compulsory and regular subjects. This is the basic content of all courses. There are a total of 19 credits worth of compulsory subjects in the first year, and elective subjects are offered in the second year. Teacher training in the bachelor's Program offers slightly more variety in elective subjects.

The curriculum of bachelor's Programs was formulated in 1990 and is being used until today or 26 years later. The curriculum includes teacher-training subjects that form the core learning, subjects in the student's field of specialization, and ICT-based subjects intended to address changing times. The content of each class and the method used to deliver it to students are important. Although details were

not examined in the study, considering the fact that several years have elapsed since the last revision, it is assumed that there is a need for the appropriateness of the curriculum's structure and content to be examined closely.

Table 3-72 Classes/Subjects in Semesters 1 and 2 of the Diploma Program

1) Compulsory subjects

	Subject name	Unit			Allocation of marks		Total
		Theory	Practicum	Unit	Practical	Theory	
First Semester	Mathematics I	2	0	2	0	100	100
	Science	2	3	3	50	100	150
	Instructional Planning & Methodology	3	3	4	50	150	200
	Educational Psychology	2	3	3	50	100	150
	Educational Technology	1	3	2	50	50	100
	English I	1	2	2	50	50	100
Second Semester	Testing and Evaluation in Education	2	3	3	50	100	150
	Technical Education in Bangladesh	3	3	4	50	150	200
	Communication in Teaching and Learning	2	0	2	0	100	100
	Mathematics II	2	0	2	0	100	100
	Mechanical Engineering	2	3	3	50	100	150
	Computers	0	3	1	50	0	50
	English II	1	2	2	50	50	100
	Practice Teaching	0	0	2	100	0	100
Total		23	28	35	600	1,150	1,750

2) Electrical & Electronics Engineering Dept.

	Subject name	Unit			Allocation of marks		Total
		Theory	Practicum	Unit	Practical	Theory	
First Semester	Elective subjects						
	Measurements and Networks	2	3	3	50	100	150
	Basic Electronics	2	3	3	50	100	150
Second Semester	Elective subjects						
	Mechanics and Automation	2	3	3	50	100	150
	Fluid Mechanics	2	3	3	50	100	150

3) Mechanical Engineering Dept.

	Subject name	Unit			Allocation of marks		Total
		Theory	Practicum	Unit	Practical	Theory	
First Semester	Elective subjects						
	Thermodynamics I	2	3	3	50	100	150
	Manufacturing Process						
	Thermodynamics I	2	3	3	50	100	150
	Fluid Mechanics						
Second Semester	Elective subjects						
	Thermodynamics II	2	3	3	50	100	150
	QC and Material Handling						
	Refrigeration and Air Conditioning	2	3	3	50	100	150
	Automobile engineering						

4) Civil Engineering Dept.

	Subject name	Unit			Allocation of marks		Total
		Theory	Practicum	Unit	Practical	Theory	
First Semester	Elective subjects						
	Geotechnical Engineering I	2	3	3	50	100	150
	Engineering materials	2	3	3	50	100	150
Second Semester	Elective subjects						
	Geotechnical Engineering II	2	3	3	50	100	150
	Architectural Professional Practice	2	3	3	50	100	150
Total		8	12	12	200	400	600

Table 3-73 Classes/Subjects in Semesters 1 and 2 of the Bachelor's Program

1) Compulsory subjects

	Subject name	Unit			Allocation of marks		Total
		Theory	Practicum	Unit	Practical	Theory	
First Year	Theories and Principles of Education	2	0	2	25	75	100
	Curriculum Studies	3	0	3	50	100	150
	Educational Measurements and Guidance	2	3	3	50	100	150
	Mathematics I	3	0	3	50	100	150
	Engineering Science	2	3	3	50	100	150
	English	2	0	2	25	75	100
	Computer Applications and Programming	2	3	3	50	100	150
Second Year	Educational Management	2	0	2	25	75	100
	Modern Trends in TVET	2	2	2	25	75	100
	Mathematics II	3	0	3	50	100	150
	Elective subjects						
	Economics	2	0	2	25	75	100
	Sociology						
	Practice Teaching	-	0	2	100	-	100

2) Electrical & Electronics Engineering Dept.

	Subject name	Unit			Allocation of marks		Total
		Theory	Practicum	Unit	Practical	Theory	
First Year	Electronics & Control System	2	3	3	50	100	150
	Fields, Networks & Machines	2	3	3	50	100	150
Second Year	Power System Analysis	2	3	3	50	100	150
	Microprocessors and Their Applications	2	3	3	50	100	150
	Elective subjects						
	Advanced Electrical Machines	2	3	3	50	100	150
	Generation, Transmission & Distribution of Electrical Power						
	Communication Engineering						
	Semiconductor Devices	2	3	3	50	100	150
	Project & Thesis	0	6	2	75	25	100

3) Mechanical Engineering Dept.

	Subject name	Unit			Allocation of marks		Total
		Theory	Practicum	Unit	Practical	Theory	
First Year	Mechanics of Materials	2	3	3	50	100	150
	Mechanics of Machinery	2	3	3	50	100	150
Second Year	Industrial Management	2	3	3	50	100	150
	Fluid Dynamics & Machinery	2	3	3	50	100	150
	Machine Design	2	3	3	50	100	150
	Elective subjects						
	Manufacturing Processes	2	3	3	50	1	1
	Applied Thermodynamics						
	Heat, Mass & Momentum Transfer						
	Project & Thesis	0	6	2	75	25	100

4) Civil Engineering Dept.

	Subject name	Unit			Allocation of marks		Total
		Theory	Practicum	Unit	Practical	Theory	
First Year	Elective subjects						
	Theory of Structure	2	3	3	50	100	150
	Architectural Technology	-	-	-	-	-	-
	Water Resource Engineering	2	3	3	50	100	150
Second Year	R. C. C & Prestressed Concrete	2	3	3	50	100	150
	Elective subjects						
	Public Health and Hygiene	2	3	3	50	100	150
	Environmental Engineering						
	Transportation Engineering	2	3	3	50	100	150
	Indeterminate Structural Analysis and Design	2	3	3	50	100	150
	Project & Thesis	0	6	2	75	25	100

Textbooks

The committee organised under the education faculty of the University of Dhaka is responsible for the textbooks used in the technical education degrees in TTTC, whereas BTEB is responsible for those in diploma courses on technical education.

The process of developing textbooks for diploma courses in technical education in TTTC is the same as for polytechnic institutes and TSCs. An organised committee, which has around five members, including BTEB officials, instructors, and experts from the industry, conduct workshops to review and compare the existing contents of the textbooks with those in other countries. In developing the textbooks of degree courses in TTTC, the committee under the education faculty of University of Dhaka is responsible for getting approval from the University of Dhaka. The process is the same with that of the diploma courses in technical education.

In recent years, development activity of the textbooks for both diploma and degree courses has not been implemented, and there is no plan to perform it at presence. According to the professors of TTTC, textbooks for TTTC had been revised in the late 1990s and, thus, considered old for current students, but the printing process was also closed. Most professors and lectures distribute copies of certain pages of reference books as reference for students, or students copy them by themselves. Teachers also use PowerPoint slides, demonstration boards, activity sheets, and charts in teaching.

School facilities

TTTC has no campus of its own and its main building is shared with the Glass and Ceramic Institute. A new three-story building was constructed beside the old building and is an annex of TTTC, through the Skill Development Project funded by the Asian Development Bank. The ground floor of the main building is the space for Glass and Ceramic Institute, and the second and third floors are the main spaces of TTTC. In the second floor, there are classrooms, practical training rooms, and a library stocked with approximately 8,100 books and computers. More classrooms and practical training rooms are found on the third floor. The annex building which is been newly built. The annex building is almost entirely

unused, as tables, chairs, or other classroom equipment has not been purchased and could not be easily moved between buildings.

Equipment

Hence, there is only one piece of equipment or apparatus available in most of the departments. About 70% to 80% of the equipment is in disrepair, leading to the conclusion that the school does not maintain the equipment required to carry out practical work effectively. In light of TTTC's purpose of training teachers, technical teachers who are unable to practice adequately what they learned would be unable to provide practical guidance sufficiently at their workplace. Thus, students and learners would not be able to learn skills sufficiently. From this situation, one can infer that the school's challenge lies in ensuring that it maintains the minimum required equipment and that the teaching staff members are taught about the appropriate methods to maintain them in proper working order.

In the photos shown below are some of the training settings, facilities, and equipment at TTTC.

	
Library	PC class
	
Practicum	Practicum
	
Practicing equipment	Equipment storage

Reasons for starting study in and expectation for TTTC

Fifty-seven TTTC students in diploma and degree courses and lecturers were interviewed for this survey. The information on the students is provided below.

Table 3-74 Information of Interviewee of TTTC

	Course	Department	Sex	Number
In-Service	Degree course	Mechanical	Male	9
		Mechanical	Female	1
		Civil	Male	1
		Civil	Female	2
	Diploma course	Mechanical	Male	13
		Mechanical	Female	1
		EEE	Male	2
		EEE	Female	1
Pre-Service	Degree course	Civil	Male	2
		Civil	Male	2
	Diploma course	Mechanical	Male	8
		Civil	Male	1
		Civil	Female	3
		EEE	Male	6
		EEE	Female	5
Total				57

Source: The Survey team

TTTC students were asked of their reason for choosing to study in TTTC. Of the total 27students who study in Pre-Service course, 19 answered that they wanted to be teachers in TVET institutions. Ten students wanted to study pedagogy; six said their parents recommended it; four said the tuition was cheaper than a university; and four said the admission exam and process were easier than those of a university. Regarding the expectations for TTTC, students said that they wanted to study new knowledge, develop their technical skills, and have a job opportunity by studying in TTTC.

Of the total 31 students who study in In-Service, 16 said they wanted to obtain and improve their knowledge and skills of pedagogy, whereas 15 answered that they wanted to learn knowledge and skills of technical subject. Nine students answered that they wanted to learn about new technology and knowledge. All students who study In-Service are actual teachers who currently work at polytechnic institutes, and they wanted to know how to improve their educational performance and create study environments in which students cooperate with each other, as well as how students acquire their technical skills in classroom. They also wanted to learn how to solve the problems they face in their teaching fields. Regarding the expectation for TTTC, students In-Service course said that they wanted to study new knowledge, develop their technical skills, and obtain an educational opportunity to be good teachers.

Students' demand estimated by lectures

The interviewed lecturers believed that students decided to study in TTTC to be teachers in TVET institutions. However, the main intention of their students is to learn new technology and develop technical skills and knowledge. Only one of the four lecturers answered that the students intended to study pedagogy as their intention to study in TTTC. Moreover, for the question on what is the most important for students, three lecturers answered technical skills; the other answered teaching skill. In the educational field in TTTC, the weakness of students seems to be skills and knowledge related technology rather than pedagogy.

Teaching ability of lectures

The results of the interview with In-service students who currently work for TVET institutions indicate that the challenges these teachers are facing in the field include ways to improve the educational performance of students, create a study environment in which encourage teamwork among students, and encourage students to study. Therefore, they wanted to learn how to solve these challenges.

However, when the survey team visited TTTC, no activities were observed in which students could be assisted in improving or solving these challenges. Moreover, there seemed to be no good instruction to approach them.

In the TTTC curriculum, project work is mandatory for students of degree courses. This project work seems to be a good opportunity for solving problems using the skills and knowledge that they learn and for working with a team. However, the project work is similar to a craft, and it was estimated that their project work is not particularly useful.

(2) Vocational Teachers Training Institute (VTTI)

History

VTTI was founded in 1982 as Bangladesh's only dedicated vocational training teacher institute. VTTI used to conduct training for teachers working in Vocational Training Institutes (VTIs), which are predecessor of the present TSCs. After 1995 when VTIs transformed into TSCs, VTTI needed to change its role. Its previous role include the following: training teachers who work in vocational training field; collaborate with companies through vocational training; develop vocational training Programs; provide training courses for active teachers and company staff; conduct R&D on curriculum and teaching methodologies related to vocational training; and manage information, such as statistics. The trainings provided to teachers were Certificate courses in vocational education, diploma courses in vocational education, and short courses for teachers.

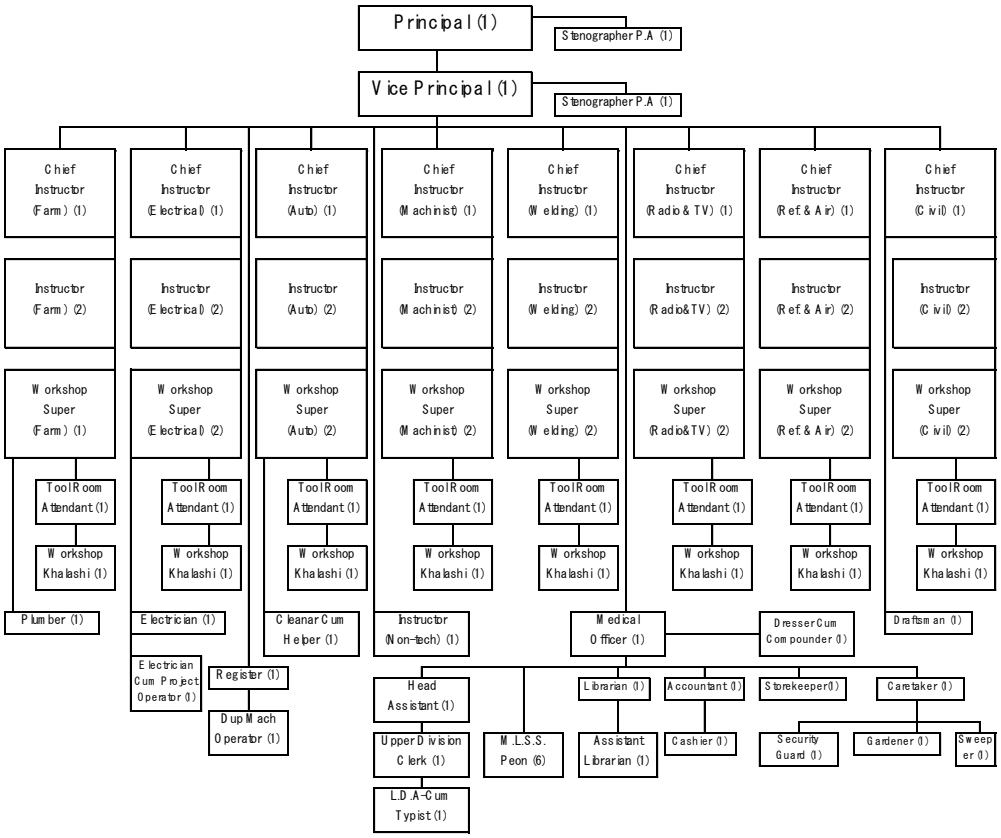
Despite its official role, after the implementation of the SSC vocational course and the transformation of VTI into TSC, the minimum educational requirement to be vocational instructors was modified from SSC to diploma level. The Certificate in vocational education is pointless under this condition, and it was discontinued in 1994. The diploma course in vocational education was also closed in 2000.

After that, VTTI conducts short training courses for teachers irregularly and provides vocational training for young generations. Moreover, to improve the access for TVET and use facilities and equipment of VTTI, VTTI started its diploma engineering courses on six technologies in August 2016.

Organisational structure

The figure below shows VTTI's organizational structure[60]. Training departments operate under the direction of a principal and a vice principal. Each department has a chief instructor who is responsible for vocational training instructors and training guidance personnel. Training guidance personnel are also responsible for managing the equipment. The administration office encompasses areas, such as the finance department and library. The number of teaching staff members is set at 35, but there were only 12 in October 2016 because its function was scaled down. Only four regular teachers and eight teachers were appointed from TSCs. The number of demonstrator staff is set at 76, but there were only 33 in 2016.[61]

[60] Based on 'Welcome to Vocational Teachers Training Institute (VTTI) Bogra', obtained from VTTI
[61] Based on 'Welcome to Vocational Teachers Training Institute (VTTI) Bogra', obtained from VTTI



Source: Welcome to Vocational Teachers Training Institute (VTTI) of Bogra (VTTI)

Figure 3-16 Organisational Structure of VTTI

Training courses

The following courses had been provided regularly by VTTI. The courses covered basic area and subjects of TVET and had a strong link to industrial development. These courses discontinued in 1999.

Table 3-75 Regular Course which used to be opened in VTTI

Course and duration	Admission Requirement	Sl. No.	Trade and Course
Diploma in vocational education (1 Year)	Certificate in vocational education	1	Automotive
		2	Carpentry
		3	Electrical
		4	Farm Machinery
		5	Machinist
		6	Radio-TV
		7	Refrigeration
		8	Welding
Certificate in vocational education (1 Year)	SSC/ SSC Vocational (National Skills Standard Ⅱ)	1	Automotive
		2	Carpentry
		3	Civil Drafting
		4	Electrical
		5	Farm Machinery
		6	Machinist
		7	Radio-TV
		8	Refrigeration and Air Conditioning
		9	Welding

Source: A Report on enrollment analysis in TVET under Bangladesh Technical Education Board

Curriculum

VTTI's previous roles included the development of vocational training Programs as well as research and development of curriculum and teaching method related to vocational training. But at presence, VTTI does not have this function.

BTEB develops the curriculum and syllabus of VTTI. The process is the same to that of TTTC. The curriculum of diploma and certificate courses was developed in 1999; there has been no concrete plan to revise them since then.

Textbooks

BTEB develops the textbooks of VTTI. The process is the same to that of polytechnic institutes and TSCs. The responsible committee comprises BTEB officials, instructors, and experts from the industry. It reviews teaching materials and conducts workshop to develop or revise the textbooks. This role has not been performed recently, and there has been no concrete plan.

Overview of Facility and Equipment

The table below presents an overview of the facility and equipment owned by VTTI. According to the principal and department heads of VTTI, there was enough space for classrooms and workshops considering the current enrolment. If the number of students were to increase in the future, VTTI could adjust to the situation by allocating more space. The area of the site offered more than enough space for utilization. Each training area was equipped with equipment storage where measurement-related equipment was stored in many racks.[62]

[62] Based on 'Welcome to Vocational Teachers Training Institute (VTTI) Bogra', obtained from VTTI

Table 3-76 Overview of Facilities and Equipment at VTTI

Facilities and equipment	Amount
Site area	15.62 acres (9,100 sq. m)
Practice area	8 rooms
Laboratory	1 room
Library	1 room
Classroom	8 rooms
Cafeteria	1 room
Men's dormitory	Two buildings (160 person capacity)
Women's dormitory	One building (40 person capacity)
Auditorium	1 room (750 seats)
Athletic field	1

Source: Prepared by the Survey Team based on the Welcome to Vocational Teachers Training Institute (VTTI) of Bogra (VTTI) , and result of interview conducted by local consultant

Challenges

The challenges of which VTTI is aware include implementation of teacher training that has not been carried out in recent years; securing of teachers capable of providing instruction at VTTIs; and maintenance of equipment, apparatus, and tools.[63] Particularly, VTTI is concerned that teachers are not obligated to undergo teacher training and practice. As one can become a teacher in Bangladesh only by having a diploma in engineering, one could, for instance, become a technical teacher by taking a teacher-training Program in Japan without actually understanding and mastering the professional ethics, theoretical and academic content, or required teaching methodology.

According to the principal of VTTI, he proposed to re-start the new diploma and degree courses for teachers, and VTTI would serve as the main institution. The role and the status of VTTI should be reconsidered with the current situation and the entire system of TVET.

The images below present VTTI's lecturer and training settings, equipment, and facilities.

Exterior

PC Course (learning PC operation)

Practicum

Practicing equipment (drill press)

[63] Based on 'Welcome to Vocational Teachers Training Institute (VTTI) Bogra', obtained from VTTI

	
Practicing equipment (electronics)	Tool storage

3.6.6 Achievements in Technical Education and Future Plans, 2009-2015

Achievements in technical education and plans of the DTE are described below.[64]

(1) Achievements

According to the DTE, achievements in government policy-based technical education between 2009 and 2015 include daily operation and management, enhancement of tangible aspects to improve access (i.e. infrastructure improvement), introduction of a dual education system, and improvement of intangible aspects (i.e. skills development).

The government's target in improving access includes a plan to increase enrolment. If the survey team use 100% to represent the entry rate into all institutions including general education Programs, the government's plan is to boost enrolment in TVET institutions from the current 8% to 20% by 2020, 25% by 2025, and 30% by 2030.[65] In addition to existing number of students, the Ministry of Education is developing an environment that will make it possible to accept an additional 100,000 students. To improve the ability to accept students, it is planning and implementing improvements to existing technical education facilities and constructing new ones. More specifically, between 2009 and 2015, 64 technical schools and colleges nationwide were rebuilt or repaired; three new engineering colleges were built in Mymensingh, Sylhet, and Rangpur districts, and four polytechnic institutes were built in Magura, Kishoreganj, Chapainawabganj, and Moulvibazar districts. Another engineering college was also constructed after 2015 in Barisal district. There are also plans to build 100 new TSCs nationwide at the sub-district and upazila level. Bangladesh aims to improve access to technical education nationwide by increasing the total number of institutions. Institutionally, efforts are also being focused on improving the entry rates of students to technical education Programs. Since 2005, a dual-shift system has been put in place at polytechnic institutes and technical schools and colleges, comprising a morning and an afternoon shift. This revision was implemented to maximise the number of students able to attend in a single day.

In terms of scholarships for students and learners, scholarships have been provided for approximately 24,000 students at 43 public and 50 private polytechnic institutes.

The DTE is developing policies and providing the support shown in the table below in an aim to improve the image of technical education among females and generate interest in enrolment into Programs. In the Sixth Five-Year Plan, work has progressed on efforts that include building women's dormitories at Dhaka Polytechnic Institute, Dhaka Mohila Polytechnic Institute, and TTTC.

In terms of intangibles or soft aspects, the country has formulated the National Skill Development Policy 2011, established its committee, studied and implemented the NTVQF, and put gender-friendly TVET policies in place. The government has also implemented teacher training for 420 prospective teachers in Singapore and another 72 in the Philippines.

[64] Cited from 'Technical Education Prosperous Bangladesh'. DTE

[65] Cited from 'Technical Education Prosperous Bangladesh'. DTE

(2) Future Plans

The DTE has already developed a number of plans for the future. Plans for tangible improvements, such as infrastructure, include improving facilities and equipment to support the increased enrolment of 100,000 additional students; establishing TVET comparable to that of polytechnic institutes overseas; building eight technical schools and colleges for women; and creating four polytechnic institutes for women. Plans for intangible improvements, such as human capacity building, include providing training to boost quality assurance and the technical skill of teachers so TVET training can be carried out effectively; establishing a Centre of Excellence (COE) for the apparel sector, which has been the driving force behind Bangladesh's production industry; and building capacity in COE's teachers and staff.

The following table shows projects that are being planned or underway based on the DTE's development plan. A variety of projects intended to support and promote the development of TVET in Bangladesh the currently either being planned or underway.

Table 3-77 Summary of Technical Education-related Projects

Sl.	Project name	Status
1	Skills and Training Enhancement Project. (STEP) * Supported by WB	On-going
2	Establishment of Barisal Engineering College Project.	On-going
3	Bangladesh Skills for Employment & Productivity Project. (B-SEP) * Supported by the Government of Canada	On-going
4	Establishment of 100 Technical School Project.	On-going
5	Skills and Employment Program in Bangladesh (SEP-B). * Supported by SDC and DFID	On-going
6	Creating Facilities for Additional One Lakh Students Enrolment in Different Polytechnic Institutes.	Awaiting approval
7	Establishment of 389 Technical School & Colleges in Upazilla level.	Awaiting approval
8	Establishment of 23 world class Polytechnic Institutes in 23 Districts	Awaiting approval
9	Establishment of four Engineering Colleges at Chittagong, Khulna, Rajshahi and Rangpur Division.	Awaiting approval
10	Strengthening Land Survey System Education in Bangladesh.	Awaiting approval
11	Modernization of TTTC and Improving the Education System in the Polytechnic Institute.	Awaiting approval
12	Establishment of 8 Mohila Technical School and college at Eight Divisions.	Awaiting approval
13	Modernisation of Teachers Training Institutions.	Awaiting approval
14	Establishment of National Institute of Training and Research for Technical Teachers (NITRTT).	Awaiting approval
15	Establishment of 4 Mohila Polytechnic Institute at four Divisions.	Awaiting approval

Source: DTE website (http://techedu.gov.bd/site/page/fd7ee5f6-4b38-43f6-a5 cb-de24769bec02/Projects)

As described above, Bangladesh has a comprehensive plan for strengthening TVET in terms of government policy, measures, and implementation sites. Not only it has steady progress on these demanded, but also it is imperative to secure the budget required to carry out the plans. It is believed that the government's policy objective in terms of short-term goals is to boost the percentage of students who enrol in technical education to 20% by 2020. However, the country has also set a goal of becoming a Middle Income Country by 2021. Among its major policies, there will be a need for greater collaboration between academia and industry to develop human resources in Bangladesh.

3.6.7 Recent trends in technical education

Improvement in the environment surrounding technical human resources is underway owing to the National Skill Development Policy established in 2011. In connection, six levels have been established for technical human resources sent to the industrial sector through the NTVQF. Work is progressing in collaboration with industry groups on a system under which one's remuneration and other benefits increase as their technical proficiency level increases. This aims to connect technical training work more closely with industrial needs by using this to bring the skills that industry demands to the surface and through a skills quality assurance and industry sector standard qualification systems that are based on competency.

In support of this trend, DPs such as the WB, International Labour Organization (ILO), the European Union (EU), and Canadian International Development Agency (CIDA), are supporting Bangladesh government initiatives in developing a variety of projects. One of the leading support projects is the TVET Reform Project, supported by the EU and ILO. In addition to implementing structural reform in teaching and operating organisations related to technical education, TVET reform also encompasses collaborations with private (non-government-affiliated) educational institutes that cover a large segment of the population. This action makes it possible for private educational institutions to teach using the same curriculum as government-affiliated institutions. It has raised the quality of technical education for NGOs and private concerns that previously had inferior quality, and has invigorated initiatives to build educational tracks to university.

3.6.8 Existing support and plans of other DPs

Government reviews of technical education and vocational training have been carried out based on the TVET Reform Project, which has been in operation since 2008, leading to the formulation of the National Skill Development Policy 2011. The government has been working towards expanding access to realise the development plan in a manner that embodies the intent of the NEP 2010 and National Skill Development Policy 2011. That being said, there are still significant challenges in terms of how to provide quality technical education. Donors are taking action to improve the quality of education through efforts, such as introducing and spreading awareness of the competency standard, NTVQF, and by implementing short-term training for teachers.

Table 3-78 List of Donor Project related to TVET

Implement Organisation	Development Partner	Project	Term	Budget	Activity
DTE, MOE, BTEB, BMET	EU, ILO	TVET Reform Project in Bangladesh	End Jan. 2008-Dec. 2015	EU US$ 2.77 million	**1) Review and strengthen TVET policies** ・Formulated National Skill Development Policy 2011 **2) Enhance the quality of TVET** ・Introduce NTVQF and promote the function of Curriculum ・Development Committee effectively **3) Enhance the skills and knowledge of teachers** ・Generate and Develop Training materials **4) Strengthen the coordination with industry Sector** ・Establish NSDC and ISC

Implement Organisation	Development Partner	Project	Term	Budget	Activity
DTE, MoE	ADB, SDC	Skill Development Project (SDP)	End Jun.2008-Jun. 2015	GoB US$10.70 million ADB US$50.00 million SDC US$3.60 million	**1) Enhance relevance and improve the access** ・Strengthen the coordination with industry Sector ・Develop NTVQF ・Review and Develop CBT courses ・Train resource person for NTVQF **2)Improve the access for qualified TVET** ・Provide in service training for teachers ・Formulated FYP for TTTC and VTTI ・Provide training for teachers of TTTC and VTTI ・Strengthen TVET institutions ・Establish research and development department at DTE ・Review and formulate development plan **3)Provide training based industry sector needs** ・Provide training for Garments, Light Engineering and Construction Sector **4) Strengthen the management system** ・Strengthen DTE and PIU
DTE, MOE	WB	Skills Training Enhancement Project (STEP)	On going Jul. 2010-Jan. 2019	GOB US$29.8 IDA US$ 179.00 million MDTF US$16.7	**1) Enhance quality and relevance** ・Provide grant for TVET Institution ・Provide stipend for students of TVET Institution ・Assist to start CBT courses **2) Pilot Project** ・Support for ISC and NSDC ・Develop SSC Vocational **3) Capacity Building of TVET Institution** ・Strengthen DTE, BTEB, BMET Management and Provide Training **4) Project Management** ・Establish PIU ・Strengthen Management Capacity
MoF	ADB, Switzerland	Skills for Employment Investment Program (SEIP)	On going Jul. 2014-Dec. 2017	US$ 1,070 million	**1) Provide Training based on Industry Sector Needs** ・Provide Training for prior 6 sectors **2) Strengthen Management and QC System** **・Capacity Building for ISC, BTEB, DTE** ・Develop TVET Institutions ・Train resource person for evaluation of NTVQF **3) Strengthen for TVET Institutions** ・Formulated system for policy making ・Promote coordination with Industry Sector **4) Effective Program Management** ・Develop the account system ・Develop Data management
DTE, MOE	Canada, ILO	Bangladesh Skills for Employment and Productivity (B-SEP)	Jan 2014-Dec. 2018	Canada CAD 19.5 million (Grant)	**1) Capacity Development for TVET Institution** ・Implement NTVQF and train resource persons **2) Implement NTVQF and train persons** 3) Develop Industrial competencies ・Promote coordination with Industry Sectors ・Have workshop **4) Promote fairness and improve accessibility**

Source: The Survey Team

Note: ADB: Asian Development Bank, BMET: Bureau of Manpower, Employment and Training, BTEB: Bangladesh Technical Education Board, DTE: Directorate of Technical Education, ILO: International Labour Organization, MoE: Ministry of Education, SDC: Swiss Agency for Development and Cooperation, WB: World Bank, MoF: Ministry of Finance

3.7 Higher Education (Engineering Education in Universities)

Higher education comprises university education and professional education (medical, art, dressmaking, etc.) There are public, private, and international universities/college/institutions. Courses are offered as three- to four-year bachelor's Programs,[66] one- to two-year master's Programs, and one- to three-year doctorate Programs. This section will provide an overview of university education as a whole and examples related to engineering education in some universities.

3.7.1 Government Bodies related Higher Education

(1) University Grant Commission (UGC)

The UGC is an organization that oversees universities. It was established by Presidential Decree no. 10 in 1973, and the committee is specified to consist of one chairman, five full-time members, and nine part-time members.

The UGC covers a broad range of functions. They include education promotion and coordination of national and private universities, monitoring and maintaining of university education standards, evaluation of the necessity of national university budgets, and university-related proposals to the government. It also has a role in representing universities to the government and Ministry of Education in order to maintain the independence of universities from the government.

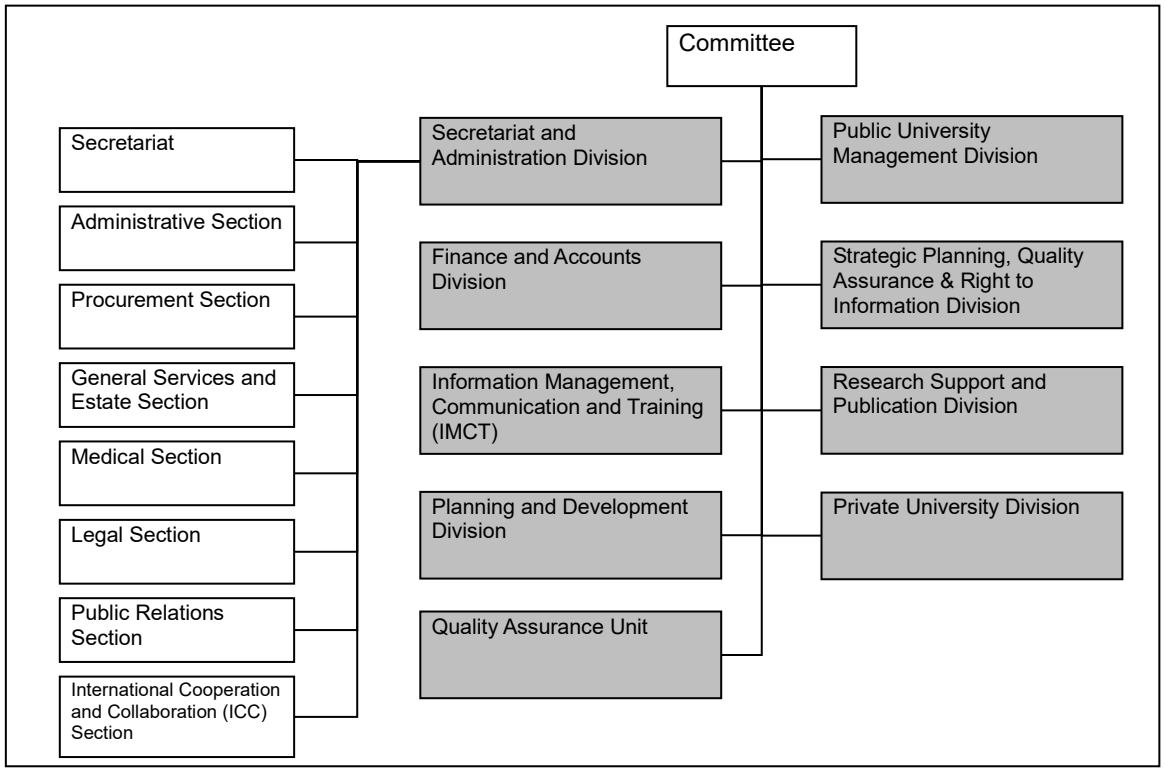
Regarding national universities, it plays the role of assessing the budgetary requests of each university, requesting and negotiating with the government, receiving the decided budget from the government, and allocating funds to the national universities.

Budget allocation is not done for private universities, but the commission plays a role in guiding, monitoring, and regulating them.

In this way, the UGC stands in a position between the government and universities as a coordinator, and prevents intervention of the government in higher education institutions, and prevents the government from dealing directly with requests from higher educational institutions. Developing educational policies is the role of the government and the Ministry of Education, and the UGC provides the documents necessary for policy development to the Ministry of Education. As long as it is within the limits of the government's policy, the UGC's activity for reconstruction and development of higher education is unconstrained.

The organization chart is shown in the figure below. The Quality Assurance Unit was established by HEQEP in 2014.

[66] The duration varies depending on the faculty.



Source: Prepared by the Survey team based on UGC

Figure 3-17 University Grant Commission (UGC) Organization Chart

3.7.2 System

(1) Degrees

Depending on the length of study, degrees at the higher educational level are called 'pass' (3 years) and 'honours' (4 years). Only the honours (4 years) courses are offered at universities. The pass (3 year) courses are offered only at colleges. The duration of an honours (4 year) course is a maximum of 8 years. While the number of credits required to graduate from an honours course varies between universities and faculties, most universities require 128 credits. The duration of a master's course is between one and two years depending on the course. The number of required credits is not clearly indicated for doctorate courses. Achievement from a research project is recorded in a testament.

(2) Admission

The minimum requirement to be eligible for a university entrance examination is a pass of the Higher Secondary Certificate. Each university determines the date and method of the entrance examination. An applicant can undertake multiple entrance examinations as long as the dates do not overlap. Generally, the entrance examination for public universities is conducted first. Unsuccessful applicants from the examination will undertake the later entrance examinations for private universities. Scores for the Secondary School Certificate (SSC) and the Higher Secondary Certificate (HSC) are recorded as a GPA between 0 and 5 (5 being the best). The score is often used for establishing a cut-off point by universities. For example, a total GPA of 8.0 from the Secondary School Certificate (SSC) and Higher Secondary Certificate (HSC) was used as a cut-off point by the science and engineering faculties, and a GPA of 7.0 by the humanities and sociology faculties at the University of Dhaka.

University entrance examinations often take the form of either a written examination only, or a combination of a written examination and an interview. For example, the University of Dhaka conducts only a multiple-choice style written examination. From the total of 200 points, the written examination

is given a weight of 120 points, and up to 80 points are added from the Secondary School Certificate (SSC) and the Higher Secondary Certificate (HSC).

(3) Credit

Universities adopt either a trimester or semester system. In the University of Dhaka, where the semester system is adopted, one semester is made up of 19 weeks, with 15 weeks allocated for lectures, one week for preparation for examinations, and three weeks for examinations. Therefore, 15 weekly lectures with the duration of 50 to 60 minutes per lecture make up one credit.

(4) Academic Assessment System

The below UGC criteria are used for the assessment of academic achievement in most universities.

Table 3-79 Marking of academic achievement (Marking list)

Numerical Grade	Letter Grade		Grade Point
80% and above	A+	A plus	4.0
75% to less than 80%	A	A regular	3.75
70% to less than 75%	A-	A minus	3.5
65% to less than 70%	B+	B plus	3.25
60% to less than 65%	B	B regular	3.0
55% to less than 60%	B-	B minus	2.75
50% to less than 55%	C+	C plus	2.5
45% to less than 50%	C	C regular	2.25
40% to less than 45%	D	D	2.0
Less than 40%	F	F	0.0

Source: UGC

(5) Syllabus

The syllabus provides relevant information such as the names of subjects to be taken in each grade, subject outlines and the required number of credits, educational content and the system of the university, and the names of the teachers-in-charge. Some universities offer the information on the university home page.

(6) Tuition

Whilst it needs to be adjusted with the UGC, each university is allowed to set its own tuition rates. The amount of tuition varies between public and private universities. The four-year Bachelor of Engineering course at the national University of Dhaka costs 20,000 – 30,000 BDT (about 27,000 – 40,000 JPY),[67] whilst the Science and Engineering course at the private East West University costs 700,000 BDT[68] (about 950,000 JPY). The Engineering course at the Bangladesh Army University of Science & Technology (BAUST) costs about 780,000 BDT[69] (about 1,050,000 JPY).

3.7.3 Current Situation of Education Institutions

There are two types of universities, public and private. There are 37 public universities, and 85 private universities. There are five main educational types on offer. They are general education; science, technology, and engineering; medicine; agriculture; and distance education. The following table shows the transition in the number of students in national and private universities in 2008 and 2015. According to the statistics from the Ministry of Education in 2015, the total number of university students was

[67] From the University of Dhaka Administration Office
[68] From the university homepage
[69] From the university homepage

recorded as 870,000. The number can be broken down into 490,000[70] in public universities, and 380,000 in private universities.[71] The number of students increased three times in national universities and 1.7 times in private universities in seven years since 2008. Therefore, several challenges emerged, such as the shortage of instruments, equipment, and teachers; the employment of temporary teachers; the decrease in the quality of students; and the increase in students per teacher.

Table 3-80 Number of students in national and private universities

Year/Rate of increase	National	Private	Total
2008	160,447	226,986	387,433
2015	493,110	379,781	872,891
Rate of increase during 2008-2015	307%	167%	225%

Source：BANBEIS2015 and 2008

(1) Public Universities

Overview

The total of 37 public universities are comprised of 11 universities for general education, 6 for engineering, 6 for agriculture, 8 for science and engineering, 1 for medicine, 1 for Islamic studies, 1 for art and culture, the National University (NU), and the Bangladesh Open University (BOU) which specializes in distance education. In the past four years, seven new public universities have been established. A further seven universities are in conception. After the establishment of the 14 new universities, the total number of universities is expected to reach 50. The National University was established in 1992 as a certifying and regulatory organization for degree conferment for colleges. It oversees more than 2,000 colleges. The Bangladesh Open University was also established in 1992. It is the only higher educational institution that offers distant education with poor mature students as a target. (Lectures and examinations are conducted only on Fridays.)

Budget

The budget of public university comes 95% from the government, and 5% from individuals. The amount of assistance is increasing. The ratio of the budget for higher educational institutions within the total educational budget has increased over the past 10 years, but decreased in the last three years. While most public universities are dependent on the budget from the government, the National University adopts a self-supporting system where the university is operated by student registration fees and examination fees without receiving a government budget. The operation of the Bangladesh Open University depends 30% on tuition, and on government budget for the rest. About 70% of the educational budget is used for salary, allowance, and pension for teachers, which leaves very little to be spent on research. While the operating costs of a university keep increasing, the government budget is not able to keep up the pace. With a prohibition on increasing tuition fees due to political reasons, most public universities are constantly running in the red. As a countermeasure, universities are trying to create extra sources of finance by setting up trust funds and requesting donations, as well as taking loans from banks.

(2) Private Universities

Overview

The number of students at private universities has increased nine-fold from 27,245 in 2001 to 257,089 in 2011. (Bangladesh Ministry of Education, 2012) In addition to the existing 74 universities, 15 universities are preparing to open. Sixty per cent of the teaching staff at private universities hold full-time positions, whilst part-time positions are filled by teaching staff from national universities. In

[70] Among the total number of students, approximately 256,000 (52.0%) attended the Bangladesh Open University (BOU).
[71] Approximately 1,000,000 students in the National University (NU) are treated as college students by the BANBEIS and excluded from the number.

comparison to national universities, private universities can be characterised as having fewer subjects to offer and higher tuition fees; however, they tend to offer a higher quality of education (facilities and curriculum) and better staff salaries. Emphasis is placed on occupational and career education, which results in higher employment ratios and salaries after graduation. Finally, private universities are prohibited from taking any political actions because of their position under the University Grant Commission after the enactment of the Private University Act in 2010.

Procedure for Establishment

The establishment of a private university requires assessment by the University Grant Commission, assessment by the Ministry of Education, and final approval by the Prime Minister. There are seven requirements for the establishment of a university, which are; approval of the university's educational plan by the UGC; having a minimum of two faculties at the time of establishment; having qualified teaching staff in each faculty; having paid a security deposit to a government certified bank; having its curriculum and syllabus approved by the University Grant Commission; allocation of 5% of its total seats to poor and high-achieving students ('5% quota system'); having clear indications of teaching staff salary and student tuition fees; and having facilities which meet the stipulated size. (University Grants Commission of Bangladesh, 2008)

Due to their rapid increase, the quality of private universities varies and is not always guaranteed. Some argue that the favorable conditions that private universities will enable them to gain a stronger standing, which has the potential to threaten public universities. Public universities have their position deeply entrenched in domestic politics and are unable to charge tuition fees. Attention should be paid to the competition between public and private universities. Despite political activities taking place in public universities, they remain attractive to top students because of cheap tuition fees and their social reputation. A portion of high achieving students is taken into private universities under the '5% quota system'.

3.7.4 Quality assurance of universities

Although there has been no standard quality assurance system, the Quality Assurance Unit (QAU) was established within the UGC in 2014 under the HEQEP. The unit's systematization is in progress.

The QAU aims to introduce a transparent and reliable quality assurance mechanism to guarantee domestically and internationally and improve the quality of higher educational institutions. The main activities of the QAU are described below.

Establishment of Institutional Quality Assurance Cell (IQAC) within each national and private university

The IQAC functions as an internal quality assurance cell within each university. The IQAC in each university operates in accordance with the operation manual created by the QAC, which maintains their consistency and functions to self-improve. The roles of the IQAC in each university are as follows:

- Creation and promotion of university mission and objectives
- Development and promotion of standards and indicators
- Implementation of internal audits and support of external audits when required
- Enter university information into the platform, the Higher Education Management Information System: HEMIS[72]) so that third parties can access the information. The following is the information to be entered.

    - Management organisation
    - Lower colleges
    - Courses (faculties, departments, available degrees, course durations, limit of intake)

[72] http://ugc-hemis.gov.bd:81/home.html#/

- Staff (total number, number of UGC-assisted salaries, qualifications of teaching staff), students (numbers of Bangladeshi and foreign students)
- Scholarships (numbers of students on scholarship and waiting list)
- Academic assessment system
- General facilities (area of the university land, floor area of buildings and libraries, availability of facilities, such as cafeterias and swimming pools, number of classrooms)
- Library (total number of books, availability of an electronic library)
- Computers (numbers of computers for student and staff use, type of network, area covered by Wi-Fi)
- Student accommodation (availability, number of residents, size)
- Financial status (amount allocated by the UGC, own budget)

➢ Creation and implementation of university five-year quality assurance plan

Allocation granted for the establishment of the IQAC

Allocations for the establishment of the IQAC are offered to universities with more than 1,000 students. Universities are categorized into four groups (Group A to D) according to the number of teaching staff. Allocations are offered in accordance with the grouping. (e.g. Group A consists of universities with more than 200 teaching staff. A total of 21 universities, comprising 11 national and 10 private ones, belong to this group.) Allocation is offered in order from Group A. As of May 2016, Group D is in the process of receiving its allocation.

This activity, which was planned initially to end in 2013, has been repeatedly delayed, but the establishment of the IQAC and information gathering at the HEMIS are making progress as a result of the allocation.[73]

The QAU also promotes the establishment of the Quality Assurance and Accreditation Council of Bangladesh (QAACB). The accreditation act is the final stage of a congressional approval. The QAC is planning to transfer its function to the QAACB by 2018.

3.7.5 International movement of students

Many Bangladeshi students obtain overseas scholarship for a degree and study abroad. According to the 2016 UNESCO data, 24,112 students went overseas to study. Similar data for incoming international students to Bangladesh are not available. The top 20 countries where students went to study in 2016 are provided below.

Table 3-81 Top 20 countries where Bangladesh students went to obtain a degree

Ranking	Destination (Country)	Number of students	Ranking	Destination (Country)	Number of students
1st	United Kingdom	4,204	11th	Finland	575
2nd	United States	3,664	12th	United Arab Emirates	516
3rd	Australia	3,603	13th	Italy	438
4th	Canada	1,530	14th	Korea, Rep.	421
5th	Malaysia	1,178	15th	Cyprus	417
6th	Japan	1,054	16th	Thailand	374
7th	Germany	993	17th	Qatar	217
8th	India	774	18th	Norway	119
9th	Saudi Arabia	732	19th	New Zealand	115
10th	Sweden	600	20th	Denmark	83

Source: UNESCO (http://www.uis.unesco.org/Education/Pages/international-student-flow-viz.aspx)

[73] Some universities had a delay due to internal resistance. For example, at the University of Dhaka, there is a personal level of resistance against information disclosure, and it has been resolved by change.

Because of the establishment of English education as a legacy of the British colonial period, English-speaking countries are popular destinations. The ranking shows that the United Kingdom, the United States, Australia, and Canada are the most popular, whereas Japan is ranked sixth.

3.7.6 Teaching staff

Rules for recruiting university teaching staff are not unified. Staff recruitment is decided by each university. Universities often refer to the Cumulative Grade Point Average (CGPA). For example, the minimum requirement for the University of Dhaka is listed as CGPA 3.5. Recruitment information is advertised to the public in newspapers. Applicants are to submit a copy of his/her CGPA and curriculum vitae (CV), with names of two referees. After the screening of applications, interviews are conducted before the selection.[74]

Although the social reputation of public university teaching staff is considered to be far higher than that of private universities, salaries are quite the opposite. Teaching staff members of public universities often take positions as external consultants or part-time teaching staff at private universities to compensate for their low salaries, resulting in education and research in the public university being neglected in certain cases.

Promotion of teaching staff is carried out in accordance with the years of service and number of paper submissions to academic journals. For example, the minimum requirement to be promoted to associate professor/professor at the University of Dhaka is to have one's paper published in an international academic journal. Publishing a paper in an academic journal is also counted for a salary raise. If this requirement is not fulfilled, no immediate punitive action, such as salary reduction, will be taken. Although failing to fulfil this requirement slows down the speed of promotion, there is little incentive in having papers published. In public universities, expenditures of the budget are mostly limited to salaries, and only a small amount is allocated to research. There is a pattern of full-time public university teaching staff staying in their positions for social standing, while their compensating salaries through additional private university employment.

3.7.7 Career paths of by engineering graduates

Engineering courses are offered at public universities, such as the University of Dhaka, BUET, Shahjalal University of Science and Technology (SUST), Kulna University of Engineering & Technology (KUET), Rajshahi University of Engineering & Technology (RUET), Chittagong University of Engineering and Technology (CUET), and the Dhaka University of Engineering & Technology (DUET). Various private universities also offer engineering courses. This section will attempt to analyse career paths of engineering graduates; however, as with many developing countries, universities in Bangladesh have no record of graduate career paths. Therefore, in this survey, information on graduate career paths was collected through the cooperation of Mr Jahidul Raju, who entered the Department of Applied Physics, Electronics, and Communication Engineering at the Faculty of Engineering, University of Dhaka during the 2009/2010 academic year and is currently a lecturer at the university's Department of Electrical and Electronic Engineering[75]. According to the survey, 70 students[76] entered the department in the 2009/2010 academic year, 45 of which graduated with a Bachelor's degree in the 2012/2013 academic year. Out of the 45 graduates, 30 continued on to a Master's course in the same faculty. Several went on to study other subjects (e.g. nuclear engineering, information technology, biomedical engineering, etc.). Two and a half years after graduation, the current career paths of the 45 graduates are provided below.

[74] In reality, it is often decided before public offering.
[75] In 2014, the Department of Applied Physics was renamed as the Department of Electrical and Electronic Engineering.
[76] The admission examination was held in 2008/2009. In Bangladesh, the word 'classmates' means the students who passed the admission exam in the same year, not those who enrolled in the same year.

Table 3-82 Current career paths of 2012/2013 graduates from the University of Dhaka, Faculty of Engineering, Department of Applied Physics, Electronics, and Communication Engineering

Career paths	Number of students	Ratio	Breakdown	Breakdown of the number of students
Further study	23	51%	Universities in Bangladesh	7
			Study abroad (already departed)	7
			Study abroad (in the process)	9
Teaching	8	18%	The University of Dhaka	2
			Other universities, colleges	6
Employment outside teaching (seeking employment)	14	31%	Private company (engineer)	7
			Applying for a government official's position (including engineers and non-engineers)	7
Total	45	100%		45

Source: Information about classmates' career paths, collected by Mr. Jahidul Raju, a graduate of the University of Dhaka, Faculty of Engineering, Department of Electrical and Electronics Engineering 2012/ 2013

More than half (51%) or 23 of the 45 graduates have continued or are preparing to continue with further study. Eight graduates (18%) have become teachers, and 14 (31%) are employed or seeking employment outside teaching.

Many students see studying overseas as a dream, and many of them aim to obtain a scholarship and study abroad, especially in the United States. Seven of the 45 graduates have obtained a scholarship and studied for a Master's or a Doctorate course in the United States, Canada, and certain EU countries, whereas nine are in the process of going abroad for the 2016/2017 academic year.

Eight graduates (18%) teach at the University of Dhaka, other universities (Dhaka International University, East West University, South East University, etc.), and colleges. A number of them have obtained a Master's degree while working as a teacher.

Seven graduates are looking for work to become a cadre (senior civil servant) in the Bangladesh Civil Service (BCS). Only the crème de la crème can become a cadre. Its selection process includes a variety of tests, such as a preliminary assessment, written examination, and an interview. Combined with a complex bureaucratic procedure, the whole process normally takes over two years. The seven graduates are still in the selection process. Government engineers are selected from the cadres. During this long selection process, many applicants are making ends meet by taking on temporary jobs, such as tutoring.

The seven graduates who are privately employed are working as engineers in companies, such as telecommunication (e.g. Huawei Technologies Co. Ltd, Walton Hi-Tech Industries Ltd, and Teletalk Bangladesh Ltd) and information technology (IT) companies. However, undertaking a Master's course is difficult for them because of the time restrictions placed on them at work.

3.7.8 Students' and parents' expectations of a university

Interviewees for this survey were 20 people, comprising of five students and one of their parents each from public and private universities. The interviewees were mainly but not solely from engineering faculties. All five public university students were enrolled at the University of Dhaka. Private university students were from four different universities. The students from private universities had recently graduated. Information on the students and their parent are provided below.

Table 3-83 List of interviewees about universities

No	Student information			Parent information	
	University	Department	Grade	Relationship	Occupation
1	The University of Dhaka	Department of Electrical and Electronics Engineering	Master's	Mother	Health instructor at a district hospital
2	The University of Dhaka	Department of Electrical and Electronics Engineering	Master's	Mother	Assistant teacher at a government primary school
3	The University of Dhaka	Department of Electrical and Electronics Engineering	Master's	Mother	Home duties
4	The University of Dhaka	Department of Political Science	2	Mother	Health and welfare worker
5	The University of Dhaka	Department of Women and Gender Studies	3	Father	Chief Judge at the district court
6	Ahsanullah University	Department of Computer Science	Graduated in December last year. Awaiting the commencement of a Master's course in September.	Mother	Home duties
7	Ahsanullah University	Department of Electrical and Electronics Engineering		Mother	Home duties
8	American International University-Bangladesh (AIUB)	Department of Electrical and Electronics Engineering		Father	Unknown
9	Brac University	Department of Electrical and Electronics Engineering		Mother	Dentist
10	NorthSouth University	Department of Environmental Science		Mother	High school teacher

Source: The survey team

Reasons for choosing the university

Three out of the five public university (University of Dhaka) students stated that the university's status as the highest educational institution was their reason for choosing it. The same reason was stated by their parents. Two students selected the University of Dhaka after failing to gain entry to other universities, such as a medical university or BUET; their parents had also wanted them to take a medicine course. Three private university students also selected their universities after failing to enter a public university. For the other two, one stated university location, whereas the other said safety. Their parents did not mention their unsuccessful applications to a public university, and stated that they respected their children's decisions.

Reasons for choosing a department and a desired career paths

The table below presents the students' reasons for selecting a department and a desired career path after graduation. Engineering departments are indicated in bold. All public and private university engineering students (Nos. 1–3, 6–9) have selected their department because they enjoy engineering and science subjects. Three students have continued on to further study, as they had not yet set a clear goal

for their career. A conservative trend has been established among the rest of the students who sought for a position in public service or teaching. There was only one out of seven students from both public and private universities who wanted to become an engineer. The same trend was found in the career path taken by the graduates of the Department of Electrical and Electronics Engineering at the Faculty of Engineering, University of Dhaka. The desired career path by parents showed an even more conservative orientation and a desire for stability. For example, parent no. 1 wanted a stable position in public service, and parent no. 6 wanted his son, an engineer in a private company, to continue his study, although he respected his son's decision.

Table 3-84 Reasons for choosing a department and desired and career paths

No	Classification	Department	Reason for choosing the department	Desired career path	
				Student	Parent
1	Public	Department of Electrical and Electronics Engineering	Likes engineering and science subjects	University teaching staff	Public servant
2	Public	Department of Electrical and Electronics Engineering	Likes engineering and science subjects	Public servant	Public servant
3	Public	Department of Electrical and Electronics Engineering	Likes engineering and science subjects	Further study	Employment
4	Public	Department of Political Science	Did not wish for the course, but passed the entrance exam	Home duties	Employment
5	Public	Department of Women and Gender Studies	Interested in the empowerment of women	Public servant	Public servant
6	Private	Department of Computer Science	Likes engineering and science subjects	Engineer at a private company	Respects the child's wish
7	Private	Department of Electrical and Electronics Engineering	Likes engineering and science subjects	Teaching staff	Further study
8	Private	Department of Electrical and Electronics Engineering	Likes engineering and science subjects	Further study (overseas)	Employment/further study
9	Private	Department of Electrical and Electronics Engineering	Likes engineering and science subjects	Further study	Further study
10	Private	Department of Environmental Science	Wanted to study something different	Employment in a related industry	None

Source: The survey team

Expectations of university and department

The two public university students pointed out the gravity of a term-long closure (called Session Jam) in public universities, and expected an improvement. One pointed out the need for a more efficient administrative procedure and an internationalization of the university. Private university students

expressed their expectations at a more practical level, such as improvement of facilities, equipment, and teaching staff.

All five parents of the public university students expected that their children would be able to secure good employment by studying at the university. The expectations of private university parents included the improvement of facilities and teaching staff, sound character-building, and good employment (only by two parents) as a result of a quality education.

Since the University of Dhaka was the only public university in this survey, no expectation was expressed for the improvement of facilities at the highest educational institution. In contrast, the high tuition fees in private universities might have warranted the expectations for the improvement of facilities. In addition, the survey highlighted the difficulties in obtaining employment even for the students of the University of Dhaka.

3.7.9 Existing assistance from other developmental aid organizations

The Higher Education Quality Enhancement Project (HEQEP) carried out by the WB for the UGC is the only aid Program by DPs for the higher educational institutions, such as universities. Other aid Programs for universities, such as financial support as part of a bilateral agreement or a cooperative tie formed between a Bangladeshi university and a university in developed countries, are arranged outside the UGC. For example, the University of Dhaka and Kyushu University in Japan are currently in continuous discussion on the establishment of the Bangladesh Japan International Institute of Technology.

Table 3-85 Developmental aid for higher educational institutions

Year	Organisation	Project name	Cost	Aid type	Overview
2009-2018	WB	Higher Education Quality Enhancement Project (HEQEP)	81m. USD	Loan	The aid provided by the HEQEP encompasses a broad area. A description of the project is provided in the relevant section of this chapter.

CHAPTER4 Needs for Human Resource for Industrial Promotion

The survey team confirmed the situations and problems of the whole education sector and its sub-sectors in Bangladesh in Chapter 3. The survey team will confirm the evaluations of people who graduated from educational organizations with educational sub-sectors' problems, and the conditions on human resource needs especially in technical aspects in industries with low evaluations.

First, the survey team will confirm necessary human resources for the manufacturing (Monozukuri) industry for the future industrial maturity in Bangladesh. The survey team will confirm the knowledge of concepts of human resource development in education and training organizations in Japan. The survey team will clarify the industrial human resource needs in the Bangladesh industries through case examples in Japan.

Monozukuri[77]
Is the term created by the Japanese government to promote the development of the manufacturing industry and translated as "core manufacturing technology".
Was established by Act No. 2 of March 19, 1999 titled as "Basic Act on the Promotion of Core Manufacturing Technology"
Monozukuri, as used in this Act means such technology pertaining
to the design, manufacture or repair of industrial products that is specified by a Cabinet Order as versatile technology that supports the development of the manufacturing industry.
One of the major focus of the Japanese technical and vocational education is the development of the human resource for the Monozukuri.
For the detail of the Act, please see

4.1 Domestic Industrial Human Resources in Bangladesh

(1) Domestic Industrial Human Resources in Bangladesh

The numbers of workers in each industrial category are shown in the following table. The number of workers increased in all industries, but the increasing rate is different in each industry. From 2005 and 2006 to 2013, the primary industry slightly decreased from 48% to 45% and the higher industry also decreased from 37% to 34%. On the other hand, only the secondary industry increased from 14% to 21%.

Table 4-1 Number of Workers by Industry

	No. of Persons（1 Million）			Rate (%)		
Industry	2005/06	2010	2013	2005/06	2010	2013
Primary industry	22.8	25.7	26.1	48%	47%	45%
Secondary industry	6.8	9.6	12.1	14%	18%	21%
Third industry	17.7	19.1	19.8	37%	35%	34%

Source: BBS

Next, the situations of industrial human resources (professional and technical workers) at local small- and medium-sized enterprises (SMEs) will be examined by looking at the percentage of skilled workers based on 'SME clusters in Bangladesh', which was published by the SME foundation. By doing so, it is possible to see how many unskilled, semi-skilled, and skilled workers exist by enterprise. Skilled workers in the following table refer to those who understand the meaning of each duty and are able to complete their respective duties without supervision. Semi-skilled workers refer to those who are able to complete their duties with a certain level of supervision.[78] The following table shows that one to ten skilled workers exist in 242 companies out of 379 companies, 11-20 skilled workers exist in 63

[77] http://www.japaneselawtranslation.go.jp/law/detail_main?re=&vm=04&id=98
[78] ILO, http://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-dhaka/documents/publication/wcms_226470.pdf, from Level3 and Level4 in P.1

companies, and 21-50 skilled workers exist in 39 companies. Out of the total of 379 companies, 305 companies (90.6%) have skilled workers. Concerning semi-skilled workers, it shows that 153 companies out of 379 companies have no semi-skilled workers and 183 companies have less than ten semi-skilled workers. It reveals that generally there are few semi-skilled workers. Concerning unskilled workers, the table shows that 275 companies out of 379 companies have no such workers and 93 companies have approximately ten unskilled workers, which means that there are almost no unskilled workers. From the above, it is assumed that: the number of SMEs with skilled workers is small, but they certainly exist; there are not many SMEs with unskilled workers; and there are not many SMEs with semi-skilled workers either. If the situation is inferred from the viewpoint of improving labour productivity at companies, the capabilities of semi-skilled workers, who are positioned in the technical middle layer, may have to be enhanced to support skilled workers responsible for the technical aspects of the companies they work for.

Table 4-2 Technical Level of Workers by Enterprise Scale

No. of workers of each layer in company	**Skilled worker**		**Semi-skilled worker**		**Non-skilled worker**	
	No. of companies	%	No. of companies	%	No. of companies	%
0	18	5.0	153	40.5	275	72.6
1-10	242	63.7	183	48.2	93	24.5
11-20	63	16.6	29	7.6	5	1.3
21-50	39	10.3	10	2.6	6	1.6
51-100	8	2.1	3	0.8	-	-
1000+	9	2.4	1	0.3	-	-
Total	379	100.0	379	100.0	379	100.0

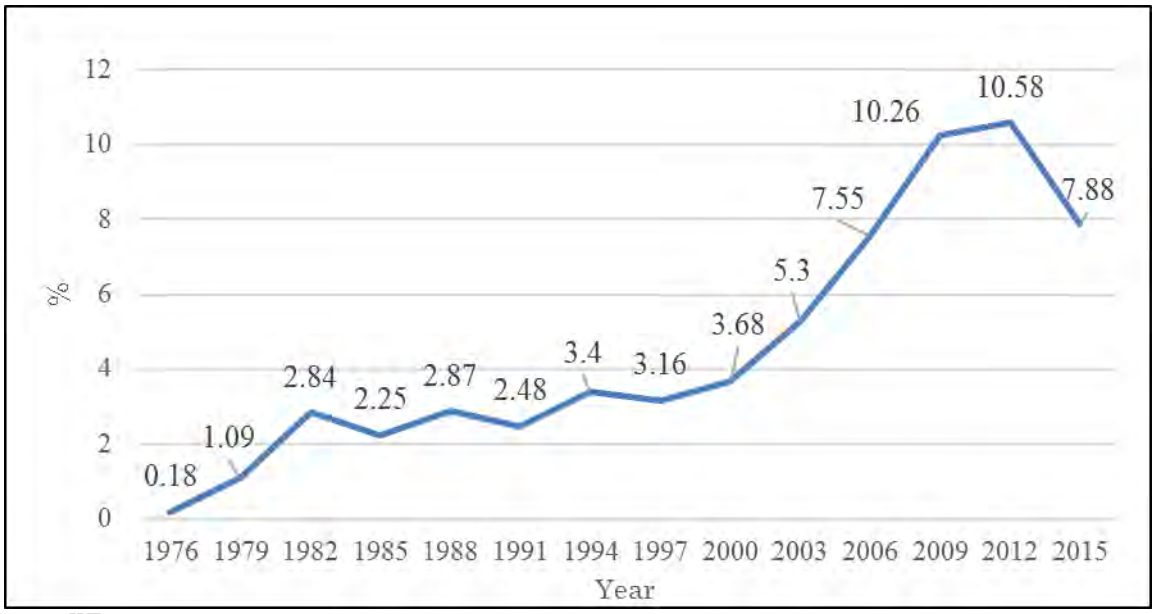
Source：SME Clusters in Bangladesh, SME Foundation

(2) Migrant Workers

The GoB is actively exporting manpower to foreign countries. The main governmental organization responsible for foreign workers is the Bureau of Manpower, Employment and Training (BMET). BMET provides services such as vocational training for people who intend to work as migrant workers abroad, looks after their welfare and their family (insuring their house and booking flight tickets, etc.),[79] and protects the rights of migrant workers after they travelled to abroad.[80]

The proportion of GDP comprised of remittances from migrant workers is shown in the following figure.[81] The proportion gradually increased between 1979 and 2000. After 2000, it has grown rapidly. The proportion peaked in 2012, decreasing thereafter. Although Tables 2-21 and 2-22 show only figures after 2001, it is fair to say that the proportion of remittances from migrant workers of GDP has become larger over the last 15 years.

[79] "Migration Scenario: Nature, Patterns and Trends", Dr. Md. Nurul Islam
[80] Referred the website of BMET (http://www.bmet.gov.bd/BMET/aboutAction)
[81] Referred the World Development Indicator. Prepared by the Study Team based on the Website; http://data.worldbank.org/indicator/BX.TRF.PWKR.DT.GD.ZS?end=2015&locations=BD&start=1976&view=chart&year_high_desc=false



Source: WB

Figure 4-1 Proportion of remittance from abroad in GDP

Human resources migrating and working overseas can be regarded as outflows of industrial human resources from the viewpoint of the labour force of Bangladesh on the one hand, while the country recognizes the remittances by such migrant workers as important means of acquiring foreign currency on the other. The following table shows the countries where Bangladeshi people go to work. Countries where Bangladeshi workers are decreasing include Saudi Arabia and Kuwait. On the other hand, the UAE, Bahrain, Oman, Singapore, and others are countries with increasing numbers of migrant workers from Bangladesh. Increasing and decreasing numbers of Bangladeshi migrant workers are being seen among various countries in the Middle In total, the number of migrant Bangladeshi workers nearly tripled from 188,965 people in 2001 to 588,869 people in 2016.

Table 4-3 Number of Bangladeshi Migrant Workers by Country (Persons)

Year	Saudi Arabia	Kuwait	UAE	Bahrain	Oman	Malaysia	Singapore	Others	Total
2001	137,248	5,341	16,252	4,371	4,561	4,921	9,615	6,656	188,965
2006	109,513	35,775	130,204	16,355	8,082	20,469	20,139	44,032	384,569
2011	15,030	29	282,734	13,928	135,260	742	48,666	71,673	568,062
2016	116,064	35,483	5,996	66,382	178,094	39,896	51,126	22,123	688,869

Source: Prepared by the Survey Team based on Ministry of Finance and BMET

Remittances to Bangladesh by migrant workers are displayed in the following table. Remittances represent important income for the country, while Bangladeshi labour enhances the economies of the foreign countries where they work.

Table 4-4 Amount of Remittances to Bangladesh (by Country)

(1 million USD)

Year	**Saudi Arabia**	**UAE**	**Qatar**	**Oman**	**Bahrain**	**Kuwait**	**USA**	**Others**	**Total**
2001/02	1147.95	233.49	90.60	103.27	54.12	285.75	356.24	229.71	2501.13
2005/06	1696.96	561.44	175.64	165.25	67.33	494.39	760.69	880.18	4801.88
2010/11	3290.03	2002.63	319.35	334.32	185.92	1075.75	1848.52	2593.79	11650.31

Source: Prepared by the Survey Team based on Ministry of Finance

According to the International Organization for Migration (IOM), migrant workers usually fall into the 20-50 age range, with workers between the ages of 24 to 35 being the most numerous. The major purpose of migrant workers is to earn income by acquiring jobs in the destination country.

The education completion level of migrant workers from Bangladesh is often incomplete primary education. The probable reasons are that they do not have sufficient education because of economic reasons or they failed to acquire certification for completion owing to insufficient understanding or acquisition of educational contents. Even if they acquire jobs overseas, they are sometimes forced to work in jobs with lower wages than in Bangladesh, depending on their completed level of education. They are also sometimes forced to work for long hours in poor working conditions. Even after understanding such conditions, there still exist a certain number of people, young people in particular, who migrate and work overseas.

On the other hand, there are people with higher educational backgrounds who migrate and work overseas. People with higher educational backgrounds mainly with university degrees or beyond increasingly tend not to apply for new jobs in Bangladesh if the firms do not ensure good conditions, provide clear job descriptions, or disclose the amount of pay and other benefits that they should expect, and they seek their new jobs in abroad As a characteristic of those with high educational backgrounds, it is related to how they are perceived socially, which is expressed as social recognition in Bangladesh.

The technical and skill levels of migrant workers are as shown in the following table. Workers without any special knowledge or skills account for about a half of the total, which indicates that getting jobs overseas is possible even without expertise or skills. It is assumed that this group engages in manual labour. The largest group of workers after unskilled workers is skilled workers.

Table 4-5 Number of Foreign Workers by Year and Technical and Skill Level

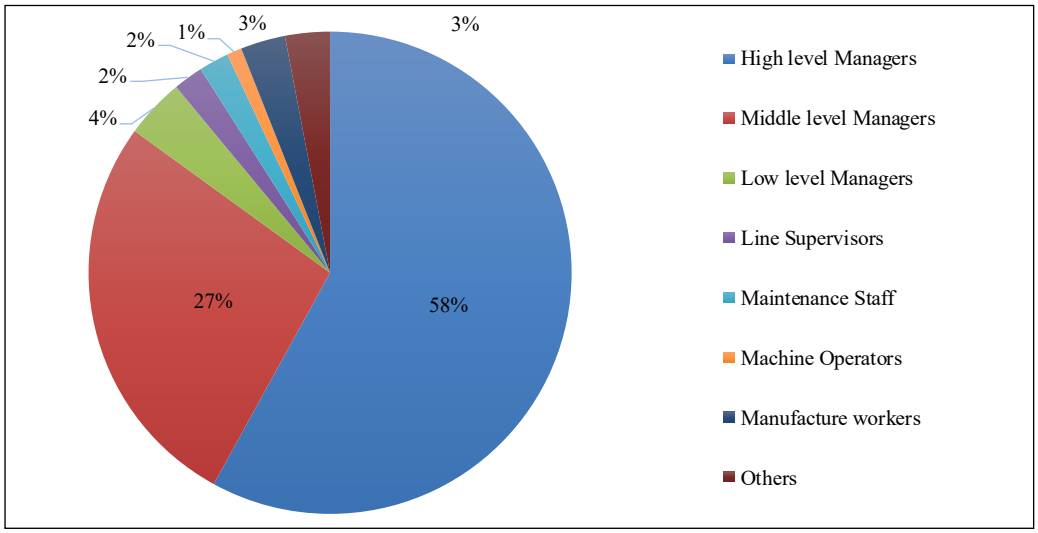
Year	Highly Skilled Worker Level	Skilled Worker Level	Semi-skilled Worker Level	No Professional	Total
2001	6,940 (3%)	42,742 (23%)	30,702 (16%)	109,581 (58%)	188,965 (100%)
2006	925 (-)	115,468 (30%)	33,965 (9%)	231,158 (61%)	381,516 (100%)
2011	1,192 (-)	229,149 (40%)	28,729 (5%)	308,992 (55%)	568,062 (100%)

Source: Bureau of Manpower, Employment and Training, Ministry of Expatriate Welfare and Overseas Employment

(3) Foreign Workers in Bangladesh

Foreign workers can be regarded as those that are replacing Bangladeshi workers. They play a role in compensating for the shortage of local labour on the one hand, while competing with those who have a similar level of skills on the other hand. In a study on industrial human resource needs carried out by IC Net Limited for 322 companies in Bangladesh, jobs for which foreign workers are taken at companies were studied. Some foreign workers in Bangladesh hold managerial occupations, and many of them are placed in high-ranked or middle-ranked positions. On the other hand, it is inferred that most Bangladeshi people are unlikely to have sufficient practical experience or skills to hold managerial positions in companies. It is said that there are many foreign workers who started working from the bottom at companies, kept working for long years, and rose to a higher position. Although the demand for foreign workers with high administrative capabilities or skills is high, if Bangladeshi workers can acquire the required administrative capabilities or skills, they are substitutable for foreign workers.[82]

[82] Information from the JETRO Dhaka Office



Source: Prepared by the Survey Team based on the on 'Industry Sector Human Resource Needs Survey' IC Net Limited (2016)

Figure 4-2 Position Held by Foreign Workers

The composition of the foreign labour force in Bangladesh is as follows: 19.9% Sri Lankan, 17.8% Chinese, 13.7% Korean, 11.6% Indian, 8.2% Japanese, and 8.2% Taiwanese. As for the reasons for employing foreign workers, the following table shows the answers obtained from the above study. It reveals that many of the reasons are qualifications, skills, and techniques that foreign workers have and the enhancement of production capacity of companies, etc.

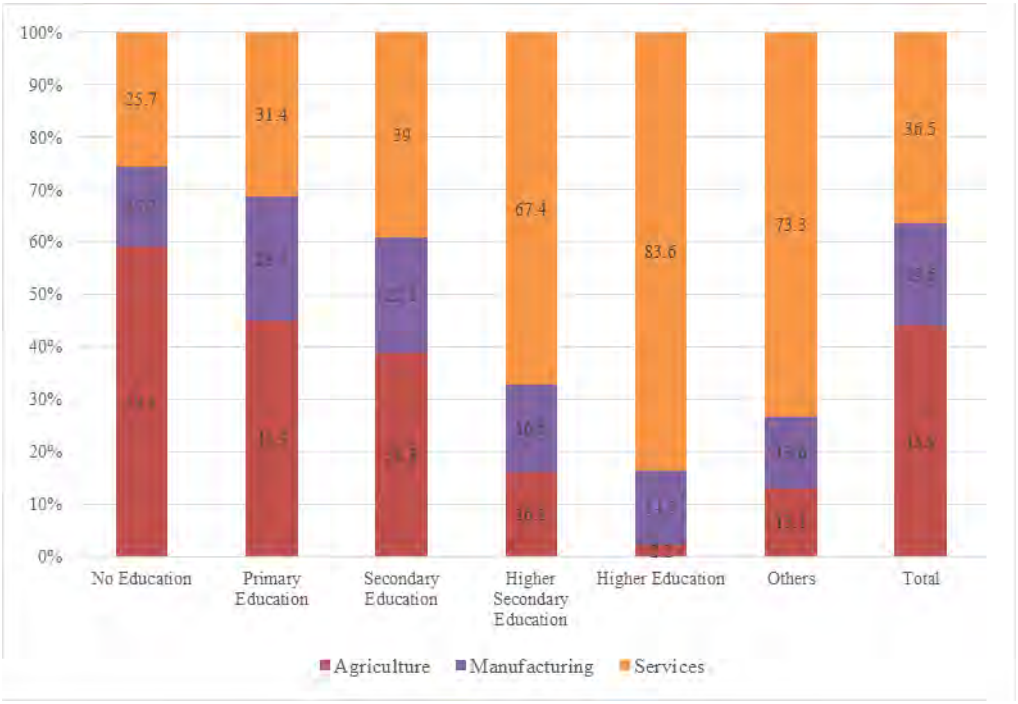
Table 4-6 Reasons for Employing Foreign Workers

Reason	Rate (%)
Because foreign workers have qualifications or professional competence, such as technique.	29
Foreign workers are employed because companies aim to increase production output.	35
Because there are many worker replacements every year.	8
Others	28

Source: Prepared by the Survey Team based on the on 'Industry Sector Human Resource Needs Survey' IC Net Limited (2016)

(4) Educational Level of Workers

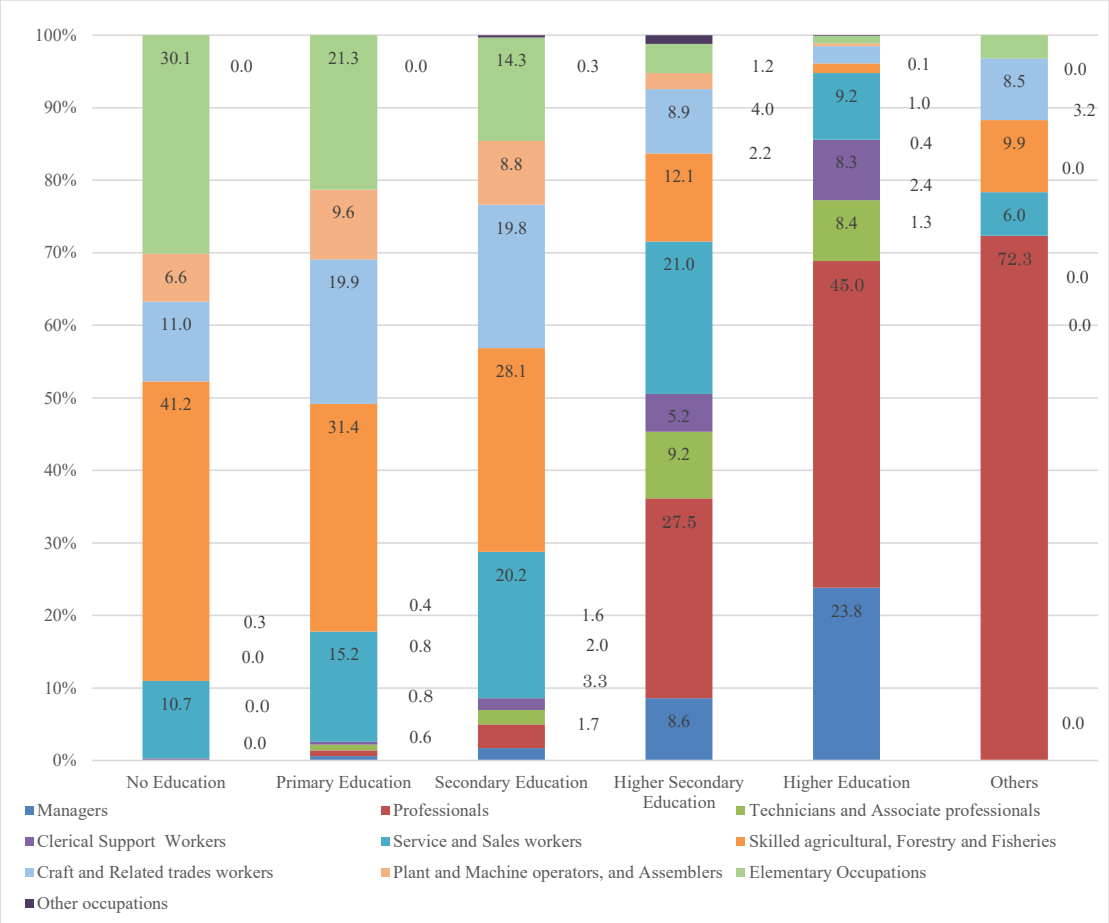
The following table shows the percentage of employed people aged 15 years and over by industry and completed education level. The ratio for agriculture is 59.1% for those who have not finished primary education, and 44.9% for those who have finished primary education, with those who have a low level of education making up the highest ratio. Although 38.8% of those who have had secondary education engage in agriculture, the ratio for the service industry is 39.0%, which exceeds that of farmers. Among those who completed higher secondary education, about 70% are employed in the service sector, while 16% are employed in agriculture or industry. Among those who completed higher education, about 80% (1.2 million people) are employed in the service sector, and the percentage of those who are employed in agriculture decreases substantially to about 2%. In summary, Bangladeshis with lower educational backgrounds tend to be employed in agriculture, while the percentage of those employed in the service industry is higher among those who have completed secondary or post-secondary education. In the case of workers employed in the industry sector, approximately 15% to 20% come from all different educational levels.



Source: Quarterly Labour Force Survey, July-September 2015, BBS

Figure 4-3 Completed Education Level of Employed Persons Aged 15 Years Old and Over by Industry (Percentage)

Employment ratios for workers over 15 years by occupation and education level are displayed in the following figure.



Source: Quarterly Labour Force Survey, July-September 2015, BBS

Figure 4-4 Completed Education Level of Employed Persons Aged 15 Years Old and Over by Industry (Percentage)

Among those who have not completed primary education, many are employed in the skilled agricultural, forestry, and fisheries (41.2%) primary industries and elementary occupations (30.1%), which account for about 70% of the total. Among those who have completed primary education, workers employed in the skilled agricultural, forestry, and fisheries industries are 31.4%, and workers employed in elementary occupations are 21.3%, which together account for about 53% of the total. Among those who have completed secondary education, workers employed in skilled agricultural, forestry, and fisheries decline to 28.1%, while employment in managerial and professional occupations rises gradually, such as managers (1.7%) and professionals (3.3%). Plant and machine operators and assemblers account for 9.6% among those who have completed primary education and 8.8% among those who have completed secondary education, which indicates that workers with the levels of completed primary and secondary education among all education levels are likely to engage in this skilled occupation. Among those who completed higher secondary education, both managers and professionals increase to 8.6% and 27.5% respectively. In the case of professionals in particular, the number of those who have completed higher secondary education increases to approximately three times the number of those who have completed secondary education. It is assumed that Bangladeshi society and economy generally require the completion of secondary education or higher to assume a managerial position. In the post-secondary education level, workers employed in skilled agricultural, forestry and fisheries, craft and trade work, plant and machine operators and assemblers, and workers employed in elementary occupations decrease, which indicates that workers are more likely to be able to move out from participation in simple-skill production activities. Among those who have completed

higher education, managers increase by about three times to 23.8% from 8.6% and professionals increase about two times to 45.0%. If people are able to complete post-secondary education, they are more likely to be able to assume key business positions at companies or organisations or enter occupations requiring high labour productivity so that they can ensure the possibility of employment more assuredly on an individual level. For professionals in particular, some knowledge that is learnt in higher education could be used directly for their duties.

In terms of the order of capacity phases required for employment accompanying the rise in completed education level, such capacity phases are assumed to shift from participation in economic activities, to participation in production activities using simple skills, to participation in production activities using techniques of professional fields (such as managerial, professional, and advanced techniques), and versatile abilities. Amongst such requirements, the completion of secondary education is usually required to assume managerial positions at companies, which therefore suggests the importance of the understanding and acquisition of the contents of secondary education and higher secondary education, as well as the completion of such education.

Figure 4-4shows the percentages and numbers of people by educational background by putting managerial duties in one 'managers' category; however, managerial occupations are versatile. A study exists that categorises managerial occupations in detail according to educational background, which will be shown in the following table, although it is different from the study on the completed education level of employed people aged 15 years old and over by occupation (number of people).

Table 4-7 Educational Background of Managerial Occupations (Percentage)

	Primary School	Trade Certificate Course	SSC	HSC	Diploma in Engineering	Engineering College (BSc)	University degree
Higher-ranked managerial position	0.7	0.2	1.8	2.2	6.8	23.5	64.9
Middle-ranked managerial position	0.2	0.0	2.2	4.4	18.4	25.7	49.1
Lower-ranked managerial position	1.1	1.3	6.8	17.1	25.7	15.2	32.8
Unit managers	5.7	10.5	32.7	35.3	10.5	1.0	4.3

Source: Prepared by the Survey Team based on 'Industry Sector Human Resource Needs Survey' (IC Net Limited)

Higher-ranked managerial positions are equivalent to company presidents and top management, middle-ranked managerial positions are equivalent to department managers, lower-ranked managerial positions are equivalent to section managers, and unit managers represent the level equivalent to managers in charge of a unit smaller than a section. Although a higher-ranked managerial position is usually filled by graduates of engineering colleges and higher, the percentage shows that those who graduate from universities account for 64.9%, which means graduation from university is necessary in many cases to assume higher-ranked managerial positions. Following university graduates, those who graduate from engineering colleges are 23.5% and those who graduate from polytechnic institutes are 6.8%. Concerning middle-ranked managerial positions, university graduates are 49.1%, engineering college graduates are 25.7%, and polytechnic institute graduates are 18.4%. Graduation from polytechnic institutes or higher is similarly necessary to assume middle-ranked managerial positions. Concerning lower-ranked managerial positions, university graduates occupy 32.8%, engineering college graduates occupy 15.2%, and polytechnic institute graduates occupy 25.7% of such positions. In this case, educational background requirements become looser than higher-ranked and middle-ranked managerial positions and the percentage of polytechnic institute graduates in managerial positions increases. This shows that a degree from a polytechnic institute or better is increasingly necessary to assume a managerial position at a company in Bangladesh.

Lastly, projections of future increase or decrease in the number of workers (by gender) will be shown in the following table. In accordance with Vision 2012, and the aim of becoming a middle-income country, it is expected that the number of male workers will increase by 4.8 million people from 44.1

million in 2016 to 48.9 million in 2021, and that female workers will increase by 9.5 million, from 24.0 million to 33.5 million, and the total number of workers will increase by approximately 14.3 million people, from 68.1 million to 82.4 million. The number of female workers is expected to increase at twice the growth rate of male workers. If quality education/training at each educational phase and education/training for employed females who have completed their education at various levels are provided and quantitative and qualitative system development for female workers through the creation of employment progresses, economic and social vitalisation and maturation accompanying social advancement of female workers will occur.

It is conceivable that foreign and Japanese companies will continue advancing into Bangladesh, and profitable companies will look to hire local management to establish continuous and stable growth. Quantitative increase in highly qualified human resources for managerial positions and human resources producing added value in professional and technical occupations are considered to be necessary.

Table 4-8 Expected Change of Number of Workers (by Gender)

(1 Million)

Year	Total	Male	Female
2016	68.1	44.1	24.0
2021	82.4	48.9	33.5

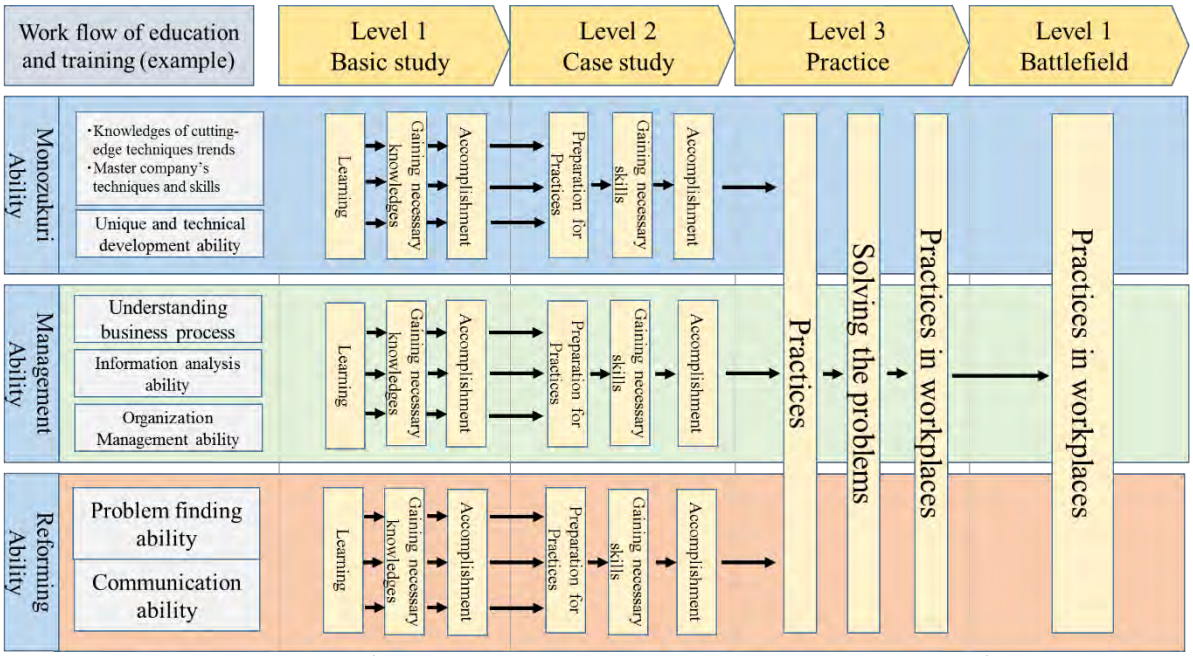
Source: "The Population and Housing Census 2011", BBS

4.2 Human resource needs for industrial promotion, and education and training in Japan

(1) Necessary senses for Monozukuri and growth of those senses in Japan

It is generally said in Japan that there are 3 important minimum abilities are necessary for the mass manufacturing production: 1) understanding of production processes; 2) reading and writing drawings; and 3) skill for creating and processing the products as in drawings. The production process refers to specific process of creating a product, from shaping and assembling of raw materials to shipment of final product to factories. Reading and writing drawings are the abilities to read the drawings of productions and its parts and design those parts by drawing. The techniques for shaping and processing the specifications in drawing will be necessary for finalizing the production. Workers cannot work in the manufacturing industry without having these skills.

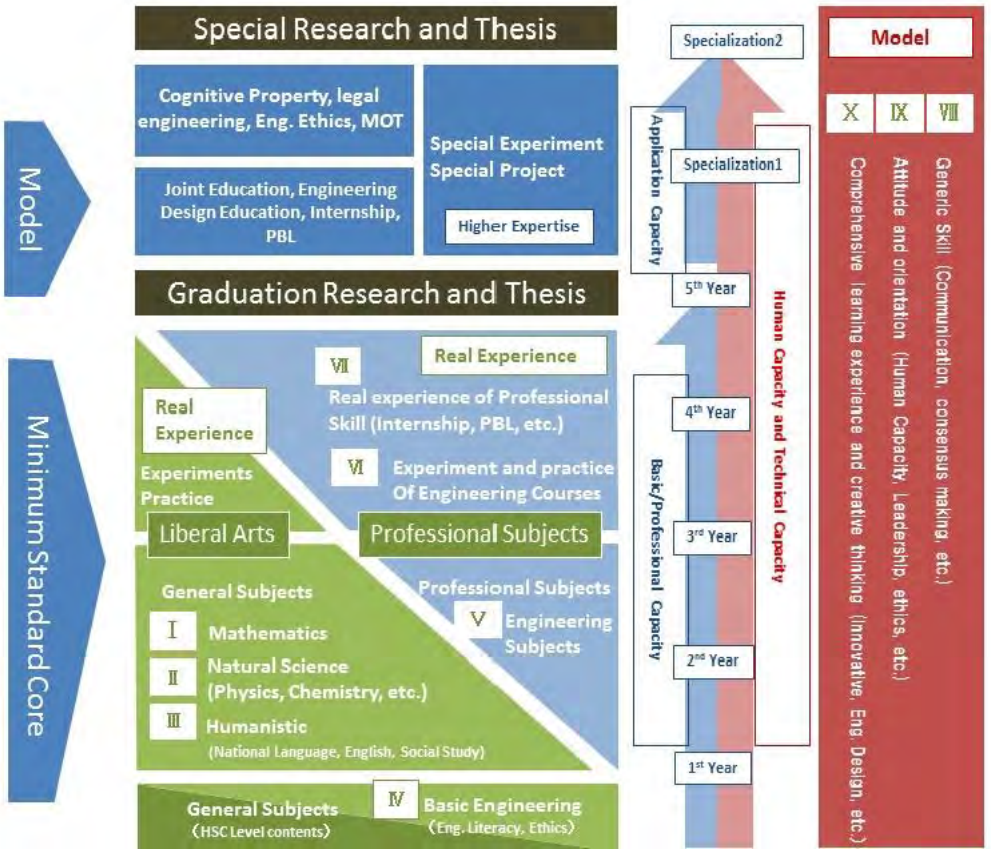
The necessary qualities for workers in the Monozukuri industry are the following: 1) Monozukuri ability (techniques and skills); 2) management capacity (business knowledge and competence); and 3) innovation ability (leaderships and teaching). A polytechnic university aims to grow leaders who have those abilities in manufacturing companies and Monozukuri specialists. The details of those abilities are as follows. Monozukuri ability is composed of having knowledge of cutting-edge techniques, their company's original techniques and skills, and imaginative technical development ability. For management competence, one must understand the business process, be able to conduct information analysis, and have organization management ability. For innovation ability, one must be able to identify a problem and communicate. A polytechnic university has the curricula for growing and strengthening the above-mentioned abilities through basic study, case study, experiments, and practices in workplaces. A polytechnic university provides practical opportunities to students for identifying a company's industrial problems and then solving them through knowledge of electricity, electronics, general mechanic, and information technology in cooperation with companies. That is a case study similar to a workplace. In conclusion, technical and vocational institution provides practical opportunities to the students for understanding and gaining high-level techniques. Students also gain applied abilities for operating high-level techniques through these institutions.



Source: Website of college in Japan（http://www.uitec.jeed.or.jp/department/monodukuri_index.html）

Figure 4-5 Concepts of education and training in Polytechnic university

Although the word "monozukuri" is not used in any curriculums for the colleges of technology, importance is placed on two types of combination to be developed of: technological and technical capacities (universal technology, attitude/intentionality) and human ability and technician's ability (comprehensive study experience and creative thinking power).



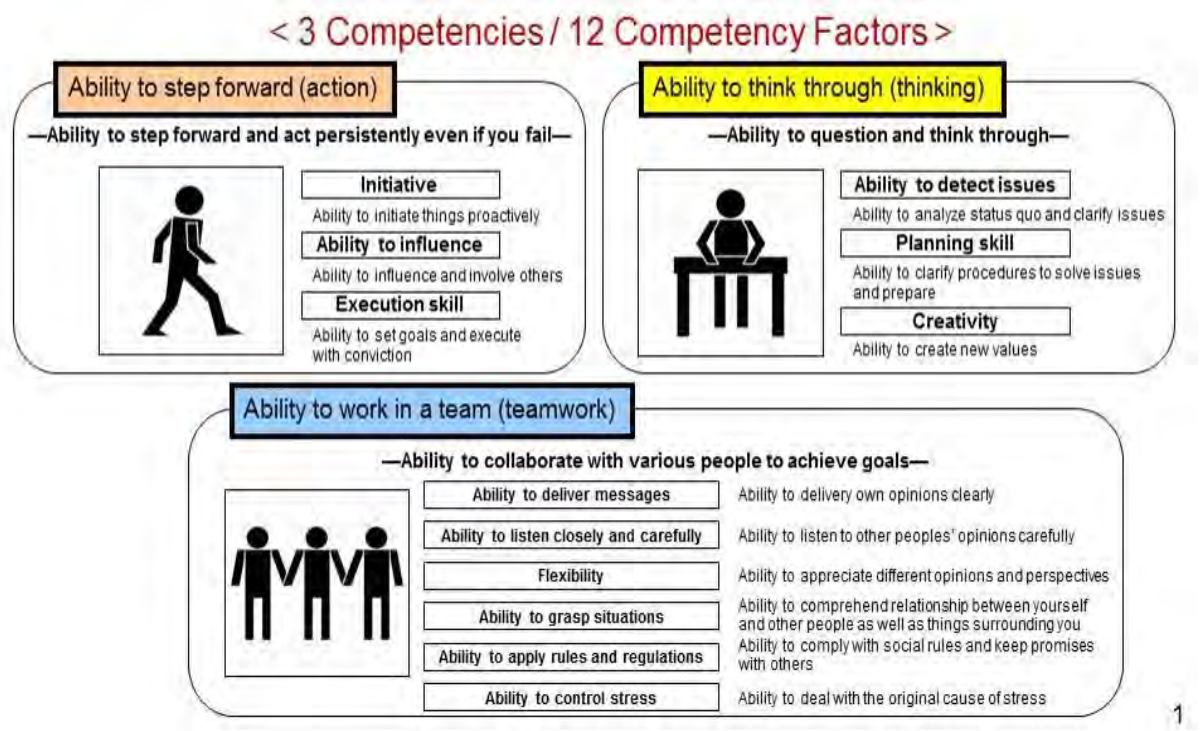
Source: Prepared by the Survey Team based on the Website of the National Institutes of Technology (http://www.kosen-k.go.jp/mcc-20120419.html)

Figure 4-6 Conceptual Image of the Model Core Curriculum of National Institute of Technology

(2) Fundamental competencies for working people

As stated in the previous section, acquiring applied abilities for Monozukuri techniques are important. Other types of abilities are provided below.

'Fundamental Competencies for Working People' suggested by the Ministry of Economy, Trade and Industry has been popular since 2006 in Japan. 'Fundamental Competencies for Working People' is the basic abilities for working with other people in a workplace and community. It is composed of three competencies (12 competency factors), namely, 'ability to step forward (action)', 'ability to think through (thinking)', and 'ability to work in a team (teamwork)'. It is almost the same as 'generic skills', 'key skills', and 'key competencies' in the theory of the 21st century human resource development. By the changes of social streams to industry and youth, 'Fundamental Competencies for Working People' should be developed on 'basic ability' and 'professional knowledge'.



Source: Website of the Ministry of Economy, Trade and Industry（http://www.meti.go.jp/policy/kisoryoku/）

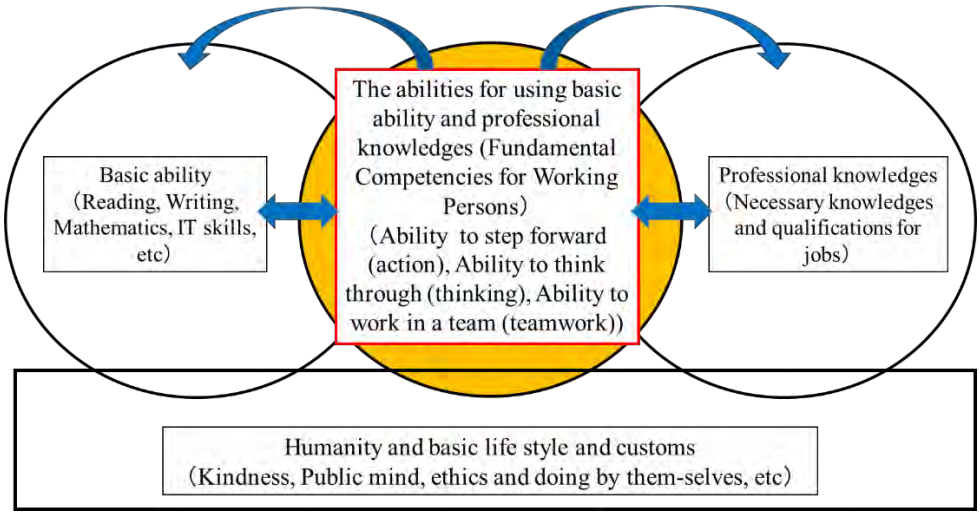
Figure 4-7 Three Competencies and 12 Competency Factors of Fundamental Competencies for Working People

The youth tend to study after secondary education in Japan. 'Fundamental Competencies for Working People' are being promoted especially in higher education institutes, such as universities and national institutes of technology. 'The Grand Prix of Fundamental Competencies for Working People' started in 2006 and it has been disseminated since then. Many kinds of projects and events are implemented in technical education.

As an example of these projects and events, 'Co+Work' started at Akashi College, a college of technology in Japan. First-year undergraduate students change scientific awareness, and the project of 'Co+Work' starts from second-year students. This project aims to develop students' independence, imagination, and cooperation, as well as teach them of the basic and professional abilities through study and practices. Imagine the circumstances that students have to live with different people after graduation, students join a team with members of different levels and implement planned activities. All teachers teach the teams for one year. Processes are more emphasised than results. Students are evaluated by both teachers and teammates.

The subject of 'Sendai College product making before graduation' aims to develop imaginative practical technicians at the National Institute of Technology, Sendai College. In this subject, students join a team with members of different levels and consider doable activities by themselves, under the supervision of the teachers from all departments. Each team member attempts to form product ideas and then create them to solve specific problems by making use of their knowledge and techniques. These products are then proposed to the team. Sendai College can develop technicians through this project, as students use their knowledge and techniques for solving problems, make new ideas, and gain abilities for multiple areas.

The two examples illustrate how techniques do not develop by themselves. Engineers or technicians develop them by maximising available human and material resources. The necessary basic abilities, such as 'Fundamental Competencies for Working People', and professional knowledge are important in society.



Sources: Website of the Ministry of Economy, Trade and Industry (http://www.meti.go.jp/policy/kisoryoku/)

Figure 4-8 Images of Fundamental Competencies for Working people in education

(3) Career education

Career education is implemented in Japan. It aims that students' knowledge, skills, and attitudes are matching with vocational images from elementary education in mathematical, scientific, and technical subjects. It was mentioned that vocational education has an important role for Monozukuri human resource development in engineering in a university, a national institute, a technical subject in technical high school, and a vocational school, according to a white paper released by the Ministry of Economy, Trade and Industry.[83] Thus, the survey team need to strengthen the Monozukuri education through qualitative scientific and mathematical subjects, and implement career education in each education.

The importance of career education for children and the youth is to gain abilities for living life, performing activities flexibly, and being independent as a working person in society. Career education aims at gaining working ethics to prepare for jobs and should be provided appropriately according to education stages of an individual. It should be implemented as guidance for students in each educational stage. Career development stages and experimental activities as examples are provided below.

[83] A white paper released by the Ministry of Economy, Trade and Industry (2016)
http://www.meti.go.jp/report/whitepaper/mono/2016/html/honnbunn/103011.html

Table 4-9 Career development stages

Elementary school	Junior high school	High school
Terms for making basics for searching and selecting future courses	Terms for searching realistically and tentatively	Terms for searching and challenges realistically and for transition preparation to society
• Making and development positive interests to myself and others • Enhancement of interests to around jobs and surroundings • Acquiring dream, hopes, expected self-image • Emphasis on working ethics, going forward and growing attitude to goal	• Positive understanding one selves and gaining self-utility • Making working ethics based on interests • Making future courses plans and tentative selections for them • Searching realistically how to live and for the future courses	• Deepening understanding one-selves image and acceptance one-selves • Making the working ethics as selection standards • Planning future design and preparation for society transition • Considering future course and participation as trial

Sources: 'Guidance for career education', Ministry of Education, Culture, Sports, Science and Technology (2006)

Table 4-10 Experimental activities (examples)

Elementary school	Junior high school	High school
• Survey exploration in community • Survey for jobs and works of family / related persons • Site visit in community • Interview • Workplace visit at community • Experimental classes	• Hearing survey about family / related persons • Workplace experiences for 5 days • Class and work place visit (family / related persons) Job shadowing activities with company staffs • Experimental classes in upper grades	• Internship at company, university, public organization and research institute • Dual system of learning at school and company • Experimental classes in upper grades • Company visit

Sources: Ministry of Education, Culture, Sports, Science and Technology, 'Guidance for career education"'(2006)

According to the above table, career education is not a specific subject in Japan, but it covers some subjects on general education, technical (vocational education), ethics, and special activities.

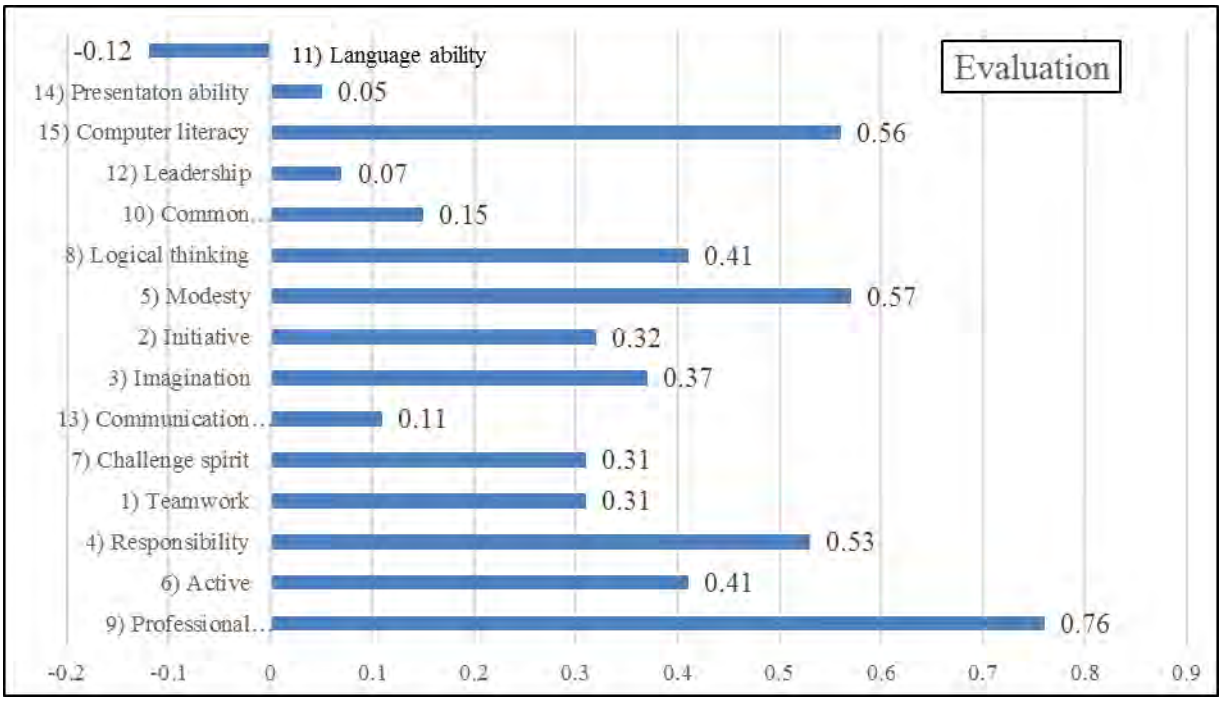
'Youth employability' is another type of ability identified by the Ministry of Health, Labour and Welfare. Industries evaluate applicants based on this ability.

Table 4-11 Youth employability

Ability	Element	Contents
Communication	Communication	Can communicate with others between my opinion and listening to others
	Cooperative Team-work	Can coordinate their opinions and be cooperative with others
	Self-expression	Can presentation for TPO
Awareness for work	Responsibility	Recognizing their roles in society
	Motivations	Having enough interests and attitude for working and do their best for their resources development
	Awareness for work	Having vocational ethics and thoughts, and show them as motivation and attitude
Basic knowledges	Reading and writing	Having enough knowledges for job
	Calculation and numerical thinking	Having numerical thinking ability for job
	Common senses	Having enough knowledges as working persons
Business manners	Basic manners	Can be appropriate with manners in working society.
Qualification	Information technology literacy	Having enough knowledges in information technology
	Finance	Having enough financial and accounting knowledges
	Language	Having enough knowledges about English and Can use it

Source: Ministry of Health, Labour and Welfare 'Actual situations about youth' vocational abilities' Survey results (Jan. 2004)

This survey was conducted for administration and business occupations. Results showed that companies emphasized more on communication skills, awareness of work, basic ability, business manners, and qualifications instead of technical knowledge.



Source: Central Council for Education in the Ministry of Education, Culture, Sports, Science and Technology 'About the qualitative enhancement of National Institute of Technology' (Dec. 24th 2008)

Figure 4-9 Evaluations for the qualities and abilities of National Institute's graduates

The abilities highly expected by the industries are the following: 1) technical knowledge; 2) active attitude; 3) responsibility; 4) teamwork; 5) competitive spirit; 6) communication ability; 7) imagination; 8) initiative; 9) steady; 10) logical thinking; 11) common knowledge; 12) leadership; 13) computer literacy; 14) presentation ability; and 15) language ability. Otherwise, the evaluation priorities of the industries are the same, namely, steady computer literacy, responsibility, and logical thinking instead of technical knowledge. This means that fundamental competencies are important in industries.

For the conclusion of abilities stated above, technical knowledge and techniques are not highly evaluated by the industries, and the ability that make those technical knowledge and techniques effective are highly evaluated by the industries. Using those abilities, the survey team need to cooperate with others. Those abilities or the so-called 'Fundamental Competencies for Working People' are general competencies composed of important abilities. Both techniques and specific abilities are important. Japan has its own history especially in the technical areas by making high value products based on high quality abilities. In society, many working people have their own strengths and weaknesses; hence, limited technical people have been supported each week by other people's technical strengths for the development of society and economy. It is implicated that general abilities are developed gradually in educational system, and those abilities should be enhanced in the industries, according to the history of the development of industry, society, and economy in Japan.

4.3 Human resource needs for industrial promotion in Bangladesh

(1) General problems for human resources needs

The Bangladesh industry has been depending mainly on the ready-made garments (RMG) sector, a low-cost industry. This situation of the Bangladesh industry continues; otherwise, competitions with Myanmar and Cambodian industries will be more competitive. Other new value added industries will be necessary for future international industrial competitions. In light of the engineering industry, productions, such as large bicycles and motorcycles, is highly focused on its large domestic market in

Bangladesh. Supply factories will be necessary for motorcycles with more than 2,000 parts. It is forecasted that skilled workers for Monozukuri who can make and process high quality productions will be necessary.[84] Japan has long history and experiences for development of the skilled workers for Monozukuri which could be shared for the human resource development in Bangladesh.

People have strong expectations and demands for human resources that contribute to Bangladeshi industrial promotion and private companies' business. Although both the state and companies require competitive and excellent personnel, it is true that employment of such personnel at the right time is difficult. It is also true that some employees are found not to meet the expectation after their employment or easily switch to another job to cause uncertainty in recruitment. Employers always have to tackle both recruiting and retaining personnel. IC Net Limited studied necessary abilities of the graduates from technical education schools and colleges, institutes, and universities (SSC Voc, HSC Voc, Polytechnic Institutes and University of Engineering and Technology) employed in 322 companies (139 domestic market-oriented, 145 export-oriented, 35 external and internal market-oriented, and 3 other companies) on the methods of recruiting. The results are provided below.

Table 4-12 Problems of Human Resources for Industry

Human Resources for Industry	No. of Answers (*1)	Category	**No.**	**Ratio**
Professional knowledge	26	Knowledges	26	14%
Professional skills or skills for specific jobs	18	Professional skills	18	10%
Comprehension or calculation ability	7	"Fundamental Competencies for Working People"	89	48%
Problem-solving skills	15			
Motivation for or positive attitude toward working	14			
Power to take the initiative	13			
Communication skill	12			
Common sense, etc.	10			
Team work skill	9			
Creativity	9			
IT skill	10	Subsidiary skill	27	15%
Foreign language skills	17			
Practical experience	22	Practical experience	22	12%
Others	1	Others	1	1%
Total	183		183	100%

Source: Prepared by the Survey Team based on the results of the study on industrial human resource needs carried out by IC Net Limited

* Multiple responses allowed

'Fundamental Competencies for Working People' accounted for 48% of all answers; knowledge, 14%; subsidiary skills, 15%; practical experiences, 12%; and professional techniques, 10%. The expectation for the technical education school and specific skills of institute graduates is low. The survey team can find the same results in countries. 'Basic ethics and work attitudes for low-skilled workers' and 'basic ethics, work attitudes, hard skills and communication skills for skilled workers' are necessary for Japanese companies in Viet Nam. The survey team can find the same results in 'Data Collection Survey on Human Resource Development for Industrialization in the Education Sector in the Kingdom of Cambodia' in Cambodia. 'Fundamental Competencies for Working People (communication skills, teamwork, honesty, time management, business ethics, leadership and

[84] Tetsuya Saito, 'Progress report of Industrial promotion for Motorcycles in Bangladesh' (2016)

responsibility, and plan and preparation abilities)' are the most necessary abilities in the 'Preparatory Mission on JICA Technical Education Project' in Egypt. It is said that 'Fundamental Competencies for Working People' are unconditionally necessary by the industry. This means that some companies understand the difficulties for teaching company oriented skills in schools.

(2) Technical problems in prospective industries

Technical and professional knowledge and skills in specific technical areas in the human resource needs for industrial promotion will be considered, including the situations of society, economy, and industry of Bangladesh. Seven top priority industries listed in the Industry Policy 2016 were selected as the industries subject to the human resource needs study, which are (1) garments, (2) agriculture and food processing, (3) light industry, (4) leather and leather goods, (5) pharmaceuticals, (6) ICT and software, and (7) jute and jute goods. The survey team regard the choice appropriate, because six industries out of these seven top priority industries are included in 10 priority industries chosen for the Report of Preparatory Research for Private Sector Development Program (industry development and trade and investment promotion) conducted in August 2012.

Established items for the study are 'jobs and skills in high demand in each industry', 'priority subjects at educational institutions (course, practical training and other activities)', 'general abilities necessary for workers and professionals', and 'educational issues of Bangladesh'. Responses for the items are as follows.

1) Human resource needs in RMG industry (one association, one private company were studied)

Needs for job & position	• Line managers, plant managers, skilled workers at site, designers
Priority subjects	• Technical subjects such as electrical engineering and machine work
Expected activities	• Experience as an intern with a company
Other items	–

2) Human resource needs in agriculture and food processing industry (one association, one private company were studied)

Needs for job & position	• Managers who understand especially production, quality control, and quality assurance of agricultural products • Mechanical engineers and engineers who can maintain machine
Priority subjects	• Technical subjects such as mechanical and electrical science, knowledge as to chemistry and food (processing)
Expected activities	–
Other items	–

3) Human resource needs in light industry (one association was studied)

Needs for job & position	• Mechanical engineers (While the survey team confirm there are companies that possess the CNC technique in Bangladesh, some workers have insufficient basic skills for lathe or fraise, or insufficient knowledge or activities as to 5S or industrial health and safety.)
Priority subjects	• People who want to work for light industry have to understand and acquire basic matters as to 5S and safety that is indispensable to working at a production site. • Technical subject: knowledge and skills concerning mechanical, electrical, and welding fields • General education subjects: mathematics, physics, chemistry, and other science-related subjects
Expected activities	–
Other items	• It is important to secure high-quality teachers and instructors, curriculum, educational materials, experiment and training equipment, and expendables for exercises.

4) Human resource needs in leather and leather goods industry (one association, two private companies were studied)

Needs for job & position	• Mechanical engineers • Engineers who have knowledge as to dyeing, colour, and textiles, and are familiar with leather products and design
Priority subjects	• Higher education: mechanical engineering, electronics • Secondary education: technical subjects, science-related subjects
Expected activities	• Provision of opportunity of an internship with a company for students who do not know the leather field
Other items	–

5) Human resource needs in pharmaceutical industry (one association, one private company were studied)

Needs for job & position	• Mechanical engineers, electrical engineers • Pharmaceutical or chemical technicians familiar with biology and chemistry (who specialise in professional or applied field)
Priority subjects	• Science-related subjects: biology, chemistry
Expected activities	–
Other items	–

6) Human resource needs in ICT and software industry (one private company was studied)

Needs for job & position	• Managers who have knowledge as to IT and data analysis (Basic IT knowledge is not enough. Data utilisation technology comes into high demand, which is necessary for service provision to customers)
Priority subjects	• Business administration, economics, statistics
Expected activities	–
Other items	• Educational material and curriculum, provision of equipment and facilities, knowledge and skills of teachers or instructors that are necessary for teaching.

7) Human resource needs in jute and jute goods industry (one association was studied)

Needs for job & position	• Mechanical (operational) engineers for sewing (people who are not only familiar with operation skills on production line but are also able to maintain equipment) • Managers familiar with jute market conditions and procurement of jute materials
Priority subjects	• Mechanical engineering field in technical education
Expected activities	–
Other items	–

8) Human resource needs of private TVET institutes, NGO's TVET institutes, Chamber of Commerce and Industry

Needs for job & position	• Engineers who have experience especially with assembly, installation, and maintenance in mechanical field
Priority subjects	• Mechanical, electrical and electronic fields (a wide range of cross-curricular knowledge and skills in mechanical, electrical, and electronic fields is necessary) • PLC-related information is important, especially in electronics field
Expected activities	–
Other items	–

CHAPTER5 Challenges and Proposal for Future Education in Bangladesh

5.1 Proposals for JICA Education Program Approaches

In this chapter, the survey team will suggest approaches for JICA education program in Bangladesh, and directions and strategies for JICA projects within the scope of those programs, based on the analysis in previous Chapters.

The following is a summary of proposals for goals, approaches and directions to JICA support Programs in the future, setting the goal of human development at realising the human resources vision created based on the situation of the whole education sector and issues in the sector and 'JICA Position Paper in Education Cooperation' (2015).

Human resources vision demanded in the Bangladesh society

Persons who have reliable basic scholastic ability as well as the knowledge and attitude necessary as members of society, are equipped with abilities and skills necessary for their own economic independence and fulfilment of the country's and society's needs and can carry out creative work in cooperation with people around them, finding problems and considering solutions by themselves.

(1) Unified goal in the whole education sector

What is required for Bangladesh to establish self-sufficient economic growth and rectify every social and economic disparity for developing a society that enables all people to enjoy a standard of living in the middle-income bracket is to accumulate education through several levels, with all people considered, for enhancing human capital. Accordingly, the education Program introduces seamless and consistent initiatives that consider the entire education sector to enrich and enhance human capital helpful for achieving fair and self-sufficient economic growth and social stability, and help Bangladesh accomplish SDGs.

Program Goal

Establish quality Learning Continuity that considers all people to enrich and enhance human capital for achieving fair and sustainable development of the economy and social stability, and promote Bangladesh to accomplish SDGs.

Below are proposals for the direction to take in the cooperation assumed for each education sub-sector.

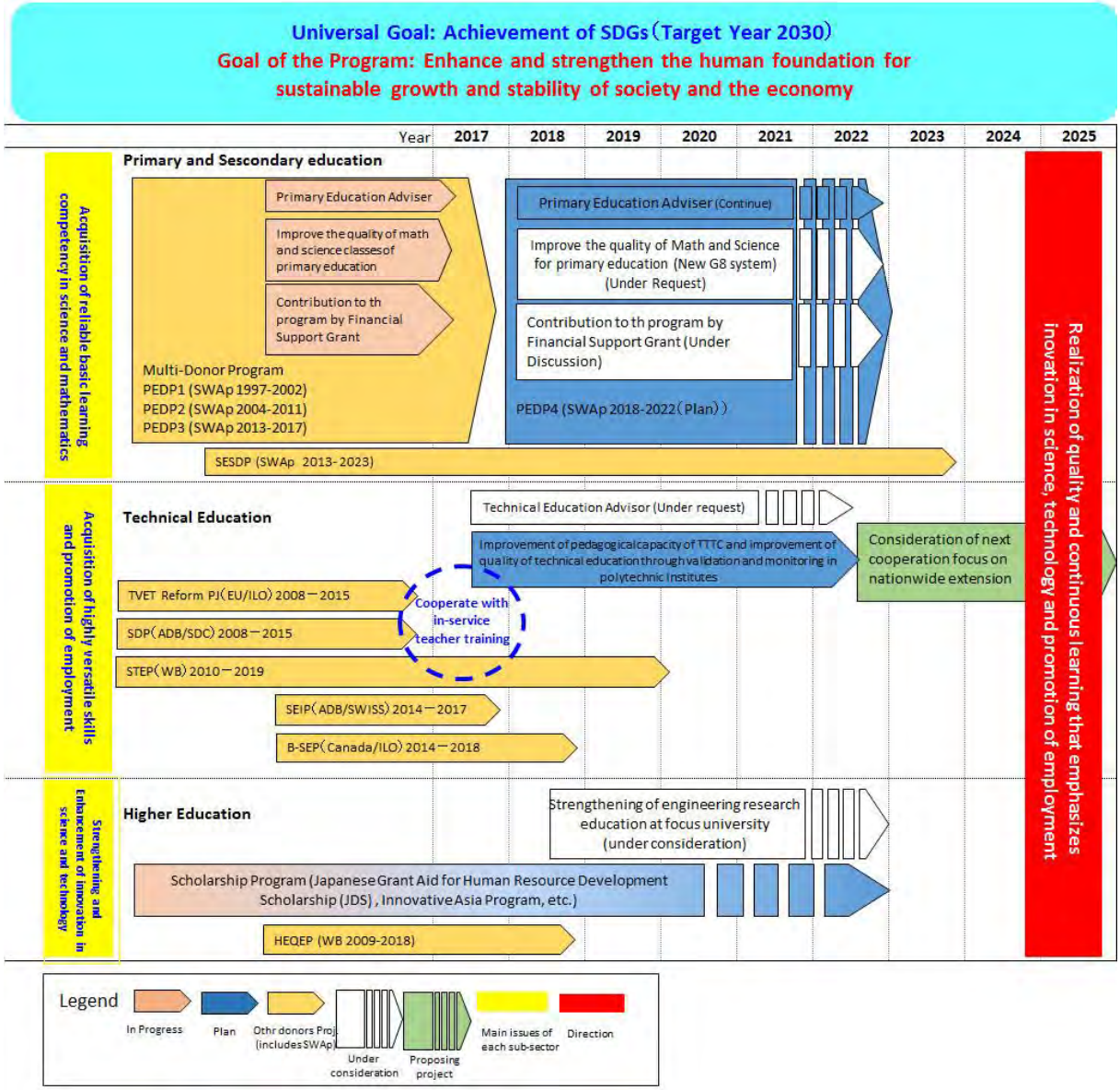


Figure 5-1 Direction for the whole education sector

5.2 Direction and Strategies for Program

(1) Direction for the field of primary and secondary education

People accumulate most of the knowledge and skills they need for daily life through mutual relationships in education and experience. What is critical from this viewpoint is to secure consistency through a learning cycle, starting from developing a curriculum for primary education as the foundation for providing appropriate education opportunities, through preparing textbooks and educational materials for classroom use based on the curriculum, and ending at evaluating performance. At the same time, the process must be designed as a comprehensive approach with a three-dimensional structure that, while securing consistency, keeps in view factors of progression from lower to upper grades.

For primary and secondary education, the key is to ensure that students can obtain basic academic abilities as a basis on which further education can be achieved. Failure of students to obtain sufficient abilities for dealing with mathematical and scientific information at the primary education stage would have a negative effect on them not only at this stage but all through the rest of their life in learning,

human relationships, and society. Science and mathematics constitute a crucial part of the basic academic abilities of students because they not only influence their scientific and reasoning judgements in social life but also greatly help them develop and nurture a grounding and interest in science. Later, at the secondary education stage, whether students choose science and mathematics classes would have a direct impact on efforts to broaden the base of scientists and engineers.

For primary education, SWAps, which started in 1997, the PEDP and PEDP2 have produced results in improving access. PEDP3 focuses on improvements in the quality of education. In work now under way for preparing a post-PEDP3 Program, the focus is again placed on the promotion of high-quality primary education.

JICA has also been providing support for improving quality of primary education since 2004. The Project for Enhancing Science & Mathematics Education at Primary Schools, a technical cooperation project, developed reference books that science and mathematics teachers can use to give exploratory and problem-solving lessons in classrooms. These highly regarded teaching materials have been distributed to teacher-training and elementary schools around the country. Phase 2 of the project, designed to promote and implement exploratory and problem-solving lessons, helps improve the quality of teacher training and revise textbooks for science and mathematics. Some achievements produced through JICA technical cooperation Programs have been applied at the ground level by Japan Overseas Cooperation Volunteers. Outputs of SWAps have also been disseminated nationwide by primary education advisers dispatched to promote expansion.

Meanwhile, cooperation provided for primary education has produced results, although existing initiatives have yet to establish learning among children. In 2017, the early secondary education (three years) is being integrated with primary education, and, as a result, the post-PEDP3 is set to have its coverage broadened from up to 5th grade to up to 8th grade. With this change in view, further studies are required for comprehensive improvement of the extended primary education sub-sector. Phase 3 of the technical cooperation project, which is now being requested, should desirably provide support for preparing science and mathematics textbooks for 6th to 8th graders in extended primary education, together with enhanced aid for the learning cycle, including effective application of assessment results, to help existing initiatives produce greater effects in establishing learning among children.

For secondary education, the ADB is carrying out the Secondary Education Sector Development Project (SESDP) to support teachers, together with researchers and others, and provide secondary education schools, including madrasahs, with equipment they need. In the support, emphasis is placed on science, mathematics, and technology education to make a significant contribution to developing human capital helpful for developing society and the economy, especially industry. The application of IT equipment for educational purposes is also regarded as important and promoted, with the IT Bangladesh policy supporting SESDP in its implementation. Early- and middle-secondary education schools have started offering career education, placing importance on making students more aware of jobs and society through education as they grow up.

Middle- and later-secondary education needs not only Programs for helping students obtain knowledge and skills, but also those for enhancing their basic abilities as working adults, including career education that considers employment after graduation and entrance into a higher-level school. Our support will have great significance for them.

What has been described above implies that for primary (and early secondary) education, support should desirably be continued, so that the comprehensive Programs that JICA and the PEDP have so far carried out will help establish learning more firmly among children.

For middle- and late-secondary education, support will have greater significance as it will also greatly contribute from the viewpoint of basic abilities as working adults. It would be appropriate to continue considering what support Japan could provide in any field where we would be able to make the greatest contributions, observing the enrolment and completion rates in middle- and late secondary education, and the trends in social development.

(2) Directions for Technical cooperation in the field of technical education

Bangladesh is called "the world's textile factory" and aims to become a middle-income country through the current brisk economic growth. It is necessary to foster people, social members and professionals based on the following social and economic changes; problems in long-term economic growth due to difficulties in getting out of the textile-centered economy, a decrease in the volume of natural gas and climate changes; and unstable society due to frequent political demonstrations and a sharply increasing number of terrorist attacks and their influence on economic growth.

In technical education in Bangladesh, critical challenges that must be addressed for the development of the country include training engineers, expanding human capital bases to stabilize the sewing industry, and transforming the industrial structure. The Bangladesh government has already prepared policy programmes for broader acceptance of technical education, and they are expected to offer greater opportunities for access to education.

Support for technical education has already been offered by the ADB, World Bank, and ILO, among others. The Skills and Training Enhancement Project (STEP), with the aid of the World Bank, provides support to the Directorate of Technical Education, BTEB, BMET, and other government organisations responsible for education, and agencies designated to implement education policy programmes in order to develop and improve their functions, facilitate preparation of policy programmes to improve the quality of education, and setting up short-term courses at educational institutions to make education more accessible.

The SDGs and Japan's new education cooperation strategy 2016–2020 emphasises and prioritises the development of human resources for industrial and scientific technologies and educational cooperation for the creation of foundations for social and economic development. As part of the creation of foundations for social and economic development in Bangladesh, the development of human resources will lead to the creation of foundations for Japanese companies' advancement overseas and promotion for their investment.

Japan's advantages include the structure of its industrial development and a technical education that matches it, especially the emphasis on craftsmanship (*monozukuri* in Japanese) in education.

In addition, it is necessary to adopt an approach that uses Japan's cooperation outputs and strong points (an approach centring on science, mathematics, technology, basics, applied skill, vocational ethics and technical cooperation). The final unified goal should be people, members of society, and professionals' acquisition of concrete abilities necessary for the sustainable growth and stability of society and the economy in Bangladesh. A multi-layered and spiral approach should be adopted for the stages as a whole and for each of the stages from the viewpoint of the effect of educational accumulation and the development of industrial human resources. A request has already been received for a technical cooperation project to improve technical education. Chapter 6 will detail the prospective technical cooperation project (proposal).

(3) Directions for Technical cooperation in the field of higher education

Higher education is given to students who, based on basic capabilities, academic abilities, and knowledge they acquired in primary and secondary education, intend to pursue more advanced knowledge and skills. Pursuing higher education brings about the joint creation of knowledge and innovations, and therefore contributes to the development and advancement of society and the economy. This means that efforts must be made to offer more opportunities for higher education so that more people can enjoy its benefits.

In the 7th five-year plan (2010–2021), Bangladesh aims to accelerate sustainable and fair economic growth and get out of poverty to become a middle-income country by 2021. The country also intends to enhance its university education and research and development functions to achieve economic growth and social development. The World Bank, through the Higher Education Quality Enhancement Project (HEQEP), has been helping Bangladesh improve the quality of its higher education. Japan has not only conducted grant aid projects but also accepted students from Bangladesh to study in Japan, under

schemes other than ODA, develop human capital who can work in higher education or as senior government officials.

From the viewpoint of science, technology, and engineering education, the Faculty of Engineering & Technology of the University of Dhaka, BUET, and a few other universities offered advanced engineering education in Bangladesh. However, constraints of research environments and other factors impede the development of new knowledge and innovation. Universities in Bangladesh are not very active in working with the private sector and in acquiring competitive research funds, both of which are critical factors for encouraging innovation.

Meanwhile, Japan has accepted many students from Bangladesh as an attempt to secure pro-Japanese people and develop strong networks not only in the academic community but also in the private and public sectors. As the country is historically friendly to Japan, students coming back from Japan and networks of alumni associations play significant roles not only for the development of Bangladesh but also in diplomatic relations between the two countries and interaction among their people. Given the expansion of the operation of Japanese companies in Bangladesh due to its stable economic growth and increasing foreign investment, students returning from Japan also have crucial roles to play in the economy of the two countries.

These developments suggest that, based on results achieved and lessons learned so far through cooperation in higher education, cooperation should be considered mainly in the field of engineering. Together with this cooperation, the acceptance of students from Bangladesh should be continued in order to support higher education in the country.

CHAPTER6 Proposals for JICA's Technical Cooperation Project to Technical Education

In this chapter, the survey team will suggest competencies and abilities that should be strengthened through technical education and, based on the Bangladesh government's request for technical cooperation, propose for JICA's technical cooperation project the directions and strategies for technical education mentioned in the previous chapter.

6.1 Need for Cooperation with Technical Education in Bangladesh

6.1.1 Japan's cooperation with technical education in Bangladesh

In Bangladesh, it is an important and urgent matter to develop industrial human resources with a long-sighted plan that continuously strengthens the RMG sector and changes the industrial structure. To achieve development and stability in industry, people must be educated to have basic competency such as math, science, and engineering skills. This is clearly shown by DPs such as the ADB that have been supporting this area. The Japanese government was requested by the Bangladesh government to provide technical to polytechnic institutes.

In the process of industrialization, one of Japan's advantages is that the technical and vocational education in Japan has emphasized craftsmanship in education. Therefore, the best way to implement JICA's technical cooperation to improve technical education in Bangladesh is through the strategies mentioned in the previous chapter. These methods use Japan's strong points and set the unified goal that educated people, members of society, and professionals acquire concrete abilities necessary for sustainable growth and the stability of society and the economy.

6.2 Competencies and Abilities that Should be Strengthened through Technical Education

6.2.1 Competencies demanded by industrial companies

Industrial companies in Bangladesh pointed out that their workers must have basic abilities, such as working with other people in a workplace and community, in addition to basic learning competency and job specific technical skills and knowledge. The basic abilities for working mean the generic skills that are called 'fundamental competencies for working people' in Japan.

The results of the 'Industry Sector Human Resource Survey in Bangladesh' (2016) show that industrial companies expect TVET graduates to acquire not only technical knowledge and skills but also the 'fundamental competencies for working people' including problem solving, imagination, and communication. Similar expectations in the industrial sector can be seen in surveys conducted in other countries. Therefore, the 'fundamental competencies for working people' can be considered as one important ability required by the industrial sector. In other words, education is expected to develop students' basic learning competencies, job specific and technical knowledge and skills, as well as 'fundamental competencies for working people.' Those abilities and skills are necessary for people to function as members in their society. Graduates from TVET institutes are expected to develop the abilities to step forward, think through problems, and work as a team to carry out creative work and address their social and organizational challenges.

6.2.2 Technical skills and knowledge to create the added-value products

To shift from the current industrial structure driven by the RMG industry to the future industrial structure while creating and expanding other potential industries, human resources must be developed who have competencies to meet the demands from industries as well as the creativity to add value to them. Japanese technical education has ensured that students acquire the necessary knowledge and skills by focusing on understanding of production process, reading and writing engineering drawings,

shaping and processing accurately based on engineering drawings, all while enhancing the students' interest in technology. Therefore, the industrial sector in Japan highly rates technical education graduates for their knowledge and reliability, and Japanese technical education has been promoted because of their good relations with industrial companies. In Bangladesh, high-quality technical education is not being provided and the linkage with the industrial sector is still weak. Technical skills for manufacturing must be developed while enhancing the ability to meet the demand from industry.

6.2.3 Low employment status of TVET graduates

According to a report of a 2006 survey conducted by the WB, the employment status of graduates from technical education is very low. Career education has been introduced to secondary education. However, the survey team will suggest that career education should be consistent from primary education through to technical and tertiary education. Education can meet social demands and achieve goals when students accumulate basic learning competency, specific and technical skills, and fundamental competencies of working people. Through the technical cooperation project, technical education students are expected to enhance their employability by accumulating knowledge about labour market needs, types of jobs, and career design.

6.2.4 Abilities required for human resource in manufacturing in Bangladesh

The following figure shows the abilities required by human resources in manufacturing in Bangladesh.

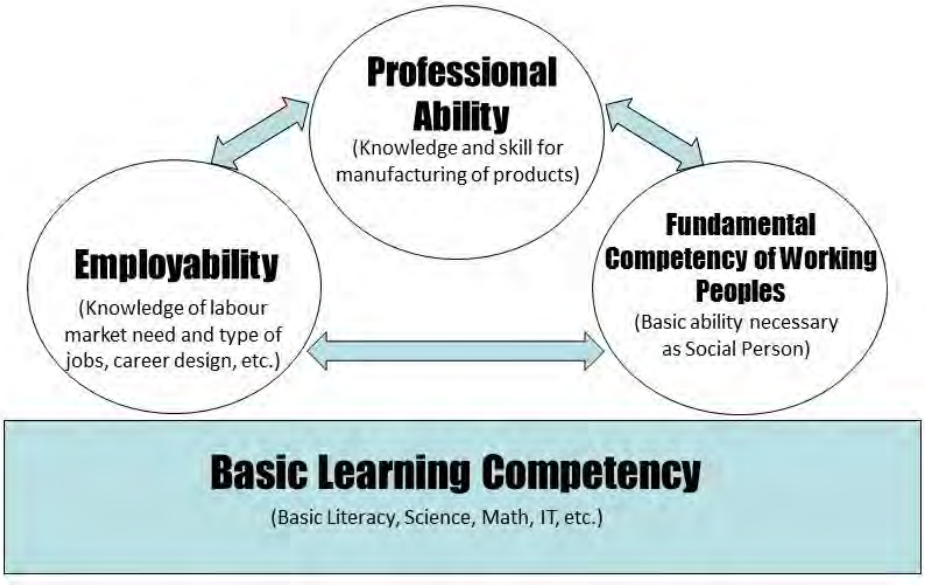


Figure 6-1 Abilities required for industrial human resources in Bangladesh

Based on the basic learning skills accumulated through primary and secondary education, technical education can strengthen technical skills and professional ability, fundamental competencies for working people, and employability in order to meet Bangladesh's industrial human resource needs.

6.3 Abilities to be strengthen gradually according to Educational Level

6.3.1 Plan to strengthen abilities according to educational level

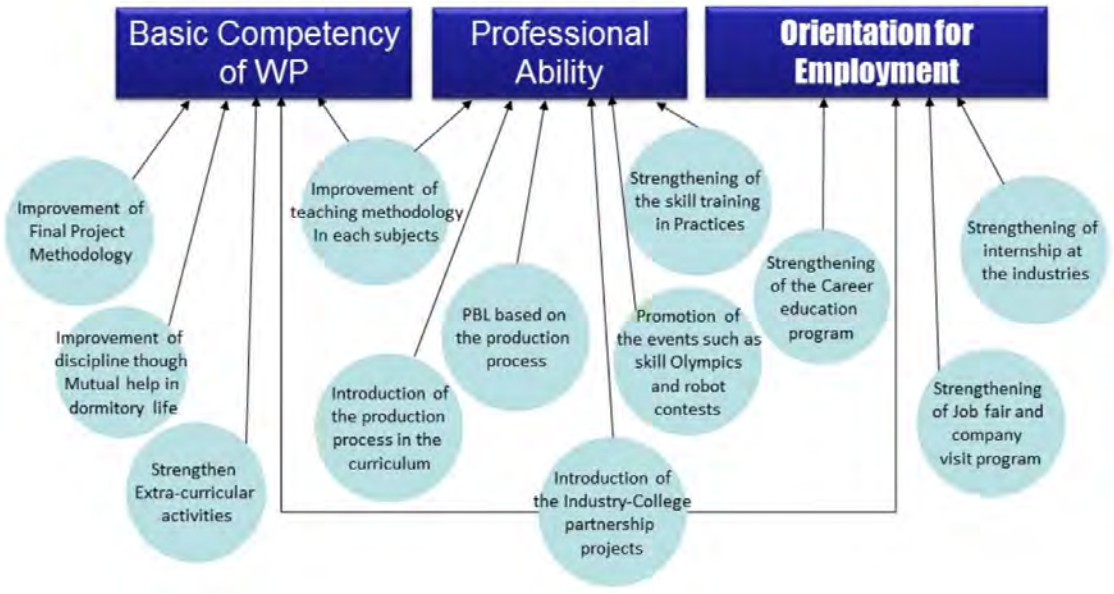
Accumulating the three kinds of abilities in a single educational subsector is difficult, and requires comprehensive and consistent efforts in the whole education sector. Table 6-1 summarises the contents

of study at each educational stage, including study of the fundamental competencies for working people.

Primary education enables students to acquire basic scholastic ability in arithmetic, science and other subjects well, while junior secondary education enables them to develop their ability to apply these basic abilities. Middle Secondary and higher education enable them to acquire higher-level knowledge in such subjects as mathematics, physics, biology, and chemistry, and strengthen employability through carrier education. In addition, the technical education course enables them to form foundations for industrial technology in such subjects as machinery, electricity, and electronics. At the diploma level of polytechnic institutes, students' abilities should be strengthened with strong consideration for employment in industry, including the understanding of production processes, the reading/writing of drawings and moulding/processing technology. On the other hand, fundamental competencies for working people require a scenario whereby abilities can be developed gradually from primary education through extracurricular activities and lecture methods in each subject.

6.3.2 Example of the activities to strengthen the required abilities

Japan's experience can be applicable in technical education to acquire the three abilities of fundamental competencies for working people, technical knowledge and skills, and employability. However, Bangladesh must also build a model of technical education through technical cooperation based on the efforts of TVET reform, which is conducted by the Bangladesh government and DPs, while considering the limitations of its budget and the status of human resources in the technical education sector. As a reference, the survey team will introduce several activities from the technical education sector to strengthen the three abilities in Bangladeshi engineers.



Source: The survey team

Figure 6-2 Example of the activities to strengthen the required abilities

Regarding fundamental competencies for working people, identify issues that companies will face during the industrial-academic cooperation project with private companies, have students consider solutions as general exercises for a team consisting of students from several courses, such as electricity, electronics, mechanical and IT, and have them strive to solve the issues for a half year to one year.

Depending on the type of issue, it may be possible for students to hand the project over to lower-grade students so that the project can be carried out for a long time. As shown in the visit to the Kanto Polytechnic College, it is fair to say that such improvement of study methods leads to great reform in polytechnic institutes. An example of strengthening of extracurricular activities is the club activities introduced by junior high schools, high schools and universities in Japan. If students enter a club according to their interest, they can develop their ability to step forward, ability to think through ideas and ability to work in a team through group activities for a common goal. Regarding the strengthening of fundamental competencies for working persons, it is necessary to strengthen them through the lecture methods employed in all subjects, including not only technical subjects but also basic cultural subjects. For example, it is possible to make the following improvements: raising the goal of cognitive study from the memorization of definitions to deep understanding, comparison and application; evaluating not only knowledge, skill and attitude through tests but also cooperativeness and other aspects from the results of project work and other tasks; and evaluating not only study results but also study processes.

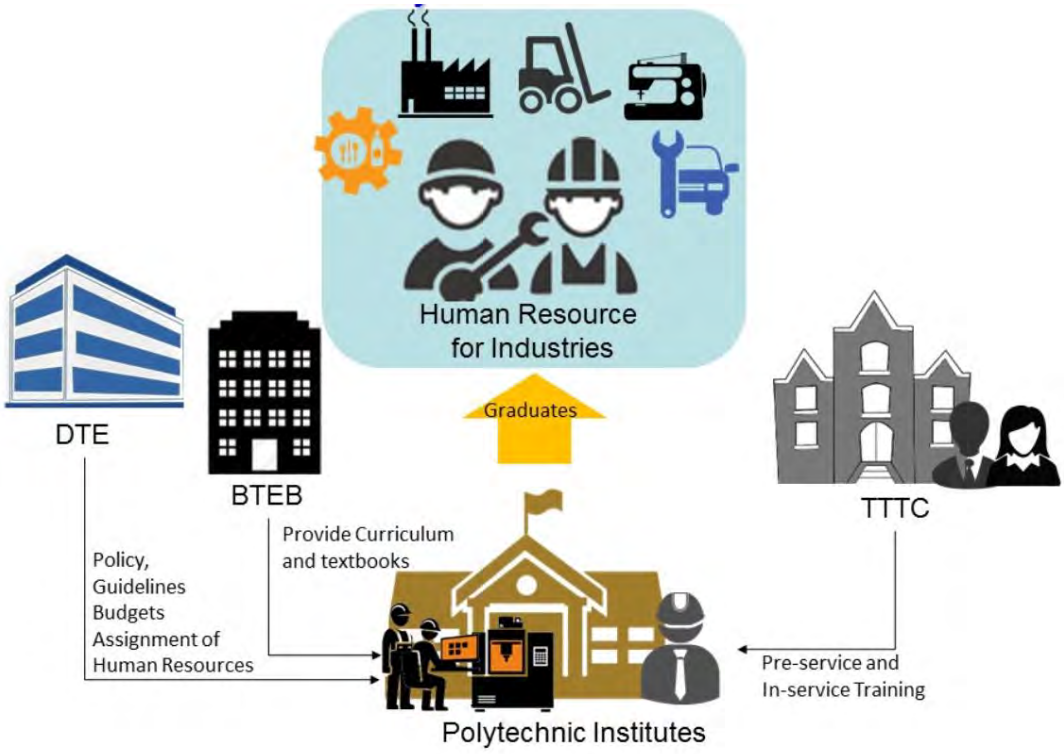
Regarding ability related to technology, it is important to understand production processes, read and write drawings as a common language in the field of technology and learn accurate processing and molding technology based on drawings. Students' motivation will be enhanced and they will become more creative human resources if National Skills Competition and robot contests are held in Bangladesh and students participate in international contests. The employment rate can be increased through on-the-job training, which is planned to be strengthened by the dual system that the ILO and EU have already begun to develop. The employment rate can be increased also by strengthening job fairs held by polytechnic institutes and visits to companies.

Focusing on the concept "Monozukuri" explained in chapter 4, the survey team selects three target technologies—electrical, electronic, and mechanical engineering—because Japan has achieved strong educational outcomes in technical and vocational education in those areas.

It would be difficult to realize the human resources vision demanded in Bangladesh society if the approach were limited to a single sub-sector. To realize the human resources vision, the entire educational sector must teach students basic learning competencies such as reading, writing, and mathematics, specific and technical knowledge and skills, and fundamental competencies for working people.

6.3.3 Strengthening of Organization and Systems for supporting technical education

In the previous section, the survey team summarized the abilities required for human resource development in the technical education sub-sector. To realize the ideal technical education and achieve the vision of human resources with the required abilities, governmental organizations and systems related to technical education must be developed and strengthened. Figure 6-3 shows primary stakeholders related to technical education under the Ministry of Education. Polytechnic institutes educate their students to be engineers who work in the industrial sector, and TTTC provides both pre- and in-service training to technical teachers. BTEB develops the curriculum and teaching materials, and DTE develops the related policies and guidelines, manages the budget, human resources and facilities of TVET institutions including polytechnic institutes and TTTC.

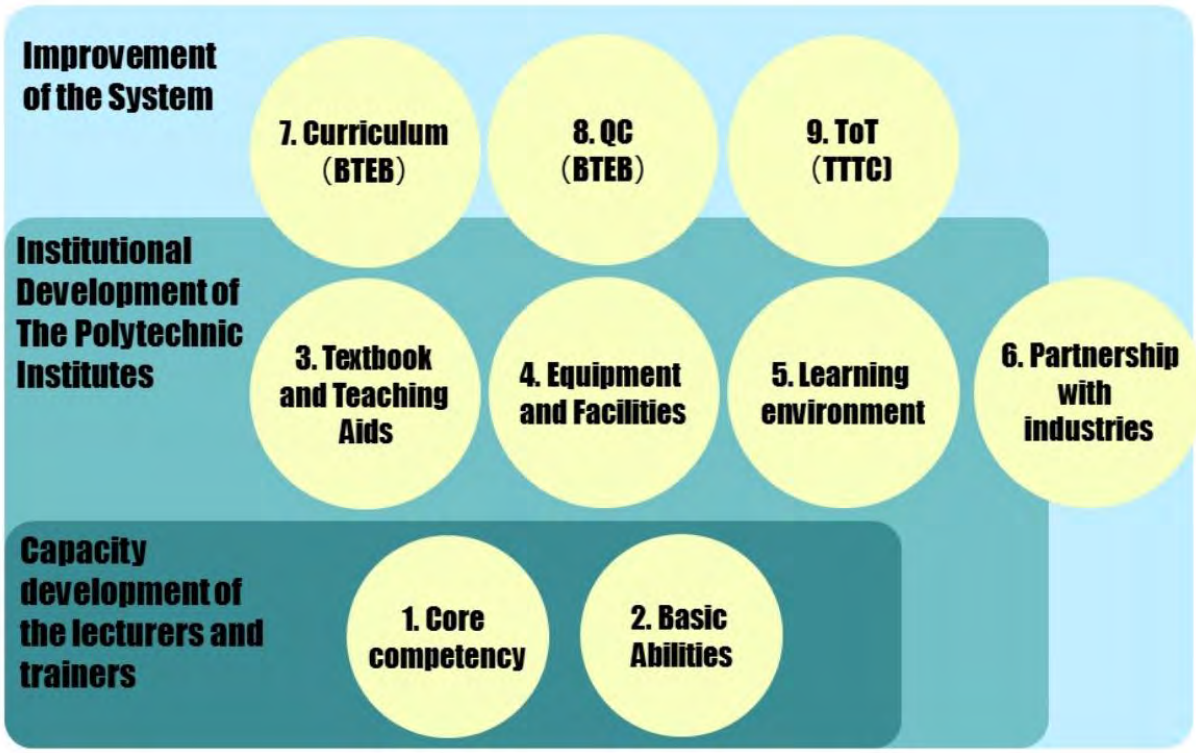


Source: The Survey Team

Figure 6-3 Main stakeholders related to Technical Education of Polytechnic Institutes

If the inputs in each stakeholder as described in the preceding section are arranged according to the framework of JICA's capacity development,[85] it is necessary to prepare designs for strengthening three layers – strengthening of the ability of instructors of polytechnic institutes; strengthening of the organization; and improvement of systems.

[85] See https://www.jica.go.jp/jica-ri/IFIC_and_JBICI-Studies/jica-ri/column/archives/osusume02.html.



Source: The survey team

Figure 6-4 Framework for Strengthening Organisation and Systems

(1) 1st layer: strengthening the ability of instructors of polytechnic institutes

First, to strengthen ability, it is necessary to set the target core competency clearly and plan a problem for strengthening the ability based on the level of competency. This is called faculty development among the higher educational institutions in Japan. In short, a scenario is prepared concerning how hired instructors should develop their careers and, based on the scenario, various types of training and promotion examinations are carried out. Because the Bangladesh Ministry of Education has already begun to introduce CBT (Competency Based Training), it seems easy for the Bangladesh to accept such a concept to strengthen the ability of polytechnic instructors in this project.

Then, it is necessary to check and strengthen instructors' basic abilities – their fundamental competencies for working persons, their occupational views and their understanding of social needs. This requires polytechnic college field surveys and the college's research and development function along with the establishment of an environment for instructors' study. Last, to encourage instructors to have a positive attitude toward the improvement of lessons, it is necessary to improve the president, the department chiefs and other executives' awareness.

(2) 2nd layer: strengthening the organization of instructors of polytechnic institutes

Next, it is necessary to develop teaching materials for the target subjects at polytechnic institutes, procure equipment for practice, establish a study environment, including a library and the Internet, and cooperate with companies. The textbooks for polytechnic institutes have not been updated since the second half of the 1990s. Lecturers provide lessons by distributing references and handouts. However, because a textbook for each course is prepared at BTEB, it is possible to reflect technical professionals' recommendations about the improvement of the textbooks in the review of the target subjects. Regarding the selection of equipment for practice, it is necessary to procure teaching materials required for understanding the basic principles and concepts of electricity, electronics and machinery according to the number of students instead of procuring many high-level equipment pieces.

It is also necessary to procure highly precise equipment for practical molding, processing and assembly in addition to demonstration. Although such equipment has been procured under some projects and by the use of the Ministry of Education's budget, specifications and the number of articles vary widely and the observation of practice gave the survey team the impression that there is large room for improvement. When a survey is conducted to prepare a detailed plan or after the project begins, an expert in the target technical field should be dispatched to design a necessary environment for practice according to the curriculum or the assumed guidance method and check the usability of the existing equipment. After that, a list of equipment to be purchased additionally or newly should be prepared.

Because the study environment for students and instructors is very poor, including libraries, the Internet, server systems and other IT equipment, it is essential to improve the study environment.

Lastly, regarding cooperation with companies, it is necessary to proceed with the construction of relationships with local companies through the Placement Cell of each polytechnic institute, conduct polytechnic institutes surveys on local industries' needs, select some of the issues found through the surveys as themes for graduation seminars and strive to solve the issues technically together with the target companies. These projects themselves may provide students opportunities to find a job.

(3) 3rd layer: improving systems for technical education

To maintain improvements at a polytechnic institute, it is necessary to strengthen the curriculums, the quality control system and also the training of teachers for the target subjects. The curriculum and the quality control are the responsibility of BTEB, and the training of teachers is provided by TTTC.

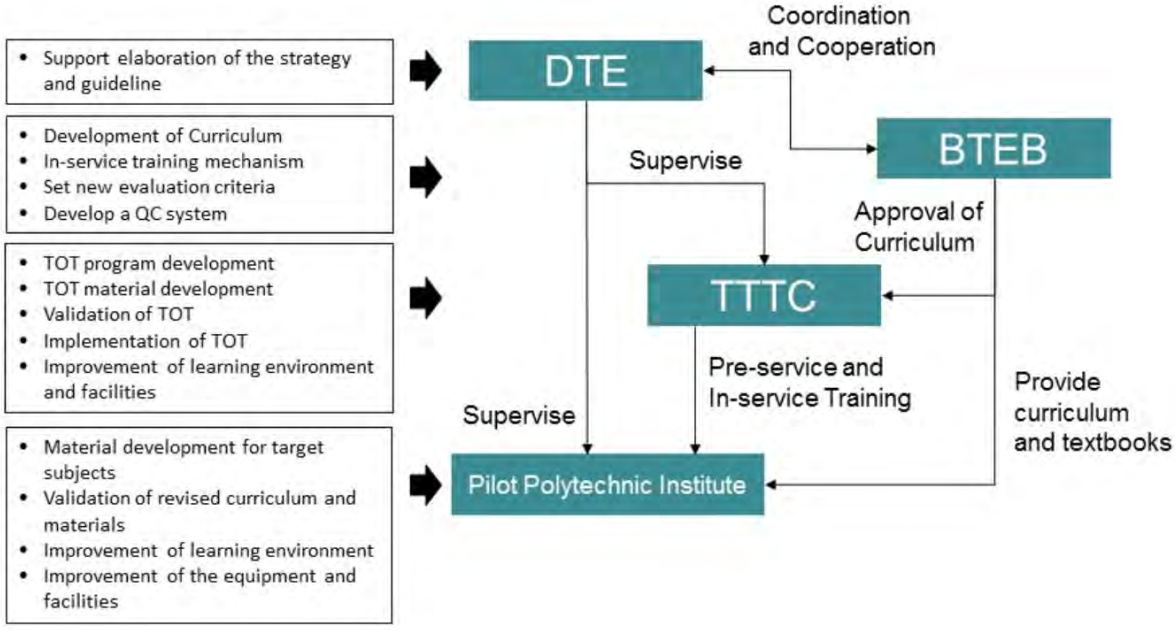
Curriculums and quality control for the target skills require detailed analysis by dispatched experts. TTTC's training of teachers consists of a two-year diploma course, a one-year bachelor's course, and short-term training of existing teachers (in-service training) in teaching methods and various skills. In the technical cooperation project, because of limitations in the period, the budget and the input of experts, it is desirable to develop course curriculums and teaching materials focusing on in-service training at the polytechnic colleges related to the target skills instead of qualification courses.

If guidelines are prepared for the DTE, BTEB's development of curriculums and the system for training teachers are strengthened, and TTTC's teachers training Program is strengthened, an environment will be established to improve lessons at polytechnic institutes in a sustainable way.

6.3.4 Main Stakeholders, Their Relationships and Necessary Input

Bangladesh has requested set strategies for technical education up to the diploma level, including developing courses, curriculum and teaching materials, and strengthening technical teachers training. DTE has plans and expects to develop TTTC for strengthening the technical education at polytechnic institutes. On the other hand, BTEB organizes its committee with focal persons and experts to develop the curriculum and teaching materials. Therefore, if the project includes activities to develop curriculum and teaching materials, BTEB will be the C/P. If the project includes activities to improve the educational system of polytechnic institutes, DTE will be the C/P. To improve and develop the educational system related to polytechnic institutes, the project requires cooperation between several stakeholders. However, the project should select the C/P that can make full-time commitment in the activity area to proceed with the core activity of the project.

If the improvement of systems at polytechnic institutes is the focused concern, as demanded in the written request by MOE, then it will be necessary to provide support in the development of strategies and guidelines, curriculum and teaching materials, as well as in strengthening teacher training and cooperation with the following four stakeholders.



Source: Survey

Figure 6-5 Main Stakeholders, Their Relationships and Necessary Input

As shown in the written request, support will be provided to the DTE in establishing a strategy for technical education as a whole and preparing guidelines. Although it is desirable to place experts in positions such as policy advisors, if the chief advisor for the project assumes the role, it is necessary to secure in R/D a status so high as to be able to discuss equality with the Head of the Directorate and people of similar class. Next, it is necessary to provide instructions to BETB concerning the revision and development of the curriculums of the target courses (electricity, electronics and mechanical), the creation of a system for training teachers, guidance in the revision of the study evaluation criteria and systems for new study efforts, including integrated exercises, and the creation of a system for quality control (QC) for the purpose of guaranteeing the quality of lessons.

Regarding TTTC, it is necessary to develop a training Program for the existing polytechnic instructors, develop teaching materials for the training of teachers, provide TOT (training of trainers), inspect training Programs for teachers and improve the study environment, including equipment for practice, study resources, a library and the Internet.

Lastly, regarding the pilot polytechnic institutes, it is necessary to develop teaching materials for the target subjects and carry out on-the-spot investigations of curriculums and teaching materials. In addition, as in the case of TTTC, it is necessary to improve the study environment for students and teachers and procure teaching materials for practice.

6.4 Contents of the written request by the Bangladesh government and the technical cooperation that JICA is expected to Provide

As of 20 July 2015, the Directorate of Technical Education had requested technical cooperation from the Japanese government as follows:

Request from Ministry of Education in Bangladesh

Overall Goal
Polytechnic Institutions sustainably produce well-educated diploma engineering graduates who contribute socio-economic development of the nation through an improved educational system.

Project Objective
To developed a post- secondary/higher engineering education model to produce well-educated and skilled human resources through improving curriculum, teaching materials, capacity of lecturers of technical education (Polytechnic Institutes)

Outputs
1. Strategies for technical education in post-secondary level institutions (Polytechnic Institutes, diploma education are set.
2. Courses, curriculum, and teaching materials are improved and developed for polytechnic institutes and technical Teacher's Training College (TTTC) by exploring Japanese colleges of technology education and the current needs in Bangladesh.
3. Improved/ developed courses, curriculum and teaching materials are utilized for capacity building of instructors/ lecturers by TTTC
4. Improved/ developed courses, curriculum, and teaching materials are applied to education in target polytechnic institutes.

Activity
1-1 To examine applicability of Japan's engineering education system to Bangladesh through visits to colleges of technology and related government authorities in Japan.
1-2 To examine and understand issues and challenges of the current polytechnic institutes in Bangladesh by comparison with Japan's system, and by comprehensive exploration of existing courses, curriculum, careers of graduates, mid-long term need of industries.
1-3 To discuss and examine strategies for secondary/higher engineering education, including polytechnic institutes and TTTC, among concerned authorities based on the outputs by 1-1 and 1-2.
2-1 To set working groups for course, curriculum, and teaching materials development among concerned authorities.
2-2 To develop action plans for improvement of teaching materials and facilities, and capacity building of instructors/ lectures through examining lectures and practices of polytechnic institutes, procedure of revision of curriculum and teaching materials
2-3 To develop draft courses, curriculum, and teaching materials based on action plan above
2-4 To discuss and approve courses, curriculum, and teaching materials.
3-1 To examine the current lectures and practices for lecturers in TTTC
3-2 To understand challenges and issues on teachings by lecturers of polytechnic institutes through observation
3-3 To implement trainings, lectures, and practices for lecturers of polytechnic institutes based on the Output 2
3-4 To feedback the lesson-learnt from the above training and lectures for improvement of teaching materials
4-1 To practice lecturers and practices in the targeted polytechnic institute based on new courses, curriculum, and practice above for the further improvement.
4-2 To make feedback from lesson-learnt from the practice above for the further improvement

Input from the Japanese Government
1. Experts with experience of Kosen
2. Arrangements for training in Japan for visiting colleges of technology
3. Equipment supply for practical classes as necessary in selected Polytechnic Institute

Implementation Schedule
From 2016 to 2021 (5 Years)

According to the results of interviews held during this survey, as a part of the reform of TVET, the Bangladesh Ministry of Education has proceeded with the establishment of a technical qualification system, which has been carried out with the support of the WB, ILO, EU, and others, the

establishment of new educational institutions, the revision and development of curriculums and teaching materials, overseas training of teachers, and other improvements. The polytechnic institutes in particular have the challenge of strengthening the function for expanding the capacity to accept students and secure the quality of education. The Japanese Government is expected to provide cooperation in tackling the challenge. Attention has been especially paid to the Japanese colleges of technology's practical curriculums, companies' high evaluation of the colleges of technology and the high employment rate of colleges of technology students. However, because enormous amounts of time and money are necessary for improving the quality of the 49 government-managed polytechnic institutes and more than 220 private engineering institutes in Bangladesh, a policy has been adopted to strengthen TTTC as strategic bases. In the above-mentioned request, consideration is given to the plan to use TTTC as bases for strengthening teachers' abilities and select pilot polytechnic institutes to inspect curriculums and teaching materials.

The survey team found the following issues when it examined the validity of this request.

6.4.1 Implementation of Invitation Program to Japan and its outputs

Japanese government invited to Japan eights high rank officials from Bangladesh TVET sector from July 9th to 17th, 2016. They had observation visits on the TVET education and human resources development system in Japan. They visited National Institute of Technology, Akashi College of Technology (Akashi Kosen), NIKKO Co., Ltd, Kanto Polytechnic College, Tokyo Tech High School of Science and Technology, Ministry of Education, Culture, Sports, Science and Technology, and JICA Headquarter.

The learning goals of the field visit are as following:

1) To learn activities and policies for career education system in Japan
2) To learn activities and policies for developing human resources as practical engineers with coordinating among educational institutions and industry.
3) To learn educational policies for strengthening Fundamental Competencies for Working People
4) To learn abilities of research and technical education teachers' senses on the knowledges of "Monozukuri"
5) To understand employment support system in colleges and high schools in Japan.

Participants learned about the concepts of technical education in Japan and discussed with JICA officers on the direction of the future Japanese technical cooperation. Although the program duration was only one week, it seemed that those study visits bring them huge implications for forming future projects. Participants visited above mentioned TVET colleges and schools, and all of them mentioned on final day of the visit that College of technology (KOSEN) could be an ideal role model of Polytechnic Institute in Bangladesh.

Colleges of Technology in Japan have five years education system for technical education and Polytechnic Institute in Bangladesh have four years education system. Both College and Institute accept graduated lower secondary, and the system seems almost the similar. However the maturity of the educational system in Japan and in Bangladesh are different. In Bangladesh has not established yet clear goal on the images of the human resources to be develop and its strategies for the 4 years technical education, also there are weakness in educational contents, teachers' abilities and employment support system linked with industries. Staffs of Japanese College of Technology (Akashi Kosen) explained mainly following-mentioned four points in their characters and implementations, and all participants seemed to be understood it for improving functions of Polytechnic Institutes in Bangladesh.

- Implementations for developing Fundamental Competencies for Working Peoples by learning technical subjects and of Project Based Learning (PBL)
- Implementations for enhancing and strengthening teachers' qualities and abilities
- Implementations of education based on human resource demands in industry
- Implementations of educational projects with industry

The participants identified the need of human resources development system based on the demands of industry, and mentioned that improving curricula and strengthening teachers' abilities through training programs are urgent issues. The details are in Appendix 1, "Outline of the Invitation Program to Japan".

6.4.2 The observation about the Written Request from Gov. of Bangladesh

(1) Application of Japan's colleges of technology System as a Role Model

From the outset, DTE has paid attention to Japan's colleges of technology system and, during discussions in invitation Program to Japan, said that it wanted to introduce some advantages of the system as a role model in Bangladesh. On the other hand, because there are great gaps in the level of teachers and the length of history of efforts for organisational reform, it is necessary to take this into consideration when examining what efforts can be introduced in the strengthening of the polytechnic institutes in Bangladesh.

Table 6-1 below summarises differences between the colleges of technology in Japan and the polytechnic institutes in Bangladesh.

Table 6-1 Comparison in Systems and Projects between Colleges of technology in Japan and Polytechnic institutes in Bangladesh

	Japan: colleges of technology	**Bangladesh: polytechnic institutes**
Education system	Five-year consistent education Secondary education graduates (10th graders) can apply for entry. -Graduates from general secondary schools are eligible for transfer to colleges of technology. -Graduates from colleges of technology are eligible for transfer to the third year at university. -If a graduate from a college of technology goes on to a non-degree course for graduates, the graduate can acquire a qualification equivalent to a bachelor's degree.	Four-year consistent education Middle secondary education graduates (11th graders) can apply for entry. -A system for higher secondary education graduates' transfer to the second year of polytechnic institutes is started in 2016. -A system whereby graduates from polytechnic institutes can transfer to university also is now under consideration. They are transferred to the second year at university.
Characteristics/ content of education	Practical and project-based study has been incorporated.	Opportunities for practice are fewer than assumed in curriculums.
Title/degree	Associate bachelor's degree	Diploma in Engineering (equivalent to graduation from junior college in Japan)
Teachers and system for strengthening their abilities	Many teachers completed a doctoral course. Systematic training is held for improvement of education.	A half of teachers completed a bachelor's course. Teachers who completed a diploma course and teachers who completed a master's course each account for 20% to 25%. Students can become teachers if they graduate from an engineering junior college and pass employment examinations. Recently, short-term training related to teaching methods has been held mainly under the support of donors.
Situation of employment / support for employment	About 40% of graduates go on to a college of technology non-degree course or the third year at university. The employment rate of job seekers is almost 100%.	According to data for 2006, only 7.26% of graduates could find a job. Although there is no recent numerical data, the situation of employment cannot be said to be good.
Research & development, cooperation with the industrial sector	Education projects are conducted jointly with industries and local governments. Efforts are made to acquire and understand companies' data and needs concerning ideal human resources and reflect the needs in actual education.	There is no research function. Usually, education projects are not conducted jointly with industries or local governments. Cooperation with companies is limited to internships and job fairs.

Source: The survey team

Japan's colleges of technology and Bangladesh's polytechnic institutes have common points in their education systems. It is fair to say that there are many aspects that would allow the introduction of the Japan's colleges of technology system, such as manufacturing-focused curriculums, students' imagination and independency in PBL and robot contents and others, extracurricular activities that draw out cooperation, dormitory life through which students learn rules and manners, cooperation with companies, employment support systems and technical research functions. On the other hand,

Bangladesh's polytechnic institutes have many problems, such as students' low basic scholastic ability, teachers' varying technical skills and poor knowledge and skills in teaching methods, inadequate study environments, insufficient budgets, limited facilities and equipment and lack of teachers. This requires accumulation from basics as a long-term measure. In Japan, colleges of technology graduates' future course has shifted from employment to transfer to a college of engineering (according to data for FY2015, 57.8% of graduates found a job, 40% went on to a college of engineering or a college of technology's non-degree course, and 2.2% took other courses). Therefore, attention should be paid to the fact that colleges of technology have become similar to colleges of engineering in Japan. If focus is being placed on practical skills for the purpose of employment, then it is fair to say that the polytechnic college which was visited under the invitation Program in July 2016 and places focus on the development of monozukuri human resources and has adopted problem-solving exercises and employment-oriented curriculums, is nearer to the direction of Bangladesh's polytechnic institutes. It is desirable to create a system that better satisfies needs in Bangladesh, based on not only the strong points of Japanese college of technology but also those of Japanese institutions related to vocational and technical education. In the final draft report meeting and discussions at DTE on 10 January 2017, the participants from Bangladesh said that the Japanese model of colleges of technology should not be adopted as it is; they hoped to improve polytechnic institutes using much time for discussing what points can be applied according to the current context of the TVET reform, which Bangladesh has already started, during the technical cooperation project.

6.4.3 Target Technology of the Project

Although the written request explains that courses, curriculums and teaching materials are revised and developed without defining the extent, the polytechnic institutes in Bangladesh now provide 34 courses in 12 fields, such as food/agriculture, construction/civil engineering, electricity/electronics, materials, automobiles, mechanical, woodwork, apparel, mining, telecommunications and medical care. Although the revision and development of the curriculums and teaching materials for the courses need enormous input, to produce maximum effects from the limited budget and period of the technical cooperation project, it is necessary to narrow down the target to some fields that desperately need industrial promotion in Bangladesh and are easy for Japan to deal with. Because four-year curriculum and teaching materials are necessary for each course, the survey team suggested to DTE that the target of this cooperation should be narrowed down to electric, electronic and mechanical technologies. Although DTE basically gave consent for these three technologies, it wished to give more consideration because the demand for the training of civil engineers, for example, is high in Bangladesh.

6.4.4 Targeted polytechnic institutes and model dissemination to other polytechnic institutes

For the time being, the targets will be government-managed polytechnic institutes. If fundamental competencies for working people and career education are introduced as cultural subjects or extracurricular activities, all 49 polytechnic colleges will be the final targets. Regarding three targeted industrial technologies, 20 to 30 polytechnic colleges have courses into which the same Program has been adopted. If a technical course or a practice Program is newly introduced as a standard curriculum, it is essential to establish a study environment, including equipment. For this purpose, it is necessary to prepare a plan to draw up a long-term budget and extend the project nationwide. In an industrial automation technology project for technical high schools in Turkey, two pilot schools were selected in Phase I (five years) to install equipment and develop curriculums and teaching materials. In Phase II (three years), the project was extended to 20 schools nationwide. Turkey's Ministry of Education prepared a budget of two billion JPY and distributed an industrial automation study system with a price of 100 million JPY to each school. Because the Ministry has independently continued the distribution since then, 53 schools provide an industrial automation course at present. In Bangladesh, when a discussion was conducted at the meeting held for giving a report to DTE on 10 January 2017, the survey team explained that although basically importance will be given to the development of curriculums and teaching materials for the target three technologies, it is necessary to select one pilot

school and conduct a field inspection of teaching materials. DTE expressed their wish to select a pilot polytechnic institute in each division (eight institutes in total). It is desirable to proceed with the development of curriculums and teaching materials together with BTEB during the first half of the project, using TTTC as bases, and conduct the first validation of the development of teaching materials by selecting one pilot institute in Dhaka. Because it is necessary to check the extension of the target courses during the second half of the project (from the third year), the extension should be checked by selecting a target school in each jurisdiction, where trainers should be fostered as a base for extension to local polytechnic institutes.

6.4.5 Obtaining a consensus regarding the introduction of education with a view to comprehensive character building

According to the written request, Bangladesh expects the development of courses, curriculums and teaching materials related to industrial technology. A great challenge was whether Bangladesh would accept the survey team's proposal about education that was based on the team's survey and places importance on comprehensive character building, such as fundamental competencies for working persons and career education.

Because the survey team could not go to Bangladesh owing to the terrorist attack in July, it was difficult to secure opportunities to proceed with the discussion. When the survey team was allowed to go to Bangladesh on 9 and 10 January 2017, it was able to report the results of this survey to the Ministry of Education, DTE and BTEB and discuss the above challenge.

Fundamental competencies for working persons have already been included in the general skills that DTE has begun to introduce during the TVET reform. Because they are included also in NTVOF, this way of thinking is basically the same as Bangladesh's policy.

However, other DPs' support tends to focus too heavily on technical skills for industrial human resource development. Therefore, when JICA's technical cooperation project is implemented, the project team should hold a discussion with DTE, BTEB and other DPs, ascertain the competencies demanded by the industrial sector in Bangladesh, and introduce in curricula and teaching methodology the concept of fundamental competencies for working people.

6.5 Proposals for Technical Cooperation Project

6.5.1 Proposed amendment to the request for technical cooperation submitted by DTE

The survey team proposes the following amendments to the technical cooperation project plan based on the analysis of the request for technical cooperation submitted by DTE. The main amendments based on the request are as follows:

1) Because it is difficult to achieve the Overall Goal proposed in the request within three years of the project completion, it was replaced with a Super Goal.
2) As a new goal expected to be achieved within three years of the project completion, disseminate the curriculums, teaching materials, teaching methods and others verified at the pilot polytechnic institutes among the polytechnic institutes all over the country. This means dissemination among the institutes providing the target three courses among the 49 institutes.
3) Make the Project Purpose more concrete. At the output level, modify Output 1 from 'develop strategies for technical education at the post-secondary level' to 'establish a strategy for technical education at the higher education level (diploma course at polytechnic institutes)'.
4) At the output level, delete Output 2 "refer to Japanese colleges of technology's system." This is because a wider range of systems and contents for technical education and vocational training in Japan should be incorporated into references, including not only Japan's colleges of technology system but also polytechnic colleges, technical high schools and vocational training. In addition, on-the-spot investigations were included in the development of teaching materials.
5) The introduction and maintenance of equipment for practice is inserted in Output 3.

6.5.2 The outline of the proposed project by the survey team

The outline of revised project is as follows:

(1) Project name (Tentative)

Project for Improvement of Technical Education According to the Need for Industrial Human Resources

(2) Super Goal

To contribute to the country's society and economy through polytechnic institutes' sustainable production of able engineers by the introduction of an improved educational system

(3) Overall Goal

To disseminate developed curriculums, teaching materials and practice methods among the polytechnic institutes

(4) Project Purpose

To improve the quality of the development of industrial human resources at the pilot polytechnic institutes through the improvement of curriculums and teaching materials for technical education mainly in electricity, electronics and mechanical engineering according to the needs in the industrial sector

(5) Expected Outputs

1) Establishment of a strategy for technical education at the higher education level (diploma course at polytechnic institutes)
2) Development of curriculums and teaching materials for diploma courses on electricity, electronics and mechanical engineering at polytechnic colleges according to the needs in the industrial sector in Bangladesh and inspection of them at pilot polytechnic institutes
3) Introduction of equipment for practice in pilot polytechnic institutes for the purpose of effectively providing technical education based on revised curriculums
4) Strengthening of the abilities of pilot polytechnic institute teachers by the Technical Teachers Training College (TTTC) by the use of improved or developed courses, curriculums and teaching materials
5) Utilisation of improved or developed courses, curriculums and teaching materials at pilot polytechnic institutes

(6) Project period

Around the fourth quarter of 2017 to around the fourth quarter of 2022 (five years)

Acknowledgement

The survey team would like to express its gratitude to all the stakeholders for the completion of the survey with their cooperation in spite of temporary suspension due to a security problem.

The survey team sincerely hopes that the results of this survey will be helpful for the design and implementation of technical cooperation projects in the future.

Appendix 1 Outline of the Invitation Program to Japan

Outline of the invitation Program to Japan is as follows.

Purpose

This survey includes an invitation Program to Japan that was planned and implemented by focusing on the following two factors. One was to allow participants to understand the technical education system of Japan and its content, especially how Japan, as a nation, has planned and implemented policies and measures to develop practical technical human resources as well as its historical background for human resource development. In addition, the survey team wanted them to understand the educational institutions' philosophy of nurturing personnel and their specific nurturing methods. The other factor was to allow participants to understand the methods and expertise of the institutions for making students acquire the attitude and mindset necessary for professionals and members of society through their academic curriculum. Learning such attitude and mindset is helpful in understanding what personnel are required by Japanese companies located in Bangladesh. Moreover, the survey team planned to make participants look at the technical education equipment and facilities used in each institution as much as possible. The survey team wanted them to understand the institutions' efforts to maintain and manage such equipment and facilities in an organised manner, as well as to improve and upgrade them. Japanese companies in Bangladesh value the maintenance of equipment and facilities, as maintenance is one of the essential elements of 5S and Kaizen. The survey team expect participants to understand the position of technical education in the whole Japanese education system, and the outline of the content of the education, and educational institutions' methods of developing students' personalities that are necessary for being working adults. Based on the understanding, the survey team hope that participants make a comparison between the education system of Japan and that of their own, analyses the difference, and use an output of the Program for planning and implementation of educational policies of Bangladesh now and in the future.

Participants

The survey team requested organisations related to this project to select participants in the Program when the survey team visited Bangladesh for the first study. Participants were from institutions and government, and from people in positions, which are regarded important in improving and maintaining the current education system and technical education there in the future. Names of the participants and organisations to which they belong are as follows.

No.	Name	Organization and position
1	Md. Sohorab Hossain (Mr.)	Secretary, Ministry of Education
2	Ashoke Kumar Biswas (Mr.)	Director General, DTE
3	Md. Mostafizur Rahman (Mr.)	Chairman, Bangladesh Technical Education Board
4	Mohammad Aktaruzzaman (Mr.)	Director, Curriculum, Bangladesh Technical Education Board
5	Md. Ramjan Ali (Mr.)	Associate Professor, Technical Teachers Training College
6	Mohammed Nurul Islam (Mr.)	Principal, Mymensingh Polytechnic Institute
7	Md. Shahadat Hossain (Mr.)	Principal, Vocational Teachers Training Institute
8	Md. Jahangir Alam (Mr.)	Assistant Director, DTE

Plan

【Planning of institutions to visit】

The survey team examined and planned institutions to visit in Japan, which would be a good reference for Bangladesh in nurturing practical engineers who will play central roles in the development of its economy, industry, and society. The survey team concluded that schools up to the level of a polytechnic college governed by the Ministry of Health, Labour and Welfare in Japan were suitable for an institution to visit in this Program. This is because the survey team regarded schools at a higher level than technical

high schools in Japan as suitable, and the first field study revealed that practical technical experts rather than genuine engineers are needed in Bangladesh. Because polytechnic institutes are expected to produce practical technical experts in Bangladesh, and those institutes are similar to the colleges of technology in Japan in terms of form, the survey team places understanding of and visit to a college of technology as a highlight of this Program. In addition, the survey team planned, as a courtesy visit, a visit to the Ministry of Education, Culture, Sports, Science and Technology that governs educational institutions comprehensively. The visit will help participants better understand Japan's education policies as a whole (including technical education policies). The survey team planned a visit to technical education institutions and the ministry above in hope that participants understand methods of developing knowledge and skills required for specialists and technicians, and general abilities and humanity necessary for working adults.

【Planning and determination of lecture and guidance for understanding of Japan's technical development and industrial promotion】

The survey team planned a lecture to be provided by a member of the survey team, who was in charge of technical education and vocational training. The survey team anticipated that the Bangladeshi manufacturing industry will grow and production processes will be automated, and consequently, Bangladesh will enjoy technical and industrial development in the future. The survey team could provide effective lectures, as the lecturer is experienced in providing lectures at higher educational institutions of science and engineering governed by the Ministry of Education and at a polytechnic university governed by the Ministry of Health, Labour and Welfare in Japan. These members also roughly understand the technical standard of Bangladeshi companies through field study. The survey team set a theme of the lecture with a view to make participants understand that sophistication of and progress in equipment, as well as nurturing personnel to use such equipment effectively, are both necessary, and the harmony between technical sophistication and human resource development would promote industrial development synergistically.

【Planning and determination of a company to visit】

Participants visited Nikko Co., Ltd., a private company located in Akashi City, Hyogo Prefecture. Nikko is a manufacturer that produces and sells construction-related machinery, material handling machinery and equipment, electrical and electronic equipment, and communications equipment. Nikko has a connection with the National Institute of Technology, Akashi College, which the survey team planned to visit, and it employs graduates of the National Institute. Nikko nurtures technical experts through OJT and seminars, and uses the OJT system and seminars effectively.

At present, labour-intensive ready-made garments (RMG) manufacturing is the pillar of the exporting industry of Bangladesh. Meanwhile, it is important to find a potential industry after the RMG industry, and simultaneously, to develop human resources for the industry. The growth of the manufacturing industry is expected to have a synergistic effect, such as a ripple effect on the higher industries and creation of employment opportunities. In this sense, light industries are among the promising industries of Bangladesh. Accordingly, the survey team planned a visit to Nikko with a view to help participants understand human resource development required for light industries, and then implemented the plan.

Follow-up and discussion during the Program

Apart from understanding human resource development at technical education institutions in Japan, it is important to organise such understanding in a manner that would be utilised for the actual educational activities in Bangladesh. Members of the survey team and other leaders provided necessary information at the appropriate time to support the participants before and after their visits. In addition, members of the survey team joined the participants to help summarise the Program after the training.

Schedule of the Program

Based on the above, the survey team attempted to create a schedule. In this Program, participants were to arrive in Japan on 10 July and leave on 17 July. The detailed schedule is as follows. They moved smoothly to places other than those in the Kanto region, and the Program progressed on schedule.

Participants endeavoured to learn from each facility they visited based on their grasp of the purpose of their visits, which the staff explained immediately after their arrival to Japan. They also sought to understand and acquire expertise that can be used in their work in Bangladesh by asking questions during the limited time of their visits.

Schedule of the Invitation Program to Japan

Date		Day of week	Morning/ afternoon	Content	Place	Place to stay
1	9 July	Sat.		Transit (via Singapore)		on board
2	10 July	Sun.		Transit (arrival at Narita Airport in the evening), move to a hotel	Tamachi	Tamachi
3	11 July	Mon.	Morning	Briefing	conference room	Tokyo
				Lecture: An image of an engineer required by industry and a role of technical education		
			afternoon	Visit: Tokyo Tech High School of Science and Technology	The school stated to the left	
				Courtesy visit: Head office of JICA	JICA	
4	12 July	Tue.	Morning	Courtesy visit: MEXT (greeting, opinion exchanges)	Tokyo	Tokyo
			Afternoon	Courtesy visit: the Bangladeshi Embassy	Tokyo	
				Visit: the National Institute of Technology		
5	13 July	Wed.	Morning	Visit: Kanto Polytechnic College (Oyama City)	Oyama	Akashi
			Afternoon	Transit: Oyama to Akashi	Akashi	
6	14 July	Thu.	Morning	Visit: Nikko Co., Ltd.	Akashi	Akashi
			Afternoon	Visit: Akashi College (college of technology)	Akashi	
7	15 July	Fri.	Morning	Transit: Akashi to Tokyo	–	Tokyo
				Secretary returns home		
			Afternoon	Discussion: Discussion and summary of what participants learned in the Program by participants, and members of JICA and the survey Team	Head office of JICA	
8	16 July	Sat.	Morning	Visit to inspect economic activities in Tokyo	Tokyo	Tokyo
			Afternoon			
9	17 July	Sun.	Morning	Return home (from Haneda Airport)		

Output

The survey team evaluated that the survey team achieved the original purposes of this Program by making visits according to the schedule in this below.

Day 1: Monday, July 11

1) Shinko Engineering Research Corporation (Lecture by Mr. Kumagai)

Lecture by Mr. Kumagai, who is one of members for this preparatory survey, remained focused the point that how TVET should support manufacturing of industry. It seems that participants could have ideas of ideal TVET which supporting manufacturing of industry through the lecture. The process of manufacturing can be divided to three stages such us “product design”, “manufacturing parts” and “assembling parts”. In

Bangladesh, cheap labour force can be input for "manufacturing parts" and "assembling parts" among those three processes for mass production. On the other hand, regarding the process of product design, it is impossible for firms without engineers who have required knowledge and experience to do it. Unfortunately, graduates from polytechnic institutes in Bangladesh do not achieve this level at this moment. The educational level of polytechnic institutes in Bangladesh shall be pull up to this level ideally because it is important to consider the TVET which can produce required knowledge and skills for industrial development of the country.

2) Tokyo Tech High School of Science and Technology

Participants received the explanation about the outline of this high school. They told that they teach with explanation which how their study in the high school make a sense for their future. Participants surprised that the student study proactively and develop their product, and admired their attitude of their study. They also found the importance of maintenance equipment and facility.

3) JICA Headquarters

Participants paid a courtesy call to JICA headquarter on the first day of invitation tour program, and had a meeting for view exchange on the last day,

When they made a courtesy visit, because the invitation program was conducted almost immediately after the Gulshan incidents on July 1st, 2016, it was confirmed that the direction of JICA future assistance will not be changed due to the Gulshan incidents happened on July 1, 2016, but the security measurement shall be taken seriously under cooperation with GOB. JICA is continuously targeting to start the technical assistance project related to Technical education in Bangladesh as their plan before the incident happened. JICA explained that if the security measurement become strict more and more, it can be considered to conduct the invitation program to Japan, training program in Japan, and training program in other countries in the beginning of the future assistance project. On the other hand, GOB explained that they considered technical education as the priority area among whole educational sector in Bangladesh, and especially they were trying to improve the access and enrollment, as well as intend to strengthen the institutional capacity of TTTC and polytechnic institutes.

Day 2: Tuesday, July 12, 2016

4) Ministry of Education, Culture, Sports, Science and Technology

Through the courtesy call and guidance, participants were explained the system of technical education in Japan and the feature of education including the career education. Technical education in Japan are consisted by three levels as technical high school or relevant other professional high school, professional school, and national institute of technology. Aside from that, mandatory education from primary education and junior secondary education, students participate activity of vocational experience. This is because it is important to start career education and vocational training in the early educational stage. The MEXT explained that career education was provided in each educational stage in Japan. Aside from career education, during the term of mandatory education, schools and institutes encourage students to clean their school and classrooms by themselves, to distribute their school lunch by themselves, and to participate the club activity with their proactivity in order to nurturing the independent persons, On the website of MEXT, guidelines for career education in primary school, junior high school, and high school are available, and teachers utilize the guideline for their teaching in the field.

5) National Institute of Technology

In National Institutes of Technology, participants were explained about the educational system, feature of their education, contents, the situation of students' career after graduation, and teachers training. Participants could ask to chairperson and understand well about their educational system including the process of curriculum development.

Day 3: Wednesday, July 13, 2016

6) Kanto Polytechnic College

Participants were explained about the Kanto polytechnic College that has introduced a Japanese-style dual system and a new practical training system that is closer to technologies needed in firms than an older one, and their activity. Participants found that this college provide more practical training in comparison with National Institute of Technology and the educational field is focused in manufacturing process. Moreover, it can be said that the system and idea of NTVQF in Bangladesh is similar with the system applied in Kanto polytechnic college.

Day 4: Thursday, July 14, 2016

7) Nikko Co., Ltd.

This company was established in 1919, and works for engineering field and contributes urban development. The total number of employee is 795, and 150 employees are engineer. Only around ten employees are graduates from National Institute of Technology, Akashi college, but the total number of graduates from National Institutes of Technology include other colleges is around 50. This company organizes communicational event with Akashi city and National Institute of Technology, Akashi college regularly. Graduates from National Institute of Technology, Akashi college is serious and excellent and they are hired as same as graduates from universities. Participants could know about the reputation on National Institute of Technology, and could have concrete image of firms which graduates are employed and works.

8) National Institute of Technology, Akashi college

As one of national institute of technology in Japan among 51 number of institutes, participants visited to National Institute of technology, Akashi college. When they visited to observe their activity, they received the explanation on the outline of the college with focusing Project Based Learning (PBL), and they could have real image of what the actual education provided by National Institute of Technology.

Day 5: Friday, July 15, 2016

9) JICA Headquarters

In the view exchange program on the last day, each participant explained to JICA officials about what they found through the invitation program and what their idea is for JICA future technical cooperation project. Most of participants told as their findings that important factors are not only modernization of equipment and facilities, but also the teacher training for the quality of teaching and curriculum. During the invitation program, participants visited different educational levels of technical schools and institutions such as a technical high school, a polytechnic college, a national institute of technology. Among them, participants wanted to set a national institute of technology as their model for polytechnic institutes in Bangladesh. Furthermore, JICA asked to participants on their activities related to linkage between educational institutions and industrial sector. Participants introduced only job fare as related activity which implemented in Bangladesh.

Learnings from this invitation Learnings from this invitation programs are as follows

1) National policy and program related to technical education

Participants paid a courtesy visit to MEXT in Japan, and received explanations regarding the educational policy, especially on the promotion of career education in Japan. A quantitative deficiency of practical engineers with technical capabilities or technical standard is one of problems in Bangladesh.There are challenges like shortage of facility, equipment and machinery and teaching method, the shortage of academic hours in education in polytechnic institutes and TSC. In practical, students who studied in TVET schools and institutions, enter the society without the required skill and knowledge after four years study because they cannot study in TVET with the quality. On the other hand, in case of Japanese technical education especially in National Institute of Technology, participants found that they can nurturing engineer with practical skill and the employment of graduates from the institution is the proof of impact the technical education policy in Japan. Moreover, in Japan career education are implemented in each educational level from primary to higher education by governmental policy. Participants understood the Japanese career education for students to enhance their readiness for their future career which became diversify and complex.

2) Factor for nurturing engineer who has practical skill and knowledge

The educational levels of national institute of technology, polytechnic college and technical high school were difference, but the common thing is those are nurturing technical persons who has ability to contribute industrial sector include regional industries. The survey team wanted participants to understand that, in order to achieve this stage, it is really important to follow specific factors like ensuring the number of teacher and teaching quality and maintaining industrial linkage. Introducing modern equipment is not in the highest priority.

3) Technical education for development working adults

NEP2010 describes aims and activities for each educational sub-sector such as primary and secondary education, higher education, technical education. But the policy does not clarify the vision or ideal image of human resource. Regarding TVET, there are also NSDP 2011 as the national policy, but that also does not describe the ideal image of working adult. In Bangladesh, the proportion of informal sector is more 90% and the type of employee is also diversifying. Therefore, there are no general image about ideal working persons and the skill and knowledge including basic academic skills which required for working adult.

According to the Industrial Sector Human Resource Needs Survey conducted by IC Net Limited in 2016, industrial firms deem that employees were required to have not only knowledge including basic academic skills and specific and technical knowledge but also competencies for work as same or more. Those basic competencies for work are, and those are called "competencies for working people". During the primary educational level, basic academic achievement in literacy and mathematic are important as the basic skill for working people.

Every technical education institution visited for the program places great importance on developing human resources as a social worker and a professional person. Those school and institution are nurturing fundamental competencies for working peoples to demonstrate technology through technical education. For example, at the National Institute of Technology, Akashi college where visited is introducing project-based, practical and participation type of education, to acquire technical expertise, the ability to cooperate with the team mate, the subjectivity, the analytical skill, and the problem-solving skill. In addition, they are also incorporating 5S, understanding of safety and health, and elements of KAIZEN which increases workplace efficiency. Furthermore, greetings, courtesy and behavior are also considered by teachers as focus area which shall be covered in their education. Many things can be acquired by themselves on their own experience in cooperation with others in lectures and practical training. Participants learned how practicing methods to make them acquire the necessary elements and knowledge necessary for society through technical education

4) Instructors of technical education in Japan

Most of Instructor who working for technical education in Bangladesh do not have good enough professional knowledge and skill and teaching techniques for their class and workshops. Moreover, they also do not have good enough instructional design skills which required for teaching advance skills for students.

In national institute of technology in Japan, on the other hand, many faculty members have PhD, has the academic achievements of specialized knowledge and skills. Also, about 30 percent of teachers has participated in the manufacturing industry. Under the guidance of such quality teachers and put practical engineers and fellows, is seen as the good results of the employment situations of students.

In case of polytechnic college in Japan, teachers passed training course to obtain the certificate for vocational training instructor, and they have the theoretical background required to human resource development, the expertise and experience widely of development of the graduates and the unemployed.

Based on the Japanese ideal image of teachers for technical education, participants are intended to find their issues on teachers training as well as to get some hints about skills, knowledge and experience required for teacher who work for technical education.

5) Support for job placement by educational institutes

There is lack of recognition and actual support for job placement by educational institutes in Bangladesh. In case of national institute of technology, the employment rate of their graduates who expected to get their

job after graduation is almost 100%. The employment of graduates from professional course of Kanto polytechnic institutes in 2013 is also 100%.[86] This is Japanese feature of technical education that students received support to acquire required competencies and have good relationship with graduates and firms continuously after hiring graduates from the institutions. Participants could understand why the high employment rate were achieved. They understood the necessity of support for job placement, and they expected to provide support for young generation to make their career development for their future.

Aside from several outputs mentioned above, participants, organizers including JICA could established good relationship, and it is also one of the big output by this invitation program. It will help to formulate the future project smoothly.

How output will be utilized

Though the duration of the invitation program was only one week because it was one part of the education sector preparatory survey, participants could inspect how technical education in Japan exists and exchange their view on the direction of JICA future assistance during the period. These outputs of exchanging view and discussion seems to make a good sense for formulation of the future project. Participants visited some TVET institutions which are in variety level like high school level, university level and institute level of national institute of technology. In the last day discussion, all participants agreed with each other that their role model of polytechnic institutes are colleges of technology, called KOSEN.

The colleges of technology provide total five years of technical education from the completion of secondary education. On the other hand, the educational system of polytechnic institutes in Bangladesh, which provide total four years of technical education from the completion of secondary education, is similar with the college of technology system. However, when those systems are compared on those maturity, polytechnic institutes in Bangladesh have some challenges. For example, in case of polytechnic institutes in Bangladesh, there are no ideal image regarding their graduates, academic target, and clear strategy. Moreover, there are other challenges in contents of education, teachers' training, support for job placement, and industrial linkage. When they visit to Akashi college, the college introduced their feature and activities with focusing these four points, and participants could understand them as important points for future development of polytechnic institutes in Bangladesh. Furthermore, participants also showed their interest and learned a lot from Kanto polytechnic college which provide practical training as same as actual industrial field and project work based on industrial demand, and study in team cooperated with other technological department such as electrical, electronic, mechanical and information technology. At present, Bangladesh introduced NTVQF, and the framework is seeking linkage with private company as well as send TVET student for industrial attachment. They are still in try and error, but they told that the Japanese practical method of polytechnic college is a good reference for technical education in Bangladesh.

When participants reviewed this invitation program, they told that they found the necessity to nurture personnel through the technical education based on the industrial demand, and especially the curriculum development and faculty development of teachers by training are urgent issue which should be addressed.

[86] School guide of Kanto polytechnic college, 2017

Appendix 2 Report on Results of Consultation with DTE

On 9 January, a report on the survey results and a presentation on the consultation and the items to confirm were provided for officials of the DTE and the new secretary of the Ministry of Education. On 10 January, a consultation was held on to confirm with officials of the DTE, BTEB and focal persons who working for technical education in Bangladesh. The details are as follow:

Date and Time: On 10 January, 2017 (Time: 9:00AM-10:30AM)
Meeting Place: Directorate of Technical Education (DTE), Agargaon, Dhaka
Participants:

DTE (Bangladesh)	Mr. Ashok Kumar Biswas, Director General, DTE
	Mr. Monjur Kadar, Director (PIW), DTE
	Mr. Md. Walidul Islam, Director (Admin), DTE
	Dr. Sheiku Abu Raza, Director (Planning & Development), DTE
	Mr, Md. Mizanur Rahman, Director (Vocational), DTE
	Mr. Mr. Jahangir Alam, Assistant Director (P&D), DTE
	Mr. Md. Rezaul Karim, Assistant Director (P&D), DTE
	Dr. Md. Ranjan Ali, Principal, TTTC
	Dr. Md. Shah Jahan, Principal, Dhaka Polytechnic Institute
	Mr. Engir. Md. Mozahan Hossain, Principal, Dhaka Mohila Polytechnic Institute
	Dr. Md. Mostafizur Rahman, Chirman, BTEB
	Mr. Nayeb Ali Madal, Secretary, BTEB
	Mr. Md. Aktaruzzaman, Director (Curriculum), BTEB
	Mr. S.M. Shahjahan, Deputy Director (Curriculum,), BTEB
JICA/	Ms. Tomomi Ito. JICA Bangladesh Office
JICA Survey Team	Ms. Kaniz Fatema, JICA Bangladesh Office
	Dr. Takujiro Ito, Team leader, JICA Survey Team
	Ms. Yumi Yamaguchi, JICA Survey Team

Contents of the presentation:
The contents of the presentation by the survey team is as follow:

- Background
- Outline of the survey
- Field survey and the result
- Analysis
- Proposals for future technical cooperation to technical education
- Discussion

*Please refer PowerPoint slides to check the details of presentation.

The results of Consultation with DTE:
The participants basically agreed with the survey results and the proposals from the survey team. But there are some comments and request from participants as follows:

[Comments]

- If the 'Fundamental Competencies for working people' is considered as 'Generic skills', there are no objection. DTE and BTEB try to strengthen those competencies through the technical education under the TVET reform as well as the future technical education in Bangladesh.
- Ministry of Education introduced the new educational system with curriculum 2016. Students who completed higher secondary education and HSC vocational course can start their study from the third semester and the forth semester of diploma engineering course, not from the first

semester. Aside from diploma engineering course, Ministry of education has plan to start the similar system for graduates from polytechnic institutes to start their study from the third semester of universities but it is still under consideration.

[Request]

Regarding the technical cooperation project, the participants agreed to establish a model while conducting the field inspections for development curriculums and teaching materials at pilot polytechnic institutes but they expressed a desire to have a pilot polytechnic institute in each of the eight jurisdictions in the country (eight institutions in total). DTE has a regional office in each division and DTE suggested that the project activities can be managed through those offices.

They also requested that civil engineering be included in the support technologies for the project in addition to the three technologies targeted for the project, which are electricity, electronics, and mechanical(proposal), because there is high demand for engineers in the civil engineering sector.

The survey team replied that, although it would be desirable to develop contents while inspecting a pilot polytechnic institute in Dhaka city, then to expand to another pilot school, it would be necessary to consider conclusively how many schools should be subject to the project through discussions with JICA based on such means as surveys to prepare a detailed plan for the future. The team suggested that, although the decision on whether to include civil engineering would depend on the size of the technical cooperation project, it would likely be narrowed down to these three technologies for the meantime in order to make use of such models for the improvement of other technologies in the future, as considerable input would be required just for the three technologies.

- **Photograph**

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Report of the survey at DTE
Jan 9, 2017</td><td>Report of the survey at MOE
Jan 9, 2017</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Discussion with DTE officials
Jan 10, 2017</td><td>Participants
Jan 10, 2017</td></tr>
</table>

➢ PowerPoint Slides : (1) Report of the survey

Ver.7A
(Jan 8, 2017)

Education Program Preparatory Survey in Bangladesh

- Presentation of Summary of the Draft Final Report -

By Takujiro Ito, Ph. D.
Team Leader, JICA Survey Team

Dhaka, Bangladesh
January 2017

Education Program Preparatory Survey in Bangladesh

Agenda of the Meeting

1. Background
2. Outline of the Survey
3. Field Survey and Its Results
4. Analysis
5. Recommendation for the future Technical Cooperation
6. Inquiry for DTE
7. Discussion

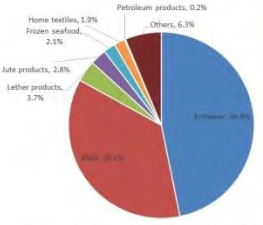
Education Program Preparatory Survey in Bangladesh

1 Part1 Background

Background 1: Issues regarding the Industrial Trend

Current Export Products of Bangladesh

How to retreat from the stiff industrial structure?



- Textiles such as Knitwear, RMG, Jutes, home textiles cover 87.70% of the total export.
- Competitiveness with neighbouring countries has stagnated the entry of new companies from overseas due to wage increase of approx. 10% annually since 2007 (Affected by high corporate tax of 37.5%)
- In order to overcome the competition with neighbouring countries and to further grow, it is indispensable to withdraw from the current industrial structure and diversify industries, increase the value of products, increase productivity, create new industries and so on.

Source: Graph prepared by survey team based on 2015 Bangladesh Central Bank data

Education Program Preparatory Survey in Bangladesh

Background 2 : Job opportunity (Mid-level Positions) taken by foreign workers

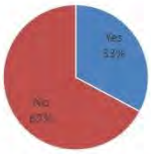
- Unemployment rate of the youth in Bangladesh is 4.5% in 2012, and is low comparing with other countries. But the average of the income is very low and considered one of the low GDP per capita in all Asia.
- The annual remittance of the Bangladesh workers abroad is around 150 million USD and became one of the major sources of income of the country.
- For the other hands, around 60 million USD are sent by remittance to the foreign countries workers which is around 1/3 of the total acquired remittance from abroad.

Why we need foreign workers in Bangladesh?

Education Program Preparatory Survey in Bangladesh

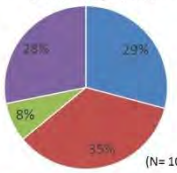
Foreign workers in the establishments

Chart 5-3-1: Do you have foreign workers in your company?



(N= 314)

Chart 5-3-2: Why do you contract foreign workers?



(N= 103)

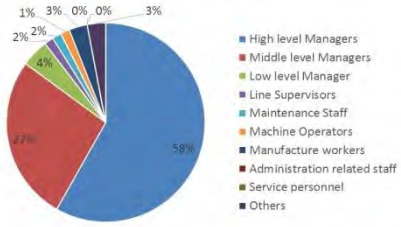
- Because difficult to find qualified/ technical staff
- Because we are increasing production capacity
- Because many workers quit the job every year
- Other reason

Source: DTE/BTEB/IC Net, Report on Industry Sector Human Resource Needs Survey in Bangladesh, 2016

Education Program Preparatory Survey in Bangladesh

Job category in which foreign workers are working

Multiple answer, (N= 134)



Source: DTE/BTEB/IC Net, Report on Industry Sector Human Resource Needs Survey in Bangladesh, 2016

Education Program Preparatory Survey in Bangladesh

Demand to Contract New Personnel Every Year

Multiple answer, (N= 437)

Source: DTE/BTEB/IC Net, Report on Industry Sector Human Resource Needs Survey in Bangladesh, 2016

Education Program Preparatory Survey in Bangladesh

Average salary of each category

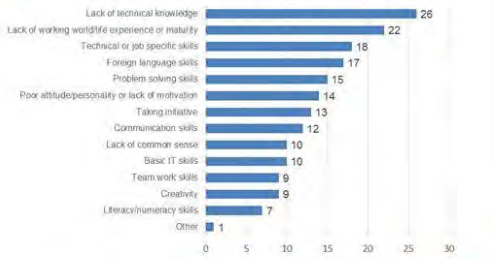
Categories	Gross salary
High level Managers	109,453
Middle level Managers	59,553
Low level Manager	35,232
Line Supervisors	18,876
Maintenance Staff	15,199
Machine Operators	12,327
Manufacture workers	9,686
Administration related staff	13,608
Service personnel	8,512

Source: DTE/BTEB/IC Net, Report on Industry Sector Human Resource Needs Survey in Bangladesh, 2016

Education Program Preparatory Survey in Bangladesh

Weakness of the Employees

(Those who answered dissatisfied or very dissatisfied, multiple answer, (N= 183)



Source: DTE/BTEB/IC Net, Report on Industry Sector Human Resource Needs Survey in Bangladesh, 2016

Education Program Preparatory Survey in Bangladesh

Necessity of Strengthening TVET system to meet up emerging demand from industrial sector/Potential needs in the industry sector that should be strengthen by the TVET institutions

- The survey found that because of lack of qualified human resource in the labor market, the companies are contracting foreigners especially for middle level and high level managers. This could be significant market to be fulfilled by the graduates from TVET institutions.
- Salary range of the service personnel and manufacturing workers is between 8,512 BDT to 9,686 BDT, will skilled personnel such as maintenance staff average is 15,199BT and for the management staff 18,876 BT to 109,453 BT. The technical education could give opportunity for the Bangladesh peoples to increase their life standard.
- For the other hands, companies pointed out the weakness of the workers such as lack of the technical knowledge and job specific technical skill, as well as more general ability such as maturity, problem solving skill, communication skill, lack of initiative, motivation and team work, etc.

Education Program Preparatory Survey in Bangladesh

Background 3: Critical situation of unemployment of TVET graduates

Outcomes of the TVET system

Table 3-8: Status of TVET Students After Graduation

	Employed (%)			Self-Employed (%)			Higher Ed. (%)			Unemployed (%)		
	Gov.	Pvt.	Total	Gov.	Pvt.	Total	Gov.	Pvt.	Total	Gov.	Pvt.	Total
Vocational Education												
Basic trades	9.80	15.60	14.10	2.00	4.80	4.00	21.60	24.30	23.70	66.70	55.10	58.10
SSC (Voc)	2.80	3.30	3.10	1.10	0.70	0.90	86.70	47.90	47.40	49.30	48.10	48.70
HSC (Voc)	28.60	NA	28.60	1.10	NA	1.10	20.90	NA	20.90	49.50	NA	49.50
HSC (BM)	NA	4.70	4.70	NA	0.70	0.70	NA	53.50	53.50	NA	41.10	41.10
Vocational Training												
Diploma and Others	28.55	15.32	18.75	1.79	2.53	2.39	21.41	56.74	32.92	48.22	45.89	46.81
Total	9.10	6.50	7.26	1.25	1.29	1.28	59.03	46.91	44.60	50.55	45.29	46.54

Table 3-9: Time Taken to find Employment (for those employed)

	< 6 months			6 months-1 years			1-2 years			24+ months		
	Gov.	Pvt.	Total	Gov.	Pvt.	Total	Gov.	Pvt.	Total	Gov.	Pvt.	Total
Vocational Education												
Basic trades	33.3	89.0	62.9	33.3	10.3	14.3	33.3	10.3	14.3	0.0	10.3	8.6
SSC (Voc	41.2	51.8	35.9	5.9	13.6	22.1	17.7	50.0	35.9	35.3	4.5	17.9
HSC (Voc	55.6	NA	55.6	7.4	NA	7.4	33.3	NA	33.3	3.7	NA	3.7
HSC (BM)	NA	23.7	23.7	NA	26.3	26.3	NA	36.9	36.9	NA	13.2	13.2
Vocational Training												
Diploma and Others	66.0	81.7	63.0	26.6	9.0	14.7	0.0	24.0	16.9	7.4	4.9	5.8
Total	44.7	35.1	38.1	10.0	18.5	16.1	19.6	37.3	32.1	25.8	9.0	13.7

Source: WB (2006) The Bangladesh vocational education and training system: an assessment

According Survey conducted by WB in 2006, only 7.26% of the TVET graduates are getting employment and 46.84% remain Unemployment. 61.9% of who got job, took more than 6 months.

Education Program Preparatory Survey in Bangladesh

Background 3: Critical situation of unemployment of TVET graduates

Outcomes of the TVET system

Table 3-11: Respondents' Reasons for Failure to Find Work

	Not Enough Local Demand	No Demand for trained labor	Experience matters more than training	Employers don't value training	Excess supply of trained labor	Others
SSC (Voc)	65.6	4.9	16.5	9.4	2.0	0.5
HSC (Voc)	31.1	6.8	43.2	12.2	4.1	-
HSC (BM)	54.1	5.4	24.6	10.8	2.0	1.0
Basic trades	67.6	6.0	17.2	6.0	1.3	0.7
Diploma (Eng)	45.0	7.5	32.5	7.5	-	5.0
Diploma (Agr)	33.3	-	33.3	23.8	-	4.8
Other Diploma	66.7	-	33.3	-	-	-
Total	**60.3**	**5.0**	**20.6**	**9.9**	**2.0**	**0.9**

Source: WB (2006) The Bangladesh vocational education and training system: an assessment

60.3% of respondent's reason for failure to find work is because not enough local demand, which mean the course content doesn't match with the demand of local market. 20.6% responded that experience matters more than training, which mean the course is not practical enough to fulfill the demand of the contractors.

Education Program Preparatory Survey in Bangladesh

2 Part2 Outline of the Survey

General Information

Title: Education Program Preparatory Survey in Bangladesh

Purpose: To review the context and situation of the education sector with special emphasis in Technical Education and provide recommendations for future technical assistance.

Period: April 22nd to November 30th, 2016 (Extended until March 31, 2017)

Implementer: Japan International Cooperation Agency (JICA)

Contractor: IC Net Limited and PADECO

Education Program Preparatory Survey in Bangladesh

Objective of the Survey

The objectives of this survey are the following;

- **Collect and review available data** on human resource needs in the education sector and industry sector, and identify the current issues and need for the technical assistance.
- **Review and Analyze** the information on secondary and higher education with an emphasis on the technical education, and identify a strategy to develop the student ability better so that they can meet the needs of society specified in the national development plan.
- Present **recommendations for a future technical cooperation** project for the Polytechnic Institutes requested by the GoB.
- Present **recommendations** for the **future assistance for education sector in Bangladesh.**

Source: Inception Report of the Survey

Education Program Preparatory Survey in Bangladesh

Table of Content of the Draft Final Report

Chapter 1: Outline of the Survey

Chapter 2: Political and Socio-Economic Situation

Chapter 3: Situation of Education Sector and Issues

Chapter 4: Needs of HR in context of Industrial Development

Chapter 5: Recommendation for Future Education in Bangladesh

Annex 1: Case study on Secondary Education
Tarpurchandi GM Fazlul Haque High School, Bagadi Gani High School
Annex 2: Case study on Higher Education in Engineering
Bangladesh University of Engineering and Technology (BUET), Dhaka University (DU)
Annex 3: Case study on TVET
Dhaka Polytechnic Institute, Dhaka Women Polytechnic Institute, Chittagong Polytechnic Institute, Gazipur Technical School and College
Annex 4: Report of the Field Observation Program in Japan

Education Program Preparatory Survey in Bangladesh

Survey Schedule

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Preparation in Japan											
Inception Report											
1st Field Survey											
Preparation of Study Tour in Japan											
Survey in Japan											
2nd Field Survey											
Progress Report											
Implementation of Study Tour in Japan											
Draft Final Report											
3rd Field Survey											
Final Report											

*1 Cancelled due to the security situation in Bangladesh
*2 Proposing alternative for Field 3rd Survey

Education Program Preparatory Survey in Bangladesh

Consultants

Responsibility	Name
Team Leader ／Education Sector Analysis 1 ／Technical and Vocational Education and Training 1	Takujiro ITO
Sub Leader ／Education Sector Analysis 2	Tatsuya NAGUMO
Technical and Vocational Education and Training 2	Hideki KUMAGAI
Secondary and Higher Education	Kaito MIWA
Human Resource Needs Analysis 1	Takahiro TANABE
Human Resource Needs Analysis 2	Kenji MOMOTA
Coordinator and Survey support	Yumi YAMAGUCHI

Education Program Preparatory Survey in Bangladesh

Methodology of the Survey

The survey was conducted using various research methods including the following.

- Review of policy- and strategy-related documents, statistical data, and other relevant documents
- Interview with responsible people of relevant educational institutions
- Interview with the donors and education project stakeholders.
- Observation visit to and interview with educational institutions such as primary schools, JSC, HSC, SSC, HSC (Voc), SSC (Voc), Universities, Teachers Training Institutes, and Polytechnic Institutes
- Japan visit program by Bangladesh's TVET-related government officials to identify the strengths of the TVET education system in Japan
- Discussion with JICA, DTE, BTEB potential future cooperation projects

Education Program Preparatory Survey in Bangladesh

Survey Sites

Note: Chittagong was cancelled due to the security situation in Bangladesh

Education Program Preparatory Survey in Bangladesh

3 Part3 Field Survey and its Results

Visited Institutions (most relevant)

Sub Sector	Organization
Education Sector in General	MOE, BANBEIS, BBS, MOPME, NSDC, NCTB, NIEAER, NIEMR, etc.
Secondary Education	DSHE, Junior secondary school, Secondary school, Higher secondary school, etc.
Higher Education	BUET, DUET, DSHE, etc.
Technical Education	DTE, BTEB, Gazipur Government Technical School & College, NSDC, Dhaka Polytechnic Institute, Dhaka Women Polytechnic Institute, TTTC, VTTI, BIIT, Dhaka University, etc.
Industry	BMET, Dhaka Chamber of Commerce, Private companies, Old Dhaka Industry Zone, Trade association etc.
Donors	ADB, ILO, WB, EU, etc.

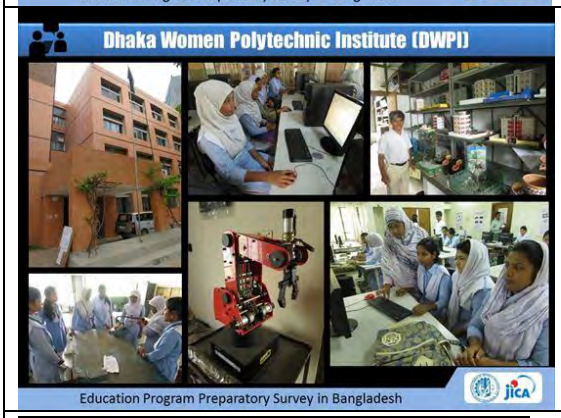
Education Program Preparatory Survey in Bangladesh

Field visit to Technical Teachers Training College (TTTC)

Education Program Preparatory Survey in Bangladesh

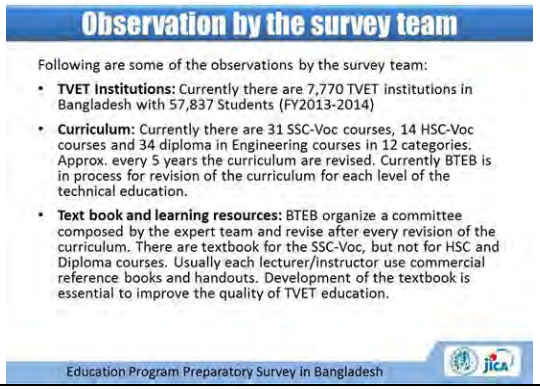

Field visit to Dhaka Polytechnic Institute (DPI)
Education Program Preparatory Survey in Bangladesh

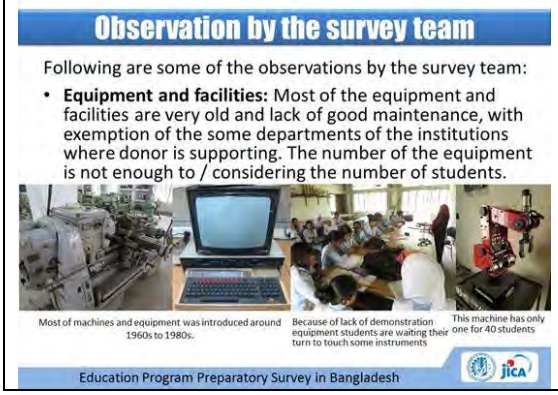

Visiting small workshops at Old Dhaka
Education Program Preparatory Survey in Bangladesh

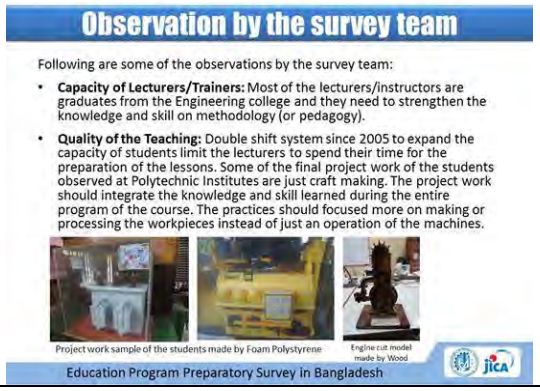

Dhaka Women Polytechnic Institute (DWPI)
Education Program Preparatory Survey in Bangladesh


Field visit to Vocational Teacher's Training Institute (VTTI), Bogra
Education Program Preparatory Survey in Bangladesh


Gazipur Technical School and College


Observation by the survey team
Following are some of the observations by the survey team:
TVET Institutions: Currently there are 7,770 TVET institutions in Bangladesh with 57,837 Students (FY2013-2014)
Curriculum: Currently there are 31 SSC-Voc courses, 14 HSC-Voc courses and 34 diploma in Engineering courses in 12 categories. Approx. every 5 years the curriculum are revised. Currently BTEB is in process for revision of the curriculum for each level of the technical education.
Text book and learning resources: BTEB organize a committee composed by the expert team and revise after every revision of the curriculum. There are textbook for the SSC-Voc, but not for HSC and Diploma courses. Usually each lecturer/instructor use commercial reference books and handouts. Development of the textbook is essential to improve the quality of TVET education.
Education Program Preparatory Survey in Bangladesh


Observation by the survey team
Following are some of the observations by the survey team:
Equipment and facilities: Most of the equipment and facilities are very old and lack of good maintenance, with exemption of the some departments of the institutions where donor is supporting. The number of the equipment is not enough to / considering the number of students.
Most of machines and equipment was introduced around 1960s to 1980s.
Because of lack of demonstration equipment students are waiting their turn to touch some instruments
This machine has only one for 40 students
Education Program Preparatory Survey in Bangladesh


Observation by the survey team
Following are some of the observations by the survey team:
Capacity of Lecturers/Trainers: Most of the lecturers/instructors are graduates from the Engineering college and they need to strengthen the knowledge and skill on methodology (or pedagogy).
Quality of the Teaching: Double shift system since 2005 to expand the capacity of students limit the lecturers to spend their time for the preparation of the lessons. Some of the final project work of the students observed at Polytechnic Institutes are just craft making. The project work should integrate the knowledge and skill learned during the entire program of the course. The practices should focused more on making or processing the workpieces instead of just an operation of the machines.
Project work sample of the students made by Foam Polystyrene
Engine cut model made by Wood
Education Program Preparatory Survey in Bangladesh

Observation by the survey team

- **Learning environment:** The libraries of the TVET institutions has no updated books and resources. There is not enough internet facilities to research information. The library system should be strengthened to provide good learning environment for both lecturers and students.

All the books has to order at reception by giving specific title. User has no access to the bookshelves | There is no students using the library | No Catalogue and classification system | Many books was never used

Education Program Preparatory Survey in Bangladesh

Observation by the survey team

- **Teachers training:** There are two alternatives to became lecturer of Polytechnic Institutes: to obtain degree in Technical Teaching or engineering. Engineering graduates has no preparation for pedagogical subjects. In-service training program for both pedagogy and technical subject has to standardize as regular program and compulsory for every lecturers.
- TTTC is the only training college that offer both technical subject as well as the pedagogical subjects for Polytechnic Institutes lecturers. The curriculum, textbook, learning environment (such as library and internet), facilities and equipment, management and trainers capacity must be upgraded to enable quality technical teachers training.

Education Program Preparatory Survey in Bangladesh

Reference: Lesson Learned from the Invitation Tour Program in Japan Related to TVET (1/2)

- **Period:** July 9 to 17, 2016
- **Participants:** Secretary of MoE, Director General of DTE, Chairman of BTEB, Director of Curriculum of BTEB, Associate Professor of TTTC, Principal of MPI, Principal of VTTI, Assistant Director of DTE.
- **Visited Institutions:** Tokyo Technical High School of Science and Technology, National Institute of Technology (NIT) Head Office, Kanto Polytechnic College, Akashi NIT, Nikko Co., Ltd., Courtesy visit to Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT) and JICA Headquarter.

Courtesy visit at MEXT

Akashi KOSEN

Kanto Polytechnic College

Reference: Lesson Learned from the Invitation Tour Program in Japan Related to TVET (1/2)

Some of the relevant findings are:

1. **Regarding the Policy:**
   - Support the gradual implementation of the career education.
2. **Regarding the development of skilled peoples:**
   - Consistency of technical skill development through the entire program.
   - Technical education institutions are responding to the needs of the industries.
   - Integration and consistency between curriculum, trainers, facilities and linkage with the industries.
   - Technical skill focused for "Monozukuri", especially for the design of the products *1
3. **Regarding the development of the socially prepared peoples:**
   - Japanese technical education is focusing on the development of the "Working peoples" with abilities for action, thinking and team work.
4. **Regarding the quality of the lecturers/trainers:**
   - In KOSEN, the lecturers/trainers required to be Ph.D. holders.
   - More than 30% of the lectures/trainers has experience working in industries.
   - At Polytechnic College, all the lecturers/trainers has qualification for the technical education.
5. **Regarding the employment support by the institutions:**
   - KOSEN as well as Polytechnic College has high employment rate (near 100%) of the graduates.
   - Graduates acquire practical skill during the course.
   - Good relationship with companies even after the employment of the graduates.

*1 "Monozukuri" (Manufacturing of products) is composed by (1) Design of the products, (2) Production of the parts, (3) Assembling of the parts. For the future, Bangladesh need to develop HR who can do the Design of the products.

4 Part4 Analysis

Current Situation and Issues on TVET (1)

POLICY

Some of the most relevant policies are:

- **Perspective Plan 2011:** The 7th Five Year Plan and NSDP2011 prioritize the education sector (human resource development).
- **Industry Policy 2016** sets orientation for the promotion of the industry. The high priority industries are those that create large-scale employment through quick expansion and earn substantial amounts of export revenue. Six industries were included in the high priority category: agriculture and food processing, garment, ICT and software, pharmaceuticals, leather and leather products and jute and jute goods
- **Digital Bangladesh** focus on human resource development, connecting citizen, Digital Government for Pro-Poor Service Delivery and ICT in business.
- **National Skill Development Policy 2011** sets several new standards for the skill development such as, NTVQF, Competency Based Industry Sector standards & Qualification and Skill Quality Assurance System.

Education Program Preparatory Survey in Bangladesh

Current Situation and Issues on TVET (1)

POLICY

Technical Education Prosperous Bangladesh

Vision

Human Resource Development, Economic Development and Improve livelihood through Technical and Vocational Education& Training.

Mission

- Providing directions, policies, Programs, Projects, standards and monitoring toward quality technical and Vocational education and training.

Strategic Goals

- Increasing 20% enrolment rate in TVET by 2020
- Introducing emerging technology as per demand of National and International job market
- Creating self employment for unemployment youths by providing entrepreneurial skills
- Accelerating poverty reduction through TVET skills
- Achieving SDGs target through Technical and Vocational Education& Training

Education Program Preparatory Survey in Bangladesh

Current Situation and Issues on TVET (1)

POLICY

Technical Education Prosperous Bangladesh

Future Plan

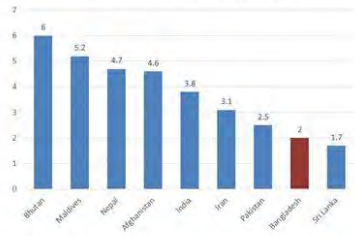
1. **Development of Physical Infrastructure**
   - Vertical extension another 4 floors of DTE building
   - Creating Facilities for Additional 100,000 (One lac) Students Enrolment 4 Out of 5
   - Establishment of 23 World Class Polytechnic Institute
   - Establishment of 389 Technical School & Colleges (2nd phase)
   - Establishment of 4 Engineering Colleges
   - Establishment of 4 Land Survey Colleges
   - Establishment of 8 Women Technical School & Colleges
   - Establishment of 4 Women Polytechnic Institutes
   - Modernization of Technical Teachers Training College (TTTC) and Vocational Teachers Training Institute (VTTI)
   - Establishment of National Institute of Technical Teachers Training and Research (NITTTR)
   - Modernization of 64 Technical School and Colleges
2. **Enhancement of Skills & Policies**
   - Increasing 30% enrolment rate in TVET by 2030
   - Integration of Teachers & Staffs for Quality Assurance & Skills Development in 64 Technical School and Colleges
   - Establishing Centre of Excellence (COE) for RMG sector
   - Capacity Building of TVET Teachers, Staffs and officials

Education Program Preparatory Survey in Bangladesh

Current Situation and Issues on TVET (1)

FINANCE

Education sector expenditure
(Percentage of GDP, FY 2014/2015)



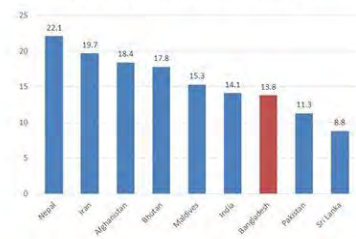
Source: BENEBEIS 2015

Education Program Preparatory Survey in Bangladesh

Current Situation and Issues on TVET (1)

FINANCE

Education sector expenditure
(Percentage of National Budget, FY 2014/2015)



Source: BENEBEIS 2015

Education Program Preparatory Survey in Bangladesh

Current Situation and Issues on TVET (1)

FINANCE

Education sector expenditure
(Percentage of National Budget, FY 2014/2015)

No.	Levels	% of expenditure		
		Salary	Others	Total
1	Primary level	98.6	1.4	100
2	Junior Secondary	96.1	3.9	100
3	Upper Secondary	95.5	4.5	100
4	Post Secondary Non Tertiary	63.9	36.1	100
5	Tertiary	91.3	8.7	100
	Average	**89.1**	**10.9**	**100**

Source: BENEBEIS 2015

Education Program Preparatory Survey in Bangladesh

Current Situation and Issues on TVET (1)

INSTITUTION

Current number of TVET institutions

Institute Category	No.
Technical Teachers Training College	01
Engineering College	03
Vocational Teachers Training Institute	01
Polytechnic Institute	49
Technical School and College	64
SSC Vocational with MPO	856
HSC Business Management with MPO	728
Madrasha With MPO (Vocational & Business Management)	18
Non Government Diploma Institute	977
Non-Government Secondary Level and Others Institute	4192
Total TVET Institutes	**7770**

Source: Technical Education Prosperous Bangladesh

Education Program Preparatory Survey in Bangladesh

Current Situation and Issues on TVET (1)

Summary

- Economic development is the main goal of the national policy, and supply of skilled human resource to the industry is high priority.
- Budget allocation for the education is still low among the south Asian countries.
- 89.1% of current education sector expenditure is for the salary and only 10.9% for the non-salary expenditure.
- Expansion of facilities and improvement of the contents to fulfil the need of the future labour market is in urgent need.
  - It is necessary to secure budget for the facilities.
  - It is necessary to strengthen the consistency among primary, secondary and TVET to enable gradual development of the students learning competency and abilities for future employment.
  - It is necessary to strengthen the recruitment and training of teachers and develop the capacity of TVET institutions.

Education Program Preparatory Survey in Bangladesh

Current Situation and Issues on TVET (2)

Current situation

Current Situation and Issues on TVET (2)

How to Overcome

Need of Industries: Essential Knowledge and Skill necessary for mass production of the products-1

1. **Understand how a product is produced (production process)**
   (1) Understand the manufacturing process.
   (2) Understand the concept of efficiency and effectiveness (Such as productivity, profitability, quality, competitiveness, etc.)
2. **Can design and produce products**
   (1) Can draw up the final image of the product.
   (2) Can transfer the image to a technical drawing.
   (3) Can manufacture a product based on the technical drawing (Such as moulding, cutting, welding, etc.)
3. **Can design and produce industrial machines**
   (1) Based on the understanding of the mechanism of the movement, can design a mechanism of a machine.
   (2) Based on the understanding of basic electricity and electronics, can create the combination of the power and mechanical control.
   (3) Based on the understanding of the basics of the IT, can program the code for the mechanical control.
   (4) By combining electrics, electronics, mechanism and IT, can create an automation system.

*1 : Hideki Kumagai, 2016

Education Program Preparatory Survey in Bangladesh

Current Situation and Issues on TVET (3) Need of development of Social Person

- According the survey conducted by DTE/BTEB/ICNET*1, Industries pointed out the weakness of the workers such as lack of the technical knowledge and job specific technical skill, as well as more general ability such as maturity, problem solving skill, communication skill, lack of initiative, motivation and team work, etc.
- The survey found that because of lack of qualified human resource in the local human resource market, the companies are contracting foreigners especially for middle level and high level managers.
- Japanese experience shows how education could contribute for the development of "Social Person" through the "Fundamental Competency of Working Peoples"

*1 DTE/BTEB/IC Net, Report on Industry Sector Human Resource Needs Survey in Bangladesh, 2016

Education Program Preparatory Survey in Bangladesh

Need of the social person: Fundamental Competencies for Working Peoples

(1) Ability to step forward (action)

Ability to step forward and act persistently even if you fail

1. Initiative
2. Ability to influence
3. Execution skill

(2) Ability to think through (thinking)

Ability to question and think through

1. Ability to detect issues
2. Planning skill
3. Creativity

(3) Ability to work in a team (teamwork)

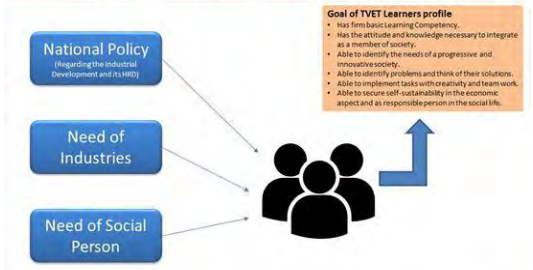
Ability to collaborate with various people to achieve goals

1. Ability to deliver messages
2. Ability to listen closely and carefully
3. Flexibility
4. Ability to grasp situations
5. Ability to apply rules and regulations
6. Ability to control stress

Source: The survey team re-organized the layout based on the chart of METI website (http://www.meti.go.jp/policy/kisoryoku/)

Education Program Preparatory Survey in Bangladesh

Current Situation and Issues on TVET (Summary)



Education Program Preparatory Survey in Bangladesh

Current Situation and Issues on TVET (Summary)

- **Summary of the results:**
  - Strengthening the implementation of the TVET in response to the demand of the National Policies of industrial development.
  - Establishing a system to grasp the demand of the industrial sector and develop the education program to meet the demand of the future market.
  - Establishing a system to enhance the fundamental competencies for working people and career education.
  - Strengthening technical education that creates added value in industry.
  - Improve the employability of the graduates of TVET.

Education Program Preparatory Survey in Bangladesh

5 Part5 Recommendation for the future Technical Cooperation

Recommendation for the future technical cooperation

I. Future Direction of Program

Recommendations for the future program

I . Future Direction of the Program

Take a strategic approach in consideration of the following.

- Focusing on industrial development, the core of the national strategy
- Comprehensive human resource development through the entire educational system
- Effective application of the experiences of JICA technical cooperation in primary education
- Considering the competitive advantages of Japan and cost effectiveness

Goal of the entire education program in Bangladesh
To develop human resources with necessary abilities to contribute for the sustainable development of the society and economy of the country.

Education Program Preparatory Survey in Bangladesh

Program: 3 Abilities

In order to achieve the Learners Profiles stated in the previous slide, the survey team proposes to strengthen following 3 Abilities from the Primary to higher education:

Education Program Preparatory Survey in Bangladesh

Program: Priority of the Ability by education level

Academic achievement accumulation effect

- To achieve the proposed learner's profile, it is necessary to take a multi-layered and comprehensive approach from primary education to technical education.

Priority area for JICA to support(tentative)

- Support for the new primary education (Current primary education + JSC education) using Japan's strengths and experience: Acquiring Basic Learning Competency, especially in math and science, and fundamental competencies for working people.
- Strengthening of technical education to meet the demand for industrial development

	Primary	Secondary Education		Tertiary	Technical Education
		JSC	SSC HSC		
1. Basic Learning Competency	◎	◎	○ ×	×	×
2a. Specialized Technical Knowledge	×	×	○	○	◎	○
2b. Specified technical skills	×	×	×	×	○	◎
3. Fundamental competencies for working peoples	△	○	◎	◎	△	○

Priorities: ◎ Very High, ○ High, △ Medium, × Low

Education Program Preparatory Survey in Bangladesh

Program: Abilities that need to be developed

Skills	Knowledge and skills as to technical areas		Common knowledge and culture	Fundamental competencies for working people
Subject	Technical subjects Inside school		Liberal arts Inside and outside school	All subjects Inside and outside school
Higher education/ Diploma	**University & Polytechnic institutes** • **Priority subjects** Mechanical engineering, Electrical engineering, Electronic engineering (Manufacturing process, Technical drawing, Processing and others) • **Optional subjects** Biology, Chemistry, etc.		• **TTTC:** Pedagogy • **Polytechnic institutions:** Career education (information on recruitment and job placement, internship, dual system, etc.)	・Thinking ・Communication skills ・Problem solving skill ・Team work skills ・Initiative ・Positive attitude for work, etc.
Higher secondary education (HSC-Voc)	**Technical education** mechanical, electrical, electronic engineering (basic and advance)	**General education** Technical subject	Advance knowledge on math and science (physics, biology and chemistry, etc.) and career education	
Senior Secondary education (SSC-Voc)	**Technical education** mechanical, electrical, electronic engineering (basic)	**General education** Technical subject		
Junior secondary education (JSC)	Basic and Advance Learning Competency (Math and Science), and skills of drawing		Basic and advance Learning Competency other than those in the cell on the left and career education	
Primary education	Basic learning competency on math and science (including basic application)		Basic learning competency, and career education other than those on the left	

Education Program Preparatory Survey in Bangladesh

Recommendation for future technical cooperation

Ⅱ. Direction of the Project for Technical Education

Ⅱ. Direction of the Project (Technical Education)

The survey team identified that it is necessary to strengthen the basic Learning competency, fundamental competencies for working people, and specialized technical knowledge and skills to achieve the proposed learner's profile. For technical education, the survey team proposes the direction of the project from the two following points of view:

To propose the direction of the cooperation based on the result of the preparatory survey of the education sector

The survey team proposes the following technical assistance.

- To build a mechanism to develop an educational program that identifies and meets the technical needs of the industrial sector, especially in the manufacturing industry
- To establish a system to develop and extend the fundamental competency and career education in the polytechnic institutes
- To Strengthen technical education to create added value.
- To enhance Enhancing the capacity of the students for employment and the system to support their job placement

Education Program Preparatory Survey in Bangladesh

Ⅱ. Direction of the Project (Technical Education)

Recommendation for the Technical Cooperation Application from DTE

- An application from DTE was submitted to the Government of Japan on July 20, 2015 requesting the development of curricula and textbooks and capacity building for instructors of polytechnic institutes. The survey team recommends the direction of the technical cooperation that applies the points identified in the team's survey.

Education Program Preparatory Survey in Bangladesh

Reference : Request from Gov. of Bangladesh

Overall Goal

Polytechnic Institutions sustainably produce well-educated diploma engineering graduates who contribute socio-economic development of the nation through an improved educational system.

Project Objective

To develop a post-secondary/higher engineering education model to produce well-educated and skilled human resources through improving curriculum, teaching materials, capacity of lecturers of technical education (Polytechnic Institutes).

Outputs

1. Strategies for technical education in post-secondary level institutions (Polytechnic Institutes, diploma education) are set.
2. Courses, curriculum, and teaching materials are improved and developed for polytechnic institutes and Technical Teachers' Training College (TTTC) by exploring Japanese colleges of technology education and the current needs in Bangladesh.
3. Improved/ developed courses, curriculum, and teaching materials are utilized for capacity building of instructors/ lecturers by TTTC.
4. Improved/ developed courses, curriculum, and teaching materials are applied to education in target polytechnic institutes.

Implementation Schedule

From 2016 to 2021 (5 Years).

Education Program Preparatory Survey in Bangladesh

Ⅱ. Direction of the Project (Technical Education)

Observation of the application from DTE

1. Courses targeted for the technical assistance project

In the application, DTE requested development of courses, curricula and textbooks of polytechnic institutes. The polytechnic institutes in Bangladesh, which offer four-year degree programs, provide courses for 34 technologies in 12 sectors such as agro-food, civil engineering, architecture, electrical technology, electronic technology, automotive technology, mechanical technology, wood, garments, and ICT. If the project aims to develop the contents of all technologies of polytechnic institutes, it needs huge inputs. Given the scale of technical assistance projects by JICA, it is better to focus on two to three technologies that Japan can assist with. JICA considers courses on electrical technology, electronic technology and mechanical technology as the targeted technologies of the future project because they are basic technologies for industrialization with high demand in Bangladesh and Japan is advanced in these technologies. The required basic skills for technical personnel are (1) basic knowledge of the manufacturing process, (2) skill for technical drawing , and (3) ability to create objects based on technical drawing.

Education Program Preparatory Survey in Bangladesh

Ⅱ. Direction of the Project (Technical Education)

Observation of the application from DTE

2. Learning from the Japanese KOSEN (National Institute of Technology) system

The educational system of the polytechnic institutes in Bangladesh and the one of KOSEN in Japan have similarities. Bangladesh could be able to learn from the experience of the KOSEN system, especially (1) curriculum that focuses on "Monozukuri" *1, (2) extracurricular activities such as a robot contest that improves the creativity, initiative, and team work skills of students, (3) learning discipline and good manners through groups, (4) project-based learning (PBL) and graduation project linked with industries and (5) support for job placement.

In Bangladesh, it is also necessary to address issues such as weak basic Learning competency of students, teachers' weaknesses in knowledge and skills on pedagogy, school environment, budget, limitation of institutional capacity, and shortage of teachers, all of which are to be rectified in the long term. Bangladesh could learn not only from the KOSEN system but also Japanese polytechnic colleges, and apply their experiences/strong points on TVET and improve it to meet the needs of the country.

*1 "Monozukuri" is the Japanese term referring to the manufacturing skills

Education Program Preparatory Survey in Bangladesh

Ⅱ. Direction of the Project（Technical Education）

Observation of the application from DTE

3. Competencies that could be strengthened by Japanese technical cooperation.

Based on the survey results, the survey team proposes that technical assistance of Japan may strengthen the following components:

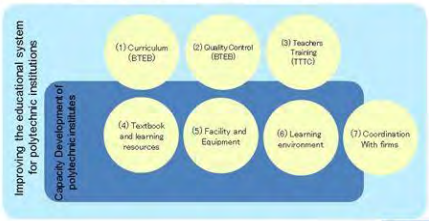
1. Fundamental competencies for working people
   - ① Ability to step forward
   - ② Ability to think through
   - ③ Ability to work in a team
2. Technical skills and knowledge (Electricity, Electronic and Mechanic)
   - ① Basic knowledge of the manufacturing process
   - ② Skills and knowledge of technical drawing
   - ③ Skill to create an object based on technical drawing
3. Employability (Readiness for Employment)
   - ① Grasping the demand of the labor market
   - ② Knowledge of occupation and job category
   - ③ Career design

Education Program Preparatory Survey in Bangladesh

Ⅱ. Direction of the Project（Technical Education）

4. Strengthening the Quality of the Technical Education for Polytechnic Institutes

As shown below, it is necessary to design a strategy for capacity development of polytechnic institutes with approaches such as strengthening professionals, organizations and system.

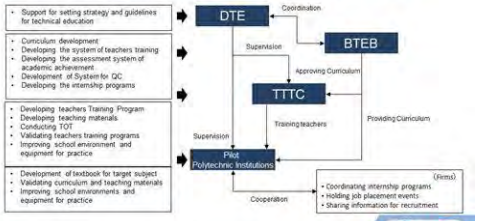


Education Program Preparatory Survey in Bangladesh

Ⅱ. Direction of the Project（Technical Education）

5. Stakeholders and input required

If the project focuses on developing the system of polytechnic institutes as requested in the application, the following four stakeholders must work together to make strategies, guidelines, and develop teaching materials and training for instructors.



Education Program Preparatory Survey in Bangladesh

Ⅱ. Direction of the Project（Technical Education）

6. Quantity Vs Quality

Education Program Preparatory Survey in Bangladesh

PowerPoint slides: (2) Consultation and Discussion

Ver.7B
(Jan 8, 2017)

Education Program Preparatory Survey in Bangladesh

- Discussion on the Inquiry points -

By Takujiro Ito, Ph. D.
Team Leader, JICA Survey Team

Dhaka, Bangladesh
January 10, 2017

Education Program Preparatory Survey in Bangladesh

Agenda of the Meeting

9:00 – 9:10 Explanation of the objective and procedure of the meeting.
9:10 – 10:10 Discussion on the inquiry points
10:10 – 10:25 Other issues
10:25 – 10:30 Closing

Education Program Preparatory Survey in Bangladesh

Inquiries for DTE

1. The survey results showed that the specialized **(1) technical skills and knowledge**, **(2) fundamental competencies for working people**, and **(3) employability** should be strengthened. Do you agree with this proposal, especially that strengthening fundamental competencies for working people and employability should be considered as the main components of the future technical assistance project?

1. Fundamental competencies for working people
   ① Ability to step forward
   ② Ability to think through
   ③ Ability to work in a team
2. Technical skills and knowledge (Electricity, Electronic and Mechanic)
   ① Basic knowledge of the manufacturing process
   ② Skills and knowledge of technical drawing
   ③ Skill to create an object based on technical drawing
3. Employability (Readiness for Employment)
   ① Grasping the demand of the labor market
   ② Knowledge of occupation and job category
   ③ Career design

Education Program Preparatory Survey in Bangladesh

Inquiries for DTE

2. Technical education aims to develop technical human resources for "**monozukuri**," meaning those who can create new value-added products and improve existing ones. The survey team concludes that, at the polytechnic institutes, **students must acquire basic skills and knowledge and capacity to apply them, then graduates can become gradually mid-level specialists with practical work experience**. Do you agree with this idea?

Education Program Preparatory Survey in Bangladesh

3. The concept of "**fundamental competencies for working people**" is proposed as a general framework and we believe that it is widely applicable. Do you have any recommendations for adapting the concept to the technical education in Bangladesh?

Education Program Preparatory Survey in Bangladesh

Inquiries for DTE

4. The survey team believes that employment is an important outcome of project intervention. The support for employment can improve the morale of students, instructors, and industries. **The project should seek the best strategy to strengthen the connectivity between industries and polytechnic institutes during its pilot phase, and a successful model can be disseminated nationwide later**. Do you have any views on this matter? The cooperation with industry is necessary for continuous development of the other abilities that can meet changing industrial demands.

Education Program Preparatory Survey in Bangladesh

Inquiries for DTE

5. The assumption of technical corporation is that the new concept of technical education should be applicable to all 49 polytechnic institutes. Considering the limitations in the budget and capacity of the technical cooperation project as well as the need for strengthening the TTTC, **one institute could be set initially as a pilot one for improvement of the environment, and development and validation of the curriculum**. If tangible improvement is seen, then it is possible to **choose four to eight institutes** to implement the concept and establish a regional training center. This could be expand later to all the remaining institutes.

Because the intervention above requires a certain number of facilities and equipment, it is necessary to consider the **possibility of covering the cost of the facilities and equipment by the DTE's own budget or by a government loan**. Do you expect to expand the intervention for all the polytechnic institutes that implement the target courses? Is there any possibility to set a budget from your own resources or by a government loan?

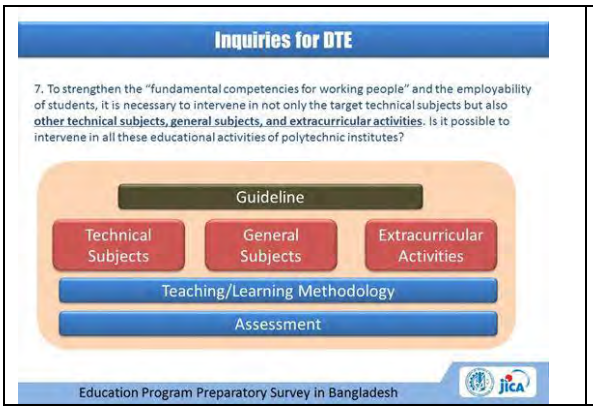
Education Program Preparatory Survey in Bangladesh

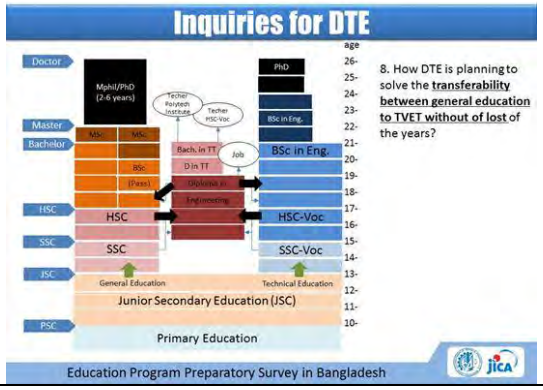
Inquiries for DTE

6. Given the need for holistic development of the curricula, syllabi, materials, facilities and equipment, and constraints on the project budget, it is necessary to focus on two to three technologies. The survey team recommends focusing on **electric technology**, **electronic technology** and **mechanical technology**. Do you agree with this selection?

- Electrical Technology
- Electronics Technology
- Mechanical Technology

Education Program Preparatory Survey in Bangladesh


Inquiries for DTE
7. To strengthen the "fundamental competencies for working people" and the employability of students, it is necessary to intervene in not only the target technical subjects but also other technical subjects, general subjects, and extracurricular activities. Is it possible to intervene in all these educational activities of polytechnic institutes?
Guideline
Technical Subjects
General Subjects
Extracurricular Activities
Teaching/Learning Methodology
Assessment
Education Program Preparatory Survey in Bangladesh


Inquiries for DTE
Doctor
Master
Bachelor
HSC
SSC
JSC
PSC
Mphil/PhD (2-6 years)
PhD
BSc in Eng.
HSC
SSC
HSC-Voc
SSC-Voc
General Education
Technical Education
Junior Secondary Education (JSC)
Primary Education
age
8. How DTE is planning to solve the transferability between general education to TVET without of lost of the years?
Education Program Preparatory Survey in Bangladesh