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15797

DP/ID/SER.A/736
9 September 1986
ENGLISH

HIGH LEVEL ADVISORY SERVICE TO THE
CENTRE OF TECHNOLOGY OF THE CHEMICAL AND TEXTILE INDUSTRY (CETIOT)

SI/BRA/85/802

BRAZIL .

Technical report: Garment industry (pattern making and grading)*

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

Based on the work of John Desmond CURRAN
Consultant in apparel design and pattern making

United Nations Industrial Development Organization
Vienna

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V.86-59764

product design

Visit to C.E.T.I.Q.T.
(9 July - 31 August 1986)

The purpose of the visit was to provide high level advisory services to the Centre of Technology of the Chemical and Textile Industry (CETIQT).

These services were to be provided in close co-operation with the senior staff of CETIQT. It was hoped that the consultant would introduce modern pattern-design and grading technology to the Centre by giving an intensive course to the staff and students.

Arrived in Rio de Janeiro Wed. 9 July 1986 at 4.50 a.m. and was met by a Mr. Romulo Durand da Motta.

On Thursday 10 July I met the directorate of the Centre for introduction and general briefing about my visit. Those present were:

- Prof. Alexandre Figueira Rodrigues (General Director);
- Prof. Alberto de Souza Cruz (Subdirector);
- Prof. Lucio Geraldo Taboada Tenan (Technical Director);
- Prof. Nilton Guimaraes de Barros (Teaching Director);
- Mr. J.D. Curran (UNIDO visiting consultant);
- Mr. Romulo Durand da Motta (translator).

We discussed in general terms what I was going to do and it was agreed that I was to:

- (a) provide a teaching course to the staff and students in pattern making and grading;
- (b) help write a pattern making and grading document for the Centre to be used in setting up a new course.

It was further agreed that (a) would take place in the mornings to selected people from the Centre and (b) would take place in the afternoons with Prof. Almir Teixeira de Souza, Assistant to the Technical Director and professor of Apparel Management.

After this meeting, I visited the facilities with Prof. Alexandre Figueira Rodrigues. The layout of the school is excellent with all the various departments well equipped with modern machinery in well lit and spacious rooms. Particularly impressive was the Apparel area, called "Núcleo de Apoio à Comercialização - N.A.C.". This area provides technical support and all kinds of information about up-to-date fashion and colour trends to the industry. Recently, they had a large fashion show in a "Salon" which would have been a credit to any leading fashion house in the Northern Hemisphere.

Friday 11th July, with Prof. Almir Teixeira de Souza and Alberto de Souza Cruz, we started to discuss and plan the course. Their problem was to decide who would attend. Because of the content and technical nature of the subject, the planning and translations were taking some time to prepare. Also, some of the people were on holiday and some on other work.

Monday 14th July, I submitted my proposed teaching programme of what I hoped to cover during my visit along with various course notes, terms and diagrams for translation into Portuguese. Prof. Almir and I spent the next two days working on this in preparation for the commencement of the course on Wednesday morning. (Course document marked APPENDIX I).

Wednesday 16th July 1986 the course commenced amid excitement and high hopes. I enclose list of students taking part (APPENDIX II). The enthusiasm was soon apparent and the class showed a great desire to learn and keen for knowledge.

For the next five and a half weeks (Wed. 16th July to Friday 22nd August 1986) I conducted the classes in the mornings (08:30 to 12:00). By means of lectures, explanations and practical demonstration I worked my way through the programme (APPENDIX I) with the students having to display their understanding of the subject by performing practically each day's lesson - themselves. Their keenness to adapt to my methods was very rewarding and soon I gained their confidence with each new process I taught them. I would like to say, at this stage, the success of the daily classes was largely due to the very efficient and knowledgeable way that Prof. Almir Teixeira de Souza translated my teachings.

From time to time, however, three of the men on the course had to be withdrawn because of other School commitments and it appeared that they all held positions of some responsibility. With the addition of two more names to the list, it meant that I had seventeen students every day and the men looking in, from time to time, to join in lessons that they found useful and interesting. It was hard to assess how they benefitted from my visit.

The grading system I introduced proved to be very well received and a very interesting exercise. The students had varying ideas about how to grade, but I am confident I have left them with a simplified system that is easy to understand and very adaptable. They are now quite capable of grading all kinds of styles and creating different types of block patterns from the original basic shape. Patterns for all kinds of fabric can be developed through grading the tolerance into or out off the basic block.

Having covered so much practical work in such a short time, I decided the best way for me to assess how successful I had been in achieving my aims and objectives was by means of a test. So, during the week of 18th August 18th to 22nd I gave the students a design of a garment (APPENDIX III) that I thought would bring together most of the important elements of the course. I asked them to cut and make size 12 pattern with all the relevant details on it as if it were going into production. Then, from the size 12, they had to grade size 10 and size 14. Finally, they had to work out an economical "lay plan" for the size 12.

I was pleased at the professional way they went about this test. They decided on the best shape to use and worked out all the relevant proportions,

lengths and design features most intelligently.

Everyone completed the work most successfully, with the better students showing a high level of competence and producing very good patterns. The ones with lesser ability showed up very well also and with a little bit of more thought and less carelessness they could be very good. It did prove to me, however, that I had achieved my aims and objectives and only time will tell how successful the course had been and how quickly the staff and students adopt my teachings.

* * *

During the afternoons Prof. Almir and I worked on the curriculum for a course in Pattern Cutting and Grading to be used in the educational structure of CETIQT.

I submitted what I thought should be the aims and objectives of such a course along with the coarse material of how to teach it in lectures and practical demonstrations. It is hoped that in due time all this material will be translated into Portuguese and produced in book form as the format for a specialized course. Unfortunately, this was proving to be a long and slow process, because of the nature of the subject and translating was not always straight forward. They hoped however to get it completed as soon as possible and hopefully be using it as a guide to teaching pattern cutting and grading throughout the Center.

Some of the major problems the Center has to face is not having easy access to up-to-date printed material of the different subjects relating to design, pattern making and grading and having their seasons at different times from the Northern hemisphere. They are either in front or behind, whichever way you look at it.

I have undertaken to get together as many books as I think will be useful to the Center and send them on my return to England.

On 21st August, Prof. Almir, Prof. Luis da Silva Lopes, who is head of N.A.C., and myself visited "Inega", a large jeans, trousers, shorts and shirts manufacturing company.

Unfortunately, we only saw the computer in operation grading jeans and making lay plans. The company was obviously well pleased with it, as it has greatly increased its production. I would have liked to have seen the rest of the factory at work, so I could have made other comparisons in factory lay-out. In the end, I was disappointed with the visit.

The highlight of my trip to Brazil was the visit to Brasilia. On Wednesday and Thursday 27th and 28th August, along with Prof. Almir T. de Souza, I was the guest of SENAI-CETIQT. It was a great honour and pleasure for me to be given the opportunity to visit the country's capital and see its magnificent modern buildings.

We met Servulo M. Moreira, the assessor for International Cooperation at SENAI. The project I had just completed was discussed, he thanked me for all the work I had done and hoped I could return to carry it on.

I would like to put on record my sincere thanks to Prof. Alexandre Figueira Rodrigues for making the visit to Brasilia possible. The trip gave the chance also to visit the UNDP/UNIDO office, where I had the pleasure of meeting Mr. Wolfgang Mathis.

RECOMMENDATIONS

On my arrival I found the students worked with measurement charts that to my mind did not seem to relate to any national shape. From these charts and by means of technical scales they were able to make block patterns. But because there was no standard size in a body form or in a dress stand form I could not see to what these patterns related.

My first recommendation would be for the Center to establish and have made a set of dress stands to what they consider to be average Brazilian sizes. During our grading session we made a new size chart. so this could be used as a good starting point. This would be a good research project for the Center to undertake. I appreciate the magnitude of the task because of the different size ranges throughout the country, but somehow a good average must be established and used.

The whole premise for improving the manufacturing of clothes is based on speed. The system I introduced was to establish a set of basic blocks of different silhouettes that are related to a standard size. By skillful manipulation sample patterns can be produced quickly from sketches and garments made. If alterations are needed, these can be made and the patterns are then ready for grading. With practice and experience this whole process will speed up and I think lead to a more efficient way of producing patterns.

Someone within the SENAI-CETIQT organization interviewed the students who were on my course and asked them what were the most important things they were getting out of it. They all agreed, that these were speed and efficiency.

As to the future success of CETIQT, I have no doubt it will go from strength to strength. When you consider what has been achieved over the last fifteen years - Textile Technicians courses in Knitting and Apparel, Spinning and Weaving, Dyeing and Finishing, not to mention the many and varied short courses that are on offer ranging from machine mechanics to time study and lay planning. The area that I am most concerned with was the relatively new course for Fashion Design and Pattern Making. It has been in operation for just over 1 (one) year. I was most impressed with the standards already achieved and with the advanced nature of the prospectus. In 1 1/2 years or 3 semesters the students are expected to cover and achieve the same standards as I know are being expected from degree courses in the U.K. taking three years.

The Center is very professional, headed by Prof. Alexandre Figueira Rodrigues and his very capable staff in buildings that are well equipped and most comfortable to work in. They deserve all the expert help they can get from countries and individuals who have had longer experience in the different specialized fields that the Center has to offer. These experts should be well briefed in the functions of CETIQT and prepare themselves well in advance of a visit. They should determine their aims and objectives clearly and concentrate on the topic in which they specialize.

The Centre would greatly benefit from visits of consultants in men's wear, children's wear, lingerie and swimwear and knitted garments.

It is important that the Centre builds up a reference library in all subjects. In this way they will receive up-to-date developments and more modern information. If this steady supply of material was available, then the staff here at the Centre are more than capable of running advanced courses to produce students who are well able to lead the Brazilian apparel industry well into the next century.

APPENDIX I

SHORT COURSE
PATTERN CUTTING AND GRADING

The aim of this special short course is to give the student a comprehensive knowledge of pattern cutting in relation to design and production.

The main objectives are that the student be able to adapt and manipulate the basic blocks to suit all conceivable styles. To understand the functions of the block patterns in relation to garment tolerance and measurements.

To understand and appreciate the principles of grading the various sizes.

- BLOCKS - Discuss size charts. Explanation of garment measurement and tolerance. Copy basic blocks to include dress, jacket, skirts and trousers. Relevant information on marking, cutting and numbering pattern pieces, including balance marks, grain lines and seam allowances.
- BODICE - Dart manipulation, which includes transferring and incorporating design lines throughout the front and back. Design variations in neckline and armhole. Front and back openings, to include explanation of button sizes, button wrap and stand, different positioning, horizontal, vertical and spacing. Different kinds of facings, all in one, and interfacings (staflex and canvas). Problems of double breasted styles. Fly front and zipped openings. Bias piping used instead of facings for effect.
- SKIRT - Pattern adaptation from the basic skirt block to cover different styles in straight, A line, slight flared and flaring. Circle - including $\frac{1}{4}$, $\frac{1}{2}$ and full. Pannelled, pegtop, gores and godets. Pleated to include knife, inverted and box, as well as the different types of machine pleating. Skirt and bodice joined to make princess line block.
- COLLARS - Basic collars including all the variations from a flat collar to a roll, i.e., peter-pan, eton, bertha, polo, stand, mandarin, wing, shirt (with and without stand). Collars that are cut integrated with the garment, i.e., tailored collar and rever, cut-on collar and facing, shawl collar, sailor collar. Collars cut to different neckline shapes, i.e., low notched, high, double

Appendix I (continued)

- SLEEVES - Adaptations of the one-piece set-in sleeve into various styles and lengths, i.e., short, 3/4, elbow, bracket, long. Differing styles of gathered heads and cuffs, tucked and pleated. Shirt sleeve and cuff detail. Sleeves that are integrated with the bodice, i.e., set-in raglan, kimono (with and without gusset), dolmans, magyars.
- POCKETS - Functional and decorative - size and position on garment. Different styles, patch, jetted flap, welt, inset in seams, slant side - the importance of the construction related to different types of fabrics.
- TROUSERS - Using trouser block to obtain shorts, slacks, culottes, flared styles and various designs in the basque, waistband, pockets and seams.
- GRADING - To appreciate and understand the principles of grading all sizes 10-18 for different garments on varying shapes and designs.
- LAY-MAKING - It is important for mass production to use as little fabric as possible. Every additional centimeter affects the final price. General talk.
- COMPUTERS - The use of computers in the Apparel Industry. General observations.
- DESIGN - Good and bad. My opinions and some hints.

* * *

APPENDIX II

LIST OF COURSE PARTICIPANTS

1. AMÉRICO TADEU BARTHOLOMEU
2. JORGE PALMA
3. ALMIR TEIXEIRA DE SOUZA
4. ANA FRANCISCA
5. PAULO DIAS NAZARETH
6. CÍCERO ATAUALPA
7. FERNANDO TEIXEIRA MIGUEL
8. MARIA JOSÉ ARRUDA
9. MARGARETH HOLDORF
10. ELNA GOMES COSTRA CYPRIANO
11. CECÍLIA FERREIRA DE SOUZA
12. SHEILA MARIA CHAGAS FERREIRA
13. SÔNIA CRUZ BARANDA
14. CLÁUDIA GEBARA
15. MÁRCIA LEAL MATOS
16. SANDRA BARANDA HALLAIS
17. LEILA MARIA DA SILVA BARBOZA
18. CLÁUDIA TERRA
19. NOEME BARBOSA MARQUES
20. TÂNIA REGINA CARVALHO SILVA

APPENDIX III

