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STRENGTHENING OF THE BANGLADESH COLLEGE
OF TEXTILE TECHNOLOGY, DHAKA

DP/BGD/85/162

BANGLADESH

Technical report: Work at the Bangladesh College of
Textile Technology, 17 May 1993 to 11 November 1993*

Prepared for the Government of Bangladesh
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of Frank Eckersley,
textile technologist (yarn manufacture)

Backstopping officer: J. P. Moll,
Agro-based Industries Branch

United Nations Industrial Development Organization
Vienna

* This document has not been edited.

Abbreviations

AGM	Assistant General Manager
BCTT	Bangladesh College of Textile Technology
BGTTC	Bangladesh-German Technical Training Centre
BJGA	Bangladesh Jute Goods Association
BJMC	Bangladesh Jute Mill Corporation
BSTI	Bangladesh Standards and Testing Institution
BTI	Bangladesh Textile Industry
BTMA	Bangladesh Textile Mills Association
BTMC	Bangladesh Textile Mills Corporation
CTA	Chief Technical Advisor
GM	General Manager
h/wk	hours per week
L	Lecture
P	Practical training
TIDC	Textile Industry Development Centre
UCEP	Underprivileged Children's Education Programme

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Abstract

DP/BGD/85/162 - Strengthening of the College of Textile Technology, Dhaka, Bangladesh. The objectives are to help in the teaching of 3rd and 4th years of the B.Sc. course, adjusting and refining new curriculum developed in the preparatory phase of this project, assisting existing teaching staff, making industrial visits with students, improving college/industrial relations and assisting the college principal in the planning of short/medium/long-term manpower requirements in industry.

The duration of project time for this report is 6 months commencing 17th May 1992 to 11 November 1993 but also includes a part which is common to all three consultants on the project commencing October 1992 to October 1993.

Improvements at the college included completing installation of new machines and equipment in all workshops and testing laboratory; also re-wiring of workshops although there are problems of voltage stabilization for new equipment in wet processing. Classrooms are in need of upgrading, reproduction facilities are inadequate and maintenance of equipment and buildings is poor.

Curriculum developed during the preparatory phase of this project has not been implemented. A refined and modified curriculum was submitted by the consultants, influenced by comments from industry which included; inadequate practical skills of graduates, greater knowledge required in engineering and computers. This proposal has been superseded by a curriculum plan finalized October 1993 which includes Clothing Technology as a fourth specialism.

There are mixed comments from industry regarding future employment of graduates only a modest increase thought necessary. With the inclusion of clothing technology, Ministry of Education

envisaged a doubling of student intake.

Some recommendations from previous reports have not been adopted; the college has no autonomy and the so-called 'session jam' continues. Two new teachers are employed, one has retired, more are required especially because of the increase in student numbers and the inclusion of garment technology.

The main recommendations are that additional equipment and new teachers are required and to improve machine and building maintenance. A greater commitment of students, staff and Ministry of Education is vital.

Introduction

This report is written by Frank Eckersley, Textile Technologist (Yarn Manufacture) in collaboration with El Sayed El Helw, Textile Technologist (Fabric Manufacture) and Volker Rossbach, Textile Technologist (Wet Processing). The brief has been to strengthen the Bangladesh College of Textile Technology, Dhaka, Bangladesh, project reference DP/BGD/85/162. This includes: adjusting and refining the new curriculum, participating in the teaching of third and fourth years of the B.Sc. course, assisting existing teaching staff to improve teaching skills and technical knowledge, making industrial visits with students, improving college/industrial relations and assisting the college Principal in short, medium and long-term planning (see job description Annex I)

The objectives have not been fully realized mainly because of college problems associated with staff shortages and long delays for staff promotions. Teaching and other activities have been disrupted by the actions of members of staff due to these delays and by students striking for seven weeks from June to August 1993.

The Principal and National Project Director was prevented from carrying out his duties because of the students strike. He has since been appointed to another college and a Principal-in-Charge was appointed from the college staff. Members of staff were promoted and two new members of staff appointed at the end of July 1993.

This terminal report covers the second 6 months assignment for yarn manufacture, from 17th May to 11th November 1993, the first report covered the period 11th October 1992 to 5th April 1993.

To avoid repetition in the terminal reports of all three consultants, Part 1 of this report involves common areas of work from October 1992 when Frank Eckersley and El Sayed El Helw commenced work at the duty station and Volker Rossbach on 31st January 1993. El Sayed El Helw completed his assignment in September 1993.

Many changes have occurred since the departure of El Sayed El Helw and some Chapters of Part 1 have been modified. To avoid confusion with the present state of curriculum planning, the original contents of Chapter II have been considerably reduced.

Part 2 of this report concerns the specialist activities for yarn manufacturing. Part 3 was the specialist activities of El Sayed El Helw (Fabric Manufacturing) reported in September 1993 and Part 4 for Volker Rossbach (Wet Processing) whose final report will be January 1994.

PART 1

COMMON ACTIVITIES AND OUTPUTS

I. TEACHING PROGRAMME IN THE COLLEGE

A. Academic Year

There is no conformity for starting and finishing dates of each year of the course, as shown in Annex V. This problem is quite common in the universities and institutions of higher education in Bangladesh and is known as "session jam".

For various reasons it is difficult for each course to be completed within one calendar year and normally it takes between fourteen and eighteen months (see for example in Annex-V, the 3rd year session 90/91 with a starting date 17/11/91, and the starting date in 4th year session, 22nd September 1993).

The extension of the academic calendar year may be attributed to various factors. With the agreement of teaching staff, the academic year can be extended beyond the normal 36 weeks. It is difficult to keep within this period due to stoppages and disruptions of the teaching programme as shown in Annex VI .

Following the completion of classes for a particular year of the four year course, there is preparation time of about two months before the start of examinations. Examination for each course year takes place at different times of the year. The time to complete all examinations of each individual session tends to be prolonged because of the number of days which is allowed between two successive examinations as follows:-

Table (1 - 1) Time phase between examinations

Marks/examination	Days between two successive examinations
100	5
75	4
50	3

In addition, examinations may be postponed due to student sickness, even if there is only one sick student. If the authorities refuse to postpone the examination in case of any minor reasons, heavy pressure is at once put on the authorities, sometime ending in demonstrations. The result of this teaching programme is that there is no semester, term structure or fixed holidays for the college staff. Disruption is also caused to other classes when examinations are held due to members of staff being required to be present in the examination room.

B. Interruptions of teaching programme

Annex VI shows the frequent interruptions of the teaching programme in the BCTT noted from the arrival of the consultants to the duty station in October 1992 upto November 14th, 1993. The total number of weeks of this period are 54 weeks.

The interruptions of the teaching programme are classified into four categories as follows:-

- 1 - Category A, represents official holidays and totals 35 days. On these days the BCTT was completely closed.
- 2 - Category B, represents the unofficial holidays (e.g. for examinations, the Islamic month of Ramadan, etc.) totalled 59 working days. On these holidays, only the teaching programme is interrupted and the local teaching

staff is free. The consultants made use of the opportunities to make industrial visits with the then principal as well as preparing lecture notes and formulating the proposed curriculum.

Attempts of the consultants to continue the teaching programme during Ramadan failed since students showed insufficient interest.

- 3 - Category C, represents hartals (general strikes) announced by the political parties, totalling 11 days. On these days, the BCTT was (like many public institutions) completely closed.
- 4 - Category D, represents the students strikes of the BCTT which started on 16/6/1993 until the 3rd of August. The main reasons of the strike were that the students were not content with the session jam and the frequent interruptions of the teaching programme. Other reasons were that the students had to wait considerable time (upto five months) for the notification of the results from the previous year. In addition, in late May three teachers refused to take classes or set examinations. During the students strike the other teaching staff and the expatriate consultants performed their non teaching duties in the college.

The total number of days off without teaching are 145 days which represent 44.7% of the total available days (324 days) on the basis of six days/week in the period under consideration (November 1st 1992 to November 14th, 1993) (See Annex VI). Most of the days-off are obviously unnecessary (See category B in Annex VI). If this time-off could be avoided the teaching programme could be made much more compact.

C. National teaching staff

The list of the national teaching staff of the BCTT at the time of arrival of the consultants is shown in Annex VII . 13 members including the then Principal, Dr. M. Rahman of the BCTT cover all the fields of textiles, and the academic specialism of each staff member is given.

Part time teachers and teachers for non-textile subjects are not considered. One of the staff member Mr. Monirul Islam was in the United Kingdom taking an M.Sc. degree course in the field of fabric finishing. He returned on July 7th 1993. Another two staff members (Dr. M. A. Baqui and Md. Shahidullah) are on "continuous informal leave". It seems difficult to fill these two vacancies as the teachers are neither sacked, nor have resigned. Thus, there is an acute shortage in the national teaching staff in short-staple spinning and testing. There is a third staff member who is also on a continuous informal leave, but is not considered in the total number of staff given before (13 including the principal) because he was actually teaching only non-textile subjects. He has been replaced with a new mechanical engineer as a staff member of the non-textile subjects. This staff member was counted in the figures mentioned in the report DP/ID/SER.A/1659 of Mr. F. Eckersley dated on 12th July 1993 (13 excluding the principal and three on informal leave).

In the meanwhile Mr. Nazimuddin Ahmed and Mr. A.B.M. Abul Kasseem have retired, causing further staff shortages. Two new members of staff, Mr. Alimuzzaman Belal (Fabric Manufacture) and Mr. Julhash Uddin (Wet processing) joined the BCTT in July 1993. They take positions of foremen, nevertheless they have a full teaching load.

Any new teacher appointed in the future should be given some teacher training although they will have missed the opportunity of additional technical training from the consultant. An offer was

made some time ago for teacher training to be carried out at the Polytechnic, next to the Textile Technology college, but the offer was never taken up.

There are now only ten staff members including the Principal-in-Charge. Within one year, another member of staff (Mr. Raisuddin) is to retire at the age of 57 years. Apart from the then principal of the BCTT, all the staff members have been on fellowships to Leeds University, see Annex IX. The Principal of the BCTT has been on an overseas study tour. The aim of these fellowships was the improvement in teaching skills to enable the staff to teach the new curriculum, which has not yet been introduced.

Three staff members have been candidates for promotion. (The requirements for promotion are given before in the report DP/LD/SER.A/1659 dated 12 July 1993). The three teachers were finally promoted in July 1993. The three consultants consider the present requirements and procedure of promotion of the teaching staff as an unsuitable system for an institution of tertiary education. They recommend some points to modify the appointment and promotion system, at the same time enabling the improvement of the general standard of the staff members as follows:-

- 1 - Published research work e.g. based on their master or Ph.D. theses taken abroad should be considered as part of the requirements for promotion. The publications should be in one refereed textile journal.
- 2 - The staff members should get time to continue R & D (research and development) work in one of the research institutions e.g. Bangladesh Jute Research Institute TIDC or the BSTI. For doing so, the teaching load of the staff members must be kept within certain specified

limits to give staff members the required time for carrying out the research work. The following table represents a proposal for the work load for the different levels which is similar to those in international academic education institutions.

Table - (1-2) Proposed Work load of teaching staff

Category	h/wk
1. Lecturer	14
2. Assistant Professor	12
3. Associated Professor	10
4. Professor	8

It is also important to improve college/industry relations to enable staff members to find suitable areas for research work in industry.

- 3 - The status of the BCTT must be changed either by assimilation wholly into the University of Dhaka, or by the establishment of autonomy. The time needed for promotion and filling vacancies would be reduced, as it would not be necessary to refer to high levels of authorization.

D. Teaching effort of the consultants

Some of the teaching staff at the BCTT and also the Principal until he left had been greatly overworked with excess numbers of teaching hours. This situation arose with the teachers on fellowships in the United Kingdom and had been exacerbated by the "informal leave" of the two textile teachers and the retirements of two further member of staff. With this ongoing emergency situation,

the arrival of the two consultants in October 1992 and the third in January 1993 was greeted with relief at BCTT.

The consultants started to teach 3rd year (session 90/91 and 91/92), 4th year (session 89/90, 90/91 and 91/92), and also 2nd year (session 90/91 and 91/92). The three consultants taught between 10 and 15 h/wk on these courses.

To the surprise of the consultants, the UNIDO proposed curriculum was not in use, but a modified version of the old curriculum is still being applied. The consultants have taught the running curriculum and at the same time have introduced topics which are expected to be included in the consultants new proposed curriculum. The result has been that the objective of teaching in the job description (see Annex I) has been fully covered. In addition, classes in the second year have been taken by the consultants which were not included in the job description.

During visits of the three consultants to textile mills (together with the then Principal upto the middle of June), it became clear, i.e. it was criticized by the mill managers, that the manual-practical skills of the graduates are poor. The consultants also realized that this aspect is not sufficiently covered in the teaching programme. The local teaching staff explains this deficiency by a general lack of materials. Nevertheless the three consultants showed that it was still possible to have successful practical work with the students even allowing for the difficult situation concerning materials.

Much of the non-teaching time spent at the college was taken by tutorials in the consultants' office. Tutorials are not normally given at the college but due to the technology, modern books and resources which had been brought to Bangladesh by the consultants, tutorials became an important part of the consultants' duties.

II. ADJUSTING AND REFINING CURRICULUM

A. Modular Curriculum

No part of the UNIDO proposed curriculum has been adopted and general oral comments at the BCTT suggested that the levels of the technology subjects in the proposed UNIDO curriculum are too low. On the other hand some parts of the engineering syllabuses part of the curriculum were considered to be better than the running one.

The present curriculum is a modification of an earlier scheme and was introduced in 1990 to allow the three specialties to be process based. i.e. yarn manufacturing, fabric manufacturing and textile wet processing. No change had been made to the subdivision of teaching staff specialties into a cotton department, jute department and textile chemistry department. New problems for the future are therefore likely.

The present scheme is not satisfactory: there is a lot of duplication of subject matter from one year to another. Parts of some syllabuses require modernizing and some of the terms used are unclear. The engineering and automation part is considered to be too low. Finally the present curriculum does not contain any continuous assessment.

One of the consultants (El-Sayed Md. El-Helw, Textile Technologist, Fabric manufacturing) prepared the basis of a modular curriculum plan. Comments by the principal and college staff as well those from management in the industry have been taken into consideration.

The curriculum plan prepared by the three UNIDO consultants contained differences from the existing college curriculum and which are summarized:-

1. The first year subjects have been planned so that a broad

scientific base is given to the whole course. Textile fibres is the only textile subject included in the first year and is basic to the development of the course into textile technology in subsequent years;

2. A gradual build up of textile technology in second, third and fourth years;
3. A much greater engineering content was included because of comments from industry and also following the previous UNIDO proposed curriculum;
4. An increase in computer content;
5. The proportion of practical to theory periods was considered, again, because of comments from industry and
6. Introduction of continuous assessment of 40% of the total marks of each subject was allocated for this assessment and 60% for the final written exam. The evaluation of the students' activities may be carried out through oral discussions in the workshop, reports on practical training topics in the workshop, attendance percent, and periodical tests.

The curriculum plan was submitted to the then principal, Dr. Mustafzur Rahman in March 1993. Three months passed before there was a feed back but these consisted of counter proposals from teaching staff rather than comments on the curriculum submitted. A meeting of teaching staff and consultants was not possible at this time because three members of staff were refusing to carry out their college duties.

The first discussions took place after the end of the students strike and a new principal-in-charge was appointed. Even then, a

letter had to be written by the consultants pointing out how little time was left before the first consultant, El Sayed El Helw, completed his assignment at the college.

A number of meetings followed to discuss a new curriculum. Firstly with members of the teaching staff at BTTC, then with the Secretary at the Ministry of Education together with industrial and university representatives and latterly with the Director General of Technical Education and senior members of the college teaching staff.

It was proposed to include Garment Technology in the textile technology course on the same basis as yarn, fabric and wet processing technologies. The UNIDO consultants suggested that this was academically unsound as a Garment Technology specialism also requires study of fashion and design in the curriculum. This would require less of a science based course than the other technologies and should include art. There are also logistic problems of training suitable teachers as well as equipping a workshop with suitable machines in time for the second year of the course. The consultants suggested alternatives but these were not accepted and garment technology is to be included in the Textile Technology curriculum plan. This has been prepared and is shown in Annex III.

During the course of the meetings to discuss the curriculum plan, many changes have been made to that submitted by the UNIDO consultants. Some changes made at earlier meeting were reversed at subsequent meetings. The curriculum plan proposed by the consultants in March 1993 contained many differences from the present one in use at the college. Some of these changes have been retained in the latest (October) plan and include:

1. The retention of the first year subjects to give a broad science base to the course and also to contain the one textile subject of Textile Fibres.

2. Although the amount of engineering and computer science has been reduced it is still much higher than in the running curriculum.
3. Continuous assessment has been retained at 40% for practical subjects but the percentage has been reduced for theory subjects to 20%.
4. The proportion of time for practical work to theory is satisfactory and the time for project work is increased.

A comparison of the number and percentage of periods allocated for each subject group for the present scheme in operation at the college, the consultants proposed scheme and the latest proposed scheme is shown in Table 1-3.

The values shown for textile technology in the latest proposed scheme includes the four specialism of yarn, fabric wet process and garment technologies. The inclusion of garment technology has reduced the time allocated to the other three specialisms.

B. Preparation of Syllabuses

El Sayed El Helw (Fabric Manufacture) prepared syllabuses in fabric manufacture, engineering and also in management in collaboration with the other consultants. These were submitted before he left Dhaka in September 1993 and before the curriculum plan was finalized in its present form. Since then, it has been made known that of a submission of a new curriculum to the university authorities, that the length of each syllabus should be contained on less than one page.

Subsequently, the writing of each syllabus had been given to members of staff concerned in teaching each subject.

Table 1-3

Present running curriculum

Year of Course	Textile Technology		Maths and Science		Engineering		Computer Studies		Management & Communication		Tables	
	Periods /Week	%	Periods /Week	%	Periods /Week	%	Periods /Week	%	Periods /Week	%	Periods/ Week	%
1	6	17.7	20	58.8	6	17.76	-	-	2	5.9	34	100
2	30	76.9	5	12.8	4	10.3	-	-	-	-	39	100
3	39	92.9	-	-	-	-	-	-	3	7.1	42	100
4	28	73.7	-	-	3	7.9	3	7.9	4	10.5	38	100
Total Course Periods	103	67.3	25	16.3	13	8.5	3	2.0	9	5.9	153	100

UNIDO Consultants proposed curriculum

1	2	5.6	16	44.4	11	30.5	5	13.9	2	5.6	36	100
2	20	55.6	3	8.3	13	36.1	-	-	-	-	36	100
3	34	94.4	-	-	2	5.6	-	-	-	-	36	100
4	22	61.1	-	-	3	8.3	5	13.9	6	16.7	36	100
	78	54.2	19	13.2	29	20.1	10	6.9	8	5.6	144	100

Latest (October 1993) proposed curriculum

1	2	5.6	24	66.6	8	22.2	-	-	2	5.6	36	100
2	28	71.8	2	5.1	7	18.0	2	5.1	-	-	39	100
3	30	78.9	-	-	-	-	5	13.2	3	7.9	38	100
4	31	81.6	-	-	4	10.5	-	-	3	7.9	38	100
	91	60.3	26	17.2	19	12.6	7	4.6	8	5.3	151	100

III. SUPPORTING THE NATIONAL TEACHING STAFF

Some meetings were arranged at the beginning of the stay of each consultant and the group of teaching staff designated to him. The meetings were intended to help in the preparation of class notes and discussing the contents of the present college syllabi and those prepared by Bolton. Problems involving workshop practice would be discussed and plans for practical training and industrial visits would be prepared.

This section of the job description has not been fully covered as would be desired. In the case of the fabric manufacturing group, there were few meetings (about 5 meetings with the individual teachers) with only two meetings for scientific discussion. In the other two fields of specialties, the meetings were more frequent, but still not to the level that was first envisaged. The staff members designated to Mr. Rossbach, however, attended some of his lectures and his practical classes. In addition, the principal of the BCTT attended regularly the lectures of Mr. Rossbach, and occasionally those of the other two consultants. The lack of success in this section may be explained partially by the time devoted by the college teachers to BCTT duties, e.g. meetings.

Requests have been made through the BCTT and UNIDO country director in Dhaka to expedite the engagement of new teachers but in vain until July 1993 when two new teachers were appointed towards the end of the students strike. Due to the heavy teaching loads of the new teachers (20 hours/week), it was difficult to find time when consultants and teachers were free from duties.

IV. COLLEGE/INDUSTRIAL CONTACTS

There is a very good relationship between the BCTT and some factories in the textile industry. This is due to the large number of textile graduates working in the industry. Since the B.Sc. course was introduced in 1981 there have been between 500 and 600 persons graduating. There are also many diploma graduates in industry from earlier years, some of them having risen to high positions in the industry. The former principal of the BCTT, Dr. Mustafizur Rahman, is very highly thought of by graduates in industry especially the ones he has taught in the specialism of dyeing and wet processing.

Several industrial visits were made with students. The potential for more visits was reduced because of the frequent break down of the college bus.

Other visits were made without students, often with the former Principal, including industrial organizations. A meeting was held at the offices of BTMA with the chairman of the organization. BTMA represents over 50 factories in the private sector, mostly spinning mills but also some in weaving, dyeing and

finishing. Although the BCTT was criticized as indicated in Annex- IV a request for help was received from BTMA shortly after our visit regarding expected waste losses after spinning. A further meeting was held with the Secretary of BTMA to discuss the problem which is related to the importation of yarns. There was another quick response to a visit to BTMC Head Office. A request was made to the BCTT for advice on roller and saw ginning and the BCTT was able to assist in this matter.

Annex-IV lists all visits made, number of graduates employed and management comments about BCTT graduates and future developments. In addition to those listed, visits were made to British Council as indicated in Chapter VI. Also, three days were spent at the BSTI early in December 1992 attending a workshop on "Objective Oriented Project Planning" (OOPP). It was jointly organized by the Government of Bangladesh and UNIDO and the present project BGD/85/162 was used as an example. Relative to the "OOPP" workshop above, a visit was made to TIDC on 1st April by the three consultants for discussions with the Principal, Dr. Aftabuddin Hossain Chowdhury. These were to assess the actual needs for the strengthening of TIDC. All the points in Annex-IV of PPD 234 25/1/93 were discussed and the Principal of TIDC supplied written information about some items. Some of the points have been covered in proposals which have been submitted to and have been approved in principle by the Bangladesh Government.

TIDC was established with UNIDO assistance in the period 1979-84 and is still part of the national sector of BTMC. The probable privatization of BTMC is expected to allow TIDC to become a national training and development centre for the textile and garment industry. There is a clear case for co-operation between the BCTT and TIDC. Most of TIDC staff are BCTT graduates and some of them have taken higher degrees in the UK. TIDC was carrying out an interesting experiment with an intensive three months training course in textiles for ten mechanical engineering graduates to work at Padma Textile Mills.

Discussions with management during the visits (approx.30) to mills and other textile oriented institutions were taken into consideration when the consultants wrote their proposed curriculum plan. Information was obtained regarding possible future increases in graduate numbers as indicated in

Chapter V. Better relationship between industry and the college was also encouraged during these visits.

V. ASSESSMENT OF SHORT/MEDIUM/LONG-TERM MANPOWER REQUIREMENTS

There have been approximately 500 to 600 graduates from the B.Sc. course at the BCTT since 1981. The number of students graduating is about 45 at the end of the "fourth year" of the course, after having studied for six or seven years! For example the fourth year students taking their final examination from April to September 1993 commenced their first year studies in 1986.

A. Short-term planning

There is a self-regulating mechanism by the students themselves for each of the present three specialties in the fourth year of the course. Although the total number of students cannot be changed for the final year, each student opts for the speciality of his/her choice. The decision may be affected by the students ability in a particular area, e.g. chemistry, but is also affected by job prospects. It is clear to the students at the end of third year studies, which specialist area offer best prospects.

B. Medium/long-term planning

The medium and long-term planning requirements of graduates for the textile industry is particularly uncertain at the present time. In the public sectors of the industry, BTMC and BJMC mills face an uncertain future because of huge debts and pending privatization. Workers in both organizations are fiercely opposed to privatization because of possible mill closures and job losses and disruptions in the mills are causing greater financial problems. Neither at BTMC nor BJMC would anyone estimate future requirements. Only TIDC (part of BTMC) is optimistic about their future as a national training centre for the textile and garment industry but could not estimate future requirements.

There is more optimism in the private sector and it is probable that an

increasing number of graduates will be required. Some mills are being built and others are at the planning stage. The actual increase in numbers required cannot be estimated at present and there is uncertainty regarding Government policy especially in backward linkages in the industry. At present, the garment industry which has mushroomed during the past ten years or so is using more than 90% imported finished material.

The garment industry is also taking a few graduates in textile technology particularly for the inspection and quality control of the fabric.

After having visited textile mills in different fields of speciality and places in the Dhaka area, the general opinion is that the BCTT should have a modest increase in numbers entering the first year of the course. Additionally, if the actual length of the course could be reduced to four years this would give a temporary increase in the number of graduates.

However, it was found very difficult to estimate quantitatively the actual need of the industry for the graduates of the BCTT and accordingly the numbers entering the first year of the course. The figures given for the need of the industry spread over a very wide range. In general, the figure of a minimum of 50 given in previous reports is evaluated to be relatively low. An extension of about 20% (i.e. up to about 60 graduates per annum) may be necessary to adapt the current expansion in the local textile industry. The wastage through the four years course (20%) is taken into consideration, when estimating the number of entrants.

As reported in Chapter-II, it is expected that the college will have a new curriculum in the near future which will include garment technology as a specialism. In view of the importance of the garment industry in Bangladesh, job opportunities of the graduates will be greatly enhanced. Taking this into consideration, the number of new entrants could be doubled when the new curriculum is introduced and additional staff and equipment is provided. There should also be much greater opportunities for female students.

VI. LIBRARY

The library is well stocked with books but there were no up-to-date books on the shelves when the experts arrived. Some books were brought from UK for the library and funded by UNIDO. These are listed in Annex- VIII.

The supply of textile magazines over an extended period would be helpful but there has been insufficient funds for these to be obtained on a regular basis. The quarterly journals of the Textile Institute for 1992 were ordered in UK and funded by UNIDO but no others have been supplied.

Due to an initiative of Mr. F. Eckersley, a visit was made to British Council in Dhaka in an attempt to obtain a book grant for the BCTT library. These grants have been discontinued but as a result of the visit, an offer of "withdrawn from shelf" books was made. They were all non-textile books but a useful 120 books were obtained on chemistry, physics, mathematics, statistics, engineering materials, and teacher training. At present, no textile books are stocked at British Council but a request has been made to them to consider starting a textile section at the library.

Funding of a library for books and magazines on a continuous basis is essential for the B.Sc. course in textile technology at the BCTT for both staff and students.

The consultants brought their own books, journals and teaching aids such as slides and transparencies to the college. They provided the library with some recent references and made those books etc. available to it as well as handing over copies to the teachers. A request to the teachers, to make their personal books available to the library has had only little response up to now.

VII. MACHINES AND EQUIPMENT

The BCTT was established originally as a school of textiles in 1950. In 1981 it was upgraded to become a college with the authority to award B.Sc. without getting any additional equipment. Therefore the state of the old machines and equipment is still unchanged in quantity and condition as described in the

UNIDO report DP/ID/SER.A/647 dated on 31/10/1985.

None of the older machines conform to normal safety standards due to missing machinery guards. It is probable that rehabilitation of these machines would be unsuitable and costly; complete replacements are necessary. Many of the other old machines cannot be used and can only be classed as museum pieces.

To improve the situation, in the preparative stage of this project, several modern machines and other equipment were delivered to the BCTT (see Annex X). Apart from the equipment for wet processing workshop, all the delivered machines and equipment were and are in good running condition.

The weaving and knitting machines had their raw material delivered by the machine manufacturers. Regarding the wet processing workshop, the newly delivered machines were left without installation waiting for the arrival of Mr. V. Rossbach who started immediately with this task, even though it is not part of his job description. Nevertheless, there are still some problems for this workshop, some of the equipment has electronic parts and there may be a problem due to the voltage fluctuation in Dhaka. Therefore part of the equipment is not running until now and it has to be clarified with the manufacturers of the machinery and the company who re-wired the workshop.

In general, the wide range of processing and testing equipment and machinery existing in BCTT could be considered for the time being to be more than sufficient for the education purposes up to B.Sc. degree in textiles except for the yarn manufacturing workshop, yarn testing and equipment for textile chemistry laboratory. The new machines in the yarn manufacturing workshop, namely draw frame and rotor spinning frame, are essential but unnecessarily expensive. Other essential machines such as speed frame and ring frame were not replaced and the existing machines are in a poor and dangerous condition. Yarn testing equipment such as for example, Ulster Evenness Tester are necessary for a B.Sc. course. The old equipment and machines need repair, renovation or replacing. This equipment and machinery has considerably deteriorated due to lack of regular maintenance and not due to excessive use. Therefore, it is well recommended, that the authorities of the BCTT must provide suitable and regular maintenance to all

equipment of the BCTT especially recently installed equipment within the framework of this UNIDO project.

At the meeting with the Secretary of the Ministry of Education, a request was made to list equipment which is still considered necessary for the Textile Technology course at BTTC. This has been completed and includes items included in Part 2 of the report. A copy of the list of equipment is shown in Annex XIII.

Classrooms are old fashioned and lack modern facilities, "black boards" are painted plaster sections on the walls of the classrooms. The teaching aids provided in the project have been one overhead projector, one slide projector and two large and bulky screens. To help improve teaching methods, a "teaching aids and reproduction section" is necessary with adequate funding.

The fabric of the buildings is deteriorating and due to broken panes of glass birds are flying around the workshops and fouling the new machines. Water leaking into the workshops and main college block is common during the wet season. Rotting wooden window frames require replacing as well as panes of glass in parts of the buildings. Standards of maintenance of machines and buildings are abysmal and there is a shortage of cleaning staff. (There is only one for the whole college).

PART 2 SPECIAL ACTIVITIES AND
OUTPUTS IN YARN MANUFACTURING

I WORKSHOPS

A. Short staple (cotton) workshop

The new equipment - Rieter Rotor Spinner, Rieter Drawframe and Miniature Spinning Plant - have been used to a greater extent during the past 6 months. Electrical problems in the blowing room had prevented scutcher laps being produced to feed the other machines. The problems were later solved but in the meantime, scutcher laps were obtained from UCEP due to a closer relationship between the college and UCEP. More machines now have creel material and card, speedframe as well as the new machines are better utilized.

The ringframe continues to be a problem without top apron assemblies. Various top apron assemblies have been tried including some brought back from U.K. but all have proved unsuccessful. Another ringframe is capable of running but the machine and particularly the drafting system is old fashioned.

Machines and equipment still required to equate with a modern curriculum in the short staple workshop include:

Comber lap preparation - Manually doffed lap winder.

Comber - a modern machine is desirable but automatic waste removal or automatic doffing is not necessary.

Speedframe - short section but containing three different drafting systems.

Ring frame - short section of 24 spindles each side. Different drafting system on each side of machine, one for fibres up to 40 mm and the other suitable for fibres up to 65 mm.

NOTE: All the above were included in the original specification for recommended equipment requirements.

Doubling (Twisting) frame or single unit 2 for 1 twister.

Single unit texturing machine, a false twist texturing unit preferred.

Modernization of one carding machine involving replacement of flexible wire with rigid wire on cylinder and doffer; replacement of flexible wire on flats with semi-rigid wire; new bearings on taker-in, cylinder and doffer; replacing doffer comb with draw-off rollers; new coiler mechanism suitable for larger delivery can. Also a single unit dust extraction unit is necessary.

Instruments required for use in the workshop include:-

Stroboscope	[These would also be useful for
Sling hygrometer]		

Small illuminated microscope for examination of card wire points.

Modern balances suitable for weighing samples of cotton and waste, metre lengths of scutcher lap, sliver, roving and yarn samples, also wrap block for slivers and roving and wrap reel for yarn.

Modernized second-hand machines, ideally suitable for the college, are available at a fraction of the cost of new machines. The workshop could have been completely re-equipped to satisfactory standard, for the cost of the Rieter Rotor Spinner and drawframe.

B. Long staple (jute) workshop

The electrical fault in the new jute spinning machine which had been reported in the first 6 months report has been rectified and the machine is in running condition.

All machines in the jute workshop are fully clothed with creel material and are in working condition. No other equipment is required in this workshop.

C. Testing laboratory

The fault in the rapid regain indicator mode known in the previous report, April 1993, has still not been rectified. A visit was made to J.H.Heal manufacturers of this instrument, during the time spent in U.K. before returning

to Dhaka for the second 6 months contract. It was found that the company had previously posted a replacement heating element which was suspected as being the cause of the problem with this instrument. Unfortunately, this part could not be traced as having been received at either UNDP Dhaka or at the college. The then Principal Dr. Mustafizur Rahman, wrote to Heals requesting more information regarding the despatch of this item but a reply was never received. Due to the subsequent problems at the college, there has been no follow up. During a visit to the company, a replacement thermometer was obtained for this same instrument as well as additional instruction brochures for the other instruments supplied to the college.

There are still some instruments required which are essential for the B.Sc. course in Textile Technology. These include:

Uster Evenness Tester including 'Classimat'

Automatic Single Thread Testing Machine

Microscopes with traversing stage, one microscope to have the facility of a projection screen. Polarisers are also required.

A modern method of fibre length measurement is desirable.

It is essential that a section of the testing laboratory should be controlled at standard atmospheric conditions of $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ at $65\% \text{ RH} \pm 4\%$.

With these additional facilities, it should be possible for the college to improve standards of students in practical work, carry out more consultancy work and improve college/industrial relations.

II TEACHING PROGRAMME

A. College staff

At the start of this period, the following three members of staff were engaged in teaching yarn manufacturing subjects.

Dr. D.N.C. Sutradhur	Associate	Short staple spinning
BSc.(Text.C.U.India)	Professor	and quality control
PhD.(Yarn manuf. Leeds)		

Mr. A.B.M. Abul Kassem Dip. (Jute Tech. Dundee) PGD (Text. Leeds)	Associate Professor	Long staple spinning (jute) carpet manufacture and specialized textile products
Mr. M.A. Kashem BSc. (Text. D.U.) PGD. (Clothing, Leeds) MSc. (Text. Leeds)	Lecturer	Long staple spinning (jute) and clothing technology

Academically the specialisms are related to processes, viz. yarn manufacture, fabric manufacture and dyeing and wet processes but the lecturers are still fibre based (cotton and jute).

Three lecturers are insufficient to teach all yarn manufacturing subjects in addition to the specialized subjects as shown above. The retirement of Mr. Kassem in September 1993 and the possible greater involvement of Mr Kashem in clothing Technology will worsen the situation in the future.

No new teachers have been appointed in this specialism although they are urgently required.

B. Support to local staff

Little support could be given during the first two months of this appointment due to disruptions to the teaching programme at the college. Following this period, a great deal of discussion has taken place with members of yarn manufacturing staff with regard to the planning of the curriculum and syllabus content. Details are given in chapter II .

C. Teaching

During this six months period, students of second, third and fourth years of the Textile Technology Course were taught for total periods per week of between 8 and 13. There has been considerable disruption to all classes and attempts have been made to concentrate a 36 week course into a much smaller

number of teaching periods.

The so-called session jam is described in part 1 of this report and the problem can be illustrated with the example of teaching two periods per week for second year yarn manufacturing theory.

The second year classes commenced on 4th February 1993 and the course was due for completion in the middle of October 1993. This gives a time span of 36 weeks. Of the possible 72 periods of teaching, class contact occurred on only 18 of these periods. This equates to only 25% of the total possible periods. The reasons for the difference in the number of class contact periods to the total possible is given as follows:

	<u>Periods lost</u>
Student strike	14
No class cover whilst consultant was in Vienna and U.K.	12
All student holidays including Ramadan, extended moslem festivals and single day holidays	18
Hartal (general strike)	1
Industrial visit with students	1
Miscellaneous (including students not arriving in class due to monsoon rains, college celebrations and college tests for new student intake)	8
	<hr/> 54

Second year practical work was also severely disrupted. In addition to the reasons given, the yarn manufacturing workshop was some times used for practical examinations and project work for students in other years of the course.

Fourth year students (session 1990/91) commenced their studies on 19th December 1992 and finished on 13th October 1993. Subjects taught to fourth year

students were 2 periods per week for yarn manufacturing theory, 2 periods yarn manufacturing practical training and 1 period quality control. During the whole time span from 19th December 1992, approx. 33% of the possible periods has been covered with the students. Even allowing 7 weeks holiday to bring the total weeks to 36, class contact only increases to 39%.

Two periods per week for yarn manufacturing have been taken with third year students (1991-92 session). These classes started on 8th August 1993 and have been relatively free from disruption, only 3 periods were missed and 2 of them due to hartals.

Much of the non-teaching time at the college has been spent in impromptu tutorials probably resulting from the reduced class contact time during the last six months.

There has been a short overlap of three fourth year student classes. The 1989-90 session class commenced their studies on 7th November 1991 but have only recently completed the whole course with project work at the college in October 1993. The 1990-91 session class finished their studies on 13th October whilst a new fourth year class for 1991-1992 session commenced studies on 25th September 1993. One period yarn manufacturing theory has been taken with this class.

Because no new teachers were appointed, many class notes have been prepared for classes taken in second, third and fourth years of the course. These are suitable for the present course subjects as well as for the new curriculum. Copies of class notes and many brochures on spinning processes, testing and quality control brought from U.K. have been left for use at the college.

III. ADJUSTING AND REFINING CURRICULUM

Many changes have been made to the overall curriculum plan, first submitted by the consultants in March 1993 to the then principal, Dr. Mustafizur Rahman. Some syllabuses were written in full but because of the continuous changes made to the plan since August 1993, the other syllabuses were written in outline form

only. Since the curriculum plan was finalized on 12th October all syllabuses associated with yarn manufacturing technology have been re-written.

A syllabus written for Clothing Technology in fourth year has been abandoned since this area of the textile industry has to be included in the Textile Technology Course with equal weighting in second, third and fourth years as yarn, fabric and wet processing technology.

The following syllabuses have been written following discussions with members of the BTTC teaching staff especially Dr. N.C. Sutradhar. It has been stated that for submission of the course curriculum to the university authorities, the length of each syllabus should be about half a page. Therefore, much of the detail included in previously written syllabuses have been excluded.

1st Year	Textile Raw Material I (Natural fibres) English language
2nd Year	Textile Physics I Textile Testing I Yarn Manufacturing I
3rd Year	Textile Physics II Textile Testing II Yarn manufacturing II
4th Year	Testing and Quality Control III Yarn manufacturing III Yarn Manufacturing IV Yarn Manufacturing Textile Mill Organization Special Yarn Products Yarn manufacturing Maintenance

The UNIDO consultants had proposed that Textile Physics and Textile Testing should be treated as one subject. This was not accepted so Textile Physics and

Textile Testing have been written as separate subjects in second and third years of the course.

IV. COLLEGE/INDUSTRIAL CONTACTS

Visits with other consultants are reported in Part I Chapter IV of this report. Following the visit to Dularia Cotton Spinning Mills Ltd. further help and advice has been given to members of the company's staff. A request for a further visit to the mill has had to be turned down because of the work to be completed at the college.

Only one industrial visit with students has been made during the six months period. The visit was made with third year students to Ahmed Sawany Textile Mills which is a BTMC composite mill. All parts of spinning, weaving, dyeing and finishing were seen although the main object of the visit was to see combing and comber lap preparation machines which the college does not possess. Because of the poor financial stage of BTMC mills, the spinning was not working due to supplies of cotton being curtailed. This was an advantage as it enabled a closer examination of the combing operation.

An industrial visit was made to Shamsul Alam Cotton Mills Ltd. which was previously owned by BTMC. There are spinning and weaving mills at present, the weaving being very old fashioned (1928 machines), but air jet looms and a bleaching and dyeing plant are to be installed. Most of the spinning machines are fairly modern. It is intended that the output of the new set-up will be of export quality and a modest increase of textile graduates will be employed.

Visits to UCEP were made to acquire scutcher laps to enable processing to be carried out in the workshop as there were electrical problems on the college blowing room machines at the time. This was possible with the close cooperation of Mr. R. Flaherty who is working at UCEP on a British overseas aid programme.

A request was made by Mr. Hamdi Eldosakey working on UNIDO project BGD/91/006 at BSTI to examine a new cotton selector (fibre/trash separator). Two visits were made to the Institute to instruct BSTI members of staff on the operation and correct method of processing samples through the machine.

Further visits were made to British Council in Dhaka. Firstly to advise on suitable textile text books for their library as detailed in Chapter VI of Part 2 of this report. Secondly, to obtain an assessment by English language teachers at the Council for the subject of English for first year students of the college. Further visits have also been made to TIDC Savar and to BTMC head office (Quality Control Dept.). Other visits were made to organizations which were not directly connected with college duties. One visit was to a local Rotary Club in Dhaka to give a talk on the Textile Industry in Bangladesh and Technical Education. Other were made to local branch meetings of the Textile Institute (based Manchester, U.K.). There are a number of students at the college who are members of the Textile Institute.

V. SHORT/MEDIUM/LONG TERM PLANNING

The visits made to industry with the then principal, Dr. Mustafizur Rahman, are reported in part 1 of this report and also in the report for the first six months of the contract of the consultant for yarn manufacturing in April 1993. Opinion from industry then and during visits made more recently have been for a modest increase in the number of graduates which will be required.

Very recent changes in Ministerial thinking have completely changed this proposed plan. By the inclusion of Clothing Technology, the intake is to be doubled.

VI. LIBRARY

More textile books brought from U.K. in May 1993, students have borrowed these directly and then later some were passed to the college library. However, there is still a dearth of good modern books in textile subjects at the college. Fortunately, after a number of attempts to persuade the British Council in Dhaka to start a textile section in their library, a new librarian has now agreed to this request. A first batch of textile text books which were recommended has been ordered.

For the students to borrow these books, a small membership subscription fee is required. It is expected that many of the students will take the opportunity to read modern textile books in addition to those available in the college library. It is expected that British Council will order more books in the future

to enlarge the textile section of the library.

A list of the books ordered but not yet received at the British Council is shown in Annex XII . The British Council is having a review of magazines at present stocked in the library and textile magazines have been proposed to replace any discontinued ones.

COMMON RECOMMENDATIONS

The recommendation made in previous reports and where no action has been taken should be reconsidered. The main one is that more autonomy should be given to the BCTT or that the BCTT should be assimilated into the University of Dhaka. Many of the problems which exist at the BCTT are related to lack of progress with this recommendation.

Other recommendations for action to strengthen the BCTT are as follows:

1. The urgent appointment of new teachers in the field of yarn manufacturing and testing.
2. Additional equipment and accessories are required for textile testing and chemistry laboratories (round bottom flasks etc.) and in the yarn manufacturing workshop to bring it to a suitable standard. Also required is the rehabilitation/modernization of some machines and some essential accessories.
3. It is necessary for the Ministry of Education to budget for maintenance of machines, equipment and consumable items such as processing material. A regular allowance is also required for purchase of books and technical magazines for the library.
4. The Ministry of Education is also recommended to improve the maintenance of the building in particular, replacing rotten window frames, glazing and painting. Also to provide additional cleaning resources. Also a continuous

water supply for the wet processing workshop and toilet facilities must be provided;

5. The setting up of a visual aids section to help improve teaching methods. This should also include the supply of teaching aids and the upgrading of the classrooms.
6. The BCTT authorities, staff and students should have a plan and self discipline to coordinate the start and finish of each year of the course. A target should be set for the completion resulting in a normal academic year.
7. The establishment of the number of teaching hours for each grade of lecture;
8. Appointment of the best graduates as demonstrators will represent a feed channel to the teaching staff membership. A transitional phase of at least 15 years after the establishment of such channel is required to make the Ph. D. degree a condition of getting the teaching staff membership in the textile field at the BCTT.
9. Although it is outside the scope of the present project, the proposal to include a garment technology specialism will require a workshop to be set up with a wide range of sewing machines, tables, cutting machines and other equipment. Additional specialist teaching and maintenances staff will be required.

Immediate planning is necessary for teachers and equipment to be available for the second year of the course. The proposed college syllabuses in garment technology cover technology but are weak in fashion and design. Expertise in these areas will be necessary if the garment industry of Bangladesh is to develop from its present dependence on imported patterns.

For a longer term strategy, it is recommended that a completely new course in garment technology is established at the college. It is not necessary to have

such a strong scientific base as the proposed course but some subjects in the textile technology course would be suitable for garment technology.

The ultimate goal of the project could be realized in fact when the local side of the project put these recommendation as well as the modular curriculum into action.

Rev.1
January 1993

UNIDO

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
PROJECT IN THE PEOPLE'S REPUBLIC OF BANGLADESH

JOB DESCRIPTION

DP/BGD/85/162/11-01/J13102

Post title	Textile technologist (yarn manufacturing)
Duration	12 months *) (split into two six-month assignment with an interruption by one month)
Date required	October 1992; May 1993
Duty station	Dhaka
Purpose of project	Strengthening of the Bangladesh College of Textile Technology
Duties	Attached to the Bangladesh College of Textile Technology and under the general supervision of the National Project Director, the Principal of the College, the expert will participate in the teaching of 3rd and 4th year students in yarn manufacturing technology. This will include adjusting and refining the new curriculum developed during the preparatory phase of this project, supporting and guiding the local teaching staff designated to him as counterparts to improve their teaching skills and technical knowledge and, in particular, promoting active College/industry contacts through frequent factory visits with the students and by linking course assignments with real factory situations to the extent possible. He will also assist the Principal in assessing the short, medium and long-term man-power requirements of the textile and jute industry in the yarn production sub-sector.
Qualifications	Degree in textile technology. A minimum of five years of industrial experience and 3-4 years of teaching experience.
Language	English

Background Information

The textile sector occupies an important place in the economy of Bangladesh. It includes 60 units in the modern mill sector, about 437,000 traditional handloom units in the cottage sector, a recently emerged and growing small-scale powerloom sector with about 4,000 looms installed, and a rapidly growing garment industry geared to exports. Altogether roughly one million people are employed in textiles, with 850,000 in handloom activity, 75,000 in the modern mill sector and about 60,000 in other groups of textile industries. Domestic textile production ranks second to jute manufacturing as regards contribution to the industrial sector's share of GDP. Jute and jute manufacturing are the largest export earners of the country, with an employment of about 200,000 persons.

The modern textile mill sector plays a critical role in the textile sector as it supplies the handloom weaver with most of their yarn requirements and itself produces about 50% of the domestically produced cloth. It has an installed spinning capacity of about one million spindles and a weaving capacity of about 7,500 automatic looms.

Managerial weakness has been identified as the most important single factor responsible for the generally poor capacity utilization and mill performance in both the textile and jute mill sectors. In recognition of this the Government decided to upgrade the College of Textile Technology (established 1952) to a B.Sc. degree-level, four-year College in 1979. The practical implementation of this decision, however, has been difficult owing to an acute shortage of qualified teachers and lack of appropriate physical facilities at the College.

Various reports on the College indicate an urgent need to improve the curricula, the knowledge and skills of the teaching staff and the physical facilities. The Government, through the National Economic Commission, endorses these conclusions and the strengthening of the Textile College has also been included in the Medium Term Education Plan prepared by the Planning Commission.

Apart from this project UNIDO has provided and is still providing, the assistance to the textile industry in Bangladesh through the following projects:

- 1 - DP/BGD/75/013 Jute Products Research.
- 2 - DP/BGD/79/030 Central Testing for Jute Goods.
- 3 - DP/BGD/80/010 Assistance to Jute Industry.
- 4 - DP/BGD/82/006 Textile Industry Development Programme.
- 5 - DP/BGD/84/051 Private Textile Mills - Production Management Systems.
- 6 - DP/BGD/91/006 Assistance to the Bangladesh Standards and Testing Institutions.

1st Year B.Sc. in Textile Technology.

Subjects	Hours Per Week			Marks						Grand Total
	Theory	Practical	Total	Theory			Practical			
				Conti. Assessment 20%	Examination 80%	Total	Cont. Assessment 40%	Examination 60%	Total	
101 Mathematics - I	2	1	3	15	60	75	-	-	-	75
102 Mathematics - II	2	1	3	15	60	75	-	-	-	75
103 Physics - I	2	2	4	15	60	75	10	15	25	100
104 Physics - II	2	2	4	15	60	75	10	15	25	100
105 Chemistry - I	2	2	4	15	60	75	10	15	25	100
106 Chemistry - II	2	2	4	15	60	75	10	15	25	100
107 Textile Raw Materials-I	2	-	2	15	60	75	-	-	-	75
108 Polymer Science	2	-	2	10	40	50	-	-	-	50
109 Engineering Materials	2	-	2	10	40	50	-	-	-	50
110 Engineering Drawing	-	4	4	-	-	-	20	30	50	50
111 Textile Engineering Practices-	-	2	2	-	-	-	10	15	25	25
112 English Language	2	-	2	10	40	50	-	-	-	50
	20	16	36			675			175	850

2nd Year B.Sc. in Textile Technology.

Subjects	Hours Per Week			Marks						Grand Total
	Theory	Practical	Total	Theory			Practical			
				Conti. Assessment 20%	Examination 80%	Total	Cont. Assessment 40%	Examination 60%	Total	
201 Yarn Manufacturing Technology - I	3	2	5	20	80	100	10	15	25	125
202 Fabric Manufacturing Technology - I	3	2	5	20	80	100	10	15	25	125
203 Wet Processing Technology-I	3	2	5	20	80	100	10	15	25	125
204 Garment Technology - I	3	2	5	20	80	100	10	15	25	125
205 Textile Raw Materials-II	2	-	2	15	60	75	-	-	-	75
206 Textile Physics - I	2	-	2	10	40	50	-	-	-	50
207 Textile Testing & Quality Control-I	2	2	4	15	60	75	10	15	25	100
208 Statistics	2	-	2	15	60	75	-	-	-	75
209 Electrical & Mechanical Engineering	3	2	5	20	80	100	10	15	25	125
210 Elements of Machine Design	2	-	2	15	60	75	-	-	-	75
211 Computer Science	-	2	2	-	-	-	10	15	25	25
	25	14	39			850			175	1025

3rd Year B.Sc. in Textile Technology.

Subjects	Hours Per Week			Marks						Grand Total
	Theory	Practical	Total	Theory			Practical			
				Conti. Assessment 20%	Examination 80%	Total	Cont. Assessment 40%	Examination 60%	Total	
301 Yarn Manufacturing Technology - II	3	2	5	20	80	100	10	15	25	125
302 Fabric Manufacturing Technology - II	3	2	5	20	80	100	10	15	25	125
303 Wet Processing Technology-II	3	2	5	20	80	100	10	15	25	125
304 Garment Technology - II	3	2	5	20	80	100	10	15	25	125
305 Textile Physics II	2	-	2	10	40	50	-	-	-	50
306 Textile Testing & Quality Control - II	2	2	4	15	60	75	10	15	25	100
307 Fabric Structure & Design (Woven & Knitted Structures)	2	2	4	15	60	75	10	15	25	100
308 Textile Applications of Computer Science	3	2	5	20	80	100	10	15	25	125
309 Industrial Management & Organization	3	-	3	20	80	100	-	-	-	100
	24	14	38			800			175	975

4th Year B.Sc. in Textile Technology.

Subjects	Hours Per Week			Marks						Grand Total
	Theory	Practical	Total	Theory			Practical			
				Conti. Assessment 20%	Exam ination 80%	Total	Cont. Assesment 40%	Exa mina tion 60%	Total	
401 Yarn/Fabric/Wet.Processing/ Garment Technology -III	3	4	7	20	80	100	20	30	50	150
402 Yarn/Fabric/Wet.Processing/ Garment Technology - IV	3	4	7	20	80	100	20	30	50	150
403 Special Yarn/Fabric/Wet Pro- cesses/Garment Products	2	-	2	10	40	50	-	-	-	50
404 Maintenance Practices of Textiles (Yarn/Fabric/Wet Processes/Garments.)	-	2	2	-	-	-	10	15	25	25
405 Textile Mill Organization (Yarn/Fabric/Wet Processing Garments	2	-	2	15	60	75	-	-	-	75
406*Testing & Quality Control - III	2	2	4	15	60	75	10	15	25	100
407*Machine Technology	2	2	4	15	60	75	10	15	25	100
408*Accounting & Marketing of Textile Mills	3	-	3	20	80	100	-	-	-	100
409 B.Sc. Project	-	6	6	-	-	-	30	45	75	75
410 Industrial Attachment	-	-	-	-	-	-	30	45	75	75
411 Comprehensive Viva	-	-	-	-	-	-	-	-	50	50
	17	20	37			575			375	950

* Common Subjects.

INDUSTRIAL VISITS

Dates Visited	Organisations & Business	Persons seen & Positions	Number of Graduates Employed & Comments		
			Number	College/College Graduates	Planning requirements
1992/93 Nov 23 Mar 1	S.C.R.P. Technician Training	R. Flanerty Consultant	3	Graduates poor in workshop practice U.C.R.P. used as 'stepping stone' to industry	Similar to present
Dec 30	Deva Textiles bleaching & Dying	Anam: Enque Manager	4		
Dec 30	Sua Textiles Dying, Printing & Finishing	H.A. Larin Manager	5	More emphasis on workshop practice/ skill training, also computers & engineering	More graduates will be required, number not known
Dec 31	Sidex Ltd. Bleaching & Dying	Sirajul Islam Manager	12		More graduates required when spinning plant is ready
Jan 12	B.T.R.C. Spinning, Weaving Finishing	H. Akhtaruzzaman director of Operations	150		No planning, future uncertain
Jan 12	B.T.R.C. Quality Control	Dr. Asrar Hassan Deor. Director	3	Should be more on management, also stronger relations with College are desired.	No plans, uncertainty about future of BTMC
Jan 19 Mar 16 Apr. 01	T.I.D.C.	Dr. Utkin Hussain Choudhary, Principal H. Bokumdin Head of Q.C	7	Workshop practice considered poor. Management, specially communications should be improved	If TIDC becomes national centre, more graduates required
Jan 28 Mar 14	Padma Textile Mills. Spinning	Shah Ain G.R. Abul Hasben Manager	35	More engineering and practical work desired	Graduates required for future developments
Feb 25	B.J.R.C. Jute Industry	A.S.H. Hafeed Director of Research and Q.C.	Two	No graduates employed recently	Uncertain future for BJRC
Mar 5	Prize Textile Spinning Mills	Habibul Rabhani, GM	22	Industrial training should be six months and include project	More graduates required upon expansion.

INDUSTRIAL VISITS

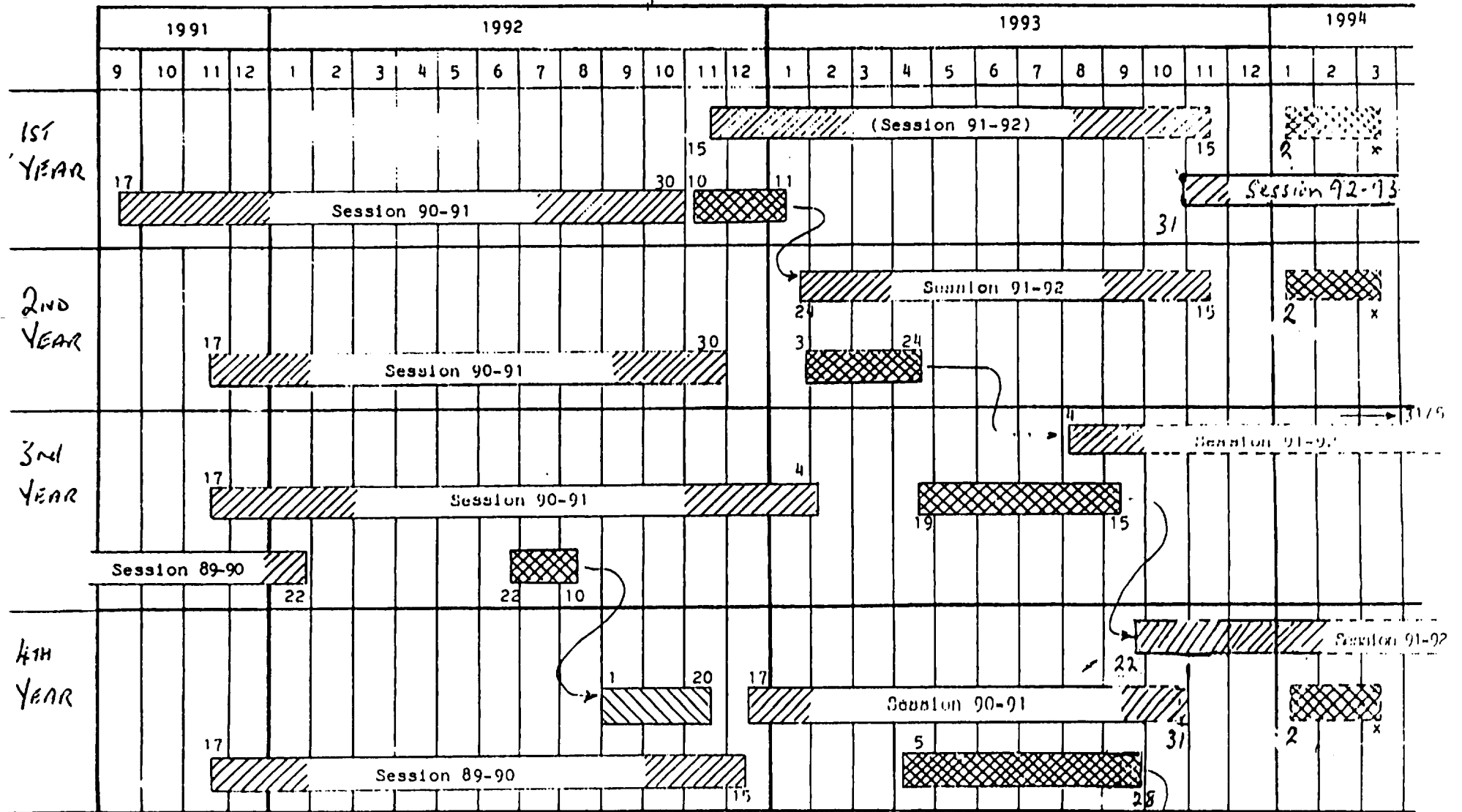
Dates Visited	Organisations & Business	Persons seen & Positions	Number of Graduates Employed & Comments		Planning requirements
			Number	College/College Graduates	
Mar 7	Opex Garments Ltd Making up Garments	Lt.Col. Nazibul Iqbal Khan (Ret.: Executive Director:	i	Graduates required with knowledge of clothing manufacturing	More expansion shortly and more graduates required
Mar 7	Friends Inter- national. Knitting, Printing, Dyeing & Making up	Ashraf Usman Technologist	:		Some expansion possible but no plans made
Mar 9	Syntax Printing & Finishing Mills	Ed. Jinal Ismail. M	+	Workshop practice and industrial training very important	Further expansion planned but graduate numbers not known
Mar 9	Begun Mills Ltd Composite Mill of PHE Dyeing & Finishing only		:		Depends upon government policy re D.T.M.C.
Mar 10	D.T.M.C. Employers' Assoc.	Wali ul Iqbal Chairman	-	Very critical of College graduates. More industrial training required, at least four months including project	A problem increase in graduate numbers in private sector but no forward plans
Mar 14	SEKINCO Conglomerate, Owns Padma Mills	A.S.F. Rahman chairman S.W. Ismail Director Human Res.	-	Course should include preventive and predictive maintenance, management should include forward planning and communications.	See Padma Textile Mills
Mar 21	Bahia Textile Mills Ltd. Weaving, Dyeing and Finishing	A.S.R. Sayef Ullah. GM Ed. Jeyal Abedin Prod. Manager	:	Graduates should be skilled in theory and practice	No plans
Mar 21	Jamaa Knitting & Dyeing Ltd. Conglomerate Knitting, Dyeing, Printing & Making up	Habib Rahman GM (Garments) H.Q. Jamaa GM (Knitting, Dyeing)	- i	College should consider more on garment manufacture	See spinning plant planned & more graduates required.

INDUSTRIAL VISITS

Dates Visited	Organizations & Business	Persons seen & Positions	Number of Graduates Employed & Comments		Planning requirements
			Number	College/College Graduates	
April 19	Shansher Jute Mills Ltd.	Mr. Mohamed Ali Sozer (Chairman of RJGA)	1	Graduates are poor in workshop practice, ready to offer 4 places annually for practical training (6 months including project). New curriculum more engineering oriented.	More graduates required in the next 5 years. Expansion plan in weaving of pile fabrics on modern shuttleless looms.
May 5	Hoksin Spinning Mills	Mr. Mahmood Khan Manager	3	Industrial training is needed, more engineering, economics and new trends of machinery.	Plans for expansion in air jet looms are ready. 15 graduates are needed soon.
May 29	Latif Bannay Jute Mills Ltd.	M. D. R. A. Nazid Fakhr General Manager	-	Increasing practical training, developing the syllabi to suit new technology, computer, and engineering.	No plans for future due to market difficulties, privatisation policy, shortage of financial support.
May 29	Jute Goods Testing Laboratory	Mr. K.H. Sahidul Islam Assistant Director	1	More industrial visits and training	No plans in sight.
June 7	Balania Cotton Spinning Mills Ltd.	Hoksin Bessa Khan General Manager Burrassan (AGM)	3	Necessary for new graduates to have more practical experience.	No more graduates are being considered.
June 16	BSTI	Mr. E. Eldosoky, CTA of UNDP/UNIDO Proj. BGD/91/006	-	Cooperation among the consultants of the two projects giving some bi-lateral advice in the field of textiles and quality control	
July 15 July 22	BCTC	Mrs. E.H. Nordberg CTA of UNDP/ILO	-	Cooperation among the consultants of the two projects giving some lectures in the field of textile technology.	

Session Jam in DCTT

ANNEX-V



teaching programme



industrial practical training



theoretical & practical examination



actual programme



planned programme

x

unconfirmed dates

**Interruptions of the Teaching Programme
(1/11/1992 - 14/11/1993)**

A) Official holidays

Month	11/92	12/92	(1-93)	2/93	3/93	4/93	5/93	6/93	7/93	8/93	9/93	10/93	11/93	Total	%
Dates	7	16+25	-	8+21	22+(24-25)	14	1+6	(1-3)	1	18+18+13	1.28	(14-31)	7+13		
Total	1	1	6	2	3	1	2	3	1	3	2	13	2	35	10.8%

B) Unofficial teaching programme suspension

Month	11/92	12/92	(1-93)	2/93	3/93	4/93	5/93	6/93	7/93	8/93	Total	%
Dates	3	(26+31)	(16-18) 21+27	(7+20) (22-28)	(1-21) 23 (27-31)	1+13	11 (23-31)	(5-8)	-			
Total	1	6	5	8	24	2	9	4	0	0	59	18.2

C) Hurlals (Strikes)

Month	11/92	12/92	1-93	2/93	3/93	4/93	5/93	6/93	7/93	8/93	10/93	11/93	Total	%
Dates	3	8	26	6+10	-	4	13	-	19	15	(10+30)			
Total	1	1	1	2	0	1	1	1	1	1	2	0	11	3.4%

D) College Strikes

Month	6/93	7/93	8/93	Total	%
Dates	4-30	(3-18) (20-31)	(1-3)		
Total	13	24	3	40	12.5

* The dates in brackets show long interruptions including the 1st and the last days but excluding the week ends (Fridays) and other categories of interruptions.

College of Textile Technology, Dhaka.

Names of technical teachers with their qualifications, designations and the subjects they teach.

1.	Mr. M. A. Khalequ	B.Sc. (DU) M.Sc. (Chem. DU) B.Sc. (Text. CU, India)	Professor	Dyeing, Printing and Finishing.
2.	D. N. C. Sutradhar	B.Sc. (Text. CU., India) Ph.D. (Yarn Manuf., Leeds)	Associate Professor	Short Staple Spinning & Quality Control.
3.	Mr. A. B. M. Abul Kassen	Dip. (Jute Tech, Dundee) PGD (Text. Leeds)	Associate Professor	Long staple spinning, carpet manufacture and specialised textile products.
4.	Mr. Sk. Md. Hasanuzzaman	B.Sc. (DU) PGD (Text. Leeds) M.Sc. (Text., Leeds)	Assistant Professor	Knitting, Fabric Structure and Analysis, Fabric Quality Control.
.	Mr. Nazmuddin Ahmed	B.Sc. (DU) Dip. (Spg., Wvg, Dhaka) Completed courses in spinning & Weaving but no certificate was awarded (Bradford).	Chief Instructor	Fabric Structure Design and Colour.
6.	Dr. M. A. Baqui	Dip. (Text. Dhaka) B.Sc. (Text. DU) Ph.D. (Text. UMIST)	Lecturer	Short staple spinning and testing.
7.	Mr. Mashud Ahmed	B.Sc. (Text. DU) M.Sc. (Text. Guelph, Canada)	Lecturer	Weaving & Specialised Textile products.
8.	Mr. M. A. Kashes	B.Sc. (Text. DU) PGD (Clothing, Leeds) M.Sc. (Text., Leeds)	Lecturer	Long staple spinning and clothing technology.
9.	Md. Monirul Islam	A.T.I. (Jute, Dhaka) B.Sc. (Text. DU)	Lecturer	Dyeing, Printing and finishing.
10.	Md. Raisuddin	B.Sc. (DU) B.Sc. (Text. Leeds)	Instructor	Weaving and Knitting.
11.	Md. Sarajuddin Bhuiya	A.T.I. (Jute, Dhaka) PGD (Text. Ind., Leeds) M.Sc. (Dyeing, Finishing, Leeds).	Instructor	Dyeing, printing, finishing, Fibre and fibre Physics.
12.	Md. Shahidullah	A.T.I. (Text. Tech. Dhaka) PGD (Text. Ind., Leeds) M.Sc. (Text. Sci., & Eng. Leeds)	Instructor	Short staple spinning & Textile Testing.

TEXTILE BOOKS

Annex-VIII/1

One copy each of the following list of textile books has been brought from the United Kingdom for the library at the College of Textile Technology, Dhaka.

fibre & Yarn Quality in Jute Spinning - Dr. H.P. Stout

1988 1 870812 09 3

**Identification of Textile Materials 7th Edn. - Perry and Farnfield 1985 0900739
14 2**

Managing Technological change

1980 09007739 42 8

Production and Properties of Staple Fibre yarns made by Recently Developed Techniques. L. Hunter 1978

Production of Textured Yarns by the False-Twist Technique

D.K. Wilson & T. Kollu 1991 1 870812 33 6

Rotor Spinning - C.A. Lawrence & K.Z. Chen.

1984 0 900739 68 1

Strengthen & Elongation Testing of Single & Ply Yarns R. Further

1985 0 900739 78 9

In addition to the above, the four quarterly issues of the Journal of the Textile Institute for 1992 were ordered and have been delivered to the College.

The following books have been made available to staff and students:

Practical guide to Opening and Carding - W. Klein 0 900739 932

Practical guide to Combing and Drawing W. Klein 0 900739 932

Practical guide to Ring Spinning W. Klein 0 900739 932

Technology of Short Staple Spinning W. Klein 0 900739 932

The Production of Textured Yarns by Methods other than the False Twist Technique - Wilson and Kollu 0 900739 96 7

Introduction to Cloting Manufacture. G. Cooklin 0 632 026618

The Worsted Industry. Briely & Iredale 0 900820 14 4

Woollen Yarn manufacture. Ross Carnaby, Lappage 0 900739 86 X

Higher Ring-frame Productivity - Ratnan

Noras for Productivity in Spinning - Ratnan & etal

Personal copies of the following have been given to the library.

**Journals of the Textile Institute Vol 84 1993
Textile Horizon Magazines
Textiles 1993
50 years of Polyester 1870812492 Textile Institute**

**Structural Mechanics of Fibres, Yarns & Fabrics
471 366692 Hearle, Grosberg, Backer**

Rogets Thesaurus 1 85471 076 1

DP/BGD/85/162 - COLLEGE OF TEXTILE TECHNOLOGY

TRAINING FIELD	CANDIDATE	PLACE OF TRAINING	YEAR															
			1991				1992											
			MONTH				MONTH											
			09	10	11	12	01	02	03	04	05	06	07	08	09	10	11	12
Dyeing, printing finishing	Mr. M.A. Khaleq	Leeds University																
	Mr. Md. Monirul Islam	UK																
	Mr. Md. Serijuddin Bhuiya	"-																
Yarn manufacture (short staple)	Dr. N.C. Sutradhur	"-																
	Dr. M.A. Baqui	"-																
Yarn manufacture (long staple)	Mr. M.A. Kashem	"-																
Fabric manufacture (weaving)	Mr. Nazmuddin Ahmed	"-																
	Mr. Md. Raisuddin	"-																
	Mr. Mashud Ahmed	"-																
Fabric manufacture (knitting)	Mr. Sk.Md. Hossainuzzaman	"-																
Fabric manufacture (carpet manufacture)	Mr. A.B.M. Abul Kassem	"-																
Textile testing	Mr. Md. Shahidullah	"-																
EXPERTS																		
Yarn manufacture																		
Fabric manufacture																		
Wet processing																		

ANNEX IX

Project Number
DP/BGD/85/162

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
NON-EXPENDABLE PROPERTY CONTROL RECORD

Page No. : 1

Period Ending : DECEMBER-93

Country : BANGLADESH

Project Title : STRENGTHENING THE COLLEGE OF TEXTILE TECHNOLOGY

Purchase Order Number	Item No.	Description	Qty. Ord.	Stock-on-hand in US\$	Received			Cond.	Qty On Hand	Remarks
					Qty.	M	Y			
15-0-01348	1	SET OF PROJECTILE WEAVING MACHINE P7100B190N1EPD1, MACHINE NO. 119846.	1	62,348.00	1	09	91			
15-0-01355	1	RIETER INGOLSTADT DRAWFRAME SB 51 WITH ONE DELIVERY.	1	38,039.00	1	08	91			
15-0-01355	2	OE ROTOR SPINNER RU 04.	1	95,444.00	1	08	91			
15-0-01355	3	OE BOBBIN TRUCKS.	2	1,211.00	2	08	91			
15-0-01355	4	OE TUBE TRUCK.	1	844.00	1	08	91			
15-0-01355	5	WASTE TRUCK.	3	1,933.00	3	08	91			
15-1-00239	1	AHIDA TURBOCOLOR 1840 ML INCLUDING AHIDA 2000 CONTROL UNIT COMPLETE WITH ACCESSORIES.	1	17,865.00	1	03	91			
15-1-00243	1	COLOUR SAMPLING DEVICE TYPE MINI MDR FOR ROTARY SCREEN PRINTING COMPLETE WITH SPARE PARTS.	1	12,154.00	1	10	92			
15-1-00243	2	DESIGNED ROTARY SCREENS, STRIPE DESIGN FOR MINI-MDR.	2	1,128.00	2	10	92			AMENDMENT A
15-1-00244	1	LABORATORY TRANSFER PRINTING UNIT: TEXIPRESS CHIEF.	1	2,195.00	1	08	92			
15-1-00973	1	BOGE SBD 250-2,9/80 3-PH AIR COMPRESSOR UNIT, MACHINE NO. 338394, AIRTANK NO. DB 55129, MOTOR NO. CP 24205.	1	1,312.00	1	11	91			
15-1-01213	1	DESIGNED FLAT SCREEN, STRIPE DESIGN FOR MINI MDF/436 FLAT SCREEN PRINTER.	2	1,393.00	2	01	92			

Country : BANGLADESH

Purchase Order Number	Item No.	Description	Qty. Ord.	Stock-on-hand in US\$	Received			Cond.	Qty On Hand	Remarks
					Qty.	M	Y			
15-1-0889Y	1	LIBA WARP KNITTING AUTOMAT COPCENTRA 2/K, S/NO 9318 COMPLETE WITH ACCESSORIES.	1	59,858.00	1	02	92			95427
15-1-0889Y	2	SETS OF TRICOT BEAMS.	2	7,851.00	2	02	92			95427
15-2-0244Y	1	LAB.PAD MANGLES (ALL PARTS IN CONTACT WITH LIQUID CONSTRUCTED FROM HIGH GRADE STAINLESS STEEL).	2	20,478.00	2	10	92			84421
15-2-0244Y	2	LAB.PRINT PASTE MIXER.	1	2,758.00	1	10	92			84421
15-2-0244Y	3	ROTARY SAMPLE DYEING MACHINE (10X210ML DYTUBES).	2	13,636.00	2	10	92			84421
15-2-0244Y	4	LAB.WINCH DYEING MACHINE.	1	8,676.00	1	10	92			84421
15-2-0244Y	5	LAB.STEAM UNIT.	2	14,356.00	2	10	92			84421
15-2-1240Y	1	SDL411 LAB.JET DYEING MACHINE WITH ELECTRICAL HEATING HT 150 DEG C 250G-3000G 220V/1PH/50HZ,UNITEX 4000 AUTOMATION SYSTEM.	1	45,470.00	1					
15-3-0231Y	1	SET OF MEASURING TOOLS AND ACCESS.FOR PROJECTILE WEAVING MACHINE.	1	3,766.00	1					REPLACEMENT PARTS
15-6-01177	1	REX ROTARY ELECTRIC STENCIL DUPLICATOR MODEL RR 790.	1	928.00	1	03	87			
15-6-01177	2	REX ROTARY ELECTRONIC STENCIL SCANNER MODEL RR 2150.	1	841.00	1	03	87			
15-6-01177	3	OVERHEAD PROJECTOR MODEL RR 3120 INCL. SCREEN 145 X 145.	1	403.00	1	03	87			

Country : BANGLADESH

Purchase Order Number	Item No.	Description	Qty. Ord.	Stock-on-hand in US\$	Received			Cond.	Qty On Hand	Remarks
					Qty.	M	Y			
15-6-01186	1	NASHUA PLAIN PAPER COPIER MODEL 5130 WITH FEEDER AND SORTER.	1	4,440.00	1	03	87			
15-6-01338	1	OLYMPIA MANUAL TYPEWRITER, ENGLISH KEYBOARD, CARRIAGE 18", S/NOS. 5.856.647 AND 5.856.648.	2	1,186.00	2	08	87			
15-6-01338	2	OLYMPIA ELECTRONIC TYPEWRITER MODEL MASTER TYPE NO. 524.528.	1	715.00	1	08	87			
15-8-00228	1	TOYOTA MB MODEL HI-ACE COMMUTER DIESEL, 12-SEATER. CHASSIS NUMBER ----> LH518-0002332 ENGINE NUMBER ----> 2L-1615778 REGISTRATION NO. => JAS-63-4374	1	12,352.00	1					TRANSFERRED FROM OP/BGD/84/051, MAY 1990
15-9-00186	1	DIAL TENSIONMETER.	1	250.00	1	03	90			ENTERED FROM 1990 Y-END INV.
15-9-01756	1	SDL15A SHIRLEY MINIATURE CARDING MACHINE 220V/1/50HZ, 380V/3/50HZ.	1	52,174.00	1	08	90			
15-9-01756	2	SDL 15B SHIRLEY MINIATURE DRAWING MACHINE SUITABLE FOR A STAPLE LENGTH RANGE 19 - 32 MM.	1	1.00	1	08	90			PRICE INCLUDED IN ITEM 1
15-9-01756	3	SDL15C SHIRLEY MINIATURE RING SPINNING MACHINE.	1	1.00	1	08	90			PRICE INCLUDED IN ITEM 1
15-9-01767	1	COLOUR SAMPLING DEVICE TYPE MINI MDF FOR FLAT SCREEN PRINTING.	1	11,336.00	1	03	90			

Country : BANGLADESH

Purchase Order Number	Item No.	Description	Qty. Ord.	Stock-on-hand In US\$	Received			Cond.	Qty On Hand	Remarks
					Qty.	M	Y			
15-9-01770	1	PROTTI HAND FLAT KNITTING MACHINE MODEL 4TL WITH BRIDGE CARRIAGE, 2 DOUBLE YARN CARRIERS GUIDE BARS, 4 YARN CARRIERS, 8 GAUGE WORKING WIDTH 120CM, S/N 9081201 COMPLETE WITH BED AND STANDARD ACCESSORIES.	1	3,873.00	1	05	90			
15-9-01771	1	YARN SPEED METER.	1	600.00	1	03	90			
15-9-01771	2	HATRA YARN LENGTH COUNTER 0-200M.	1	758.00	1	03	90			
15-9-01771	3	QUADRANT TWIST TESTER MODEL 73.	1	1,284.00	1	03	90			
15-9-01771	4	WIRA RAPID DRYING UNIT MODEL 121/2.	1	3,953.00	1	03	90			
15-9-01772	1	MATHIS COATING PLATE TYPE SKP, WITH CLAMPING DEVICE, MACH. NO. 3889.	1	2,932.00	1	12	90			
15-9-01772	2	MEIER BARS 25/60/75/100/140/180/220 WITH BAR HOLDER.	1	2,370.00	1	12	90			
15-9-01773	1	TENSIOMETER TYPE KXB 300 20 - 300 CN.	1	748.00	1	02	90			
15-9-01773	2	MOTOR-DRIVEN YARN REEL L 232/1/10/F.	1	6,263.00	1	02	90			
15-9-01776	1	SDL4 SHIRLEY CRIMP TESTER.	1	2,226.00	1	05	90			
15-9-01776	2	SPIN DRYER - TOP LOADING 2700 RPM 2 KG.	1	258.00	1	05	90			
15-9-01776	3	SDL406A LABORATORY SCALE JIG DYEING UNIT 30CM WIDE.	1	5,742.00	1	05	90			
15-9-01776	4	SDL210BM SHIRLEY COLOUR MATCHING CABINET INDUSTRIAL SIZE.	1	1,258.00	1	05	90			

Project Number : DP/BGD/85/162

Page No. : 5

Country : BANGLADESH

Purchase Order Number	Item No.	Description	Qty. Ord.	Stock-on-hand in US\$	Received			Cond.	Qty On Hand	Remarks
					Qty.	M	Y			
15-9-01776	5	SDL402 ATMOSPHERIC DYEMASTER SAMPLE DYEING MACHINE WITH 16 TUBE CAPACITY.	1	6,813.00	1	05	90			
15-9-01776	6	SDL238A SHIRLEY CROCKMETER RUBBING COLOURFASTNESS TESTER HAND OPERATED GREY SCALE & CROCKING CLOTHS INCL..	1	637.00	1	05	90			
15-9-01776	7	SDL215 PRESSLEY FIBRE STRENGTH TESTER.	1	2,548.00	1	05	90			
15-9-01776	8	SDL215A SHIRLEY PRECISION TORSION BALANCE.	1	855.00	1	05	90			
15-9-01776	9	SDL92 COURTAULDW TETRAPOD WALKER FOR CARPETS (SINGLE DRUM MODEL).	1	5,187.00	1	05	90			
15-9-01776	10	SDL9A SHIRLEY COMB SORTER FOR 2" FIBRE LENGTH.	1	2,903.00	1	05	90			
15-9-01776	11	VERNIER MICROSCOPE 100MM TRAVEL .1MM READING 50MM OBJECTIVE.	1	508.00	1	05	90			
15-9-01776	12	SDL229A BURSTING STRENGTH TESTER (HAND OPERATED MODEL).	1	4,000.00	1	05	90			
15-9-01777	1	STROBOSCOPE SD-8 FOR WEAVING AND DS-4C FOR SPINNING.	1	1,909.00	1	06	90			
15-9-01777	2	COURSE LENGTH TESTER.	2	1,146.00	2	06	90			
15-9-01777	3	PH METER MG-7.	1	955.00	1	06	90			
15-9-01777	4	LABORATORY OVEN DH-62.	1	4,890.00	1	06	90			
15-9-01777	5	CREASE RECOVERY TESTER.	1	766.00	1	06	90			

ANNEX X/5

Country : BANGLADESH

Purchase Order Number	Item No.	Description	Qty. Ord.	Stock-on-hand in US\$	Received			Cond.	Qty On Hand	Remarks
					Qty.	M	Y			
15-9-01791	1	LABORATORY OVEN.	1	1,984.00	1	07	90			
15-9-01791	2	COLORIMETERS.	6	4,461.00	6	07	90			
15-9-01791	3	LIGHT FASTNESS TESTER.	2	6,591.00	2	07	90			
15-9-01791	4	GRISWOLD CYLINDER AND DIAL KNITTING MACHINE WITH ACCESSORIES.	2	4,353.00	2					
15-9-01819	1	CANON P1252D 12-DIGITS PRINTING AND DISPLAY CALCULATOR AC 220V.	1	120.00	1	02	90			
15-9-01819	2	KODAK CAROUSEL S-AV2010 35MM SLIDE PROJECTOR WITH 75-120MM ZOOM LENS.	1	634.00	1	02	90			
15-9-01819	3	DA-LITE VERSATOL MAT TRIPOD-TYPE PROJECTION SCREEN, SIZE: 70" X 70".	1	135.00	1	02	90			
15-9-01864	1	FE-11 TAST-O-TESTER, NO. 89.155.	1	5,945.00	1	03	90			
15-9-01864	2	FE-09 SCOURTESTER, NO. 89004.	1	5,025.00	1	03	90			
15-9-01938	1	4.3/4" APRON DRAFT SPINNING FRAME, SERIAL NO. FS25317, HAVING 8 SPINDLES, 4.3/4" PITCH. COMPLETE WITH INDIVIDUAL ELECTRIC DRIVE EQUIPMENT.	1	101,234.00	1	03	91			
19-7-05676	1	TYPEWRITER, BENGALI KEYBOARD.	1	100.00	1	06	87			LOCAL PURCHASE

Project Number
DP/BGD/85/162

**UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
NON-EXPENDABLE PROPERTY CONTROL RECORD**

Page No. : 7
Period Ending : DECEMBER-93

Country : BANGLADESH

Project Title : STRENGTHENING THE COLLEGE OF TEXTILE TECHNOLOGY

We certify that the quantities of non-expendable equipment received, less the quantities of non-expendable equipment written-off, reflect the physical count of the items on hand.

Unido project manager
or
Resident representative

_____ signature

Date _____

Government counterpart

_____ signature

Date _____

BOOKS ADDED TO LIBRARY IN THE FIELD OF
FABRIC MANUFACTURING

Serial	Title	Author	Publisher
1.	The World Conference on Warp Sizing May 24 - 28/1982		Lemelson University, South Carolina, U.S.A.
2.	Extra Collected Papers:- <u>Exp. No.</u> <u>Topics</u>		
	136 The Mergeth sample warping machine		
	137 The Hirschburger yarn length measuring device.		
	144 The choice and design of warping machinery		
	195 The EWS warper - a descriptive appreciation		
3.	Extra Collected Papers: <u>Exp. No.</u> <u>Topics</u>		
	6 Winding yarn package of uniform length with special reference to tufting.		
	43 The effect of winding conditions on yarn hairiness		
	73 Measuring the length of running yarns.		
	81 Yarn tension meters		
	99 The constant winding-tension test as an aid to quality control		
	189 The Hengstler yarn length counter type 224.		
	100 Calculation of correct change wheel for warping gear trains		
4.	167 Calculating warp beam capacity		Shirley Institute Publication S 7
	212 Calculation of the gear train and ramp angle on modern warping machines.		Cassell Ltd. 35 Red Lion Square, London WC1E 4SG
5.	The place of textiles in the economy of a developed country.	Eric Broudy	Academy for Research and Technology/Cairo, Egypt
6.	The book of looms	-	
7.	Ultra-Filtration in Textiles "A Symposium of Textile Institute/Denkendorf and Academy for Research and Technology/Cairo, March 1992	-	Granitville Company, Granitville, South Carolina, U.S.A.
8.	Manual of Standard Fabric Defects in the Textile Industry		
9.	Textile Science and Technology 3, Shuttleless Weaving Machines.	Oldrich Talavasek Vladimir Svaty	Elsevier Scientific Publishing Company Amsterdam-Oxford-New York 1981

Serial	Title	Author	Publisher
10.	Textile Engineering Experience	Joseph Noguera	Dawson & Goodwell Limited, the Mendip Press, 1978
11.	Die Mechanische Weberei - Sechste, erweiterte Auflage 1970	H. Repenning	Technischer Verlag Herbert Berlin 30
12.	Vorbereitungsmaschinen fuer die Weberei - Zweite Auflage	J. Schneider	Springer - Verlag, Berlin/Gottingen Heidelberg
13.	Weberei, Verfahren and Maschinen fuer die Gewebeerstellung	J. Schneider	dito
14.	Raschel Lace Production	B. Wheatley	National Knitted Outerwear Association, 51 Madison Avenue, New York, NY 10010
15.	Knitted Fabric Technology	E.D. Darling tonetal	Ditto
16.	A Practical Programme for Quality Control in Knitwear and Swinwear:- Part I Sewing room Quality Control	B.P. Ass.	Ditto
17.	Fundamentals of Raschel Knitting	T.A. Podbereski A. Reisfeldetal	Ditto
18.	PART-II Jacquard Design & Knitting	J.B. Lancashire	Ditto
19.	Hosiery Technology	Harry Wignall	Ditto
20.	Wrap Knit Engineering	A. Reisfeld	Ditto
21.	An Introduction to the stitch formation in wrap knitting	Klaus-Peter Weber	Ditto
22.	sizing with Sucker sizing machines (5 issues)		Karl Mayer e.V. 6053 Obertshausen, Germany Cebrueder Sucker D4050 Moenchengladbach 1

Books ordered for British Council Library

The Technology of Clothing Manufacture	Carrx Lathan
Introduction to Clothing Production Management	Chuter
Fusing Technology	Cooklin
Introduction to Clothing Manufacture	Cooklin
Garment-Dyeing : Read to-wear Fashion from the Dyehouse	Harrison
Textiles: Properties and Behaviour in Clothing Use	Miller
Comfort Properties of Textiles	Slater
CAD in Clothing and Textiles	Aldrich
A Practical Introduction to Fibre & Tow Coloration	Clarke
Colour Physics for Industry	McDonald
Manual of Textile Printing	Storey
Physical Properties of Textile Fibres	Morton & Hearle
Long Vegetables Fibres	Mukharjee &
Identification of Textile Materials	Radha Krishnan
Knitting Clothing Technology	Parry & Farnfield
Ginning : Art and Status	Brackenbury
Roller Drafting	Doraiswamy
Physical Testing and Quality Control	Lord & Grover
Fibre and Yarn Quality in Jute Spinning	Slater
Textile Mechanics Volume I	Stout
Textile Mechanics Volume II	Slater
Principles of Weaving	Slater
Cloth Geometry	Marks & Robinson
Worsted Spinning	Pierce & Womersley
The Technology of short-staple spinning	Henshaw
A Practical Guide to Opening & Carding	Klein
A Practical Guide to Combing & Drawing	"
A Practical Guide to Ring Spinning	"

PROPOSED NEW CURRICULUM - EQUIPMENT REQUIREMENTS

Equipment is still required in the short staple yarn manufacturing workshop, wet processing workshop and testing laboratory to bring the standard up to a minimum required for an international level Bsc course. The following items of equipment are suggested as necessary for this minimum standard.

Yarn Manufacturing Workshop

Comber, automatic waste removal or automatic doffing is not necessary.

Lap former (Lap preparation for combing)

Short section of speed frame with 3 different drafting systems.

Short section of ring frame with 2 different drafting systems.

Both speed frame and ring frame should have at least two modern drafting systems.

Small section of doubling frame or 2 for 1 twister.

Single unit for texturing, preferably false twist method

Small illuminated microscope for examination of card wire.

Stroboscope.

Sling hygrometer

Modern balances suitable for weighing samples of cotton and waste, meter lengths of scutcher lap sliver, roving and yarn samples. Wrap block for slivers and roving and wrap reel for yarn.

Modernization of one carding machine replacing flexible wire on cylinders and doffer with metallic wire; replacing of flexible wire on flats with semi-rigid wire; new bearings on all cylinders; draw-off rollers and large coiler and can.

Wet processing workshop/Textile Chemistry Laboratory

There are nearly no small items of laboratory equipment for the workshop, although these are necessary for the dyeing and finishing experiments as well as textile chemistry investigations.

Consumable items**Glass beaker**

40 x 100 ml

40 x 250 ml

10 x 500 ml

5 x 1l

3 x 5l

Round bottom boiling flasks

10 x 250ml

10 x 500ml

10 x 1l

Graduated flasks

40 x 250ml

10 x 500ml

5 x 1l

Graduated pipettes

20 x 1ml

20 x 2ml

20 x 5ml

20 x 10ml

20 x 25ml

Full pipettes

10 x 1ml

10 x 2ml
10 x 5ml
10 x 10ml
10 x 25ml

4 desiccators
20 watch glasses
10 burettes

filter funnels
100 reagent tubes
5 water cooled condenser for distillation
5 water cooled reflux condenser
measuring cylinders (plastics)
10 x 50 ml
20 x 100ml
20 x 250 ml
10 x 500 ml

5 Soxhlet extractors with corresponding condensers
plastic stoppers
rubber stoppers
20 thermometers
30 glass bottles + 30 plastic containers (for chemicals and
dyestuffs)

Non-consumable items

1 refrigerator
1 washing machine
Laboratory centrifuge with corresponding glasses balances 2 fine
balances (down to mg region) 2 rough balances (up to KG)

4 hot plates
10 magnetic stirrer
30 wire nets
20 tube carriers
20 clamps (for round bottom flasks and condenser)
10 pots for water and oil baths
20 clamps (for tube)
5 thermostates
standard capillary viscometer (including various capillaries)
5 heating mantles (corresponding to the round bottom glassess)
1 shaking machine

Testing Laboratory:

Standard testing laboratory conditions of $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and 65% R.H. $\pm 4\%$ for tests such as those for linear density and strength of fibres and yarns. Only one section of the laboratory is required with these conditions.

Testing equipment required:

Uster Evenness Tester, preferably including classimat. Automatic single thread strength testing machine.

Modern instrument such as Fibrograph for measurement of fibre length

Modern method for separation of cotton lint and trash particles.

Microscopes with traversing stage, one with projector screen for fibre examination.

Garment Technology

For the Ministry of Education requirement of a garment technology

specialism, a considerable amount of equipment will be required. These should include:-

A wide range of sewing machines such as industrial backstitch, 3 thread overlockers, 4 thread overlockers, special industrial machines (for button holes, blindstitch, gatherer) and domestic sewing machines.

Circular cutting knife

Pressing units, ironing boards

Cutting tables

Pattern rack

Other accessories including dress stands, rails, coat racks, tables and other items of furniture and for storage.