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STRENGTHENING OF THE COLLEGE OF TEXTILE TECHNOLOGY, DHAKA

DP/BGD/82/047

BANGLADESH ,

Technical report: Visit to the College of Textile Technology, Dhaka\*  
9-21 September 1985

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 Ivan Wroe )  
Expert in dyeing/finishing

United Nations Industrial Development Organization  
Vienna

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## 1. INTRODUCTION

Under the general guidance of a UNDP Preparatory Assistance Document (number DP/BGD/82/047/A/01/37), a copy of which is given as appendix I, and a job description (number DP/BGD/82/047/11-03/31.7.B.), a copy of which is given as appendix II; the author visited The College of Textile Technology, Dhaka, Bangladesh from 9th to 21st September, 1985.

The background to the visit and the terms of reference are detailed in appendices I and II, and the current operation and aspirations of the college are outlined in an article prepared by the principal, which is given as appendix III.

The major objective of the visit, as perceived by the author, was to attempt to answer two questions:-

- (i) Does the Bangladesh textile and jute industry require degree-level textile technologists and, if so, can this perceived need be quantified?
- (ii) In which ways and to what extent can UNIDO, acting as executing agency for UNDP, assist in the strengthening of The College of Textile Technology, Dhaka, appropriate to the needs which may be identified from (i)?

A rigorous schedule of meetings and visits, details of which are given in appendix IV, was arranged by the principal of the college, Dr. Mustafizur Rahman, to whom the author's most grateful thanks are due for giving up so much of his valuable time and energies in order to ensure an efficient and effective programme.

The author is also grateful for the interest, enthusiasm and assistance of Robert Petri, UNDP office, Dhaka, and the many colleagues in the college, industry and government for their invaluable contributions.

## 2. INDUSTRIAL PERSPECTIVES

Previous UNIDO reports (see Woolfenden, J., Manpower needs in the BTMC; The BTMC Training Centre; The Dacca college of Textile Technology; Final Report of Training Centre Adviser), dating back to 1980, have attempted to quantify the needs of the Bangladesh textile industry for trained textile technologists. The authors recent discussions with representatives from both the private and public sectors of the Bangladesh textile and jute industry would suggest that, although

the earlier reports may give an indication of the order of magnitude of the need for trained technicians and technologists, it is difficult to precisely specify the requirements due to the fluctuating nature of the organisation, production and market situation of the industry. However, all the consulted parties were in agreement that a minimum of 50 graduates per year (which is the nominal target figure pursued by the College administration), covering the major specialist areas of yarn production, fabric manufacture and wet processing, should be the aim.

Empirical observation and anecdotal evidence would tend to support this view, and the figure has been accepted by the author as a realistic goal for the college to achieve, without losing academic credibility, provided that support can be given in relation to staff development, build-up of physical resources and up-dating of the curriculum.

Within the span of time allowed for this visit to Dhaka, it has been impossible to quantify the training needs of industry in more precise terms, but it is the author's opinion that the imbalance, between the industries requirements and the ability of the college to meet those requirements, is such that a more precise quantification is unnecessary at this stage of development.

However, it is apparent that there is a very large area of textile education which is not receiving the attention that its importance demands. At present, textile education in Bangladesh comprises the graduate level work of The College of Textile Technology and the craft-centred work of the six Textile Institutes spread over the country. Thus, the vitally important level of technician education is absent and, unless action is taken to quickly ameliorate this problem area, full advantage will not be achieved from the craft and graduate level training programmes instigated so far. It is vital to understand the inter-dependance, in textile technology, of the skill areas of the craftsman, the technician and the technologist. It can be seen from appendices I and II that this issue is outside the author's brief, but it is considered to be of such importance, to the successful assimilation of the colleges graduate output into industry, that immediate attention to this issue, at the highest levels, is warranted.

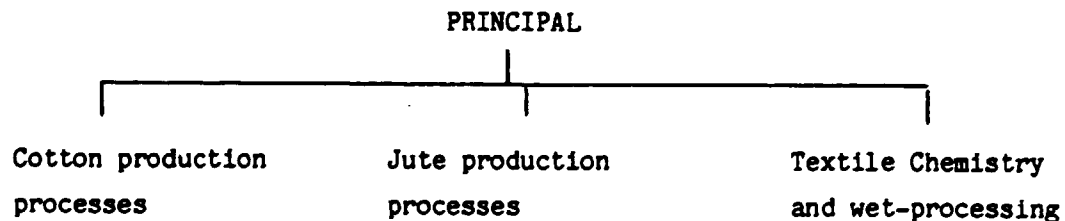
### 3. Administration and Organisation of The College of Textile Technology

At present, finance and administration of the college is controlled by the Directorate of Technical Education whereas academic matters, such as curricula, examinations and degree validation, are under the auspices of the University of Dhaka. This system of dual control is considered by the author to be most unsatisfactory in that it must, inevitably, lead to a conflict of interests. At this stage in the planning of support for the college, it would clearly be opportune to consider the establishment of a single, controlling body. There would appear to be two fairly simple approaches by which this objective could be achieved:

- (i) assimilation of The College of Textile Technology wholly into the University of Dhaka;
- (ii) establishment of the college as an autonomous, degree-awarding body, under the guidance of a board of governors and responsible to the Ministry of Education.

Either approach would allow for a satisfactory administration of the college and must be better than the current, confusing, dual-system.

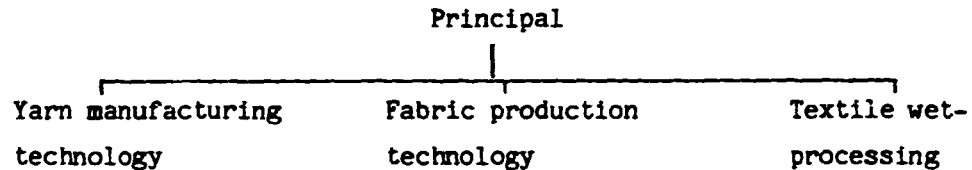
A similar problem arises in the internal organisation of the college, which would also benefit from consideration and appropriate action during the support stage. It would appear that two models for the management of the college are operable at present. The older model is generally a fibre-based departmental system:-



The current curriculum reflects this organisational structure in that students can specialise during their last year of study in any of these areas. However, most textile educational establishments now tend to offer specialisation by process rather than on a fibre basis, for example, yarn production technology, fabric production technology, because of the similarity of principles involved irrespective of the nature of the textile fibre being processed.

This view was confirmed by many of the industrialists with whom this question was raised and their view, generally, was that they required a specialised spinning technologist, specialised weaving technologist, a colourist, rather than a more generally trained cotton or jute based technologist. One of the major advantages of process specialisation is that the graduate technologist is more immediately adaptable to the industrial situation as a result of his more specialised studies.

The alternative and newer model is thus based upon a departmental system operating via division by process:-



It is recommended that this latter model be adopted as soon as possible, as a basis for the day-to-day management of the College, in order that all are aware of any staff for whom they are responsible, the areas of work for which they are responsible and the direct superior to whom they are accountable.

Appendix V illustrates how this departmental system could operate on the basis of staff currently in-post, although no attempt has been made to formalise the management functions and responsibilities of each member of staff.

#### 4. COLLEGE-INDUSTRY RELATIONSHIPS

From discussions held with senior representatives from the Bangladesh jute and textile industry, it is obvious that the industry is aware of the strengths and weaknesses of the college and, indeed, a working party constituted under a Ministry of Education directive, number SO-X/4A-34/81/976-Edn, dated 23.12.82, has reported on a comprehensive evaluation of the college (see Chowdhury, N.N., A Report on the Comprehensive Evaluation of The College of Textile Technology, Dhaka).

However, on a day-to-day basis, contact between the college and industry would appear to be rather spasmodic and lacking major initiatives in both directions. If the college is to play a major role in the development of a dynamic, technologically competent industry, then a more interactive approach will be required of the college and, similarly, industry will also need to consider how co-operation between the two bodies can be effected.

The situation is exacerbated by the College policy of admitting only full-time students to the four-year degree programme and, although probably logistically difficult to implement under present circumstances, could well benefit from the resulting industrial influence of part-time students on day - or block - release from their employers. It is the authors opinion that any future consideration of the college curriculum should take cognisance of the importance of part-time educational facilities within an industrial context.

It is suggested that a small working party be set up under the chairmanship of the college principal to consider the feasibility of various mechanisms for improving interaction between the College and industry, such as:

- (i) exchange of academic and industrial colleagues on a short-term basis;
- (ii) increasing the period of industrial training for students before graduation;
- (iii) availability of college testing and sample processing facilities for industrial use;
- (iv) establishment of an advisory or consultancy service to industry by college staff;
- (v) development of part-time and short courses for industry on both general and specific aspects of textile technology.

## 5. CURRICULUM DEVELOPMENT

Considerable attention will be needed to be given to the curriculum for the four-year, B.Sc. course in Textile Technology, with particular reference to:

- (i) the balance of theoretical studies to practical work, a 60:40 ratio would appear to be more appropriate;
- (ii) exclusion from the curriculum of academically sound but technologically inappropriate material;
- (iii) changing from a fibre-based specialisation to a process-based approach in the later years of study;
- (iv) a much more detailed presentation of course syllabi, preferably in an objective or semi-objective format;
- (v) inclusion of technologically important topics such as automation, process control systems and computer applications, etc;
- (vi) the development of more student-centred learning systems and processes;



(vii) establishment of a more formalised academic year.

Whilst development of the curriculum is in progress, it will be important to consider the significance and relationship of the Bangladesh clothing industry to any future provision of textile technology education. The two areas of clothing technology and textile technology share much common ground which, in an educational context, reflects many common or similar subject syllabii. Previous reports (see Woolfenden, J.; Chowdhury, N.N.) on the activities of the college have confirmed this view. However, it is the authors opinion that the development of a clothing technology discipline at The College of Textile Technology, Dhaka, is to be encouraged, but at a later stage. It is considered that an attempt to introduce clothing technology studies at this stage would over-complicate the college strengthening programme and perhaps result in a spread of effort over too broad a front.

## 6. COLLEGE STAFFING POLICY AND TRAINING

It can be seen from Appendix V that only 12 academic staff, out of a total of 18 in-post, are actually available, on-site, for teaching duties; the remaining 6 being currently on secondment, to various academic centres, pursuing courses of study usually leading to the award of higher research degrees.

Of the teaching staff on-site, several have very heavy class-contact loads approaching 30 hours per week in some instances, which is obviously undesirable on many grounds, whereas others have lighter loadings. Overall there would appear to be a shortage of competent, qualified and experienced teachers in the college; although several would meet one or two of those descriptions.

It is the authors opinion that, in order to function effectively, the teaching staff in the college should be skilled in several areas:-

(1) In order to legitimise the academic standing of staff teaching to degree level, it must generally be accepted that possession of a good honours degree, or equivalent qualification, in a relevant subject area should be a pre-requisite for a teaching post at the college.

A post-graduate or professional qualification in an appropriate specialised area of study would be an added advantage; but it is the authors opinion, admittedly rather biased, that a post-graduate research degree contributes very little, considering the time invested, to an individuals subject awareness apart from an in-depth knowledge of a tiny segment of an area of specialisation within any given discipline.

As the interest for the UNDP financed support of the college is based around the supply of technologically trained graduates for the Bangladesh jute and textile industry (see appendix I) and not for the provision of highly trained research workers for academia, then support for the technological training of teaching staff at the college would probably be more appropriately applied to programmes of training or study to increase the subject awareness and knowledge of the individual in their chosen textile specialism.

This principle, though, should not totally preclude the possibility of support for research degree programmes as, in particular and specific instances, it may be appropriate to the overall aims of the college and its wider role within the structure of higher education in Bangladesh.

(ii) An output of technologically trained graduates implies that the curriculum is strong in both theoretical and practical elements. In this case, teaching staff need to be able to put into practice the theoretical aspects considered in the lectures and tutorials, and it is dangerous to assume that important practical work supervision can be left to less thoroughly trained personnel.

Thus, it is important that industrial or practical experience should be recognised as a particularly valuable attribute for teaching staff and support for practical training programmes should play a significant part in the strengthening of the college.

(iii) The academic excellence or practical ability of a teacher will achieve very little unless that teacher is capable of motivating students to learn about a subject, or of being able to effectively communicate subject knowledge. Fortunately, these are skills which can be developed in a teacher and teacher training should be considered as a vital element of the strengthening of the college.

All the teaching staff who were on-site for the period of the visit by the author to the college, co-operated in the compilation of individual, abbreviated C.V.'s listing academic and industrial attainments and experience.

The staff have also been asked to: indicate those areas in which they felt that further training or education would be of benefit to themselves and/or the college; explain what advantages would be gained by such a training programme; comment on any problems which could arise as a result of following such a programme.

Dr. Rahman, the college principal, commented on these proposed training programmes and modifications have been suggested where appropriate. The principal has also prioritized the training needs of his staff in relation to the requirements of the college and appendix VI lists, in decreasing order of priority as determined by the principal, a suggested training programme for each academic staff member.

It was explained, by the principal, that the academic staff who comprise the Department of Related Studies are in a somewhat different position to the textile specialist staff. The difference is that, as teachers within the Directorate of Technical Education, the related studies staff could be called upon at any time to transfer to another academic institution within the directorate, which would obviously nullify the benefit of any textile related training that these staff members may receive. This instability is most unsatisfactory, as it is vitally important that any related studies subjects are taught within a framework of textile related examples and subject relevancy.

In several subject areas textile related examples and subject relevancy are not adequately reflected in the teaching strategies; amelioration of these problems could be effected by appropriate staff development programmes. However, it is the authors opinion that training programmes should only be applicable where subsequent benefit can be assured to a reasonable degree, and a policy decision from the Directorate of Technical Education confirming the permanency of the related studies staff would be advantageous.

It will be noted that none of the suggested training programmes includes mention of professional teacher training. As all the academic staff members would possibly benefit from a course of training covering the principles and practice of teaching, it would probably be more convenient to arrange a packaged, in-house programme for all the staff to follow, held at The College of Textile Technology.

Although training programmes for the academic staff of the college are obviously of great importance and must, necessarily, form a major thrust in the strengthening of the college, it must be borne in mind that any institution concerned with textile technology education must also be staffed, by virtue of the practical nature of the subject, with technicians, trained to the highest standards, who can operate, service, maintain and repair the majority of the machinery and equipment which is concomitant with textile studies. It is recognised throughout the world that this calibre of technician is often more

difficult to find and keep than the best academic staff. There is no reason to suggest that Bangladesh is any different in this respect, and thus the recruitment and training of suitable technicians must be of prime consideration, particularly if new, modern equipment is to be supplied to the college through the UNDP strengthening project.

Initial observation of the laboratories and workrooms at the College does not promote confidence in this area; much of the equipment is out of service due, apparently, to neglect or lack of simple maintenance and the surroundings do not indicate the level of meticulous care which must be given to modern-day textile processing equipment.

As a way of overcoming the problems of technician recruitment, it is suggested that consideration be given by college management to the identification of final-year students (some from each major specialist area of study) who would be prepared to take up employment within the college at technician level. Whilst appreciating that the college salary structure mitigates against the possibility of a positive response from the students, the offer of a post-graduate training programme in technician-related skills could provide the necessary motivation. If this approach proved to be viable, the process could be repeated in the subsequent academic years to produce a wide pool of technician availability. It is the authors opinion that adequately skilled technician support is vital to the success of the college strengthening programme and must be given highest priority.

One of the major problems which will be exacerbated by acceleration of college staff training through UNDP support will be the increased absence of staff from the college. This problem is already acute, with only 12 out of 18 in-post teaching staff currently available on-site.

In order to provide temporary support, so that staff training can proceed as quickly and vigorously as possible, it is suggested that consideration be given to the employment of ex-patriate teachers in the areas of yarn technology, fabric technology, wet-processing, and textile testing, for a period of one year each, preferably to run concurrently. This suggestion, however, may not be feasible to fully implement. In order to bring academic credibility to the college, the ex-patriate staff will need to be highly qualified academically; and, in order to provide the required skill input into the teaching activities, should preferably be teacher trained and will require to have had considerable industrial experience. Such qualified personnel are currently thin on the ground and may not be readily available on the world market; as a result, an element of head-hunting may be required.

## 7. EQUIPMENT AND MACHINERY

A wide range of processing and testing equipment and machinery is available in the college. However, much of the equipment is not fully functioning as a result of various factors:-

- (i) Some are full-scale industrial machines which require large volumes of material and high inputs of energy and labour to set-up and run successfully. This type of equipment also tends to be undesirable even for demonstration purposes, as it is often impossible to run slowly enough for the processing action to be observable.
- (ii) Some are inoperable through neglect of maintenance or repair. In some instances, repair cannot be effected through lack of spare parts, operation manuals or skilled labour.
- (iii) The standard of service supply of electricity, steam and water is generally inadequate, which can limit or prevent use of some equipment.

Staff of the college have co-operated in the production of a machinery and equipment inventory covering the laboratories, workshops and administration facilities. Individual staff members have listed all the equipment available to the area of work for which they are responsible, categorised into: fully functioning; non-functioning; repairable; scrap. From this inventory it has been possible to identify:

- (i) those items which should be retained;
- (ii) those items which should be retained but are in need of repair;
- (iii) those items which should be scrapped.

Staff have also itemised equipment which they feel is needed to replace or supplement that which is currently available.

In conjunction with the college principal, and subsequently with colleagues in the Department of Textile Studies at Bolton Institute of Higher Education, the author has produced schedules of:-

- (I) Equipment that should be retained; although possibly requiring repair or renovation.
- (II) Equipment that is considered essential to augment that scheduled under (I), and which it should be viable to install and maintain at the college.
- (III) Equipment that could be considered as desirable, for

various reasons, to augment that scheduled under (I) and (II), but which would involve, for example, very high expenditure, problems of installation or availability of spares, requirement of specialised, very highly skilled and trained technicians, high rates of use of raw materials, etc.

The items scheduled under (iii) often include modern, high-speed production units or sophisticated sampling units. It could be strongly argued that such items are essential for the integrity of degree level study facilities, but consideration of the possibility of installing such items must also be tempered with the reality of the problems associated with keeping the equipment in a fully-functioning condition. It is the authors opinion that, however desirable it may be to install this type of machinery and equipment, no action should be taken until a constant supply of appropriate personnel to support such installations can be guaranteed.

Consideration of schedules (I), (II) and (III) would suggest that there would be considerable benefit to be gained by renovation of much of the equipment currently available. However, as the author is not an expert in all branches of textile technology, it must be accepted that the schedules have been produced as a guide and are not definitive; further detailed analysis by the appropriate experts will be subsequently required before relevant action is taken.

The schedules of machinery and equipment are given as appendix VII.

Before any equipment is renovated or installed, it is recommended that the workrooms and laboratories be carefully examined in relation to the level and standard of services required in each area of work, and that appropriate action be taken to satisfy these service requirements.

## 8. COLLEGE LIBRARY

The college library is reasonably well stocked with a good selection of text-books covering aspects of textile technology and related studies. However, several factors mitigate against the efficient operation of the library as a learning resource for degree level studies:-

- (i) The books are kept in cupboards which are not directly available for student access and, as there is no file or catalogue system in operation, the students are not aware of the books that are available to them. The librarian has agreed that a file or catalogue system should be introduced.
- (ii) Although the library is quite large and suitable for individual study, the physical barrier of the issue and return desks

prevents access of the students directly to the books. It is recommended that this barrier be removed, but this will require that a security system be organised.

- (iii) In Dhaka, it is very difficult, for a variety of reasons, for students to obtain personal copies of text-books on textile technology and the college library is their only immediate source of text-books and, thus, must be maintained at a high standard with multiple copies being available of commonly used books.

The author and the college principal have examined the range of titles available in the library and, following upon this exercise, the principal has produced a list of text-books, with a suggestion as to the number of copies that would be appropriate, which are needed to bring the library up-to-date; the list is given as appendix VIII.

- (iv) Compared to many other technologies, there are relatively few text-books specifically devoted to aspects of textile technology and, thus, the development of a comprehensive library based solely on books is made difficult. Fortunately, however, there are many journals and periodicals in the field of textile technology and these tend to form the basis around which an adequate library can be built. The college library has a few journals, obviously collected at random over the years, but needs regular subscriptions to several of the major international titles. Following from discussions held with the principal and his staff, it is recommended that consideration be given to a trial subscription, for a period of three years, to: Textile Asia, Textile Month, Textile Horizons, Journal of the Society of Dyers and Colourists, Journal of the Textile Institute, American Dyestuff Reporter.

## 9. INTER-COLLEGE ACADEMIC LINK PROGRAMME

### 9.1 Counter-part College

In order to ensure the efficient and effective implementation of the UNDP financed project to strengthen The College of Textile Technology, Dhaka, it is suggested that an academic link programme should be developed between the Dhaka college and a counter-part college which should be a well established, industrially orientated educational institution involved in the field of textile technology.

## 9.2 Principles and Aims

1. The establishment of the link should be of mutual academic, technical, social and cultural benefit to both colleges.
2. The link should establish a channel for communication and dialogue in the field of textile technology and related subject areas.
3. The link should facilitate:
  - (i) the development of a modern and rigorous curriculum for the four-year B.Sc. course in Textile Technology offered by the Dhaka college;
  - (ii) the training of academic and support staff from the Dhaka college such that the academic and technical integrity of the college is without question;
  - (iii) the establishment of adequate practical, library, and teaching facilities at the Dhaka college, appropriate to a graduate level programme of studies in textile technology and related subjects;
  - (iv) the training of staff of the Dhaka college in appropriate teaching skills and/or education administration techniques and systems;
  - (v) the development of the management structure, physical conditions and academic environment appropriate for an autonomous, degree awarding institution.
4. The link should contribute to an improvement in the technological skills and industrial awareness of the B.Sc. Textile Technology graduates.
5. The link should assist the development of the nature and level of inter-action between the Dhaka College and the Bangladesh jute and textile industry.

## 9.3 Administration and Control of the Link

1. A full-time academic link co-ordinator, with appropriate clerical assistance and facilities, should be established at each college, to be mutually responsible for the day-to-day organisation and running of the link programme.
2. The overall control and monitoring of the link programme should be directed by a link co-ordination team comprising:



chairman - UNIDO nominee;  
secretary - UNIDO nominee;  
the principal of each college or their nominee;  
the academic link co-ordinator for each college;  
such co-opted members as are requested by the team.

The team should meet at least once a year to:

- (i) decide on general policy and policy implementation;
- (ii) review progress;
- (iii) hear evidence from such parties as are involved under (i) and (ii).

#### 9.4 Outline Link Programme

A suggested programme for the first 24 months of a four-year academic link between The College of Textile Technology and a counter-part college is given in appendix IX. At this stage of the project, it is considered that:

- (i) 6 month blocks probably give adequate detail to the programme although a more rigorous analysis will be required before the formal commencement of the link;
- (ii) it would be unwise to extend the model beyond 24 months due to the need for much greater flexibility of the link arrangements during later stages in order to take account of changes in policy or unforeseen circumstances;
- (iii) a schedule of proposed teaching inputs from the counter-part college into the Dhaka programme has not been included as, until the level of full-time ex-patriate teaching work has been established, the areas of maximum need cannot be identified.

APPENDIX I

SIGNED ORIGINAL

PREPARATORY ASSISTANCE DOCUMENT

UNITED NATIONS DEVELOPMENT PROGRAMME

Project of the Government of the  
PEOPLE'S REPUBLIC OF BANGLADESH

PREPARATORY ASSISTANCE DOCUMENT

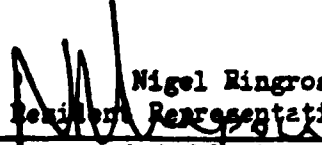
Title:	Strengthening of the College of Textile Technology	Proposed starting date of Preparatory Assistance	<u>July 1985</u>
Number:	DP/3GD/82/047/A/01/37	Duration of Preparatory Assistance	<u>One month</u>
Sector:	(Govt. Classification) Education	UNDP class. and code - Science and Technology (16)	
Sub-sector:	(Govt. class.) Technical Education	UNDP class. and code - Technical and Engg. Education (1620)	

Government Implementing Agency: Ministry of Education  
Directorate of Technical Education

Executing Agency: United Nations Industrial Development Organization (UNIDO)

Government Inputs: \_\_\_\_\_

UNDP Inputs: US\$ 19,000  
US Dollars

Approved:   
Nigel Ringrose  
Resident Representative a.i.  
on behalf of the  
United Nations Development Programme  
Resident Representative

Date: 22 May 1985

## I. Background

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 weavers 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 (estd. 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.

A technical assistance project to support the Government's actions is likely to concentrate on three points:

1. Improvement of the curriculum of the College by making it more relevant to the requirements of the textile and jute industry;
2. Improvement of the physical facilities of the College. The present, unusable, full-scale machines should be replaced by laboratory-scale versions of production equipment covering all stages of production from spinning to dyeing, finishing and printing. Such equipment would be ideally suited for educational purposes. Also the testing equipment needs partial replacement.

3. Improvement of the technical knowledge and teaching skills of the College staff through fellowship and exchange programmes.

An integrated approach seems to be called for which encompasses the three elements mentioned above. An exchange programme - a twinning arrangement - with an existing university in Europe would ensure proper coordination between fellowship training on one hand and the activities of the expatriate teaching staff on the other. It would also make it possible to use several lecturers on a given subject without jeopardizing continuity. A properly planned and executed three-year programme would produce a significant improvement in the College's standard. A project of this type would also constitute a logical follow-up to the current UNDP/UNIDO assistance to the textile and jute sectors (DP/BGD/75/013 - Strengthening of BJRI, DP/BGD/82/006 - Textile Industry Development Programme, DP/BGD/79/030 - Testing of Jute Goods for export). \$ 860.000 of UNDP funds have been tentatively earmarked for a technical assistance project to strengthen the College.

II. Purpose of preparatory assistance

Preparatory assistance is requested to

- review the man-power requirements in the textile and jute industry sectors, both in terms of quality and quantity;
- review the present curricula, physical facilities and adequacy of the teaching staff of the College;
- prepare an outline of a technical assistance programme designed to address the identified shortcomings of the College.

III. Outputs of preparatory assistance

1. Report on the man-power requirements of the textile and jute industry sectors and on the College's capabilities to meet them - including identification of areas where the College needs strengthening and recommendations for measures required to deal with its shortcomings.
2. Project document setting out the objectives, outputs, activities and inputs of UNDP assistance in support of recommended measures.

IV. Activities

A team of three textile education specialists, covering between them spinning, weaving and dyeing/finishing, will

- review existing reports on the man-power requirements of the textile and jute industry sectors, conduct interviews with the representatives of the Bangladesh Textile Mills Corporation, the Bangladesh Jute Mills Corporation, the Ministry of Textiles and Jute and the Ministry of Education.

- assess the Textile College's capability to meet the industry's requirements: curriculum, physical facilities, teaching staff.
- outline what external assistance is needed to upgrade the College to the required level and make concrete recommendations on how to implement such assistance.

Based on the findings and conclusions of the team and in cooperation with the team members a UNIDO staff member will draft a project document.

V. Inputs

UNDP

- Spinning specialist	Three weeks	July 1985
- Weaving specialist	Three weeks	July 1985
- Dyeing/finishing specialist	Three weeks	July 1985
- UNIDO s/m	One week	July 1985

Government

- Administrative support, local transport, counterpart personnel.



**PROJECT BUDGET/REVISION**

1. COUNTRY BANGLADESH	4. PROJECT NUMBER AND AMENDMENT DP/RGD/R2/047/A/01/37	5. SPECIFIC ACTIVITY 31.7.B.
12. PROJECT TITLE Preparatory Assistance: Strengthening of the College of Textile Technology		

15. INTERNATIONAL EXPERTS <small>(Short term only reported except for line 11.50)</small>	16. TOTAL		17. 1985		18.		19.		20.	
	m/m	\$	m/m	\$	m/m	\$	m/m	\$	m/m	\$
01 Spinning specialist	0.7	4,900	0.7	4,900						
02 Weaving specialist	0.7	4,900	0.7	4,900						
03 Dyeing/finishing specialist	0.7	4,900	0.7	4,900						
04										
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
16										
11.50 Short term consultants										
11.50 Sub-total International experts	2.1	14,700	2.1	14,700						
17. REMARKS										

If more than 16 experts are required check here  and attach continuation sheet 1A. This sub-total must include all experts



UNIDO

## PROJECT BUDGET/REVISION

4 PROJECT NUMBER	16. TOTAL		17. 1985		18.		19.		20.	
	m/m	\$	m/m	\$	m/m	\$	m/m	\$	m/m	\$
OPAS EXPERTS (functional titles required)										
12 01										
12 02										
12 03										
12 99 Sub total OPAS experts <sup>b</sup>										
ADMINISTRATIVE SUPPORT PERSONNEL										
13 00 Clerks, secretaries, drivers		500		500						
13 50 Freelance interpreters (non-UNDP projects)										
13 99 Sub total Administrative support personnel		500		500						
UN VOLUNTEERS (functional titles required)										
14 01										
14 02										
14 03										
14 04										
14 99 Sub total UN Volunteers <sup>b</sup>										
15 00 Project travel										
16 (M) Other personnel costs (including UNIDO staff mission costs)		2,800		2,800						
NATIONAL EXPERTS (functional titles required)										
17 01										
17 02										
17 03										
17 04										
17 05										
17 99 Sub total National experts <sup>b</sup>										
19 99 TOTAL PERSONNEL COMPONENT		18,000		18,000						

<sup>b</sup>If additional individual budget lines are required, check here  and attach continuation sheet 1A. These sub-totals must include budget lines listed on page 1A.



UNIDO

## PROJECT BUDGET/REVISION

4 PROJECT NUMBER	16. TOTAL		17. 1985		18.		19.		20.	
	m/m	\$	m/m	\$	m/m	\$	m/m	\$	m/m	\$
SUBCONTRACTS										
21 00 Subcontracts										
TRAINING										
31 00 Individual fellowships										
32 00 Study tours, UNDP group training										
33 00 In service training										
34 00 Non UNDP group training										
35 00 Non UNDP meetings										
39 99 TOTAL - TRAINING COMPONENT										
EQUIPMENT										
41 00 Expendable equipment										
42 00 Non expendable equipment										
43 00 Premises										
49 99 TOTAL EQUIPMENT COMPONENT										
MISCELLANEOUS										
51 00 Sundries		1,000		1,000						
55 00 Hospitality (non UNDP projects)										
56 00 Support costs (CC and DC projects only)										
59 99 TOTAL MISCELLANEOUS COMPONENT		1,000		1,000						
SURPLUS/DEFICIT										
81 00 Surplus/Deficit (ADM/ES use only)										
99 99 PROJECT TOTAL	2,1	19,000	2,1	19,000						
C COST SHARING (UNDP/IFP projects only)										
C NET UNDP CONTRIBUTION										

  C For information only - not for PAD input





UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO

6 August 1985

PROJECT IN THE PEOPLE'S REPUBLIC OF BANGLADESH

**JOB DESCRIPTION**

DP/BGD/82/047/11-C3/31.7.B.

Post title                    Dyeing/finishing specialist

Duration                     Two weeks

Date required                16 August 1985

Duty station                 Dhaka

Purpose of project             Strengthening of the Textile College

Duties

Concentrating on the dyeing/finishing sector but also covering other sectors to the extent possible the expert will

- appraise the Dhaka Textile College's curriculum, facilities and teaching staff against the estimated man-power requirements of the textile and jute industry;
- make a first draft proposal for a three-year twinning arrangement between the Bolton Institute of Higher Education and the Bangladesh Textile College

The expert will also be expected to prepare a brief report, setting out the findings of the mission and recommendations to the Government on further action to be taken.

Qualifications               Dyeing/finishing specialist, with experience in textile education

Language                     English

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Applications and communications regarding this Job Description should be sent to:  
Project Personnel Recruitment Section, Industrial Operations Division,  
UNIDO VIENNA INTERNATIONAL CENTRE P.O. Box 300 Vienna, Austria

## I. Background

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 weavers 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 (estd. 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.

A technical assistance project to support the Government's actions is likely to concentrate on three points:

1. Improvement of the curriculum of the College by making it more relevant to the requirements of the textile and jute industry;
2. Improvement of the physical facilities of the College. The present, unusable, full-scale machines should be replaced by laboratory-scale versions of production equipment covering all stages of production from spinning to dyeing, finishing and printing. Such equipment would be ideally suited for educational purposes. Also the testing equipment needs partial replacement.

3. Improvement of the technical knowledge and teaching skills of the College staff through fellowship and exchange programmes.

An integrated approach seems to be called for which encompasses the three elements mentioned above. An exchange programme - a twinning arrangement - with an existing university in Europe would ensure proper coordination between fellowship training on one hand and the activities of the expatriate teaching staff on the other. It would also make it possible to use several lecturers on a given subject without jeopardizing continuity. A properly planned and executed three-year programme would produce a significant improvement in the College's standard. A project of this type would also constitute a logical follow-up to the current UNDP/UNIDO assistance to the textile and jute sectors (DP/BGD/75/013 - Strengthening of BJRI, DP/BGD/82/006 - Textile Industry Development Programme, DP/BGD/79/030 - Testing of Jute Goods for export). \$ 860.000 of UNDP funds have been tentatively earmarked for a technical assistance project to strengthen the College.

The policy, aims and aspirations of the College of Textile Technology  
Prepared by: Dr. M. Rahman  
Principal, College of Textile Technology, Dhaka

History of textiles is as old as human civilization. Besides clothing one of the basic necessities of life, textiles find applications in areas such as upholstery, drapery, floor coverings, packaging, in the manufacture of industrial products and many others. Production of textile goods has always occupied an important position in the economic activities of mankind. In Bangladesh, today textile industries including jute contribute to almost half of the total industrial output. In the years to come their share is likely to go up.

Educated manpower is a prerequisite for efficient running of any industry. Textile is no exception. So in the interest of national economy and development of textile industries, great importance ought to be attached to textile education. In a country like UK a good many educational institutions offer courses in different aspects of textiles such as textile engineering, textile technology, textile economics and management, textile design and design management, clothing technology, etc. and at different levels namely certificate, Diploma, Associateship, degree and postgraduate levels. In this country the College of Textile Technology is the only institution where training in textile technology is imparted at degree level.

#### College of Textile Technology

From the consideration of an acute shortage of manpower trained to cope with modern developments in textile industries and to meet their demand for junior, middle and senior management personnel, the Government decided to introduce degree level textile education in the country in 1978. This decision was implemented by upgrading the Textile Institute at Tejgaon, Dhaka founded in 1950 as a diploma awarding institution into the College of Textile Technology. The administrative and financial controls were left with the Directorate of Technical Education, Ministry of Education and the courses for the degree of Bachelor of Science in Textile Technology, prepared by a committee, were affiliated with the Dhaka University. The course made its beginning in the academic session 1978/79.

### Two types of degree programmes

The College, since its inception, has been conducting two types of degree programmes, one 2-year and another 4-year course.

The 2-year course was designed for the holders of H.S.C. and Diploma in Textile Technology. Three batches of students have graduated so far under this programme. The admission to this courses has been discontinued and the course will be abolished as soon as another two small batches of students are through with it.

A 4-year course for those who passed H.S.C. with mathematics, physics and chemistry as compulsory subjects has been running concurrently with the 2-year programme. As envisaged in the plan, this is the programme which is to be continued permanently. The first batch of students under this programme graduated recently.

The current enrolments in the 2-year and 4-year courses are 30 and 330 respectively.

### Courses of Studies

The courses of studies are pretty comprehensive and encompass instructions in mathematics, physics and statistics, textile fibres, fibre production, textile processing, textile physics, quality control and testing of textiles, engineering drawing, workshop practice, mill engineering and industrial management. Mid-course industrial training for two months at the end of 2nd year is arranged as per requirements of the course. The course is so designed as to enable the graduates to fit in industry based on all textile processes and fibres with some bias for cotton and jute. Students in the final year have choice to select advanced cotton, jute or chemical processing as a paper for study and for project work.

Efforts are underway to review the courses and effect necessary modification and alteration.

#### Difficulties faced

The College of Textile Technology is still in its infancy and yet to get over the initial difficulties. Senior faculty positions have been lying vacant for years and recently a number of faculty members have gone abroad for higher training. These problems are overcome presently by drawing part-time teachers from BTMC, BCSIR, BMDC and from amongst consulting textile technologies. With the filling in of the vacancies and return of the trainees from abroad, the situation will be far more satisfactory.

Many of the machineries are old and out-moded. For lack of spares, some of them are not functioning well. Moreover they are oversized and their operational costs are little too high. They need to be replaced by machines of laboratory/pilot plant size which could be run for demonstration purpose at much lower operational and maintenance costs.

#### Recent Developments

UNDP has long been approached by the Government to assist in strengthening the college so that the courses offered and teaching could attain internationally recognised standard. It may be stated with some happiness that UNIDO is about to field experts to study these aspects and suggest ways and means to bring about the expected improvements.

#### Further Expansion

A proposal of introduction of textile engineering course in this College has been submitted to the Planning Commission recently. Attempts are being made to prepare a Technical Assistance Project Proposal (TAPP) for introduction of Clothing Technology course in the College.

#### Textile Education at Diploma Level in Bangladesh

For a balanced staffing of the textile industries, there is a need to train people in textile technology at diploma level as well. According to a recent report, the country like Pakistan turns out 200 diploma-holders as against 50 graduates in textile technology annually. In Bangladesh at present there is no institution offering courses in textile technology at diploma level.

This may, however, be possible by upgrading some of the certificate awarding District Textile Institutes managed by the Department of Textile into diploma-awarding Textile Institutes.

Mention may be made of Sericulture Institute at Rajshahi which offers 2-year post-graduate diploma course on silk production.

#### Patronage of Textile Education by Textile Industries

Textile education in Bangladesh has been so far mainly the business of the Government. Help and cooperation extended by BTMC and BJMC to the College of Textile Technology, should, also be gratefully acknowledged. BJMC, however, is yet to recruit graduates in textile technology in large number.

Textile industries in private sector are kind enough to extend necessary courtesy when the students go to visit their mills. Some industries have also provided employments to graduates in textile technology recently. But this, to the author's mind, is not enough. They can do a great deal to move to champion the cause of textile education in the country.

In order to ensure high productivity and quality of products in the textile industries, services of competent textile technologists are absolutely essential. It is the responsibility of all to see that supply of such technologists is sufficient.

APPENDIX IV

SCHEDULE OF MEETINGS AND VISITS  
ARRANGED FOR I. WROE IN DHAKA

SCHEDULE FOR VISIT TO COLLEGE OF TEXTILE TECHNOLOGY, DHAKA

- Monday 9th Sept.: Depart Manchester for Dhaka.
- Tuesday 10th Sept.: Arrive Dhaka.
- Wednesday 11th Sept.:
- i) Mr. Vincent Levides, UNIDO. UNIDO Office  
Mr. Robert Petri, UNIDO.
  - ii) Dr. M. Rahman, College of Textile Technology  
College Principal.  
Mr. Robert Petri.
  - iii) Dr. Rahman. College of Textile Technology  
Mr. Aziz,  
Director of Planning, Directorate  
of Technical Education.  
Mr. Eusufjai,  
Assistant Director of Planning,  
Directorate of Technical Education.
  - iv) Mr. Shah, Offices of DG,  
Director-General, Dir. of Tech. Ed.  
Directorate of Technical Education.
  - v) Mr. Mian, Offices of Dir.  
Director of Administration, of Tech. Ed.  
Directorate of Technical Education.
  - vi) Dr. Rahman. College of Textile  
Technology
- Thursday 12th Sept.:
- i) Dr. Rahman. Sheriton
  - ii) Dr. Rahman. BTMA Offices  
Mr. K.M. Husain,  
Secretary to Bangladesh  
Textile Mills Association.
  - iii) Dr. Rahman. BJMC Offices  
Mr. M.A.R. Talukder,  
Director, Bangladesh Jute  
Mills Corporation.
  - iv) Dr. Rahman. College of Textile  
Technology
- Friday 13th Sept.: No appointments.



Saturday 14th Sept.: i) Dr. Rahman. College of Textile Technology

ii) Dr. Rahman. Mr. A.S.M. Shahid, Planning and Development Director, Bangladesh Textile Mills Corporation. BTMC Offices

iii) Dr. Rahman. Mr. A. Hussain, Director of Operations, Bangladesh Textile Mills Corporation. BJMC Offices

iv) Dr. Rahman. Mr. M.N. Islam, Planning and Development Member, Bangladesh Handloom Board. B.H.B. Offices

v) Dr. Rahman. Staff of College of Textile Technology. College of Textile Technology

Sunday 15th Sept.: i) Mr. Raisuddin, Assistant Professor, Fabric Technology, and second year students; Weaving Prac. Class Weaving Shed College of Textile Technology

ii) Dr. Rahman. Mr. Anwar Hussain, General Manager, Ahmed Bawany Mill, Dhaka. Ahmed Bawany Mill

iii) Dr. Rahman. Staff of College of Textile Technology. College of Textile Technology

Monday 16th Sept.: i) Dr. Rahman. College of Textile Technology

Tuesday 17th Sept.: i) Mr. R. Petri. UNIDO Office.

ii) College of Textile Technology Student Seminary. College of Textile Technology

iii) Various Dhaka Banks

iv) Mr. R. Petri. Sheriton

Wednesday 18th Sept.:	i) Dr. Rahman. Staff of College of Textile Technology.	College of Textile Technology
Thursday 19th Sept.:	i) Dr. Rahman. Staff of College of Textile Technology.	College of Textile Technology
	ii) Mr. Shah. Mr. Aziz, Dir. of Tech. Ed.	Offices of Dir. of Tech. Ed.
	iii) Dr. Rahman. Staff of College of Textile Technology.	College of Textile Technology
	iv) Dr. Rahman. Mr. V. Lavedes. Mr. R. Petri.	UNIDO Offices
Friday 20th Sept.:	Depart Dhaka for Manchester.	
Saturday 21st Sept.:	Arrive Manchester.	

PROPOSED MANAGEMENT STRUCTURE OF COLLEGE

	<u>Principal</u> [Dr. Rahman]	-----	Secretary [Mr. Hoque]	
<u>Yarn M/F</u>	<u>Fabric M/F</u>	<u>Dyeing &amp; Finishing</u>	<u>Textile Related Studies</u>	<u>Admin</u>
Prof. [vacant]	Prof.[vacant]	Prof. [vacant]	Asst. Prof.	
Assoc.Prof.[vacant]	Assoc. Prof.[vacant]	Assoc. Prof.[vacant]	[Mr. Mortuza]	
Asst. Prof.	Asst. Prof.[vacant]	Asst. Prof. [vacant]	Lecturers[1 vacancy]	
[Mr. Sutradhar, not in post]	[Mr. Raisuddin]	[Mr. Khaleque C/I]	[Mr. L. Rahman-chem]	
[Mr. A.B.M. Kassem,C/I]	[Mr. Nazmuddin, C/I]	Instructors/lecturers	[Mr. Mullick-phys.]	
Instructors/Lecturers	Instructors/Lecturers	[Mr. Islam, + Testing]	[Mrs. Dewan-English & Econ.]	
[Mr. Baqui, not in post]	[Mr. S. Bhuiyan, not in post]	-----	[Mr. Dewan-Eng.]	
[Mr. Kashem]	[Mr. Ahmed, not in post]	Demonstrator[vacant]	Demonstrators	
[Mr. Shahidullah, not in post]	[Mr. Hassanuzzaman, not in post]		Mr. Jabbar	
[Mr. Hassanuzzaman, not in post]	Demonstrator		Mr. A.M. Bhuiyan	
Deomonstrator	[Mr. Nabi]			
[Mr. Nabi]				

12 Academic staff in post, on-site.  
 6 Not in post:  
 Mr. Baqui, Manchester; Mr. Buiyan, Leeds;  
 Mr. Sutradhar, Leeds; Mr. Shahidullah, Leeds;  
 Mr. Ahmed, Guelph; Mr. Hassanuzzman, Leeds.

APPENDIX VI  
SUGGESTED TRAINING PROGRAMMES FOR TEACHING  
STAFF AT THE COLLEGE OF TEXTILE TECHNOLOGY, DHAKA

No.*	NAME	SUGGESTED TRAINING PROGRAMME	TIME
	Dr. H. Rahman	i) Short, intensive tour of educational institutions involved in textile technology.	3 weeks
		ii) Short course in education administration.	12 weeks
2	Mr. A.B. Kashem	i) 2 year, theoretical and practical training in yarn technology; for example, A.T.I. yarn technology specialism.	24 months
		ii) Consider for higher degree training at a later stage.	
3	Mr. M. Raisuddin	Practical training programme in knitting and non-woven fabric production.	12 months
4	Mr. A.B. Kassem	i) 2 year, theoretical and practical training in yarn technology.	24 months
		ii) Consider for higher degree training at a later stage.	
	Mr. M.M. Islam	i) 2 year, theoretical and practical training in wet-processing.	24 months
		ii) Consider for higher degree training at a later stage.	
	Mr. A. Khaleque	One year taught M.Sc. course in textile chemistry and wet-processing.	12 months
	Mr. A. Nazmuddin	Short, intensive course in practical weaving and loom maintenance.	6 months
	Mr. A. Mullik	i) Intensive course in theoretical and practical aspects of general textile technology.	12 months
		ii) Consider for specialist textile physics course at later stage.	
9	Mr. A.T.M. Rahman	i) Intensive course in theoretical and practical aspects of general textile technology.	
		ii) Consider for specialist textile/polymer chemistry course at later stage.	
10	Mr. A.K.M. Murtaza	i) Intensive course in quality control and testing of textile materials.	12 months
--	Mrs. R.Z. Dewan	i) Intensive course in theoretical and practical aspects of general textile technology.	
		ii) Consider for specialist textile economics and management course at later stage.	

\* In order of priority

APPENDIX VII

SCHEDULE OF EQUIPMENT AVAILABLE IN THE COLLEGE OF TEXTILE TECHNOLOGY AND/OR FURTHER EQUIPMENT, ETC., REQUIRED TO AUGMENT THAT ALREADY ON-SITE AND FUNCTIONING

SECTION: Textile Testing

Item	Quantity	Schedule	Installed Costs	Comment
Rapid Regain Tester	2	I		Allow £40,000 for renovation of shedule equipment
Shirley Moisture Indicator	1	I		
Wrap Reel (Cotton)	1	I		
Wrap Reel (Jute)	1	I		
Wrapping Block	1	I		
Yarn Examining Machine	1	I		
Balance (Simple)	1	I		
Yarn Balance	1	I		
Knowles Yarn Balance	1	I		
Beesley Yarn Balance	1	I		
Yarn Assorting Balance	1	I		
Yarn & Fabric Quadrant Balance	1	I		
Yarn Numbering Quadrant Balance	1	I		
Precision Torsion Balance	1	I		
Shirley Comb Sorter	1	I		
WIRA Cotton Fineness Meter	1	I		
Cloth Tensile Tester	1	I		
Single Thread Tensile Tester	1	I		
Carpet Dynamic Loading Machine	1	I		
Twist Testers	2	I		
Ballistic Tear Tester	1	I		
Fabric Abrasion Resistance Tester	1	I		
Compound Microscope	1	I		
WIRA Dynamic Loading Tester	1	I		
Soxhlet Extractor	1	I		
Water Repellency Tester	1	I		
Avery Scale	1	I		
Shirley Fabric Thickness Gauge	1	I		
Shirley/IIC Fineness/Maturity Tester	1	I		
Shirley Air-permeability Tester	1	I		
Shirley Hydrostatic Head Tester	1	I		
Shirley Stiffness Tester	1	I		
Rapid Regain Tester	1	II	15,000	
Pressley Fibre Strength Tester	1	II	12,000	
pH Meter	1	II	600	
Grey Scales	1	II	40	
Shirley Comb Sorter	2	II	10,000	

SECTION : Textile Testing (continued)

Item	Quantity	Schedule	Installed Costs	Comment
Tetrapod Walker Carpet Tester	I	II	4,000	
Twist Tester	3	II	4,200	
Bursting Strength Tester	I	II	4,000	
Travelling Microscope	I	II	800	
Crease Recovery Tester	I	II	1,200	
Instron Tensile Tester + Accessories	I	III	50,000	Robust but expensive to purchase & maintain
Uster Yarn Irregularity Installation	I	III	60,000	
Colourimeter	I	III	60,000	
Single Pan Balance	2	III	4,000	
Shirley Trash Separator	I	III	17,000	
Digital Fibrograph	I	III	46,000	Simple to use but expensive to install & maintain
Flammability Tester (I.S.O.)	I	III	4,000	Robust & cheap but results difficult to interpret
Air-conditioning Plant	5	III	50,000	
Yarn Hairiness Tester	I	III	10,000	
Projection Microscope	I	III	20,000	
Washing Machine	I	III	6,000	

SECTION : Yar Technology

Item	Quantity	Schedule	Installed Costs	Comment
Bale Breaker	1	1		
Ultra Cleaner	1	1		
Twin Opener	1	1		
Hopper Feeder (No.1)	1	1		
Single Porcupine Opener	1	1		
Hopper Feeder (No.2)	1	1		
Single Scutcher & Lap M/C	1	1		
MDF 1 Drawing Frame	2	1		
MS 2 High Draft Speed Frame	1	1		
MS 2 Roving Frame	1	1		
MR 1 Ringframe	1	1		
MR 3 Ringframe	2	1		
MDC Ring Doubling M/C	1	1		
O.D. Batching Emulsion Mixer	1	1		
Jute Softener M/C	1	1		
Jute Finisher Card	1	1		
1st Jute Drawing Frame	1	1		
2nd Jute Drawing Frame	1	1		
3rd Jute Drawing Frame	1	1		
Jute Spinning Machine	1	1		
Apron Draft Jute Spinning Machine	1	II	90,000	
Centrifugal Spinning M/C	1	III	100,000	
Autoleveller Drawing M/C jute	1	III	58,000	
Teaser Card Jute Root Cuttings	1	II	90,000	
Rotor Spinning M/C type 1	1	III	40,000	
Autoleveller Drawing M/C Cotton	1	III	30,000	
Drawing M/C for Cotton	1	II	22,000	
Complete Combing Set	1	III	150,000	
Speedframe	1	II	49,000	
Hollow Spindle M/C	1	II	58,000	
Tandem-card	1	III	45,000	
Sampling Roller & Clearer Card	1	II	25,000	
Miniature Spinning Plant	1	II	150,000	
Miniature Ringframe	1	II	50,000	
Rotor Spinning M/C type 2	2	II	30,000	

SECTION : Fabric Technology

Item	Quantity	Schedule	Installed Costs	Comment
Hessian Loom	2	I		Allow £45,000 for renovation of schedule equipment.
Sacking Loom	2	I		
Northrop and/or Butterworth Looms	4	I		
Rapier Looms Showing Comprehensive range of Machinery design principles and allowing flexibility in textile design.	7	III	340,000	
Projectile Looms	2	III	130,000	
Air Jet Looms	2	III	110,000	
Water Jet Loom, Filament	1	III	40,000	
Multiphase Loom	1	III	65,000	
Modern Shuttle Looms	2	III	30,000	
Narrow Fabric Looms (tapelooms)	1	III	20,000	
CAD System + Jacquard for Narrow Fabric Loom	1	III	55,000	
1 m Cut Pile Tufter	1	III	70,000	
1 m Face to Face Wilton	1	III	120,000	
Section Warper	1	I		
Cheese Winder	1	I		
Card Puncher	1	I		
Bobbin Winder	1	I		
Sizing M/C + Mixer	1	I	Details needed for repair	Scrap if warp can be commission sized
Automatic Pirnwinder	1	I	"	scrap if over 10 years old
Manual Conewinder 8 Spindles	1	II	10,000	
Single Spindle Automatic Winders- Range of Machine Principles	3	III	30,000	
Automatic Pirnwinder 10 Spindles	1	III	30,000	
Copwinder Jute, Manual 4-8 Spindles	1	II	7,000	
Griswold Hand Circular Machines	6	II	6,000	
V-bed Hand Flat Machines	6	II	24,000	
Hand Flat Purl Machine	2	II	10,000	



SECTION : Fabric Technology (Continued)

Item	Quantity	Schedule	Installed Costs	Comment
Circular Plain Web Machine with Sinkers	1	II	20,000	
Circular Rib Machine	1	II	20,000	
Circular Interlock Machine	1	II	25,000	
Sampling Tricot Machine (narrow width)	1	II	20,000	
Sampling Raschel Machine (narrow width)	1	II	20,000	
Circular Knitting Machines	2	I		
Flat-bed Knitting Machine	1	I		
Sock Knitting Machine	1	I		
Circular Single-jersey Jacquard Machine with Pattern Wheels	1	III	50,000	
Circular Rib Jacquard Machine with Pattern Drums	1	III	50,000	
Half-hose Machine	1	III	30,000	
Power flat Jacquard Machine	1	III	50,000	
Circular Rib Garment Length Machine	1	III	50,000	
Compound Needle Tricot Machine (Three-bar)	1	III	55,000	
Raschel Machine with Latch Needles (Four-bar)	1	III	55,000	
Circular Braiding Machine	1	III	20,000	
Sampling Needle Bonding Machine	1	III	20,000	
Laboratory Knit-goven fabric Forming line (card, cross-lapper, needle loom, thermal bonding and winding unit)	1	III	100,000	

SECTION : Fabric Technology (Continued)

Item	Quantity	Schedule	Installed Costs	Comment
Tensionmeters - hand held, narrow strip; electronic with high speed recorder; weft tensiometer.	7	II	7,500	All items on this page are additional items considered essential for effective teaching in the areas of weaving, knitting & nonwovens.
Other quality control equipment		II	2,000	
Stroboscopes	2	II	5,000	
Photographic attachments for Stroboscopes	1	II	2,500	
Fabric Analysis equipment various		II	5,000	
Comprehensive range of fabric stocks		II	2,000	

SECTION : Wet Processing Technology

Item	Quantity	Schedule	Installed Costs	Comment
Lab. scale Roller Printing M/C	1	I		
Sample Dyeing M/C	1	I		
Wash-Wheel	1	I		
Lab. Oven	1	II	500	
pH Meter	1	II	250	
Lab. Spin Dryer	1	II	100	
Lab. Flat Bed Screen Printer	1	II	4,000	
Lab. Pad-manole	2	II	3,000	
Print Paste Mixer	1	II	200	
K-bar Hand Coaters	4	II	200	
Sample Dyeing Machines	4	II	8,000	
Lab. Jig Machine	1	II	3,000	
Colour Matching Cabinet	1	II	500	
Lab. Winch M/C	1	II	1,500	
Lab. Hank M/C	1	II	3,000	
High Temp. Steamer Unit	1	II	8,000	
High Temp. Sample Dyeing M/C	1	II	5,000	
Lab. Rotary Screen Printer	1	II	6,000	
Steamer Units	2	II	3,000	
Transfer Print Unit	2	II	3,000	
Baking Unit	1	II	4,000	
Multi-function continuous Processing unit	1	III	30,000	
Lab. Single Package M/C	1	II	8,000	
Lab. Jet Dyeing M/C	1	III	9,000	
Colourimeters	6	II	6,000	
Reflectance spectrophotometer	1	III	20,000	
Light Fading Test Units (lab)	2	I!	5,000	
Crockmeter	1	II	250	

SECTION : Textile Science and Related Studies Laboratories

Item	Quantity	Schedule	Installed Costs	Comment
Various, non-specialised items of laboratory equipment are needed for effective operation of the laboratories. At this stage a definitive schedule is not feasible.				Allow £80,000 for renovation of some equipment & purchase of new.

SECTION : Administration

Item	Quantity	Schedule	Installed Costs	Comment
Photocopier	1	I		
Typewriters - mechanical	3	II	£1,200	
Typewriter - scientific	1	II	1,000	
Duplicator	1	II	1,000	
Photocopier with stencil facility	1	II	4,000	
Desk Calculator	1	II	100	
Slide Projector & Screen	1	II	500	
Overhead Projector & Screen	3	II	1,200	

LIST OF TEXT-BOOKS REQUIRED TO AUGMENT THE LIBRARY AT  
THE COLLEGE OF TEXTILE TECHNOLOGY, DRAKA

PRIORITY LIST OF BOOKS

	<u>BOOK</u>	<u>'AUTHOR/PUBLISHER'</u>	<u>QUANTITY</u>
1.	Textile Fibres and Properties	Council of Technology, American Association for Textile Technology.	10
2	Textile Processing (Yarn Manufacturing Segment) Volume I (Opening, cleaning and Picking)	Dr. Z.S. Szaloki	5
	Volume II (High speed carding and continuous Card Feeding)		5
	Volume III (Intermediate Processing: Drawing, Combing and Roving)		5
	Volume IV (Conventional and Modern Spinning Systems)		5
3.	Chemical Testing of Textiles	D.M. Hall	5
.	Woven Stretch and Textured Fabrics	B.L. Hathorne	2
.	Chemical Aftertreatment of Textiles.	H. Mark, N.S. Wooding and S.M. Atlas	2
..	Introduction to Weft Knitting	J.A. Smirfitt	10
-	Introduction to Warp Knitting	D.G. Thomas	10
8.	Weaving Control of Fabric Structure	K. Greenwood	
9.	Textile Chemistry	R.H. Peters Elsevier Publishing Co.	
	Vol. I		5
	Vol. II		5
	Vol. III		5
10.	The Chemical Technology of Dyeing and Printing		
	Vol. I		5
	Vol. II		5
	Vol. III		5

11	Dyeing of Synthetic Fibres and Acetate Fibres	D.M. Nunn	5
12	Transfer Printing Manual	Textile Institute	5
3	Finishing of Textile Fabrics	C.S. Whewell	5
14	Foam Processing for Dyeing and Finishing	Textile Institute	5
5	The Theory of Colouration of Textiles	C.L. Bird	5
5	Statistical Method for Textile Technologists	T. Murphy, K.P. Norris and L.H.C. Tippet	5
7	Quality Control Handbook	J.M. Juran, F.M. Gryna Jr. and R.S. Bingham Jr.	5
3	Carpet Surfaces	H. Peinton	4
13	Carpet Substrates	Peter Ellis	4
20	An Introduction to Textile Economics	Peter Ellis	5
21	Applied Textile Marketing	Leon E. Seidel	5
2	Rotor Spinning, Technical and Economic Aspects	Eric Dyson	5
3	The Analytical Chemistry of Synthetic Dyes	K. Venkataraman ed.	5
4	Textile Yarns: Technology and Science	B.C. Goswami, J.G. Martindale and F.L. Geardino	5
5	Textile Dyes, Finishes and Auxiliaries	Michael Bogle	5
6	Textile Mathematics	J.E. Booth	4
	Vol. I		4
	Vol. II		4
	Vol. III		4
7	Manual of Nonwovens	Radko Kroma	5
18	Nonwovens 71	Peter Lennex-Kerr	5
29	The Modern Textile and Apparel Dictionary	George E. Linton	5
30	Bulked yarns, Production, Processing, and Applications	Behumil Piller	5
31	Handbook of Industrial Textiles	Ernest R. Kaswell	5

2	Introduction to Polymer Science and Technology	H.S. Kaufman and J.J. Falcetta, eds.	5
3	Textbook of Polymer Science	F.W. Billmeyer, Jr.	5
4	Experiments in Polymer Science	Edward E. Collins	5
35	Fibres	C.P. Chapman	5
5	Fashion Drawing for Advertising	P.J. Ireland	5
37	Drawing and Designing Menswear	P.J. Ireland	5
8	Fashion Design Drawing	P.J. Ireland	5
39	Illustrated Guide to Sewing	Hazel M. Sear	5
J	Professional Patternmaking for Designer's of Women's wear	Jack Handford	5
61	The Standard Handbook of Textiles	A.J. Hall	5
2	Fibre Science Series	L. Rebenfield, ed.	
	Vol. I	Fourt and Hollies	3
	Vol. II	Mary E. Carter	3
	Vol. III	O'Connor	3
	Vol. IV	Ward	3
	Vol. V	Black and Preston	3
	Vol. VI	I.V. de Gruy, J.H. C and W.R. Geynes, T.O. Connon	3
	Vol. VII (in two parts)	Martin J. Schiek, ed.	3
	Part I		
	Part II		
3	Oriental Carpets	Robert de Calatchi	3
44	Supreme Persian Carpets	M.K. Zaphyr Amir	4
5	The World Fibres Book	Peter Lennox-Kerr	4
46	American Cotton Handbook, (Latest Ed.)	D.S. Harnby	
	Vol. I		3
	Vol. II		3
7	Textile Monographs		
	Decrystallized Cotton		5
	Textile Printing		5
	Cotton Modification with Oxianes		5
	Physiology and Hygiene of Materials and Clothing -		1
	Permanent Setting of Wool -		1
	Drycleaning -		1
	Twistless Yarns -		1
	Elastomeric Fibres		1



The Mothproofing of Wool	1
Durable Press Cotton Goods	1
Flame Resistant Cotton	1
Tape Yarns	1
Bicomponent Fibres	1
Bonded Fabrics	1

Month	Title and Item no.	Objectives	Method	Notes
1	1. Project confirmation			
	2. Co-ordination and administration	To establish co-ordination and administration team for project; identify lines of communication and responsibilities, policy and mechanisms.	Visit by Dhaka Principal and UNIDO nominees to counter-part college.	4 x ½ week
	3. Education administration.	To widen range of administration models open to principal.	Tour by Dhaka Principal of Educational Institutions specialising in Textile Technology.	1 x 2½ weeks
	4. Ex-patriate teachers	To obtain services of four ex-patriate teachers to cover yarn, fabric, wet-processing technologies and textile testing.	Advertisements in world textile press and/or head-hunting as required.	
	5. Curriculum Development	To establish basis for 1st and 2nd year curricula.	Visit to Dhaka by Textile specialist staff in yarn, fabric, wet-processing technologies and related studies specialist.	4 x 3 weeks

SUGGESTED OUTLINE FOR THE FIRST 24 MONTHS OF A FOUR-YEAR ACADEMIC  
 LINK BETWEEN THE COLLEGE OF TEXTILE TECHNOLOGY, DHAKA, AND A  
 COUNTERPART COLLEGE

	6. Equipment and Machinery.	To establish details of equipment etc. renovations and requirements.	As above	
	7. Library	To establish detail of text-book and periodical requirements.	As above	
	8. Academic staff training and Technician training.	To identify and confirm training needs of selected staff and arrange suitable programmes.	As above	
		To implement technician staff training.	Dhaka staff made available for appropriate training.	6 x 52 weeks (Technicians)
	9. Academic Liaison	To establish, confirm or change policy. To review progress.	Meeting of link team	
6	10. Teaching skills	To improve teaching skills of Dhaka staff.	4 week teaching skills (module 1) course at Dhaka College	2 x 4 weeks
7	11. Ex-patriate teachers	To provide short-term teaching support to Dhaka College.	4 x ex-patriate teaching staff to Dhaka for 12 month contract in yarn technology, fabric technology, wet processing, textile testing.	4 x 52 weeks

12. Academic staff	To provide academic staff at Dhaka with practical or technological training.	Implementation of training programmes as determined under 8.	4 x 52 weeks (Academic)
13. Teaching skills	to improve teaching skills of Dhaka staff.	4 week teaching skills(module 2) course at Dhaka College.	2 x 4 weeks
14. Library	To provide text-books and periodicals for Dhaka Library, to improve learning resources at Dhaka.	Order books and periodicals determined under 7.	
15. Technician Training	To provide adequately trained technician for laboratories and workrooms at Dhaka.	Implementation of training programmes as determined under 8.	6 x 52 weeks (Technician)
16. Curriculum	To confirm and implement first year curriculum.	Visit by specialist staff from counter-part college to Dhaka.	4 x 3 weeks
17. Equipment and Machinery	To implement commissioning of equipment, etc. identified under 6.	Order equipment etc. identified under 6.	
12	18. Academic Liaison	To establish, confirm or change policy. To review progress	Meeting of link team

13	19. Management and Administration	To develop education management skills at Dhaka.	Dhaka Principal released for management training programme.	1 x 12 weeks
	20. Teaching skills	To improve teaching skills of Dhaka staff.	4 week teaching skills (Module 3) course at Dhaka College.	2 x 4 weeks
	21. Curriculum Development	To establish basis for 3rd & 4th year curriculum.	Visit to Dhaka by Textile specialist staff as appropriate.	4 x 3 weeks
	22. Equipment and Machinery	To commission equipment, etc., ordered under 17.	As above	
	23. Library	To establish Library as a learning resource centre.	Visit to Dhaka by specialist staff as appropriate.	1 x 3 weeks
18	24. Academic Liaison	To establish, confirm or change policy. To review progress.	Meeting of link team	
<hr/>				
19	25. Curriculum	To confirm and implement 2nd year curriculum.	Visit by specialist staff from counter-part college to Dhaka.	4 x 3 weeks
	26. Equipment and Machinery	To finalise commissioning of equipment etc. as under 22.	As above	
	27. Academic and Technician Staff training	To identify and confirm training needs of selected staff and arrange suitable programmes.	As above	4 x 52 weeks (Academic) 6 x 52 weeks (Technician)

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28. Academic Liaison

To implement staff training programmes at technician and academic staff level.

Release of staff and implementation of appropriate training programmes.

To establish, confirm or change policy.

Meeting of link team.

To review progress.