The Bangladesh Obscruer

তারিখ 17 APR 1992

Science and technology

From Page 5

at different levels and fields to meet the need of industry and various service organizations operating within the country. In its present set up, technical education is offered in three levels-degree, diploma and trade level training. The Bangladesh University of Engineering and Technology (BUET) also offers post-graduate courses (M. Phil. Ph. D) in some specialized areas.

After the HSc (Science) a four-year degree (B. Sc. Engg.) course is offered by the four Bangladesh Institute of Technologies and the BUET. Two specialized colleges — College of Textile Technology and College of Leather Technology also offer degree courses after HSC. There are 18 polytechnic Institutes and two Mono-technics (Institute of Graphic Arts and Institute of Glass and Ceramics) which offer three-year diploma courses after SSC (science) to produce technicians to meet the requirement of mid-level supervisory personnel. The diploma courses are offered in the following fields of technology:

(a) Civil, (b) Mechanical, (c) Electrical, (d) Power, (e) Chemical, (f) Architecture, (g) Electronics, (h) Food, (i) Automobile, (j) Printing and (k) Ceramics.

To meet the requirement of skilled workers for operation and maintenance, training courses in a variety of trades are offered at the 51 Vocational Training Institues (VTI). Entry requirement is normally class VIII pass (in some cases SSC pass is needed). The courses are of two years duration and a certificate is awarded after successful completion of the course. Trade courses are offered in the following fields:

(a) Auto-mechanics, (b) Carpentry, (c) Drafting (Civil and Mechanical), (d) Electrical, (e) Farm mechanics, (f) Foundry, (g) Machinist, (h) Masonry, (i) Radio and Television, (j) Refrigeration and Air-Conditioning and (k) Welding.

Madrasah Education

As recommended in the Bangladesh Education Commission Report, 1974, emphasis has been given to modernize Madrasah education by introducing science courses. These courses have been introduced phase-wise in the Ebtedaye (primary), Dakhil (secondary) and Alim (higher secondary) stages starting with class III in 1975. The following year an elective science group was introduced both in the Dakhil and Alim stages. In 1983 and 1985 respectively the science courses in the Dakhil and Alim levels of the madrasahs were made similar to the science courses of the secondary and higher secondary levels general education. Efforts are being made to improve the science education in madrasahs. Two hundred madrasahs including 12 Alim level madrasahs have been included in the Secondary Science Education Project. Textbooks on science subjects have been written and published according to the syllabuses prepared by the Bangladesh Madrasah Education Board. Science education in madrasahs, however, is somewhat different from that of general education in its content and approach.

completed in June 1991. The main objective of the project was to improve the quality of secondary education, with particular emphasis on science education, through upgrading and expanding physical facilities of secondary schools and madrasahs and improving the professional competence of teachers, teacher-trainers and educational administrators. This would help establish science as a basic component of the school curricula and facilitate introduction of science for all pupils as part of the core curriculum in classes IX and X.

Under the project 4000 institutions — 3800 non-government secondary schools and 200 madrasahs (188 Dakhil and 12 Alim) — have been developed. Science laboratories/class-rooms have been constructed in 1500 schools and 200 madrasahs. All the 4000 institutions have been provided with science equipment, chemicals, books and other teaching aides such as charts, maps and models. The most important component of the project was the establishment of 9 Secondary Education and Science Development Centres (SESDC) at the premises of teachers' training colleges of the country, including a national one in Dhaka, for organizing in-service training courses for secondary teachers. These are the only institutions of its kind in the country at present. The importance of training for enhancing the professional competence and for updating knowledge of subject matter as well as of modern teaching methodology cannot be over emphasized, particularly where about 65% of the secondary teachers are still untrained. A total of about 20,000 secondary teachers and educational administrators have been provided in-service training under the project till December 1991, mostly of 2-3 week duration. The nine SESDCs are expected to impart in-service training to about 10,000 teachers a year.

The increase in science enrolment at the SSC level after 1984 indicates the impact of the SSEP under which physical facilities for science have been provided to the most deficient schools. It may also show the greater awareness about the importance of science in the modern society among the students and the guardians. The decrease in science enrolment at HSC level after 1986 is perhaps due to lack of science facilities at the colleges. A Higher Secondary Education Project with the assistance of the ADB is under process of implementation this year (1992). Under the project science facilities at the HSC level will be provided to selected colleges. it is expected that science enrolment at HSC level will increase after implementation of the project.

The better results of the science students both at SSC and HSC level do not necessarily mean that quality of science teaching is better. Perhaps it indicates that meritorious students generally opt for science.

It is seen that the science enrolment at the degree (pass) level increased by 100% as against total enrolment increases of 131% during the period from 1981 to 1987. The proportion of science students, however, decreased to about 18% in 1987 from about 21% in 1981. At the honours level, the science enrolment increased also by 100% but the total enrolment decreased by about 10% during the same period. The proportion of science students increased from about 16% to 35% of the total. The graduates in the engineering, agriculture and medicine also increased by about 60% on the average.

The enrolment in BUET and the 4 BITS in 1989 was 3813 and 2313 respectively (total: 6126) whereas in the 18 polytechnics it was 7260 and in the 51 Vocational Training Institutes (VTI) 2532. Thus the ratio of degree: diploma: certificate level enrolements is 1: 1.2: 0.4. The degree level enrolment in engineering increased from 4350 in 1981 to 6126 in 1989. The diploma level enrolment remained almost steady around 12000 from 1981 to 1988, but it suddenly dropped to 7260 in 1989. The enrolment in the VTIs remained unchanged around between 1981 and 1988

To bring about qualitative improvement in science education, it is not enough to recognise the need for an increased scientific and technological literacy. More important is the understanding of the exact nature of such literacy.

The Present Scenario

To accelerate economic growth and national development, the need for qualitative improvement along with quantitative expansion of science and technology education has been duly recognized by the policy-makers. To bring about such improvement, it has been realized that modern curricula with new teaching methods and appropriate and adequate textbooks and equipment for teaching-learning process are necessary. Accordingly, some measures have been taken by the Government to improve the expand science education. The national Curriculum and Textbook Board (NCTB), established in 1982, has been entrusted with the responsibility of continuously evaluating, reviewing, revising, improving and updating curricula and syllabuses up to higher secondary level. The NCTB has designed new courses of studies in science and produced textbooks and teachers' guides up to SSC level. As stated earlier, these have already been implemented.

The most important development programme under-taken by the government to achieve both equalitative improvement and quantitative expansion of science education at the secondary level is the secondary Science Education Project (SSEP). The project, with the financial assistance from the Asian Development Bank (ADB), was launched in April 1986 and

Continued on page 8

dropped suddenly to 2204 [illegible] and remained about the same till 1989.

The enrolment in the BAU was 3480 in 1989 as against 3470 in 1981. The corresponding figures in medical colleges was 7197 and 7732 respectively. This shows that there have not been any substantial increase in the agriculture and medical enrolments since 1981.

Qualitative Improvement

Although some efforts have been made to improve the qualitative improvement in the science education during the third five-year plan period, the condition is still much to be desired. New curricula and syllabuses, textbook and teacher's guides, have been introduced with modern approach and content up to SSC level. But there are complaints from the students, guardians as well as the class-room teachers of the syllabus being too heavy and the textbook not well written.

To bring about qualitative improvement in science education, it is not enough to recognise the need for an increased scientific and technological literacy. More important is the understanding of the exact nature of such literacy. And this is not entirely clear not only to the developing countries like ours, but to the developed countries as well. The traditional conception of science education is to perceive science as the dispassionate search for knowledge — knowledge that only scientists can understand and use but others cannot. Science is thought as an elitist, academic subject and too much emphasis is given to 'science foundational building for the sake of building'. The attention is focussed on preparing students who would pursue science education at the higher level. But this serves the purpose of only a small fraction of the students and knowledge gained may not be relevant and significant for life outside schools. Also, technology education has been separated from science education and is often confused with technical and vocational education. But the modern concept is the 'Scientific and Technological Education for all', as part of 'Education for all'. It should start right at the primary level and continue throughout one's life. The aim is national economic and social development of the country which in turn will improve and sustain the quality of life for all citizens.

The objective is know. Now is the time to determine what is appropriate and relevant to the needs of the country, and how to achieve it with the available resources — human, physical and financial.