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Project Findings and Recommendations

Draft prepared by Prof. A. K. De, Project Director
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BACKGROUND

We live with man-made objects around us all the time and our perception to adopt it to more closer to culture is achieved through its communication value. Industrial design and visual communication has to play a greater role to rectify the imbalances created by a speedy industrialization in countries like India. India's encapsuled industrial experience of 50 years must accommodate all major shocks for which the industrialized nations of the West had more than two centuries to absorb.

India, during the last three decades, is trying to become one of the major industrial countries of the world and is striving hard to face the competitive challenges of internal and international trade. With fast growing modern technology, it has also become necessary to review its position and to put emphasis on industrial design and visual communication and its application to the areas which are difficult to perceive earlier. This has brought new challenges to the designers and the design schools of today. Traditional training approach to design do not permit to face these challenges as they tend to depend on development of mere skills and intuitions. To create better and more humane design environment, intuition needs to be supported by knowledge - the knowledge of science and technology. There is hardly any well equiped nucleus agency which could dedicate and devote itself to the field of design and act as a galvanising force to fulfill the growing need of knowledge and better skills.

Design in developed countries has made a tremendous progress and helped to accelerate industrial growth, however same is not true in the case of India where most of products and equipment still suffer for want of good design. This is not true only with products but also in all means of our communication problems. Whether it may be a street sign or standard textbooks in schools. The absence of encouragement to achieve design excellence by our producers of artefacts has resulted in creating a poor and brutal environment. It was therefore rightly felt the need to create a nucleus body that could be in a position to provide all assistance to the industries and devote itself to undertake research and developmental work, carry out educational programme, organise training course and disseminate information.

Aimed at performing these functions, the Industrial Design Centre was established by the Government of India under the auspices of Indian Institute of Technology, Bombay in 1969. However, it was soon realised that, if the Centre has to render useful services it should diversify its existing training facilities to enable to meet adequately the design needs in the areas of industrial design and visual communication.

Industrial Design as a profession is new in India. For a society that is used to more traditional ways of solving problems, the new profession is bound to be received with suspicion. It is important that professionals trained in this new discipline, show standards that will command respect and help convince the other professionals of this

need. So it was felt that the 15 months postgraduate diploma programme should be upgraded to Masters level to bring the highest level of professional standard.

As there was no institution in the country that imparted similar education, an international assistance was sought after. Prolonged discussions among faculty members took place to determine various gaps and the new input required to strengthen our existing programme. A detailed project proposal was made and submitted to the Ministry of Education, Govt. of India, to be included in Unesco programme. Thanks to the Ministry who have given top priority to the project. The project was approved and signed by the Government, Executive Agency and UNDP in June 1978. Duration of the project was three years and subsequently extended for another two years. The project will be terminated in December 1983.

Dr. Arthur Pulos, Chairman of the Department of Design, Syracuse University, U.S.A., was invited as UNDP specialist (from 7th to 13th January 1979) for preparation of work plan for the project in consultation with the leader of National Staff indicating the world renowned institutions for fellowship training programme and for inviting international experts.

.0 OBJECTIVES OF THE PROJECT

2.1 Developmental Objective

The project is intended to improve the quality of Industrial Design through the improved training of designer.

2.2 Immediate Objective

The project aims at expanding and diversifying the existing training facilities of the Industrial Design Centre to enable it to meet adequately the industrial design needs both in public and private sectors. The project will prepare and equip the Centre to carry out specific functions within the field of -

. Visual Communication

. Environmental Design

. Ergonomics

. Design and Development Cell

. Information

. Training and Education

. Industrial Liaison

. Consultancy

2.3 Logic of the Project

The expected output of the project was a well developed design centre, both in terms of personnel and physical facilities, able to perform the aforementioned specialized functions.

In order to produce the expected output, the Government would contribute with the following inputs:

. Teaching and counterpart faculty upto total of fourteen

. Technical supporting staff upto total of thirty one

. Secretarial staff upto total of seven

UNESCO/UNDP would contribute with the following inputs:

. Chief Consultant (Senior Professor) and additional experts for a total of twenty nine man/months

. Fellowships and study tours for a total of twelve faculty and staff upto an approximate total duration of fifty seven man/months

. Equipment according to pertinent requisitions upto a total around one hundred twenty nine thousand US dollars

. Appropriate provision was also made by the Government and UNESCO/UNDP under heading of miscellaneous

3.0 ACTIVITIES AND OUTPUT

A constant watch and co-ordination was made throughout the project between incoming equipment and consultants, counterpart staff and technical activities to achieve desired output.

For case of analysis the activities of the project will be considered in two main groups: Delivery of project inputs and Design project activities.

3.1 Delivery of Project Input

Expansion of building i.e. construction of additional floor including installation of services and furnishing has been completed. Plan for construction of annex building has been approved and in process of tendering. Construction of annex building is expected to be completed by the end of August 1985, and will house the activities of visual communication and design and development cell.

The national personnel component of the project was revised accordingly to the more important needs for project implementation. Revised posts were approved by the IIT Board and were filled in.

Annexure 1 gives information of the staff status at the end of June 1984. It can be seen on Annexure 1 that 49 posts of the 51 proposed in the project document were already implemented by the Government.

In respect of the equipment provided by the Government of India, the installation has been completed (Annexure 2).

Regarding UNESCO/UNDP inputs, all the forecast expert posts were fully implemented. Annexure 3 details the concerned missions, including the summary of the experts reports.

Training programme, consisting of nine fellowships and two orientation study tours, of which except one fellowship in Furniture Design and one study tour, was fully implemented. Annexure 4 and 5 include implementation schedule and individual summaries of respective fellowships and orientation tours.

In respect of UNESCO/UNDP provided equipment, all the requisitioned items were received and installed except the Micro Computer which is expected to be received in August 1984. Annexure 6 gives information on equipments.

3.2 Design Project Activities - Output

Design activities of the project may be classified under four major headings namely:

a) Design Research and Development

b) Education and Training

c) Information and Industrial Liaison

d) Consultancy

Workplan for each of the divisions relating to the above activities as detailed in Annexure 7 were drawn. To focus attention on the major areas was the main objective as most of the activities shown in workplan are of continuous nature.

With the Centre's input of expertise, contribution by the experts, utilisation of the equipment and intensive interface between the IDC and the members of the industry, all efforts were made to achieve the programmes of work according to plan.

a) Design Research and Development

Orientation programme and fellowships, contribution by experts, together with rise in the level of contacts with the industry have contributed significantly to effect a qualitative shift in the work of the Institute's teaching manpower. IDC's activities show a definite trend towards research work on topics related to design. Such works can be divided into two categories. The first includes projects with design orientation where extensive investigation and research on complex problems end in suggesting a new direction for designing. The second category of projects deal with generating body of knowledge that directly or indirectly influence design decisions.

Out of 20 projects envisaged in the project document, 12 projects have been completed and others are either in process of completion or in the preliminary stage of investigation.

Besides these projects in project document, few additional research projects were undertaken such as:

1. Development of bicycle for the rural transportation
2. Devanagari typeface design
3. Design of Audio-visual instructional material

4. Newspaper design

5. Seat design for long distance buses

Project - Development of bicycle for rural transportation was sponsored by Department of Science and Technology. A thorough investigation has been made of human stresses under extreme conditions while riding, stability of bicycle in terms of its structural strength, and balancing aspect. Before making the final prototype, various experimental rigs were fabricated and tested in our Ergonomics Lab.

Most of the design research projects were done by faculty and assisted by design associates. Design and development projects were assigned to senior students as degree projects and were guided by the faculty members. Some of the projects were completed till the prototype stage and the others at model and conceptual stage.

The practical experience obtained during some of these projects has immensely benefited IDC and has resulted in obtaining finance from Indian Government, for starting a product development cell in IDC.

Discussions with various UNDP experts, as well as exposure during fellowship training programmes revealed the need to develop body of knowledge that support design decisions. Even internationally, design science is considered as a young field and intuitive actions continue to dominate design. It is important that like in other disciplines, the schools and universities accept this new challenge and move on to the new role as research institutes. This growing awareness has resulted in initiating projects, in areas and objectives, beyond those envisaged in project documents.

Influenced by this thinking, some of the projects were of theoretical and/or pedagogical nature. These projects represent a beginning of the role that IDC is moving into. Some of the projects in this area were -

1. Communication and structure of form

2. Similarities and discrimination process in forms

3. Studies of Indian product design tradition

4. Biomechanics of Machine control design

5. Ergonomics of Seating

In fact, this shift towards research evolved gradually during the UNDP project time into a more viable activity, though its seeds can be seen in the earlier work. There is a considerable interest and enthusiasm to generate new information and it is manifesting itself in 'Abhikalpa', a new bi-yearly research journal, published by IDC. In fact, most design centres lack research activities and a major thrust in this field will definitely put the IDC on the forefront in future. To promote design, the IDC faculty is continuously involved in writing article in press media or presenting papers in conferences or seminars (Annexure 8).

b) Education and Training

As envisaged in the project, IDC had upgraded its 15 months diploma programme to 2 years Master of Design Programme (M.Des) since 1979 with intake capacity of 15 students per year and 45 students have passed out and are now holding the position of industrial designer in public/private sector. Annexure 9 will show the infiltration of trained designer in vast panorama of our industry. This we hope will result in developing a confidence among the industries that Indian designers are as good as their counterparts elsewhere. The programme has become so popular that the industries are eager to absorb fresh designers as soon as they complete their studies. Annexures 14, 15 and 16 show the students enrolment, programme of studies and students' projects respectively

Educational programme at IDC has also started attracting students from overseas countries and during the last two years two students from University of Compiegne, France, have completed their project under the guidance of our faculty members. Four more have registered for similar training out of which two are from France and one of each from U.K. and U.S.A. in the area of Product Design and Ergonomics.

Another M.Des programme in Visual Communication has been approved by the IIT Senate and will be commencing from July 1984. It is expected to take 15 students. The content of this programme has been worked out with detailed discussions, conducting workshops with UNESCO/ UNDP Experts. The programme which is unique in its approach, is expected to fill the gap of designers in the area of educational publication, educational aids including film and video programmes.

Programme in Environmental Design is in the formation process with the appointment of an Associate Professor. Through the discussion with architects, public bodies and industries, a feasibility of such programme will be worked out for Senate's approval. As was done with visual communication programme, few research projects will be carried out to generate experience, case studies and evolve education material for finalising educational contents in environmental design. A beginning has been made by accepting a project from Spastic Society of India, to design the total working environment and physical hardware for spastics, for their new building in Bombay. A team of three faculty members is engaged in this project, which is expected to complete it by the end of 1984.

With the introduction of Environmental Design, our objective to offer facilities to tackle total design areas will be fulfilled. The students who will have the exposure of all these three areas, will be able to see the design in its holistic nature.

Perhaps more important development that is worth noting is the change in overall approach to teaching. International exposure through fellowships and visits of UNDP experts as well as the pedagogical research in the last few years, has substantially influenced the educational programme.

Courses have been given newer interpretations, and teaching methods have undergone substantial changes. Commitment to bring out a new professional designer is fully reflected in the programme.

c) Information and Industrial Liaison

The Centre was in continuous touch with industries, since its inception. This interaction has mainly through short term courses organized for industries and consultancy services offered by the faculty members. Through UNDP, IDC was able to strengthen mainly the training activity. When the experts programmes were chalked out, IDC requested most of them to also conduct special programmes like short term courses and workshops along with IDC faculty. These programmes were mainly attended by personnel from industries, government agencies and other design institutes. Totally 33 short term courses and workshops on various topics were organized by IDC.

UNDP Experts mainly concentrated on the topics of their expertise while the IDC faculty dealt with problems related to Indian situation in these workshops and courses. Some of the workshops were held at Delhi, Madras, Bangalore and Ahmedabad as well (Annexure 10). Problems of design development were brought by the industries in the workshops and discussed in great length. Later some of these were converted into consultation projects wherever feasible. IDC faculty continues these short term courses which includes in-house programmes (Annexure 11).

Product design is an interdisciplinary activity that mainly attempts to give an overall view of the problem. Programmes in Product Planning and Product Innovation are a natural extension of the design. Industries are feeling the need to plan for future if they have to sustain the pressure of the multi-national intrusion in Indian industry.

IDC did take the opportunities offered by UNDP assistance to move into Product Planning and Product Innovation. These are not only new part of general design approach in IDC's educational programme, but are tending to become one of the services, that IDC will offer to industries in future.

These programmes give them methodology and process and help to break their mental blocks of conventional thinking of development. Industries such as Crompton, Tubes India, Jyoti, Larsen and Toubro have gained a new dimension to their product line due to their exposure to our short term workshops and have paid high tributes to the faculty.

IDC also now offers training to individuals in specific fields such as in Product Photography, Model Making Techniques, Industrial Finishes etc. Institutions like Central Electronic Design (CEDT), Technical College, Mysore etc. have taken advantage of such training.

d) Consultancy

Consultancy work offers opportunities for IDC faculty and industry to interact. UNDP assistance, particularly in form of equipments, has made IDC consultancy an attractive proposal for industries. Fellowship training programmes have given the faculty international exposure and understanding of international market. This is indirectly reflected in the consultancy services offered, particularly in dealing with product designed for export. Recent examples in these areas, are services offered for Thermax India Ltd. and Vijay Machinery Corporation, for their export products.

During the period under review, the Centre completed 24 consultancy assignments (Annexure 12) which greatly helped the sponsoring organisation to achieve overall design excellence and understand the vital role the design plays in making products viable. It has also helped them to understand that the innovations in designs is a must, if they have to compete with the international market. The steady growth of consultancy services from year to year lends support to the IDC's acceptability by the industry on the one hand, and speaks of growing awareness of industrial design, not only in the industry but also in consumer's mind.

4.0 ACHIVEMENT OF IMMEDIATE OBJECTIVE

The IDC's performance and its resolve to undertake extensive work in each of the four major areas outlined in the foregoing are of continuing nature. During the period under review, IDC has achieved almost all the immediate objectives set up for it in the expansion project, with the exception of full utilisation of the fellowship and group training component. A faculty who was selected for furniture design could not join the IDC. In fact the visit of Project Leader to Finland had confirmed his training programme with the Finnish Furniture Designer as well as in furniture industry in Germany. Two man-months under the project head Group Training could not take place due to the heavy commitments of the Project Director and the Project Head over here.

The objectives of training as planned during the period have been fully achieved. It has also been possible to lay down foundation for commencing programme in Visual Communication and Environmental Design. Similarly there has been a qualitative and quantitative growth in the performance of the Research and Development among the staff. The previous section already describes the achievements in details under each heading.

Not only the Centre has strengthened its teaching capabilities but its problem solving services has increasingly been sought by a wide spectrum of the Indian Industry. A considerable progress has been made and is being made further in creating design consciousness and awareness. Whether it is the public sector or the small scale industries or large and medium scale industries, they

are getting increasingly concerned about improving their products from design point of view.

IDC has been attempting to establish linkages with various educational, technical institutes, government bodies and their working groups, and this association is resulting in bringing about a greater understanding by sharing of knowledge in various relevant fields related to Industrial Design.

It is with the initiative and effort of IDC's faculty that the Ministry of Industries, Govt. of India is now planning to establish an Indian Design Council to promote industrial design activities. Member of IDC faculty is also involved in a working group to make proposal as to how best Industrial Design could be incorporated in uplifting the technology in small scale industries.

The thrust made by IDC in serving the industries at an all India level through its capabilities developed during the project period has achieved a good deal of success and demand for further reinforcing its various services is growing considerably.

Development of Ergonomic Lab and Photo Studio

Studios and labs are the backbones of our educational programme. UNDP assistance in this regard have immensely benefited in uplifting standard of research work as well as professional work. IDC's Ergonomics Lab, Photo Studio and Workshops are one of the best in the world and used extensively by the faculty and students with profound satisfaction. Regarding the Ergonomics Lab, Prof. J.G. Kreifeldt, a visiting Unesco Expert at IDC, remarked the following in his article on 'Human Factors Abroad' "The programme at IDC, which attempts to integrate human factors and industrial design, is highly meritorious effort and one which could serve as a model for similar activities in U.S."

Following are the on-going projects in the Ergonomics Lab:

1. Biomechanics of Machine Control Design
2. Anthropometric Standards for Indian School Children
3. Ergonomics of Seating
4. Use of Multidimensional Scalling System in Product Development
5. Ergonomic Designing of Computer Work Station

Design and Development Cell

IDC's impressive record in design consultancy and developmental work in product design have been noticed by the Government of India and has sanctioned a special grant of Rupees 20 lakhs for the further development of the Design and Development Cell. This Cell was started as a part of UNESCO/UNDP programme with appointment of new manpower and equipment. Since then IDC had developed a number of prototypes such as Domestic Geyser, Sugarcane Crusher, Cloth Measuring Device, Rheostat, Bicycle etc.

The Cell also helps the students to make prototypes of their projects which are either sponsored by the industries or conceived by them. Objectives of the Design and Development Cell is given in Annexure 13.

7.0 RECOMMENDATIONS

- Establishment of Regional Centre

The IDC can be strengthened further to become a Regional Centre for the whole of Asia for imparting training and education in Industrial Design and Visual Communication. IDC has the capability to work in an advisory capacity to develop educational programmes as well as in design, research and developmental activities. This effort is expected to strengthen the relationship between the developing countries in the region and create atmosphere of positive co-operation in raising the standards of industrial objects as well as communication. A detailed proposal is submitted in this regard to Unesco.

- Development of Programme in Visual Communication and Environmental Design

A large number of undergraduate programmes in graphic design and applied art are conducted in India. However, most of them do not go beyond teaching the technical skills of graphic communication. They are usually geared to provide skilled technicians for the advertising industry - and a large vacuum exists as far as creating professionals for meeting the social communication design needs are concerned.

The Visual Communication Programme at IDC will be at an advanced level to create graduates with greater analytical and problem solving capabilities. The provision of a unique theoretical and applied technological infrastructure at this centre, with an analytical yet creative approach at various stages of visual design process and development will put the designer in a 'problem-solver' role, who in turn will influence the Indian design and technological environment. Such a fusion of art and technology catering to the field of communication is not met by any art institute in country.

Unesco support which we received earlier has helped us to make the beginning and first batch of 15 students has been enrolled in Visual Communication Programme. There are however some individual experts who are working in fragmented manner in the area of Visual Communication in India. To invite them with specific assignment will certainly help to boost the programme further. There is also need to support this programme with some sophisticated equipment and fellowship training programme for the faculty. A detailed proposal is worked out to get Unesco assistance which will be presented to Ministry of Education for onward processing.

Since Visual Communication and Environmental Design are interdisciplinary in nature, therefore, we are inclined to introduce full time M.Des programme in Environmental Design also. Skills and technique developed in product design/industrial design and visual communication programme will be useful in Environmental Design as well.

IDC is also starting Design Development Wing with funds from Government of India to step up Industry IIT Development Interaction.

In addition IDC has started a quarterly News Bulletin which reports the development works done at IDC. First 3 issues are already out. UNDP assistance for Visual Communication Programme is acting on the backbone for publication activities.

Training Programme

Under UNDP/UNESCO grants, the faculty members were deputed abroad for periods ranging between nine months to one year. The exposure to design schools, research institutes and offices of eminent designers contributed in developing and expanding the faculty view points. With the result, faculty has not been seeing IDC as merely an educational centre, but a leading institute in design research and design practice.

As a part of this new role, IDC is new publishing a bi-yearly journal 'Abhikalpa' fully devoted to science of design. Faculty hopes to express their view points and research material through this forum.

During their stay abroad, faculty mainly gained insights into new fields that have resulted in offering new courses, reinterpreting existing courses and initiating work on new research topics.

Influence on Courses

Courses offered to M.Des students, have substantially benefitted by the new inputs. Course objectives and assignments have undergone changes during past three years. Few of these new developments are listed below:

IDC now offers a course in Product Planning and Marketing, and has successfully integrated this approach with project work. This has resulted in broadening the scope of the product design projects.

Training has made it possible to not only initiate course work in 'creativity and design' but also offer regular short term workshops for industries on this topic.

New advance level electives are offered in M.Des programme. Typical among them is Advance level electives in Ergonomics, that was possible because of the well developed laboratory with UNDP assistance and training of the faculty in that area. Similarly advance level electives are now offered on 'Studies in Form','Design methodology' and 'Product detailing'.

Influence on Research Activities

Perhaps the most notable contribution of the faculty training programme, is the enthusiasm with which the foundations of research activities are being laid.

Research projects in studies of tradition, visual communication, perception and ergonomics have generated material that is attempting to give new directions to current design thinking. IDC is one of the few design institutes that integrates design research and education together. It is this combination that is likely to make IDC a leading design institute in future.

Past few years of international exposure was a highly illuminating experience. During and after the programme, IDC and its faculty has spent time trying to define its role. It has become increasingly clear that IDC must not only commit to new responsibilities by broadening its educational programme, but also work towards influencing the design thinking at national and international level.

Seeing UNDP assistance in retrospect, IDC now realizes the need to relate design approach to business needs. Activities like product innovation and planning are seen now as part of corporate culture and policies. IDC not only plans to integrate this thinking in the design approach, but also hopes to influence corporate structure, to view design as a part of the business strategy, through short term courses for managers in industries.

IDC also is increasingly feeling the need to integrate Product Development with Product Design. Situations in developing countries seem to demand this additional service from the designer, and we share this experience with UNDP experts like Prof. G. Bonsiepe, who has been working under similar conditions. Under UNDP this activity was strengthened by concentrating on product detailing. Fortunately government also shares this concern. IDC has received special budgetary sanctions to strengthen this activity. We now plan to start a regular product development cell in IDC, with dedicated workshop facilities. When the cell starts functioning, it is bound to influence not only IDC's consultation work, but also the present educational programmes.

IDC is also gradually developing its material library. Besides giving 'support information' to product design and development activities, it is also expected to become a reference service to industries.

Through UNDP assistance, activities in Ergonomics have benefited in the form of experts and equipments. During the programme, IDC updated its' ideas on Ergonomics Laboratory. It is now not only one of the best lab facilities in India, but is also a budy unit involved in teaching and research. After Prof. Kreifeldt's and Prof. Iida's visits to the IDC, the unit now also extends its activities to cover investigation of psychological factors - an area where further UNDP assistance might be of use.

In the past few years, IDC developed a much broader understanding of design and realized the importance of form and style in our national design traditions. The western developments are seen now as one of the possible approaches to design.

The ideas on Visual Communication Programme were crystallised during this period. This programme, based on problem solving approach, is trying to focus on information and education orientation in its projects, and hopes to influence broader sections of the community.

UNDP fellowships to the faculty have contributed in developing a broader perspective. The international exposure to design standards and evaluation of educational programmes in other countries, has helped IDC to define its activities with greater clarity.

Perhaps, the supporting services in IDC have not yet developed to the extent they should. It is important, that in future, more attention will have to be paid, to raise the overall standards of supporting services. Attempts through UNDP assistance were well received, but were not adequate to cover all the services necessary.

Future as we see it

With these inputs from UNDP and the faculty initiative, IDC is now poised for a big leap. Most of the experts commended IDC work and it's already getting international attention. We have already started receiving inquiries from international students (and interestingly all from advanced countries) to work on a project in IDC. At the moment these are treated as individual cases.

Idea of IDC becoming a Regional Centre is already under discussion. We hope to pursue this further, and create facilities and environment to generate work of highest order. While Centre has absorbed the enormous inputs that came through UNDP, the newer developments were not included in this proposal. Tremendous developments in Computer Graphics and the new products that have appeared in last three years in the market, unfortunately have not featured in IDC's original proposal. When it was realised, it could not have been executed, without the existing proposals suffering for want of funds. We hope that there will be future opportunities to update IDC's inputs.

We are of the opinion that the two disciplines - visual communication and environmental design - need to be assisted further through UNDP. As a continuation of these projects, we are at present working on proposal to strengthen these areas. We will be forwarding the proposals to UNESCO shortly.

IDC is poised to become an important regional as well as international force in design and the faculty is working towards it. We hope to create a roof under which design education and design research can be nurtured for the benefit of the community.

- Need for Updating the Faculty and Facilities with New Input

It is desirable that IDC maintains its current leadership and activities in coming years. To retain this lead IDC will be required continuously to update its facilities and interaction at international level. It is recommended that the provision should be made of UNESCO/UNDP assistance on continuous basis in following activities:

- Visit of Experts for on-going Project

The IDC though well equipped in its laboratory and manpower requirements would further require experts' input at least for three to five years more. Government had already sanctioned fund for establishing of Design and Development Cell. This Cell will undertake projects designed by the students and developed further to make it commercially viable. Experts' input in specific areas will be of great assistance to bring the product to international standards. There is also a need to buy products from other countries which have very high design standards - the products which have received international or national awards. The collection of such products will have very important educational value. Funds should be available on regular basis to keep this archive uptodate.

- Visit of Staff to International Seminars and Exhibitions

Activities in international design are dynamic and ever-changing. To keep pace with the changing technology and the style, and to have its influence in training, our faculty have to be constantly updated about these developments. Faculty participation at national and international seminars, symposiums and exhibitions is a vital necessity. Finances for such activity should therefore be available on a regular basis as a matter of policy.

- Organisation of Seminar, Workshop (Interdesign)

IDC should periodically conduct international seminars sponsored by international agencies like UNDP, UNIDO for the purpose of benefiting the executives/trainees from the developing countries.

Interdesign is another activity which is started by International Council of Societies of Industrial Design (ICSID) to help to work on design of community projects. The participants are invited from all over the world limiting to 15 numbers. Same number of participants are invited from host country. It is recommended that Unesco may sponsor few participants from developing countries. This is usually two weeks programmes and all the hospitalities are taken care of by the host organization.

- Updating and Maintenance of Equipment

IDC had received US $ 270,000 worth of equipment under the Unesco/UNDP project. These equipments are continuously in use and soon their wear and tear are expected. To purchase the replacement of parts and

equipment or accessories contingency funds are recommended from UNESCO.

- IDC's Exchange of Programme with other Schools

Most of the experts who have visited IDC have endorsed the view that the knowledge and the expertise available with the IDC's faculty and technical staff is not only equal, but in some areas more than that is available in design schools in developed countries. These capabilities should be transferred to other schools not only in India but also to design schools in other countries. It is recommended that an arrangement should be made on continuous basis of exchange of faculty and students with other well known Institutes such as Tuft, School in Rhode Island, Stanford University in USA, Royal College and Imperial College and University of Loughborough in U.K., University de Compiegne in France and Tsukuba University in Japan. IDC is already training few students from University de Compiegne in Paris. Specific support such as travel grants and fellowship could be available through UNESCO. These arrangements are beneficial to both the countries and we feel it is worth pursuing further.

- National Requirement for Designer

Need for trained industrial designers and the design consultation services will be growing in many fold in near future, if one realise the development and growth of Indian industries. 15 students passing from IDC and few from NID will be a drop in an ocean and is unlikely to make substantial impact at national level. More such centres should be opened. The IITs in different regions can take the lead. IDC is now in a position to help other IITs to develop the programme of M.Des course in product/industrial design. These centres should be given freedom and flexibility to operate within the IITs as was given to IDC Bombay, during IDCs phase of development and growth.

- Undergraduate Programme in Design

Keeping in mind the future needs of the country, we at IDC are looking into the possibility of starting an undergraduate programme in Industrial Design. A Committee has been formed to look into all the aspects including the equipment and manpower needs for such a programme and also to look into the physical facilities required such as Department buildings and Staff quarters etc. This Committee will produce a report and recommendation thereof will be submitted to the Government of India for consideration.

- Design Assistance to Small Scale Industries

IDC has been invited to participate in the working group of Technology upgradation in Small Scale Industry. So design has become a vital link between the technology and its end products and therefore we strongly recommend that design and technology should always come together

because one without the other is useless. The Product Development Cell, which is being formed at IDC, will be able to offer such assistance to small scale industries.

- Facilities for Field Work

Most of the IDC's research and documentation work is confined to laboratories within the IDC. Earlier attempts in field trials, through yielded excellent information and documentation, showed tremendous gaps in infrastructural facilities for such tours.

Field work is important for documentation of historically significant products and buildings, as well as for 'on the spot' ergonomic studies. In future, environmental design studies will also require field trips. In all these cases, it is important to carry expensive documentation as well as measuring equipments to these places. This rules out use of public transportation facilities.

Following facilities are recommended:

1. Bus - equipped with secured cupboards for equipments, and overnight staying accommodation, suitable for type of research planned. Budgetary provisions to cover expenses such as driver's salaries, petrol expenses etc.

- Orientation Programme for Rural Industries

With the pronounced policy of state and central governments to decentralise the industrial development and to take the industries to rural areas, it is considered imperative that rural based industries should be oriented and exposed to advantage of industrial design. This is expected to create a beneficial effect for improving not only the standard of their end product but also minimising the cost. To fulfil the task, it is recommended that an orientation programme through audio-visual extension service should be planned.

- IDC/UNESCO/UNDP Project - An Experience - A Documentation

It has been felt among the faculty members that the current Unesco/UNDP programme of IDC went so smoothly with tremendous amount of input, intellectual and practical, that the whole experience could be documented and could be published for international circulation as a Unesco publication. The documentation will be useful for other design schools and the government in developing world who are looking forward for such assistance.

Annexure 1

Counterpart Staff Status

Sr.No.	Post	Original	Additional	Total	Remarks
	Counterpart				
1.	Professor	1	2	3	
2.	Asst. Professor	2	-	2	
3.	Lecturer	3	-	3	
4.	Development Engineer	-	1	1	
	Supporting Staff to Counterpart - Technical				
1.	Lab. Supdt.	-	1+	1	+ Designated as Ceramic Designer
2.	Foreman	1	-	1	
3.	Sr. Tech. Asst.	2	2	4	
4.	Jr. Tech. Asst.	2	2	4	
5.	Commercial Artist	-	-	-	
6.	Draughtsman Gr.1	-	1	1	
7.	Draughtsman Gr. II	1+	-	-	+ Upgraded as Draughtsman Gr.I
8.	Mechanic Gr.A	4+	2	6	(Four upgraded as Workshop Superviser)
9.	Printer Gr.A	-	1	1	
10.	Model Mechanic Gr.A	-	1	1	
11.	Mechanic Gr.B	-	1	1	
12.	Mechanic Gr.C	-	4	4	
13.	Sr. Lab. Asst.	-	-	-	
14.	Jr. Lab Asst.	1+	-	-	+ Promoted to Sr. Lab. Asst. and subsequent JTA
15.	Lab. Attendant	5	-	5	+ Four promoted as Mech. Asstt.
16.	Helper	1	-	1	
17.	Stores Attendant	-	-	-	
18.	Library Attendant	-	1	1	

Sr.No.	Post	Original	Additional	Total	Remarks
	Administrative Staff				
1.	Jr. Superintendent	1	2+	3	+Promoted from Lib.Asst./O.A.
2.	Selection Gr. UDC	-	-	-	
3.	Upper Division Clerk	1	-	1+	+Promoted as Office Asst.
4.	Asst. Librarian	-	-	-	
5.	Library Assistant	1+	-	-	+Promoted as Jr. Supdt.
6.	Sr. Stenographer	-	1	1	
7.	Jr. Stenographer	1	-	1	
8.	Storekeeper	1+	-	1	+Promoted as Office Asst.
9.	Lower Division Clerk	1	-	1	
10.	Peon	1	-	1	
	The total staffing pattern				
1.	Counterpart	6	3	9	
2.	Technical Supporting Staff	15	16	31	
3.	Administrative Staff	7	2	9	
	Total	28	21	49	

Besides above mentioned faculty posts, we have recruited 2 Professors as Visiting Faculty and 1 as Asst. Professor for two years.

Annexure 2

Procurement of Major Equipment Aginst Government Counterpart Contribution in Kind

Sl.No.	Name of the Equipment	Quantity
1.	Measuring Muscular Power Measuring Device	1 No.
2.	Elevating Truck	1 No.
3.	Canon Auto Zoom Camera	1 No.
4.	Canon Movie Camera	1 No.
5.	MMC Tool and Cutter Grinder with accessories	1 No.
6.	Enlargers	1 Set
7.	Stabilizer	2 Nos.
8.	Hydrometer	2 Nos.
9.	Anthropometer	1 No.
10.	PDR Videotronic, accessories	1 No.
11.	Techometer	1 No.
12.	Expirograph	1 No.
13.	Furnace	1 No.
14.	Body Assembly	4 Nos.
15.	Digital Multimeter	1 No.
16.	Spectrophotometer	1 No.
17.	Bradma Interchugeastle Steel	1 No.
18.	Respirometer	1 No.
19.	Sphygmomano Meter	1 No.
20.	Brazer attachment	1 No.
21.	Metronome	1 No.
22.	Electro Cardiograph with accessories	1 No.
23.	Murphy Function Generator	1 No.
24.	Heavy Duty Precision Lathe with accessories	1 No.
25.	Pentax Camera	4 Nos.
26.	Dual Trace Oscilloscope	1 No.
27.	Beckman Model Monitor	1 No.
28.	Multimeter	1 No.
29.	Bench Grinder	1 No.
30.	Magnascope	1 No.
31.	Portable Diagnostic Audiometer	1 No.
32.	Magnetic Stirrer	1 No.

33.	Sound Projector 16 mm	1 No.
34.	LCD DMM (Multimeter)	1 No.
35.	Flash Gun Vivitar	2 Nos.
36.	Isolation Transformer	1 No.
37.	Cosmic Amplifier, Deck, Turn Table	1 No.
38.	Shearing Machine	1 No.

Procurement of Equipment against Government Counterpart Contribution against Foreign Exchange Account

S1.No.	Name of the Equipment	Quantity
1.	Beckman Model Monitor with accessories	1 No.
2.	Microfiche Reader	1 No.
3.	Temp. Thermometer etc.	1 No.
4.	Grip Dynamometer	2 Nos.
5.	Aneroid Barometer with accessories	2 Nos.
6.	Perimeter	1 No.
7.	Gas Analyser etc.	1 No.
8.	Transparency Maker/Copier	1 No.

Annexure 3.1

Experts - Summary Report of Prof. C. Joshua Abend

Area of Specialization - Product Innovation

Duration

1st November 1979 to 7th December 1979

Programmes conducted

1. Conducted Innolab Workshop participated by IDC/IIT students and IDC faculty in which all aspects of Innovation Management and its problems were dealt with.

2. Gave special lecture at IDC on 'Innovation Management - The Missing Link in Technology Transfer'.

3. Provided guidance to IDC faculty to arrive at conclusion for defining objectives, areas of project need and its planning for important UNDP projects.

4. Conducted a seminar for top Industrial management concerns on "Greater Organizational Success through Innocation Management".

5. Conducted Idea-Generation Workshop at IIT for practising group and individual creative problem solving.

6. 3-day course to R & D Managers, Product Designers and Design Engineers was organized entitling "New Approaches to Product Innovation". It was attended by representatives of reputed Indian industries.

Recommendations

Innovation - Develop and continue a syllabus in innovation planning, management, and creativity.

. Offer Innolab theory and practice to all students within IIT.

. Expand the utilization and services of Innolab in terms of addressing project oriented solutions.

. Develop solutions for immediately local, community and environmental needs.

Organization - Encourage greater design organization and planning.

. Develop objectives within a more formalized 3 year plan.

. Identify events in the future such that resources and time are properly matched.

. Seek greater quantification of goals and results, for example, the number of projects undertaken, number of projects successfully implemented, diffusion of results, scope of programme, number of students involved, etc. Integrate the above with time and budget allocations if this is not already being done.

IIT Interface - Develop more dialogues and interaction in collaboration with other components of the Institute in terms of workshops, colloquims or joint projects.

Class Size - Increase the industrial design student body to 15 or about double its present size. Strive for a more proportional faculty-student ratio; this may also require a slight addition of faculty. New students could be recruited from surrounding countries where feasible.

Develop greater design utilization within the state infrastructure; that is, design related to the public sector in terms of signage, tourism, transportation, health care and information, airports, communication, etc.

Innovation '80 (Fall 1980) - A conference for focusing attention on the need for innovation both in the public and private sector; bring together key people to work on problem identification and as problem solvers. Such a conference might run 4 days as a focal point of a new innocative design practice. This might bring together the interests of product design, export, and related areas to give greater visibility to industrial design utilization within India as noted in the above recommendation.

Design Asia - Develop a prototype academic programme which would attract students from the surrounding and contiguous countries of Asia. The objective here would be to define and highlight Asian interests and problems relative to industrial design; with emphasis on applications in eastern rather than the western sector countries. This would offer a distinct leadership position to IIT and fill a gap not presently undertaken by any design institution. This programme could have significant bearing on IDC/IIT role in consolidating its overall mission not only within UNESCO but from an Indian viewpoint as well. This undertaking could have broad and beneficial effects on a number of Asian countries in terms of economies, export product development, and particularly certain infrastructure needs which would not otherwise be tackled.

Annexure 3.2

Experts - Summary Report of Prof. Arthur J. Pulos

Area of Specialization - Design Education

Duration

28th December 1979 to 19th January 1980
30th December 1980 to 25th January 1981

Programmes conducted

1. Organised a seminar on hospital equipment with doctors, nurses, hospital administrators, hospital equipment manufacturers and IDC faculty for active redesign programme.

2. Conducted a national seminar on Design Education with IDC/IIT Faculty and the NID in Ahmedabad

3. Gave lecturers at NID, Ahmedabad

4. Conducted a Design Workshop with IDC students on product design theory with demonstration project in product design.

5. Participated in a Tripartite review of the programme to date with representatives from IDC/IIT Bombay and from UNESCO/UNDP India.

6. Conducted a one-day seminar for top management on Industrial Design for Industry with case history presentations.

Recommendations

By all means the Design Centre, IIT, must continue to hold design education meetings on an annual basis, in collaboration with the National Institute of Design in Ahmedabad where possible, in order to bring together educators, both university and public school level with government and industry representatives, the main purpose being to develop a consensus on goals to be achieved through design and the means for achieving those goals.

The annual meetings may provide a forum to which foreign experts may be invited to share their knowledge and experience.

I have developed, with the help of Indian colleagues, a new category IV for membership in the International Council of Societies of Industrial Design. This will make it possible for designers from the developing countries to join ICSID at a price that they can afford and thus to take their proper place in the international community of designers.

I am convinced that the future or the IDC/IIT lies in two directions of equal importance:

a) Continuing to develop products and services that will be of direct benefit to needs at the village level. The prototype bicycle project at the school is a good example.

b) Working across the board with the products that are related to a specific area of service and industry that have been more or less static since India became independent. The present project involving hospital furnishings and equipment is a good example.

The IDC/IIT should continue to search our problem areas and to establish research and development teams with foreign experts where appropriate to undertake the necessary work.

I support the interest of IDC/IIT in developing a programme in informational graphics. The amount of visual pollution in urban India is staggeringly bad. I am convinced, for example, that a system of street and traffic graphics would reduced the confusion in the streets, save human lives and begin to bring some order our of chaos.

It is reasonable to suggest that studies in the behavioral and social sciences should be encouraged at IDC/IIT - perhaps as part of a new undergraduate programme. The present concentration on retraining engineers and architects tends to serve the technological side of design in India. I believe that the humanistic side must be given equal time.

As an 'outsider' these are easy recommendations to make. However, I am aware and completely respectful of the dedication with which Professor Nadkarni and his colleagues are attempting to bring industrial design to India.

be to involve as many people as possible in the building of a general awareness on design problems.

A second thing the school needs in my opinion the possibility of building a collection of well designed products from abroad, to work for the students as a physical example of the possibilities of different techniques and technologies. Some of the products for this collection could be asked officially to industries as a gift, others can be purchased. Besides these recommendations that can strengthen the activities of the school, I think the program the school is following now is very well structured and organized. I admired very much the work of Professor Nadkarni and of Assistant Professor Trivedi. The students I worked with were dedicated and prepared but I will never stress enough the fact that the whole school if living a very isolated situation and that it needs badly some form of publicity and public relations with the national, social environment, particularly at high levels.

Annexure 3.4

Experts - Summary Report of Prof. Rolf A. Faste

Area of Specialization - Product Design

Duration

June 1980 to August 1980

Programmes conducted

1. Conducted 6 week design project "Hospital Equipment" for IDC students first batch which included visit to hospitals and concerned workshops; presentations by students with product detailing for disabled persons, discussion and criticism of students jobs, finalizing and submitting mechanical drawings, prototype models presentations. The design project was satisfactory one from every standpoint. Students presentations were better and some are worth developing further with added research

2. A 3 week introductory exercise in weathervane project was given to IDC students in which each student constructed two weathervanes in different materials.

3. Conducted a 4-day workshop for designers from Industry entitled "Seeing it Different Ways". He was a principal speaker and gave five lectures. Workshop also included problem solving in which IDC faculty also participated. The workshop was a success and a very worthwhile undertaking which influenced participants the widely based view of designers.

4. Gave lectures to IDC faculty, NID faculty, IDC students and Tata Management Training Centre, Pune on the subjects such as Industrial Design, Designing for Disabled Persons, Design Projects at Syracuse University and Teaching Technology to Design Students.

5. Prepared a Booklet on Hospital Project.

6. Gave talk and critique of corporate products at Larsen and Toubro Ltd.

Recommendations

Students

Continue admitting both engineering and architectural graduates into the Masters Degree Programme.

Faculty

Enrichment programmes for faculty development should include (if possible) a working experience in design offices or industries.

The faculty should consider the dangers inherent in too much specialization to both the student's integrated

education and to the generation of usable products for India.

Facilities

The IDC should take steps to insure that the basic machines required by the students be available and maintained. Specifically the IDC requires:

. A variable speed drill press with an adequate supply of drill bits.

. A good band saw

. Heat treated shoes for the metal brake

. A working tube bender

. Sanders equipped with sufficient abrasives

. A spindle sander

. Lamps for the students' desks

Staff

The IDC should consider ways of instilling the same values expected of the students (creativity and craftsmanship) among the workshop personnel. Perhaps an enrichment programme for staff members would be beneficial.

Annexure 3.6

Experts - Summary Report of Prof. John G. Kreifeldt

Area of Specialization

Ergonomics

Duration

10th April 1981 to 9th May 1981
7th December to 24th December 1983

Programmes conducted

1. Conducted workshop on Ergonomics in Machine Tools Design

2. Gave lectures to IDC students and Faculty on ergonomic techniques in Product Design

3. Daily review and discussions with students on the major course projects dealing with the ergonomic content

4. Discussed with faculty on the Ergonomics Laboratory at IDC and its activities and suggested need for digital computer for satisfying future needs

5. Visited to NID, Ahmedabad and discussed with its faculty on ergonomic curriculum Plans and in Product design

6. Discussed with IDC faculty in details about several advanced ergonomic techniques for product design

7. Lengthy and critical discussions were held with IDC faculty on two continuing projects viz. Cycle Design and Hospital Furniture

Recommendations

The most urgent recommendation as I see it is to continue the IDC faculty's exposure to ergonomic design as it is practised in competitive markets since producing a commercially successful product or design is the "proof of the pudding". This will require the faculty to spend time at appropriate sites abroad and with other visiting UNDP experts. It would also be desirable to have one or more visiting experts spend sufficient time at IDC to conduct a formal course.

Obviously the Ergonomic Program at NID and at IDC should be given careful attention in view of the present Ergonomic resources that exist in India with the objective of focussing them more sharply in order to reduce the Institute - like nature they presently seem to have. It is however essential that NID and IDC have adequate and credible ergonomics labs and programs for their design programs. As a suggestion, several UNDP ergonomics experts might be brought to India for some period of time solely to address these programmative efforts in a formal way after receiving intensive site visits and briefings on

The next most urgent recommendation concerns the addition to the IDC Library of the latest books and journals on Ergonomics and Human Factors. Prof. Ray should be able to compile a list of titles and publishers while in the U.S. I would also suggest that samples of the better student projects be kept on ready reserve in the libraries in case this is not already done.

In summary, I was pleased at the formal efforts to incorporate ergonomics with design at IDC (and also at NID) and cannot commend Prof. Nadkarni enough for this vital effort which is absolutely essential to proper design for human use. I would prefer to see it play an even larger role in the sutdents' curricula and training.

As a final recommendation, I suggest that an IDC faculty member spend 6 months to a year at Tufts Universtiy working with myself on a consumer project with substantial ergonomic content and which is important to India's needs. This would permit the IDC faculty member to learn ergonomic consumer product design as we have developed it as well as provide the Tufts faculty with an opportunity to understand and possible contribute to furthering ergonomics in India. A potentially suitable project could be the design of a Water Closet for India's population which I discussed at some length with Mr. Gaffoor at IDC. This project could be considered for UNDP funding to support the IDC faculty member in the U.S., provide necessary project needs funding and partial release time support for the Tufts faculty member. Programmatic and budget needs for such a project could be worked out if this idea is found to have merit and support.

nificance of the assignments is a matter of chance, since IDC generally reacts to outside requests rather than actively soliciting the type of work where it could have the most impact and the results could be most visible.

One possible approach would be to identify the most desirable product areas first and then mount a deliberate campaign to seek sponsors from among the private and public sector establishments that offer these products or have the capability to do so.

Consider establishing a 'Product Research Centre,' possibly a collaborative effort with other Engineering Departments on the campus if necessary. The Centre would compile product catalogs, brochures and information on materials, manufacturing processes, etc. from various sources worldwide. With cooperation from industry, this could be set up to operate eventually on a self-sustaining basis.

Annexure 3.8

Experts - Summary Report of Prof. Gui Bonsiepe

Area of Specialization

Product Design

Duration

12th October 10 19th November 1982

Programmes conducted

1. Participated and contributed by expert guidance in Basic Design Education Program at IDC & NID

2. Arranged individual meeting with senior IDC students where consultancy service was extended to their product design assignments. It was suggested that detailing quality be emphasized.

3. Consultancy was extended in research project "Rural Bicycle". It was suggested that along with the milk and other loads, passenger load carrying be kept in mind.

4. Participated in discussions to initiate Visual Communication Programme at IDC. It was suggested that possibilities be explored for Visual Design as a tool for instructional or informative visual communication.

5. Gave lectures on topic like "Methodology of product design; Case histories of product development; Industrial design and Small scale Industries; and Industrial design as technological innovation" in the various Organizations vis. State Trading Co., New Delhi, Small Scale Service Institute, Madras, Indian Institute of Science, Bangalore, IDC, Bombay and NID, Ahmedabad.

6. Held meeting with the members of the Society of Industrial Designers of India in Bangalore.

Recommendations

1. It is recommended that the activities of IDC be increased at IIT. It is recommended that the UN-Agencies help and even stimulate the expansion of educational service in this area. The proposal for Ergonomics Workshop should be implemented as a part of the original programme.

2. 2 year PG programme should be more practice oriented and less theory oriented. Student should be obliged to follow time schedule where 40% of time will be spent in detailing, 20% on development of alternatives and 25% on model building and not more time be spend on data collection research which later serve as an excuse for his design incapabilities. If necessary 6 months more to 2 years programme be added.

3. There is an evident lack of a good industrial design manual for students of Industrial Design in developing countries. The very few books on Industrial Design

published so far in Industrialized countries, do not serve the needs of developing countries; furthermore they cause more damage than be of real value.

Unesco should considered the feasibility of financing the preparation of the "software" of a manual by a group of specialists. It could be done in 18 calendar months by 5 to 8 specialists following coordination scheme so that different parts will form a coherent unity and not simply an eclectric collection of materials.

4. Unesco should stimulate the production of - Theoretical background material for the variable "technology" to be instroduced in basic design programme in developing countries and production of - a set of practical exercises which serve to train at basic design level some sort of technological sensibility.

5. Unesco should support the preparatory period of the new course in Visual Communication by short term assignments of specialists, both for theoretical areas and for practical design areas. The future consultants should be, not just lecturers but, problem-solvers in design projects in the areas detailed in the report.

Annexure 3.9

Experts - Summary Report of Prof. M. Yoshioka

Area of Specialization

Product Design

Duration

21st December 1982 to 4th January 1983

Programmes conducted

1. Conducted seminar for Industries and SIDI members on Industrial Design in Japan.

2. Discussion with IDC staff and students on Japanese Design Development as a whole and also on Design Education and promotion in Japan.

3. Talked to IDC students on "Inevitability on mutation of Product Forms" and on "Need Identification Development and Solution of Project".

4. Discussed with IDC faculty about future collaboration in Ergonomics.

Recommendations

1. As for the present equipment, facility and total space are just minimum for institutional task-force operation and a small scale of higher education. But, it is sincerely hoped in future there will be two levels of consolidation for the subject matters mentioned above. One consists of the general experimental workshops (incl., visual, product, prototype and material testing) and ergonomics laboratory for undergraduate students. The others are the laboratories for professional operations, since the present faculty members have been pursuing a variety of project such as decomposition and re-organization of Cottage industrial activity, Research on Load carrying on Cycle, Development of Better Post-Box design and Ergonomic Evaluation and Design Consideration for Indian Sanitary Wares, also been offering a variety of courses on Design Management and Professional practice and others for mid-career professionals, management and R & D engineers. These above mentioned activities have to be one of the cores of the present qualified faculty members IDC, even in future, besides their own teaching in the Graduate school.

2. Tentative Projects be undertaken as under:

   i) Extensive Research on the clusterization from existing technics of manual work to high-technologies, and their re-clusterization for the sake of future industrial operation.

   ii) Design survey, research and development in conjunction with ergonomics study in infra-structural level, agricultural and industrial sectors.

iii) Study on traditional handicrafts and conversion the works into the craftbased industries (process oriented).

iv) Decomposing the present contents of the craft-works and their re-organization;

a) Visual documentaion and presavation of traditional techniques and materials.

b) Conversation of materials into modern one or vis-a-vis.

c) Creation of new items or product by evaluating the above mentioned activities and modern living.

v) Anthropometric study of the native and establishment the standard measurement.

vi) Design study of public utensils

vii) Design study of institutional facility.

Annexure 3.10

Experts - Summary Report of Prof. Manfred Herrmann

Area of Specialization

Environmental Design (Furniture Design)

Duration

1st February to 31st July 1983

Programmes conducted

1. Design-task Seating system for public auditoria was undertaken. The project was supervised by him at every stage and the final design was approved for furnishing of IIT Convocation Hall.

2. Conducted Project entitled "Stackable Bench for Exhibitions and Public Waiting-zones". Besides their use for an exhibition and also for waiting zones at IIT Hospital, the project gave good training to IDC workshop in steel tube bending techniques.

3. Discussed the Design-task "Office Furniture" mainly in analysing existing furnitures, production methods, technologies and the social background in India.

4. Conducted 2 months workshop/seminar on "Industrialized Furniture Design". Sketches, drawings and prototype were made by the participants.

5. Co-guided the M.Des final projects of three students which included "Design of Bus-Chair; Executive Chair; Canteen Furniture". Here need for design details was felt and hence emphasized.

6. Design exercise "Development of School Furniture for Children for one age group - consisting of chair and table as one unit for one child" was carried out for senior M.Des students.

Recommendations

During my stay at IDC I came to work on very different levels and fields. These recommendations, being part of my duties within my contract, are related to different areas.

1. In furniture design students should have practical experience in their profession. A demand of two years practical-work before entering IDC, would be helpful for them, to understand some problems easier.

2. NID's approach to furniture-design is, I feel, unrealistic to education-institute, as they are developing, producing and selling. IDC should not follow this approach as this needs high organized management and marketing man-power, which an education institute cannot effort.

3. To develop furniture in absents of industrie-brief is a risk, because particularly furniture-industrie in India is not an organized sector and the production is mainly

dependent on various production methods from semi-industralized to fully hand made fabrication. The process of making first the design and then look for the client, is very illogical for above mentioned reason.

4. A possibility to design furniture in an efficient way is to develop concepts and to discuss with interested industries, before finalizing. This interaction will help to achieve most realistic objectives.

5. On educational front in Europe there are, as far as my knowledge, no special furniture-design-programme. Most of the designers learn themselves by observation and industrial experience. Because in India furniture-industrie is still at infant stage, I feel semi industrialization is desirable for fulfilling the massive deman in furniture in public sector as well as domestic field. To learn certain basic requirements for furniture design and to develop esthetical sensitivity, a special developed course-material at foundation level is necessary. The classroom exercises should be designed to convince the student that there is hidden technical esthetic in industrialized furniture. This may be achieved by devising simple technical-oriented projects, tasks of creative construction and training of detailing.

Annexure 3.11

Experts - Summary Report of Prof. Alain Baillon

Area of Specialization

Product Detailing

Duration

1st August to 9th September 1983

Programmes conducted

1. Conducted project "Study of electronic wheel-chair for physically handicapped people" at the request of Ministry of health. The second project, idea of which was subtted by Ministry of Industry entitled :Sheet Metal Iron" to be used in automobile industry.

2. Exercise was conducted in "Presentation of different themes; and difficulties faced by designer in industry". It enlightened the students about the use of new techniques and the new materials.

3. Projects of Industrial Design and research for concepts and technical details were undertaken for junior and senior students of IDC, in which students gained experience in technical development through didactic schemes and had opportunity to judge interaction of theory and practice.

4. Gave lectures to the members of faculty of IDC, Members of the Chamber of Commerce and Industry, Bombay; Franco Indian Association of Technical Development; and The Society of Industrial Designers of India (SIDI)

Recommendations/Observations

1. I feel that the Institute is achieving its goals which are: to form a new generation of engineers capable of having a world view of the problems, of being aware of the problems of usage, ergonomics, maintenance and aesthetics. Because one becomes a designer more by practice than by listening to discourse and theory. One does not create simply through the process of reading but one must develop an open state of mind. In that respect, practice, exercises and projects are very formative.

2. I've been very impressed by the creative possibilities of the professionals and the students, but the Indian industry hasn't yet fully acknowledged them. However, I'm sure that the efforts made by the Industrial Design Centre of the Institute of Technology to open to the outside and encourage contacts with the world of Industry will be very fruitful within a few years on an international level.

Annexure 3.12

Experts - Summary Report of Prof. Roland Furst

Area of Specialization

Product Photography

Duration

4th August to 2nd November 1983

Programmes conducted

1. Organised 2 months course in advanced photography and one week course in colour printing to make participants familiarize with basic techniques including IDC students and staff; 12 persons participated.

2. Gave introductory lectures on photography to IDC students. Topics were "Personal Protfolio; History of the photography and actual trends of the European photography; applied photography in Europe Today".

3. Gave lecture on Personal Portfolio at NID, Ahmedabad, SIDI (Bombay) and the Rotary Club of Mulund, Bombay

4. Exhibitions of personal works were held at IDC and at Max Mueller Bhawan, Bombay.

5. Extended advice on various points regarding IDC color Laboratory and lighting set-up.

Findings and Recommendations

In the course of a meeting of the IDC staff, of leading Indian phtographers, of art directors, and me, we were talking about a possible organization of a photography course at the IDC.

Results of the discussion: During the short term, we were disposing of, an intensive photographer training seemed to be impossible. In other countries, i.e. the United Kingdom or West Germany, the photographer training takes 2 or 3 years. It is, however, imaginable, to incorporate a part of photography into a course of studies of visual communication.

1. Organization of the course

   The student begins with an elementary course where he requires basic knowledge of materials and equipment, of fundamental techniques such as camera systems, basic lighting and darkroom processes.

   In a second stage, specialized workshops are built were experts are teaching special subjects of photography such as:

   - photo journalism
   - product photography
   - fashion photography

- industrial photography
- architecture and interior
- etc.

2. Number of Students

The number of students is depending upon the special matter of the course. Considering the actually existing equipment, I would advice to admit to an introductory course or to a course with mainly outdoor photography ca. 8 to 10 students. Ca. 6 studetns could be admitted to workshops taking to a great extent studio photographs and 4 students could participate in colour printing courses.

3. Management

The main problem consists in the fact that it is to find a qualified person qualified in his profession and character - who is able to direct the photography classes and to guide the photography staff members in a responsible and efficient way. This person should be free of all other charges in the IDC. In addition, he should able to hold an elementary photography course as described above. In my opinion, as to the specialized workshops professional photographers from India and abroad could be invited to stay and to teach as visiting professional at the institute.

4. Equipment

To guarantee successful photography courses, the equipment of the studios and labors needs to be improved urgently.

As for my person I put more importance on the creative aspects of photography than wasting time with technical plays. However, technically insufficient and unserviceable equipment produces frustration and makes the success of a photography course very uncertain.

4.1 Studios

For the most part, many studio floodlights are covered with rust and therefore no more adjustable. The electric cables, too, present a danger to life. Only 50 of the sources are fit for arestrictive using. As far as possible they are to be repared or to be replaced by new ones. The technical defects of the equipment results from a lacking maintenance that even in such an aggressive climate as in Bombay ought not to be neglected. A person charged with the maintenance of the equipment is absolutely necessary.

4.2 Black-and-white labor

The enlargers in the black-and-white labors are to be rapidly and carefully serviced or replaced. During the time of my course, it has been impossible to produce satisfactory prints with the help of these enlargers, because they had many defects as to equal lighting, filmholder and quality of the lens. Not only the

cameras, but the necessary equipment, too, has to work perfectly in the course of the entire process. In this case too, the defects are due to an irregular maintenance. By the time, little defects come to be irreparable.

4.3 Colour Laboratory

After having been a little improved and better arranged in the room (as discussed with the IDC staff), the existing Drust-equipmqnt is quite good for producing colour prints by the negative-positive-process. Colour-printing is a process easily to learn, but it takes constant practice and experience to master.

To employ the equipment in an efficient way, I recommend the following proposals which I consider reasonable and noteworthy:

1. A qualified colour-lab-technician should be engaged. If possible, this person should dispose of sufficient practice after having worked in a professional labor and should as well be able to direct the IDC-colour-labor.

   If this is impossible, I recommend a one-month-training (at least) of an IDC staff member by a proficient colour-lab-technician, either in the IDC colour-lab or in a professional colour-lab in Bombay.

2. One should aim at a closer cooperation with the supplying manufacturers (as Agfa and Kodak), for the purpose to analyze and to eliminate flaws, During my course irregularities occured which are die to flaws of the chemicals or to faults made during the process.

3. Unlike black-and-white printing, all colour processes are extremely sensitive to impurities, false concentration, inexact temperatures, an excessive use and a too long conservation of the solutions.

   To guarantee constant and successful results, here too, it is urgently advised to control carefully the process and to maintain the machines, especially the colour film processor and the colour paper processor.

4. I dissuade from using the E-6 colour reversal process in the IDC colour lab.

   The points mentioned in paragraph 3 are especially important for this process and can only be realize insatisfactory with the existing machine. In my experience there are a number of excellent professional labs in Bombay doing such work. As well, I do not see any educational purpose in developing the ektachrome films by yourself. Under such circumstances, irregularities and imperfections in the process cannot be avoided. They are time-consuming, unnecessarily costly and they cause frustration.

   Actually and especially in the future there are an immense number of problems to be solved by

industrial designers, by graphic designers and by communication designers.

For this reason, I think extremely important and fit to support and to develop with Unesco help a project like the IDC.

It was a greater task and an extremely interesting teaching for me. The resonance coming from the students was, to my pleasure, very good and very encouraging. For the future, I still feel obliged to the staff and to the students at the IDC and I shall be pleased to help by work and deed.

Annexure 3.14

Experts - Summary Report of Prof. Fujio Watanabe

Area of specialization

Visual Communication

Duration

18th to 30th December 1983

Programmes Conducted

1. Participated in the workshop on "Designing for Children" and gave various instructions and advices to the participants on techniques of drawing illustrations. Technique of effective spray-gun handling and airbrush painting was demonstrated. My guidance was also supported by slide shows.

2. Extended guidance to IDC staff engaged in Product Design on techniques of expressing various textures such as metal, plastic, wood or stone by super-realistic illustration method.

3. Drawn a draft picture for IDC postre and he is working on it in Japan.

Annexure 4

Fellowship Training

Name of the Fellow	Specialization	Duration	Country of study	Started	Completed
1. Prof. A.K. De	Familiarisation tour as a part of preparatory activities	4 weeks	USA Canada UK Netharland Belgium France Itally	26th Feb. 79	26th March 1979
2. Prof. S. Nadkarni	Study visit (Ist Phase) under group training				
3. Prof. S. Nadkarni	Study visit-II phase under group training	4 weeks	Finland Sweden West Germany Italy	28th July,	18th Aug. 1981
4. Prof. S. Nadkarni	Visual Communication under group training (study visit)	22 days	UK West Germany Itally France	21.10.83	11.11.83
5. A.G. Rao	Product Innovation in Synectics	9 mm	U.S.A.	Jan. 1980	Oct. 1980
6. U.A. Athavankar	Design Methodology and Computer Graphics	12 mm	U.S.A	Sept. 1979	Aug. 1980
7. Kirti Trivedi	Product Design	9 mm	Japan	March 1981	Dec. 1981
8. K. Munshi	Design Techniques	9 mm	Hungary W. Germany France & Italy	May 1981	March 1982
9. Dr. G.G. Ray	Applied Ergonomics	9 mm	U.S.A. & U.K.	June 1981	March 1982
10. V.P. Bapat	Materials and Processes; Product Detailing	9 mm	U.S.A. W. Germany & France	Feb. 1982	Nov. 1982
11. A. Gaffoor	Ceramics and teaching methods	3½ mm	Italy Finland & U.S.A.	Nov. 1983	March 1984
12. G.R. Agarkar	Visual Communication & Illustration	7 mm	U.S.A.	Jan. 1984	Continuing
13. Ravi Poovaiah	MAE Programme in Art Education (Visual Communication)	9 mm	U.S.A.	Feb. 1984	Continuing

27. Editor, Italian Design Magazine, Casabella, Milan

28. Bonetto Design, Milano, Milan

29. Architetto Ettore Sottsass Associates
Milano, Milan

Observations

Prof. A.K. De, Project Director and Prof. S. Nadkarni, Project Leader visited USA, Canada, UK, Netherland, France Italy under the familiarisation tour programme during which they have visited the leading design institutions, colleges, universities, as also the leading professional design offices and design councils.

This visit was intended to acquaint themselves with the design education programmes, teaching and research facilities and the academic personnels and the professional design experts over there with a view to formulate a programme for inviting the eminent persons as experts under UNDP programme for the IDC, to depute IDC faculty for specialised training at the leading design institutions abroad, to procure the sophisticated equipments not available in the country for proper set up of the workshop, studios and laboratories so that teaching programme over here can be updated to be at par with international standards abroad.

It was observed that in the USA Design education was imparted at undergraduate level, graduate level, post-graduate level and doctorate level, in the academic institutions e.g. independent art colleges, state universities and private universities. The main emphasis on design education is placed on teaching the design for enhancement of the aesthetics values of the products with due consideration for its economic cost for rendering effective professional services to the contemporary world.

In UK, the design education is separated from the university and is operated by the independent college, as RCA with conjunction of design education and engineering and technology leading to improvement of the quality of product of the national industry.

The design councils in the western country are acting as state sponsored advisory bodies to guide the industry, educational institutions by organising exhibitions, seminars leading to propagation of education at high level and for rennovation of qualitative production with ultimate goal of enhancement of national product for better satisfaction.

The visit was immensely beneficial and it helped us inviting eminent experts for short assignments here, deputing our faculty abroad under fellowship programme for specialised training, import of sophisticated equipment and upgrading our educational programme to Masters Degree level.

Annexure 4.2

Study tour of Prof. S. Nadkarni

Duration - 1 August to 21 August 1981

Objective - Participate International Conference on Design organized by ICSID and ICOGRADA
- Selection of experts for ongoing UNDP project and briefing of project assignment
- Selection of equipment
- Documentation of current trends in Design
- Industrial visits

Name of the organisations and countries visited

Finland
. 'Design 81' International Conference at Helsinki
. Form Center - Design office
. Oppi Untracht - Art Critique of International Repute, Raatihuoneenkatu 3B41 06100 Porvoo 10
. Arja-Leena Varhimo - Design office Messeniuksen katu 1b 5, 00250 Helsinki 25
. ISKU - Furniture Industry PL 40, Lahti
. Finnish Society of Crafts and Design Pohjoisesplanddi 25A, 00100 Helsinki 10
. Finnish Glass Museum - Riihimaki Iittala Glasswork Arabia Ceramic Factory

Sweden
. Husqvarna - Furniture Industry Fack, S-56101 Huskvarna
. Svenska Rum - Interior Design office Triewaldsgrand 2, S 11129 Stockholm
. Gunilla Lundahl Swedish Society of Craft and Design Nybrogatan
. Johan Huldt Design Lilla Skuggans Vag 18/11542 Stockholm
. Focus Design Kornhamnstorg 49 S-1127 Stockholm

Germany
. Technical Institute - Hannover Prof. Herbert Lindinger Head Industrial Design Dept
. Seamens Design Office Erlangen

Italy
. Sottsass Associates Milan

Italy . Rudolfo Bonetto - Design Office
Milan

Observations

Paper presented by me in Design 81 Conference on Educational Programme at IDC, generated interest among the educationist and many have expressed the view that similar programme will be advisable in their country at postgraduate level. Participants from France, Australia and Argentina shown interest in visiting IDC to know more details about the programme. Representative from Technical Institute Compiegne, Paris, has made suggestion of close interaction between their institute and IDC. This could be done through exchange programme among faculty and students.

Visits to various design offices and art and design centres proved to be very useful and have fairly covered the objectives outlined. Visits to the industries particularly the furniture industries and exhibitions also were helpful to understand the total process involved in mass produced furniture systems and also the newer developments taken place in materials as well as in fabrications. Specific discussion held with top level personnel particularly on the organisation, project preparation/time evaluation etc. also were extremely beneficial.

Application

Observations made during the orientation tour have helped in working out programme contents in furniture design and its methodology.

Mr. V.P. Bapat's fellowship training was arranged with Siemens Design Office in Germany. This was the follow up of my discussion with its Chief Designer.

Specific discussion and visits also helped in identifying and suggesting specific institutes or design offices for training of other members of the faculty provided in the fellowship programme and modify the training outlines required more purposefully. Contacts established have helped in further correspondences particularly on technical matters and for exchange of knowledge.

Design office

Italy
- Sottsass Associates - Design Office, Milan
- Mario Bellini - Design Office, Milan

France
- Ecole des Arts Decoratifs, Paris
- Pompido Centre, Paris
- Alain Baillon - Design Office, Paris

German
- Fachhochschule, Trier
- Staatliche Akademie der bildenden Künste Stuttgart
- Hermann Design - Design Office, Ulm
- Hans Roericht - Design Office, Ulm

Observations

Participation in Design Conference has given valuable information on design practice in Italy. All the discussions in the seminar were of grass root nature i.e. a detailed nature of how design decisions are taken in industry and the process of implementation.

The most important and informative aspect of the conference was the visits to the exhibitions organised at the event of the Conference. The subjects of these exhibitions were varied from design of furniture to industrialise building and the history of Italian graphic design to the trends in contemporary visual communications. It is worth mentioning that nearly forty per cent of export of Italian products are due to the excellency in good form and design. Main items of export are office furniture, lighting systems, household goods and building hardware.

Visits to industries proved to be extremely rewarding as it explained various techniques of manufacturing particularly in materials like SMC, DMC and sheet metals. Special invitation by Prof. Nick Roericht for the presentation of his office furniture programme to his client gave me insight of design process whereby using standard components one can achieve a very surprising results from the point of view of its functional and aesthetical qualities.

Applications

On return, the fellowship programme in furniture design was reorganised with a view to be more meaningful to the needs of the country. Information gained from the practical and planning aspect of industrial objects was tried in classroom projects as well as in professional practice. The fellowship training programme in furniture design was confirmed with the firm Behr Mobil and with Nick Roericht.

The visit also helped to plan a great deal of preparatory work for fellow in furniture design so that he could gain on an accelerated basis the full benefits of his visit abroad.

Annexure 5.1

Summary Report of Fellowship Training of Prof. A.G. Rao

Duration - January 1980 to October 1980

Name of Organizations and Country Visited

1. Massachusetts Institute of Technology, Cambridge, Boston, USA.

2. Syenectics Education System, Boston, USA.

3. Creative Education Foundation State University of New York, Buffelo, New York, USA.

4. Delta Planning Group, Chicago, USA.

5. Centre of Cognitive Studies Rutgers University, New Jercy, USA.

Areas of Study

Product Innovation, Product Planning, Creativity and Thinking.

Recommendations and Applications

IDC should interact more with industry in terms of Product Innovation and Product Planning which will form the basis for successful implementation of Product Design. Courses to Industry at top, and middle management should be conducted.

IDC should also enter into policy making body of the Government, so that product innovation policies are developed and implemented.

In view of the large implications of 'creative thinking and innovation' IDC should get into extension activities like creative design inputs into school education, craft education to school children.

Extension and research activities should also encompass contacting small industries and craftsmen and developing programmes for Industrial Design inputs in these sectors through workshops and projects.

IDC should assist other IITs to start similar center with UNDP assistance and an undergraduate programme to increase the basic innovative inputs in design education.

Annexure 5.2

Summary Report of Fellowship Training of Prof.U.A.Athavankar

Duration - September 1979 to August 1980

Name of Organizations and Country Visited

1. Tuft University, Boston, USA.

2. Design Schools at Syracuse and New York, USA.

3. Science Museums at Washington, USA

4. Institute of Design, I.I.T. Chicago, USA.

Area of Study

Design Methodology and Computer Graphics

Recommendations

IDC's research activities need to be strengthened. In absence of doctoral level programmes, alternative arrangements must be made to fund and assist research programmes on long term basis.

A provision of in-house computer graphics facility is worth considering. This is a relatively young but fast growing field that needs to be integrated in IDC activities and programmes.

Applications

New inputs in visual perception at IIT, Chicago, has helped in opening up a new research area for me. Besides integrating this new angle in current thinking, courses and shsort term workshops are planned to promote this new viewpoint.

With the necessary computer graphics facility available, courses in computer graphics can be initiated.

Exposure to product planning has helped in substantially contributing in the IDC course offered on that topic. The present courses have also gone through a phase of reinterpretations because of the new inputs in form of faculty training. Courses in basic design and studies in form have gone through complete reinterpretations and are expected to make substantially original contributions in that field.

Annexure 5.3

Summary Report of Fellowship Training of Mr. Kirti Trivedi

Duration - March to December 1981

Name of Organizations and Country Visited

1. Kohei Sugiura Design Office, Tokyo, Japan

2. G.K. Industrial Design Associates, Japan

3. Institute of Art and Design, University of Tsukuba, Tsukuba, Japan

4. Corporate Design Centre, Sharp Corporation, Japan

5. The National Museum of Ethnology, Osaka, Japan

6. The Musashino Art University, Tokyo, Japan

7. Korea Design and Packaging Organization, Seoul

8. Hong Kong Polytechnic, Hong Kong

9. Hong Kong Industrial Design Council and Hong Kong Museum, Hong Kong

10. Visited various museums in Bangkok

Area of Study

Product Design and Design Education

Recommendations

At present IDC offers courses in Product Design only. The addition of Visual Communication from 1984-85 is a welcome step. To provide a holistic design approach at IDC, disciplines of Environmental Design, as well as inputs in Cultural Anthropology, Bio-Sciences, Management and Behavioural Sciences should be added.

Applications

The new experience and knowledge gained in Japan has been directly useful in the academic courses; and also in the design projects. New inputs have been added in the courses 'Elements of Design' and 'Design Management and Professional Practice'. The presentation techniques learnt are being taught to the students for their presentation.

Annexure 5.4

Summary Report of Fellowship Training of Mr. K. Munshi

Duration - May 1981 to February 1982

Name of Organizations and Country Visited

1. Hungarian Design Council, Hungary

2. University of Hannover, West Germany

3. Lindinger and Partner Hannover, West Germany

4. School of Design at Burnswick, West Germany

5. School of Design and IDZ Berlin, West Germany

6. Sottsass Associate Milano, Italy

7. Design offices of Olliveti, Mario Bellini, Rudolfo Bonnetto and Alchymia, Italy

8. Enfi Design Group, Paris, France

9. Society of Trinome, Paris, France

10. Raymond Loewy and Associate, Paris, France

11. University of Compiegne, France

Area of Study and Recommendations

To study design techniques and how a design activity is managed particularly when multi-disciplinary, and multi-organization involvement is necessary. In that respect it was a very successful programme. Number of contracts were developed and these persons were called as consultants to IDC. Exposure to various design thoughts and techniques was very helpful.

Interdesign activity and experience seems to me to be very useful with for the participating designers as well as to the sponsor. I would therefore recommend that travel grants be instituted on a permanent basis by UNESCO/UNDP for facilitating the designers from developing countries to participate in such interdesign seminars.

The administrative agencies in West Germany and France provided excellent facilities and services whereas the administrative agency in Italy was a total disappointment. Instead of solving problems they created more hazzles for the fellow.

The fellowship amount in Italy particularly in Milano was woefully inadequate. Unesco probably goes by the consumer price index which is no reflection of cost of living as the charges for accommodation are extremely high. Same problems are faced in Paris but to emphasis again the Italian fellowship is absolutely inadequate. I strongly recommend that it should be increased to make it at par with West Germany.

Annexure 5.5

Summary Report of Fellowship Training of Mr. V.P. Bapat

Duration - February to November 1982

Name of Organizations and Country Visited

1. Pratt Institute, Brooklyn, N.Y., USA
2. Design Section of the Port Authority of New York and New Jersey, USA
3. Rhode Island School of Design, USA
4. Syracuse University, USA
5. Philadelphia School of Design, USA
6. Knoll International, East Greenville, USA
7. Southern Methodist, University of Dallas, USA
8. Delta Planning Group, Chicago, USA
9. Illinois Institute of Technology, Chicago, USA
10. Scimence Industrial Design Group, Munchen, West Germany
11. Scimence Ausberg, West Germany
12. Scimence Erlangen, West Germany
13. Design School Munchen, West Germany
14. Design office of Mr. Schutte, West Germany
15. B.M.W. Munchen, West Germany

Areas of Study

Product Detailing with Consideration for Materials, Form and Processes.

Recommendations and Applications

During stay over at Pratt, associated with Prof. Mart Blumenfield. Lot of indepth discussion regarding course contents, depth to which Industrial Designer should know about materials, processes and product detailing were carried out, which particularly resulted into change in teaching methods of material and processes and product detailing courses for M.Des students. Involvement with Product Design Group of Scimence Munchen, West Germany, exposed me to the product detailing used by Scimence.

Visits to various exhibitions helped me establishing contacts with various industries, to bring back about 110 Kg literature regarding materials, processes products etc. This inturn is helping in updating and proper organisation of Material Library.

After coming back to India, I realised that particularly our plastic industries are not capable of bringing out good designs in plastics due to lack of product design inputs. A short term plastic product design course (may be at one year diploma level) for the plastic technologists, will help to fill up the gap, and will result into better looking and functional plastic products in Indian market.

To maintain the pace with current technological advances, Material Library should go for computerised dats storage and retrieval system.

Annexure 5.6

Summary Report of Fellowship Training of Dr. G.G. Ray

Duration - June 1981 to March 1982

Name of Organizations and Country Visited

1. Tufts University, Medford, USA

2. Southern Methodist University, Texas, USA

3. Liberty Mutual Insurance Co., Hopkinton, USA

4. C.L. Mauro Associates Inc. New York, USA

5. Henry Dreyfuss, New York, USA

6. Institute for Consumer Ergonomics, University of Technology, Loughborough, U.K.

7. University of Technology, Department of Human Sciences, Loughborough, U.K.

Areas of Study

Although the principle area of study in the UNDP programme was Ergonomics but beside this some other areas have also been covered while staying abroad. These are Biomedical Instrumentation (strain gauge application), Product Liability, Video analysis technique of man-machine-environment system.

Recommendations

Experiences abroad definitely have a great impact on 3 major areas viz. teaching, research and consultancy works.

The course conducted at Tufts University and Loughborough University will help us to think about necessary orientation requires for our Ergonomics courses from the view point of product design. Way the courses are presented to each students specially to Tufts University, Southern-Methodist University etc. are highly commendable and with some modifications we have already introduced the course curriculum to our students. As our students come from purely engineering and architect disciplines so we give emphasis more on the practical aspect rathern than theoretic aspect. Application of different methodology like mock up study, simulation experiment, video technique etc. as use in developed countries in case of ergonomic studies has also been implemented at IDC for teaching and consultancy job. With the help of UNDP equipment the department is now capable to take up any product design/product liability problem.

Experience gained at Tufts University in the area of using strain gauge for designing and fabrication of bio-instrument is now being effectively used in basic researches. The department is also thinking that some of those instruments designed by them can be patented after necessary modifications.

Altogether it seems that though the teaching methodology used abroad cannot be directly implemented at IDC but with necessary changes it is highly useful for IDC but some of the research methodology can directly be implemented which has already been done.

Annexure 5.7

Summary Report of Fellowship Training of Mr. A. Gaffoor

Duration - 14 November 1983 to 3rd March 1984

Name of Organizations and Country Visited

1. SITI SPA, Novara, Italy
2. Colorobbia SPA, Florence, Italy
3. Industrie Bitossi SPA, Sovigliana - Vinci, Firenzi, Italy
4. Decalcomanie Bitossi SPA, Italy
5. Gabbrielli Impianti, Firenze, Italy
6. Marazzi Ceramiche SPA, Sassuolo, Italy
7. Ceramica Cristallo SPA, Modena, Italy
8. Product Design AG, Basel, Switzerland
9. Oy Wartsila Ab, Arabia, Helsinki, Finland
10. Oy Wartsila Ab, Nuutajarvi Glass, Nutajarvi, Finland
11. Royal College of Arts, Kensington Gore, London
12. Queensberry Hunt, Design Consultants, London
13. Cleveland Institute of Art, Ohio, USA
14. The Hall China Company, Ohio, USA
15. Case Institute of Technology, Case Western Reserve University, Cleveland, USA
16. New York State College of Ceramics, Alfred University New York, USA
17. Syracuse University, Syracuse, USA
18. Rhode Island School of Design, Rhode Island, USA
19. Glass Hower Museum, Harvard University, Mass., USA
20. University of Cincinnati, Ohio, USA

Areas of Study - Ceramic Design

To acquaint with the ceramic educational programme, equipment, manufacturing technique. Ceramic colours, decals, product detailings, methodology and marketing avenues etc.

Recommendations

The experience gained during the visit to the aforesaid institutions, industries abroad can be utilised in the educational programmes for ceramic design at this Centre. It has been found that the institutions and research centres and professionals in the field of Ceramics specially in tiles, table wares, sanitary wares, ceramic stains making techniques have acquired high professional standards by resorting to energy saving devices by putting into operations sophisticated equipments like

F-1 Multi Channel Kiln, improved manufacturing processes by utilising different oxides like lead glazes, by making frits etc. and taking precautionary safety measures for the working people.

It is felt that in order to bring the ceramic industry in the country at par with the international design levels, we should organize short term courses, seminars for the R & D personnels and executives in Ceramic Industry as a propagation work to start with and should assess the need of the Ceramic Industry and work out the scheme for the regular educational programme, say, a Diploma Course in Ceramic Design where the interested industries may sponsor their candidates who on completing their course here can serve the industry for the rennovation, modernization in the ceramic product development and contribute significantly to the national product, keeping in view our traditional aspects.

Annexure 7.1

Hospital Furniture

Hospitals in India are not designed for growth and adaptability to new developments. This has resulted in over crowding and an acute need for space. There are problems in patient and hospital environment, in transportation of patients, medicine and food, in communication with staff and patients and in general hygine.

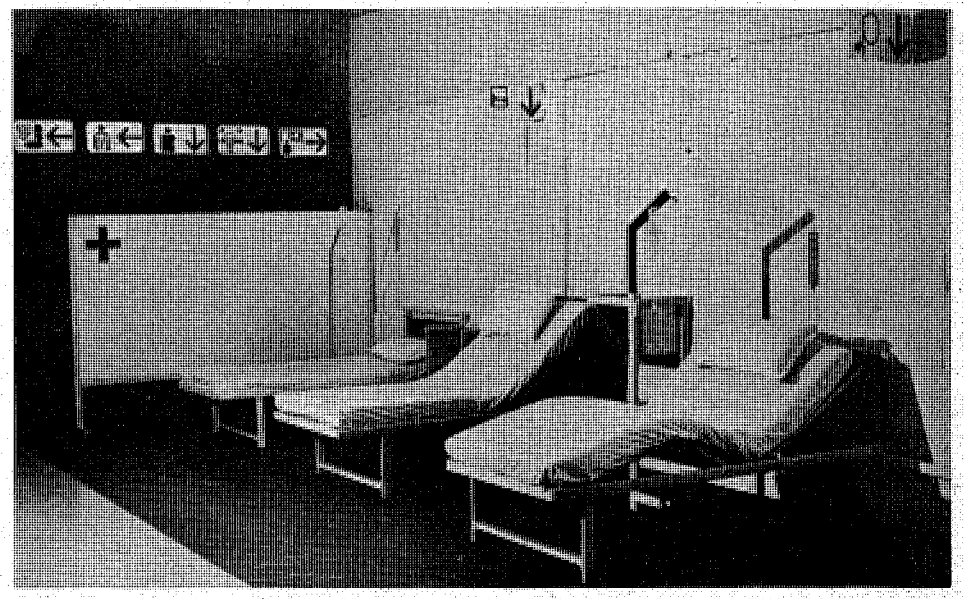
The present furniture is very bulky, oversized, noisy inefficient resulting in discomfort for use. They are not designed with human engineering factors.

Maintenance and repair of these furniture is difficult because hospitals do not have maintenance staff and other facilities. This has resulted in piling up of scrap furniture at every free space in the hospitals.

The furniture designed, is based on a modular system such that the parts are interchangeable. They are flexible to suit the individual requirements of the patients and the staff of the hospitals.

Ergonomical studies were done in various hospitals on patient and staff requirements and the furniture was designed for maximum percentile of the population. This has also given rise to new standards being developed regarding patients, nurses and doctors.

DESIGN TEAM : S. NADKARNI, S. RAUT, KAMAL PADH, G.G. RAY



Annexure 7.3

School Chairs

Mr. Manfred Herrmann, Furniture Designer from Ulm, West Germany, visited IDC. He guided a one month project for junior batch of IDC students in designing school furniture for IIT Central School.

Four groups of students studied requirements for school furniture. The concepts were developed based on combination of two materials i.e. wood, steel tube. Out of many, four concepts were selected for prototypes and were tested for ergonomical and functional requirements.

DESIGN : M.DES. (BATCH 82-84) STUDENTS
GUIDE : MANFRED HERMANN

Annexure 7.4

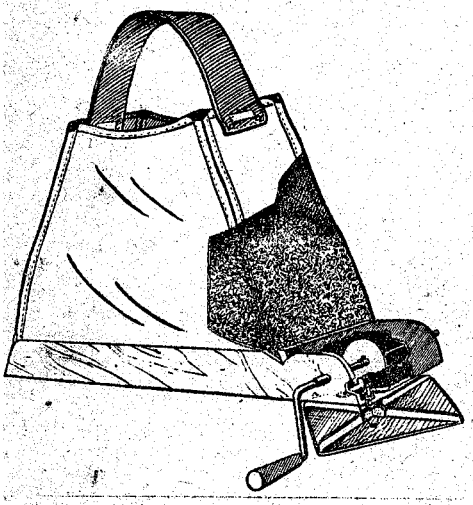
Seed cum Fertilizer Broadcaster

Agricultural activity in India has been improved to large extent during post-independance period and brought so called Green Revolution making nation self-sufficient in food-grains. Still in backward rural regions, agriculture is mostly depending on manual labour and bullocks, for ploughing and other activities.

Seed cum Fertilizer Broadcaster was designed for Farm Rain Consultants Pvt. Ltd. It is useful for application of granuler fertilizers and for sowing, where grains are hand thrown in random pattern.

It is made very light and with tapering bag of 5 Kg capacity one can cover about 4000 sq.ft. area, very comfortably within 15-20 minutes at normal walking pace.

DESIGN : VIJAY BAPAT
CLIENT : FARM RAIN CONSULTANTS



Annexure 7.5

Significance of Studies in Similarities and Discrimination of forms

Grouping on the basis of similarity of forms can give clusters, which share visual attributes. Clustures were developed on the basis of responses from untrained subjects. The analysis revealed the formal variables that influenced the grouping and similarity decisions.

The second part of the study suggests developing forms, that are carefully planned to enter these clusters. New forms were developed and mixed with original forms and tested similarly with untrained subjects.

The results are available in form of report at IDC.

RESEARCH TEAM : U.A. ATHAVANKAR, BHAVANANI

Annexure 7.6

Ergonomic Data Generation on Indian School Children for School Furniture Design

In view of the complete lack of anthropometric data on Indian children in the age group 5 - 18 years - and the importance of such data for designing school furniture; a research project and study has been initiated by the ergonomics division of IDC. The aims of the study are: to generate an anthropometric data bank for Indian children between the age group 5 - 18 years; to publish children's body dimensions in an easily understandable format for designers; and to study body composition and biomechanical characteristics of Indian children.

RESEARCH TEAM : G.G. RAY, N. SADHU

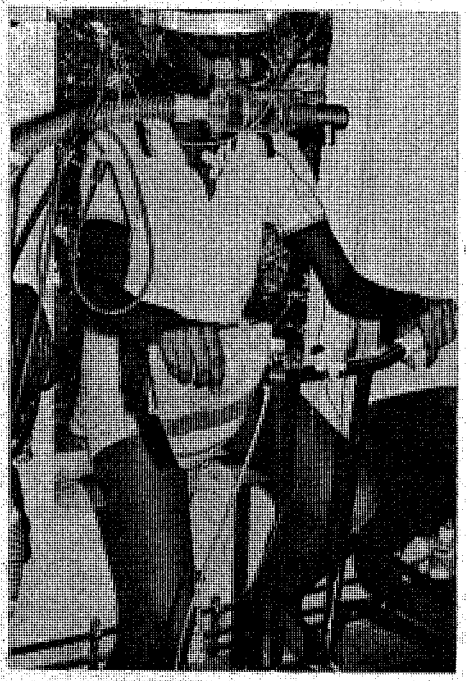
Annexure 7.7

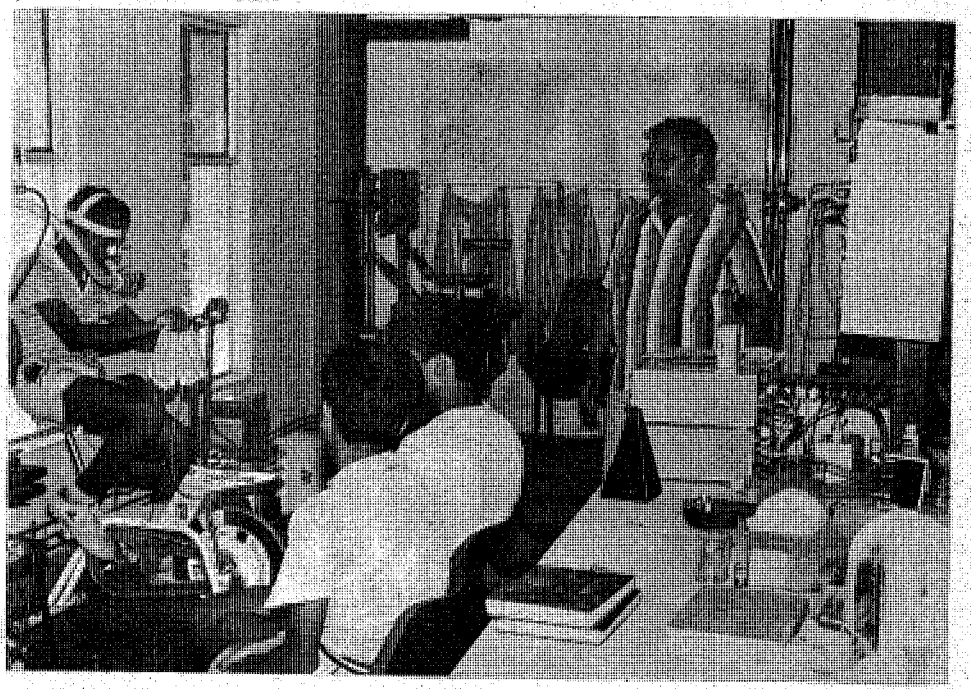
Study on Badminton Players

The Ergonomics Laboratory of IDC carried out physical fitness tests for 19 participants (10 boys, age 11-17 years and 9 girls age 11-19 years) in a one-month training camp in badminton at I.I.T. The tests were conducted according to the guidelines laid by the International Physical Fitness Research Committee, USA; to find out 1. maximal aerobic power and work efficiency of the trainees, 2. Scientific gradation of trainees in terms of their physical fitness; and 3. body composition and nutritional status of the trainees.

The results of these tests will be used by the coach for evaluation and successive follow-up training of participants.

RESEARCH TEAM : G.G. RAY, N. SADHU, PRAMANIK



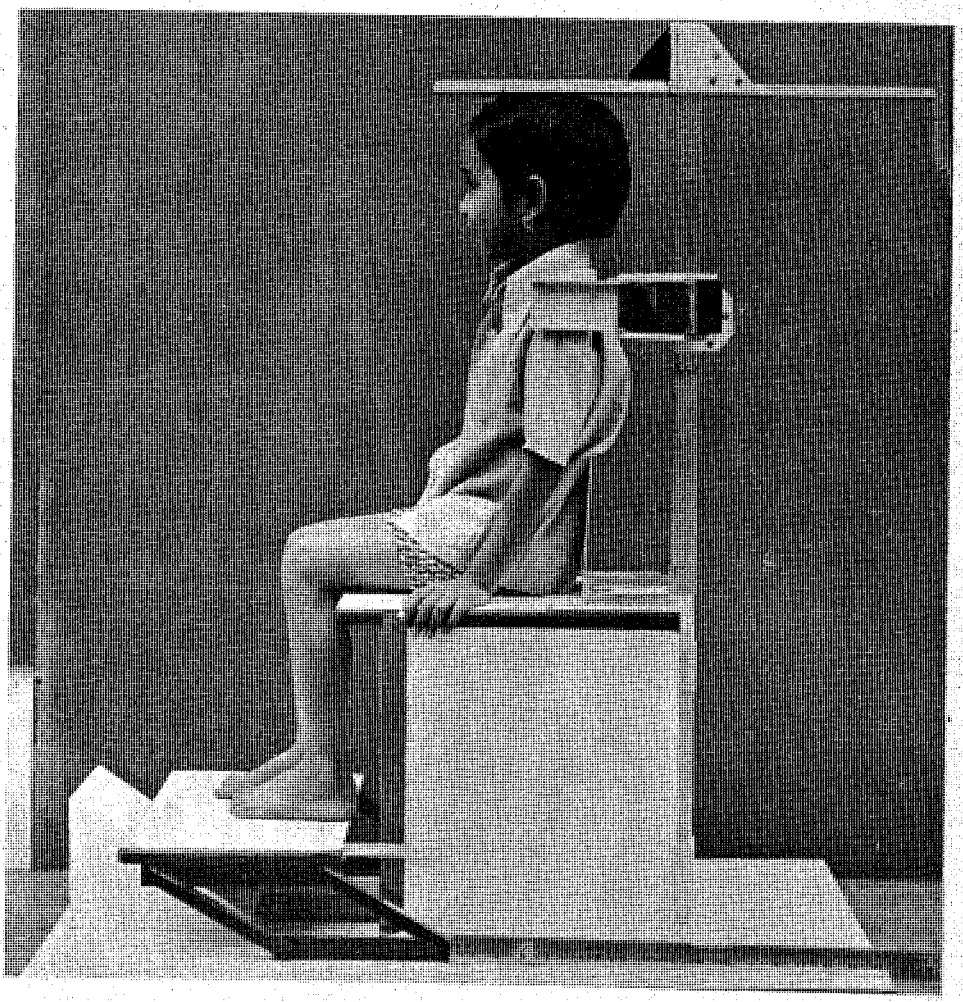


Annexure 7.8

Anthropometer

The designing of K.G. School furniture initiated the anthropometric studies of K.G. School children. A simple and faster anthropometer was developed to take 14 different body measurements.

DESIGN : VIJAY BAPAT

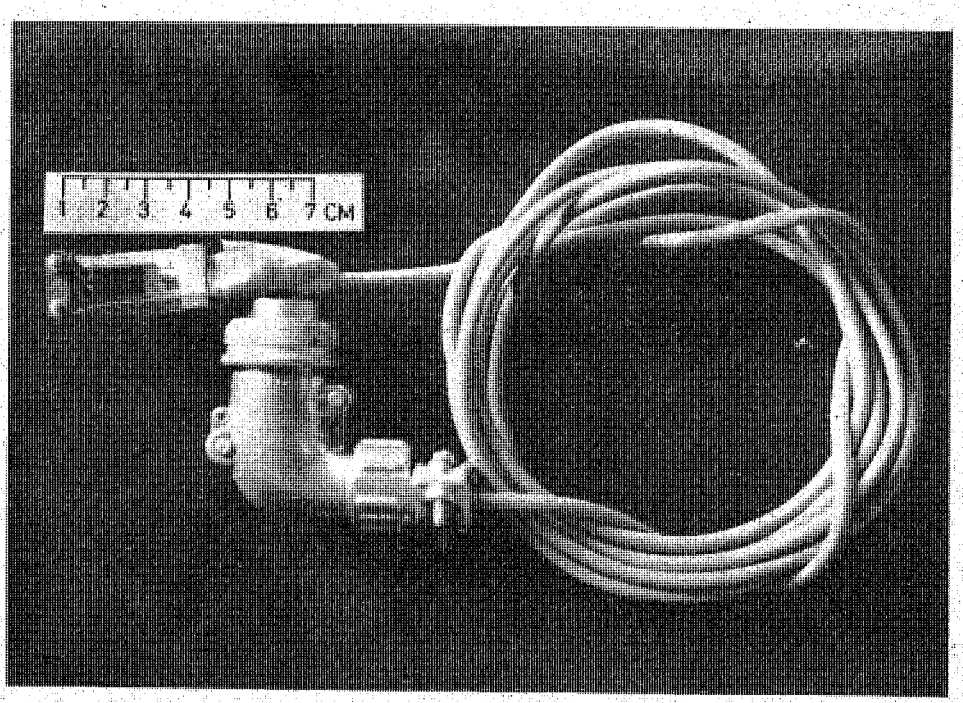


Annexure 7.9

Miniature Accelerometer designed and fabricated with Dr. Harding

A miniature accelerometer was designed and fabricated to measure the peak acceleration of different body segments; under Dr. Harding's guidance. The accelerometer can be tied on any body segment. A simple electrical device was also made to determine the angular changes at different body segmental joints.

DESIGN : G.G. RAY, HARDING



Annexure 7.10

Devanagiri Type Redesign

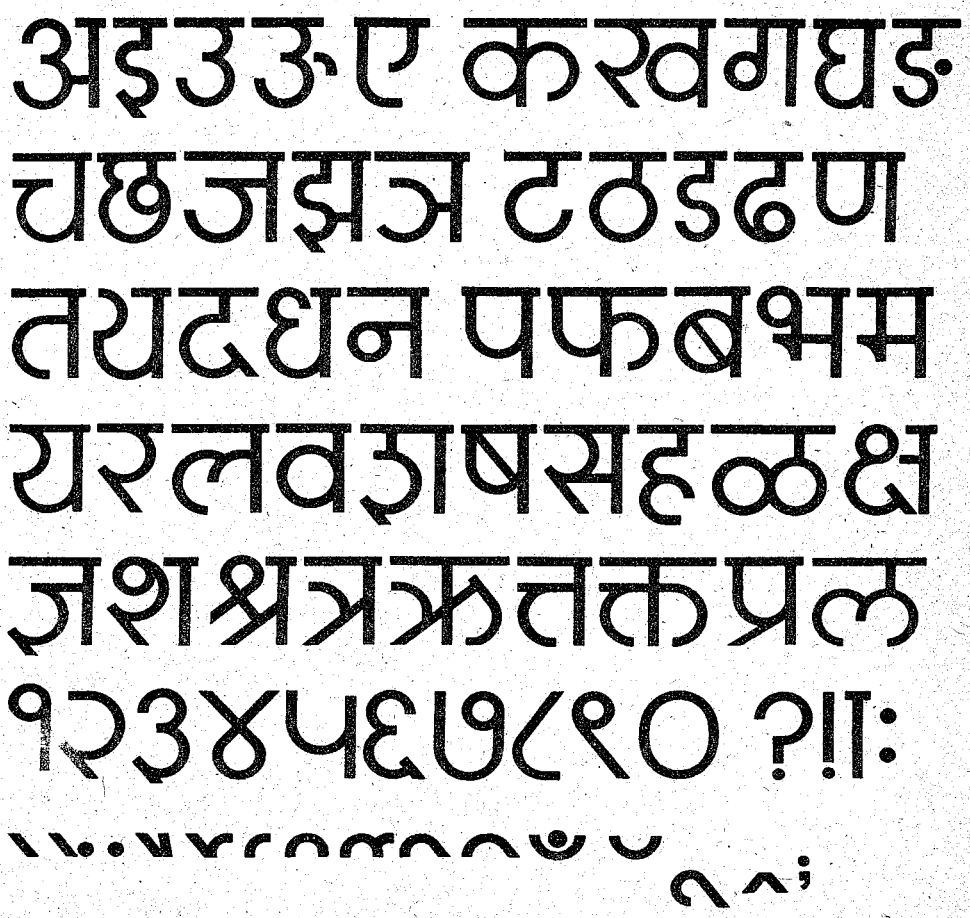
At present, the devanagiri type face is similar to the traditional ones created with a reed pen.

These traditional forms are ill suited for reproduction in printing and thus the legibility gets affected.

Here the types were redesigned to make them more legible. Experiments were done on recognition of shapes and grey masses. Circularity of the letterforms were accentuated to bring in clarity.

The letters are designed mainly for use as display type-faces.

DESIGN : KSHIRSAGAR S



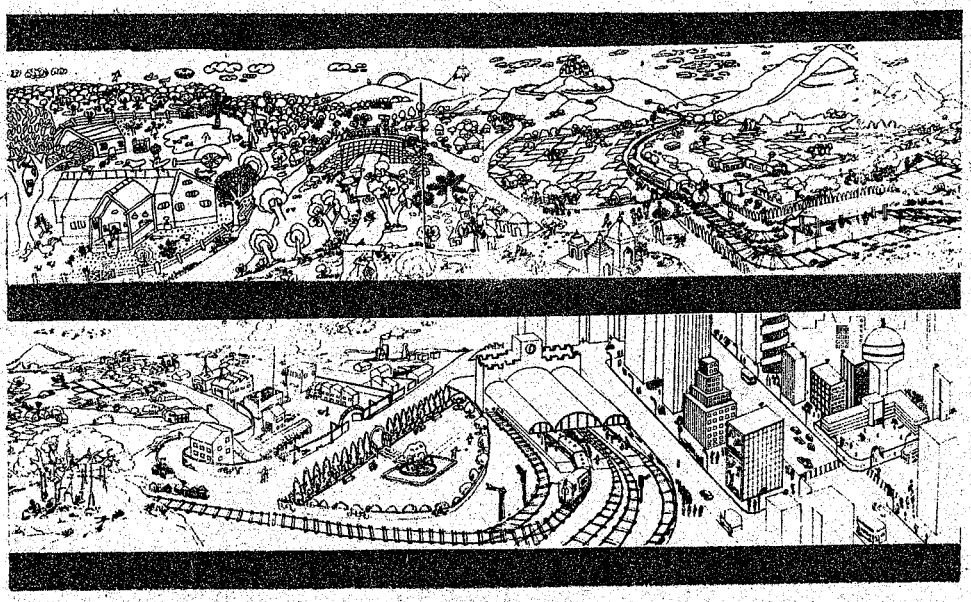
Annexure 7.11

Designing for Children

A three week workshop on designing children's books was conducted in IDC by Mr. Kohei Sugiura, graphic designer, from Japan and Mr. Fujio Watanabe, illustrator. Participants in the workshop were from the students and faculty members of IDC and NID, Ahmedabad.

Working within the overall theme of 'Synesthesia: New Experiences through the Five Senses' - the participants explored ways in which a book can make a child's own world more vivid.

Each of the seven books developed in the workshop provides an exciting new experience. Departing from the usual bound format of the book - the format was changed to suit the theme - resulting into books as moebius strips, circles, scrolls and floor games.



Annexure 7.12

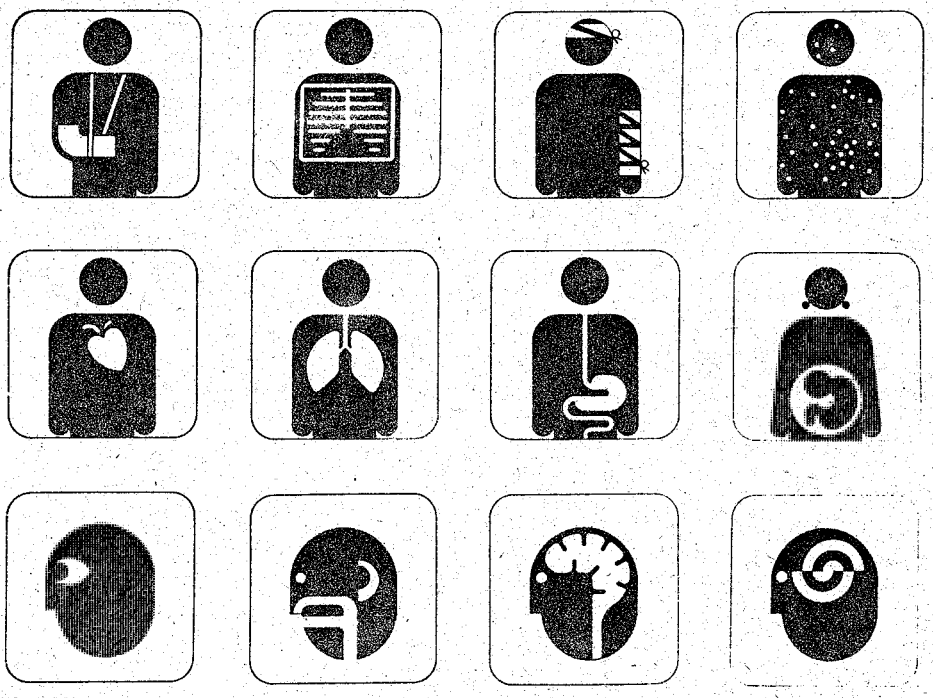
Hospital Graphics

Communications in India suffer from a major drawback because of the very diverse cultural, traditional, lingual and social backgrounds of the people. These factors force communications to resort to greater and greater generality and simplicity.

Consequently, there is a felt need for an alternative language, common to people with different languages, to literates and to illiterates. This being an impossibility, we have tried to evolve a system of symbols to help communications in specific areas.

Here are shown some symbols for use in Indian hospitals. Broadly, the approach was the creation/generation of a large set of possible solutions which were progressively narrowed down and retired till the final set emerged. The design solution also involved a diabetical movement between the designer and the user. Thus, at every stage, the process was modulated by the response of the public.

DESIGN : RAVI POOVAIAH



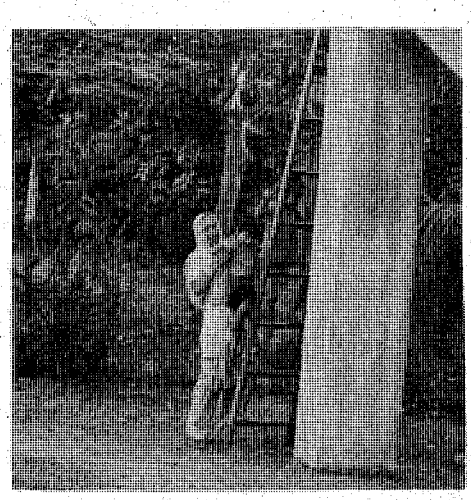
Annexure 7. 13

Children Playground

Unlike in overseas countries, not much design/research has been gone into playground equipments in India. In a typical Indian playground there is nothing more than usual slides, swings and seesaws. These equipment are being used since past few decades without much changes and fantacy.

Research project was undertaken by two of our students. Detailed observations of children's behavioural pattern in playgrounds, interviews with parents and equipment manufacturer, and anthropometric data collection resulted in the form of recommendations for playground equipments, which can be used for future design problems.

RESEARCH : MISS KUMKUM, VERMA DINESH,
GUIDE : VIJAY BAPAT



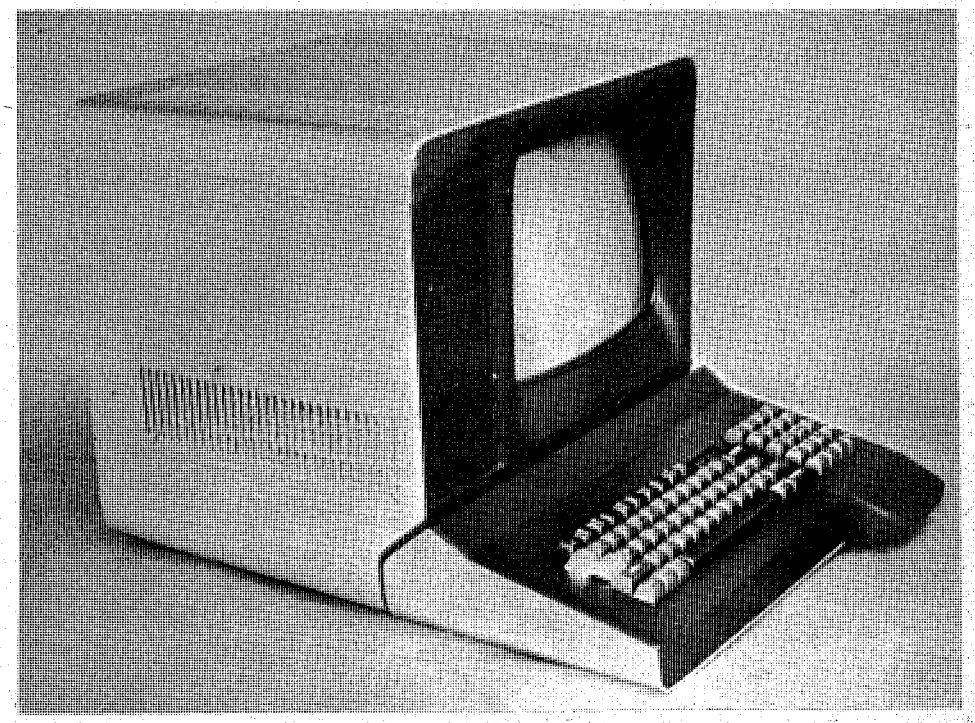
Annexure 7.14

Micro Computer

Manufacturing of Micro Computers in India, is a new activity started only couple of years back. Production is still in batches and rather crude, hand fabrication techniques are used. The new design involves standardised parts and fabrication is done in a conveyer belt fashion i.e. in sequential operation with simple jigs and fabrication methods, resulting reduction in cost and quality control in production. Card storage is hinged on one side of the body to have an easy access for maintenance.

On the key board, the letters or alphabets are usually on one side and the numbers on the other side. As the numbers are typed only by one hand, operated experiences stress as he cannot rest the other hand. In the new design an extra projection is provided for hand rest which is the new feature in the keyboard display.

DESIGN	:	S. NADKARNI
CLIENT	:	M/S. PSA BANGALORE



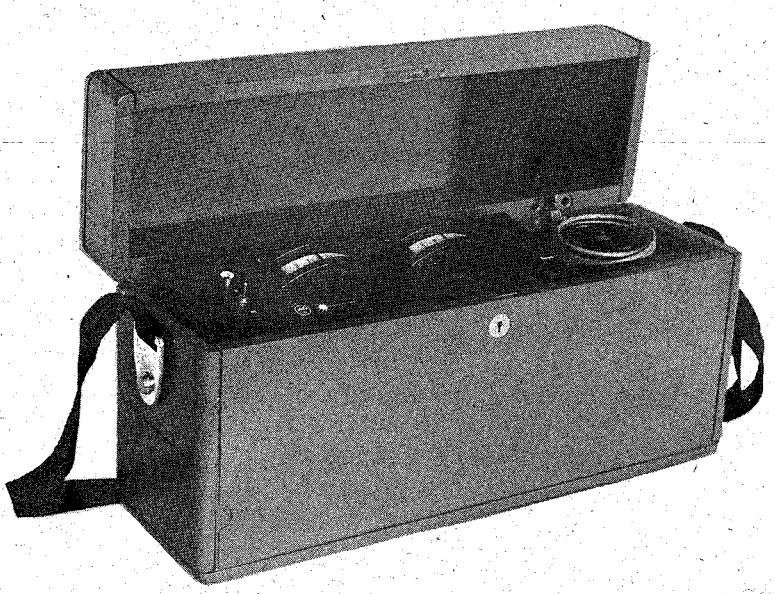
Annexure 7.15

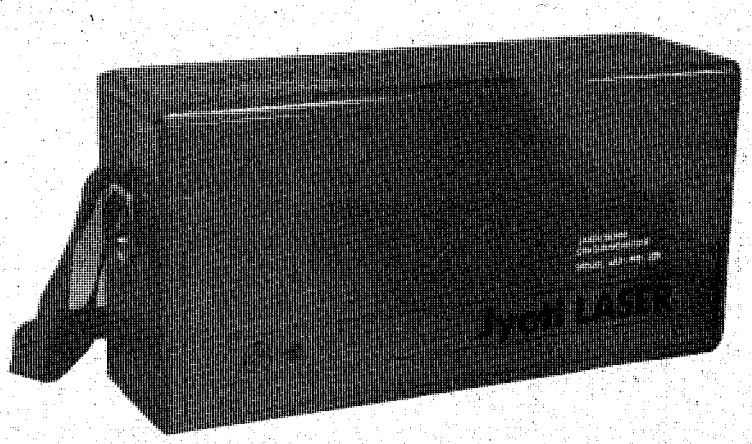
Laser Beam Centering Device

An assignment on industrial designing of a portable unit housing the laser beam centering device display panel and sensor for the laser alignment system manufactured by Jyoti Limited, Baroda was undertaken. The prototype submitted to the client is expected to be on display at the Hannover Fair in W. Germany this year.

The major improvements were reduction of overall size by half for increased portability; integration of two separate housings into a single, more convenient unit; and an easily accessible and legible display panel. Appropriate product graphics and colour scheme were also suggested to suit the nature of the product.

DESIGN : K. MUNSHI, KIRTI TRIVEDI,
CLIENT : JYOTI LTD BARODA





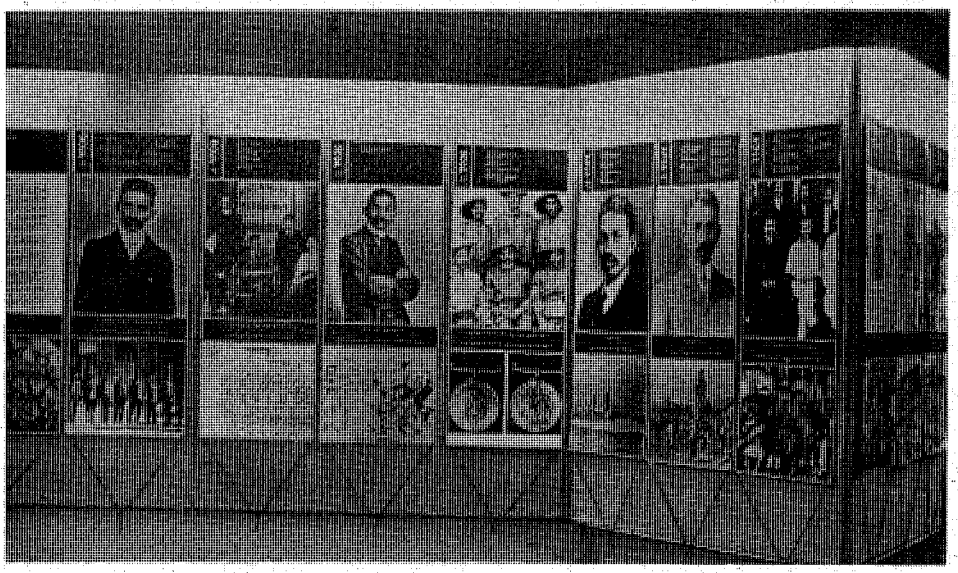
Annexure 7.16

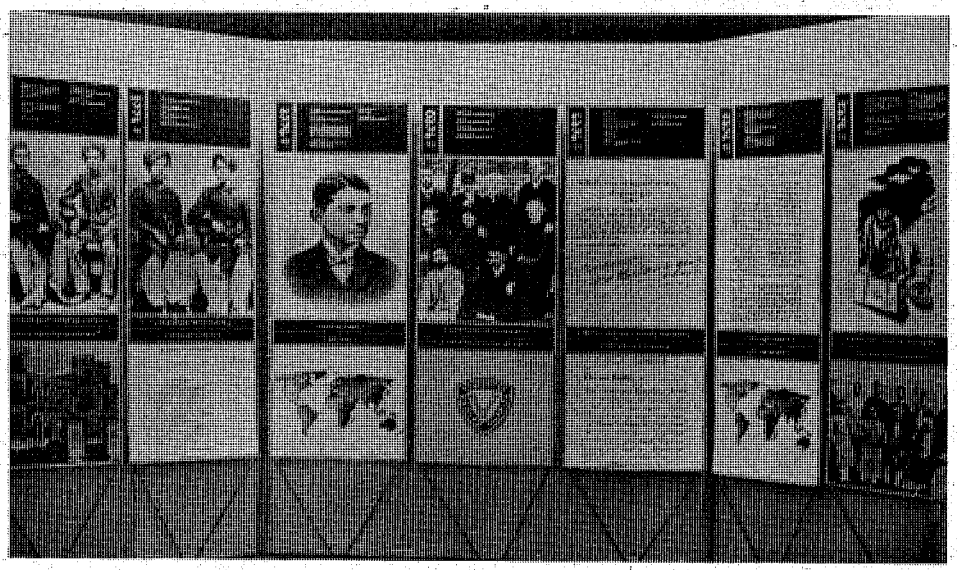
Gandhi Bhavan Museum

IDC completed an assignment of designing a Photo exhibition on Gandhiji's life for the Gandhi Bhavan Museum at Bhopal.

The photo exhibition depicted Gandhiji's life in a chronological order using visual material from various sources. Models and actual samples of Gandhiji's writing and his letters were included to make the display more interesting.

DESIGN : KIRTI TRIVEDI
CLIENT : GANDHI BHAVAN, BHOPAL





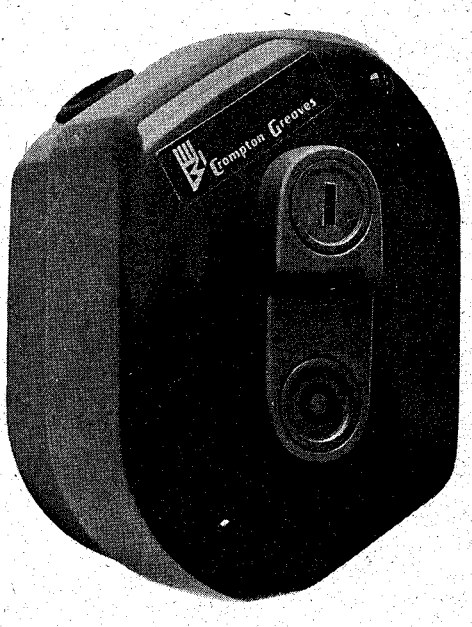
Annexure 7.18

Motor Starter

Crompton Greaves after developing a functional unit for a Motor Starter, approached I.D.C. for the design of housing. This is a typical problem of Indian Industry, which has the trained man-power to bring out functional unit, but lacks the know how for housing design, that reflects the company's image and withstands the international competition.

Two alternative designs were developed, using a plastic shroud for on-off buttons, which reduces a production process of welding and improves the get up of the product. First one was recommended as it reflects the starter look as accepted in the market. The company is introducing the first model.

DESIGN : A.G. RAO
CLIENT : CROMPTON GREAVES LTD.



Annexure 7.19

Prism Spectacles

Prism spectacles are used to view an object held not directly in front of your eyes but which is kept almost flat on your stomach.

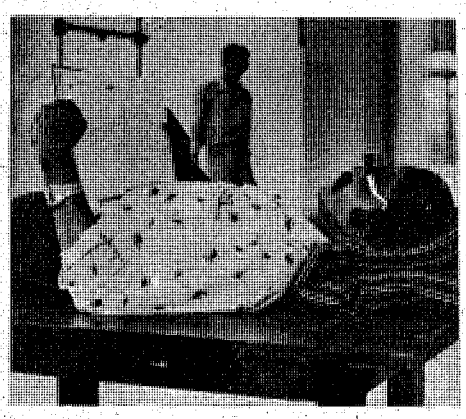
Prism spectacles can be used to read while lying down as in this posture it is very tiring to hold the book or magazine in front of your eyes. So keep the book flat on your stomach wear prism spectacles to read comfortably. These spectacles can also be used to watch T.V. while enjoing a very relaxed posture.

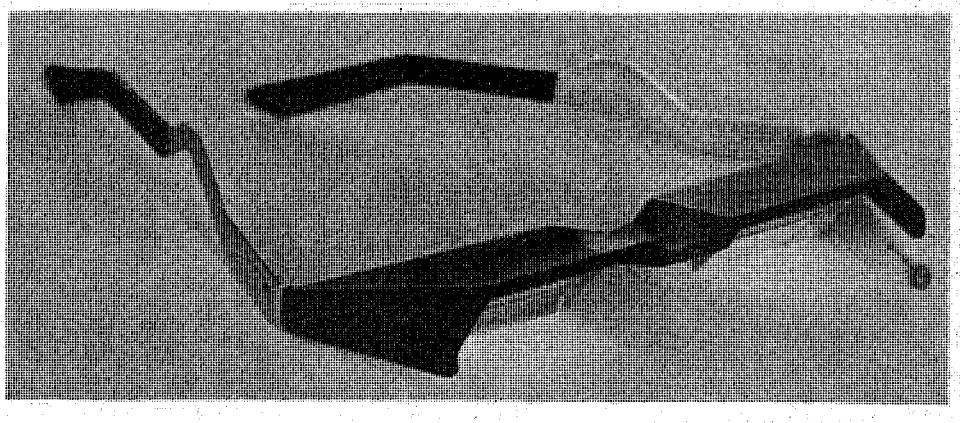
Prism spectacles can be an invaluable reading and viewing aid for people suffering from Spondylitis of neck or back.

In the said design the weight was kept to bare minimum by the use of light weight plastics and Aluminium. Dimensions were so worked out that it could fit easily to large percentage of the adult Indian Population. It can also be used along with the normal spectacles.

Three years back such aesthetic detailing was used, which is now coming in vogue internationaly, considered fashionable, to be able to sell it at higher price to the top end of the market.

DESIGN : K. MUNSHI
CLIENT : M/S. ASTRO OPTICAL INDUSTRIES





Annexure 7.21

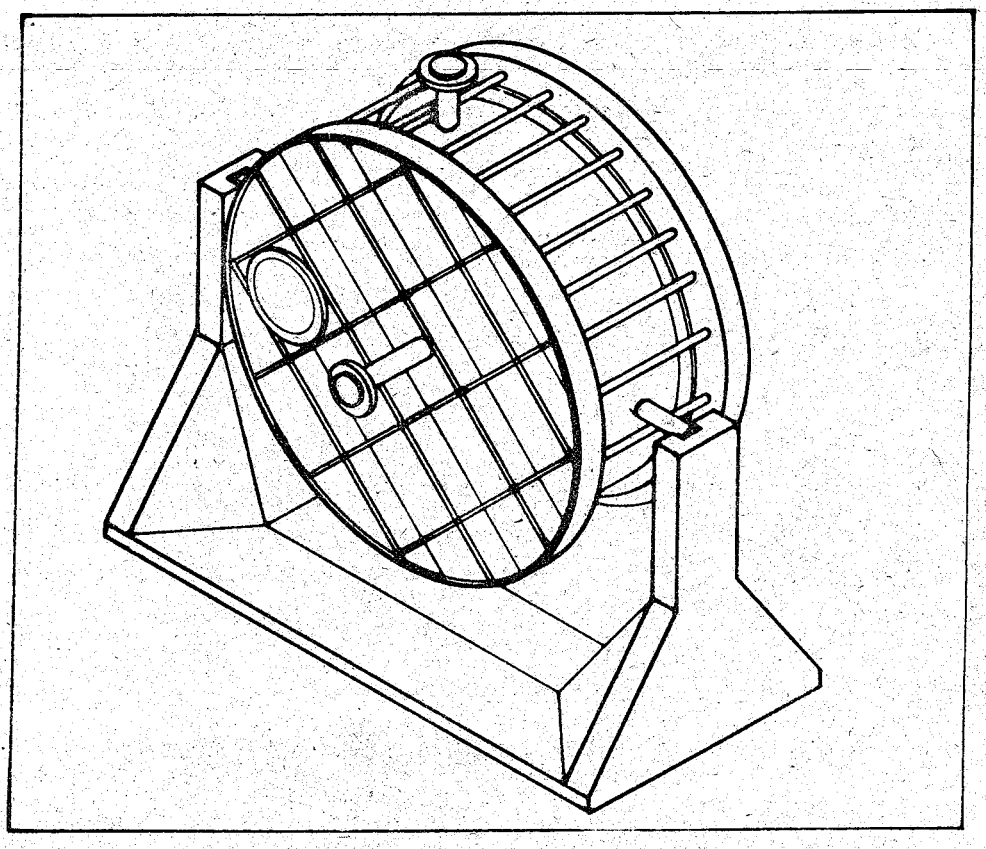
Exterior Design of Heat Exchanger for L & T

An exterior designing of a heat exchanger unit, manufactured by Larsen and Toubro Ltd. was undertaken. The product which uses a new system for fabricating internal tubular coiling developed by L & T, will be on display at the Hannover Fair this year. Due to its compactness and portability - a good market is expected for the product.

The main problem in the existing unit was the robust and heavy look created by structural complexity of the construction - which was inconsistent with its portable quality. Visual problems also existed with the stand, and the flanges on the unit.

The new design proposed by IDC, softened the harshness - by use of a geometrical pattern, integration of main forms; and a subdued colour scheme. A circular window with lighting for inspecting inner coil structure was also provided.

DESIGN : S. NADKARNI
CLIENT : LARSEN AND TOUBRO

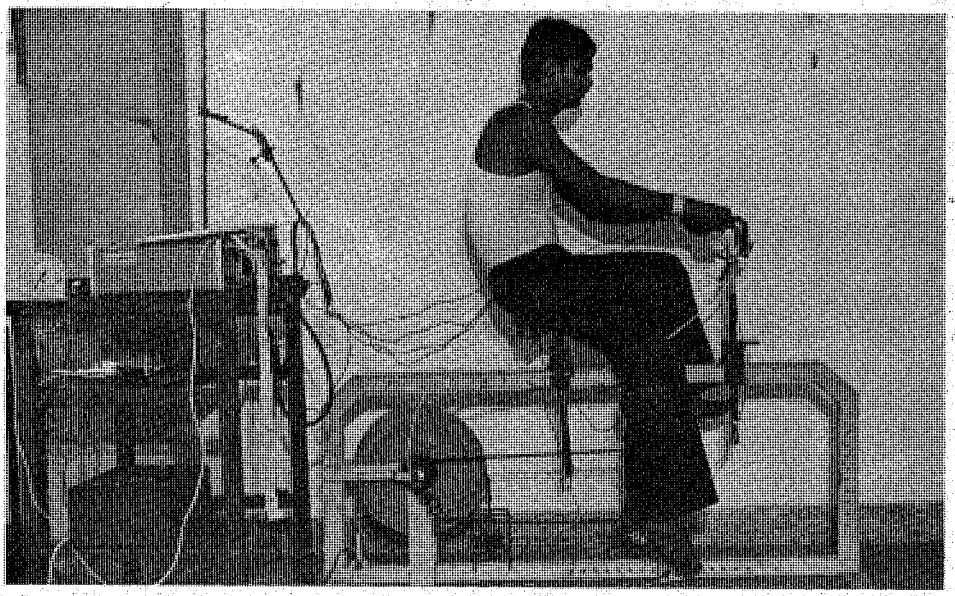


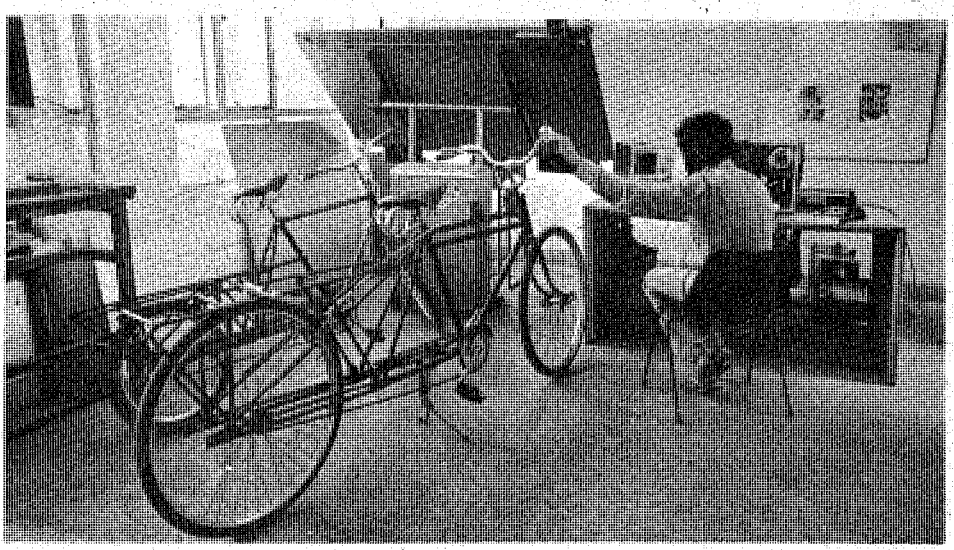
Extensive study on energy consumption and stability with varying span was carried out as part of this project. A full time design associate was recruited.

Two papers, one on 'Load carrying aspects of bicycle' and another on bicycle stability were published.

Photographs below show the experimental set ups.

RESEARCH TEAM : G.G. RAY, VINOD GUPTA



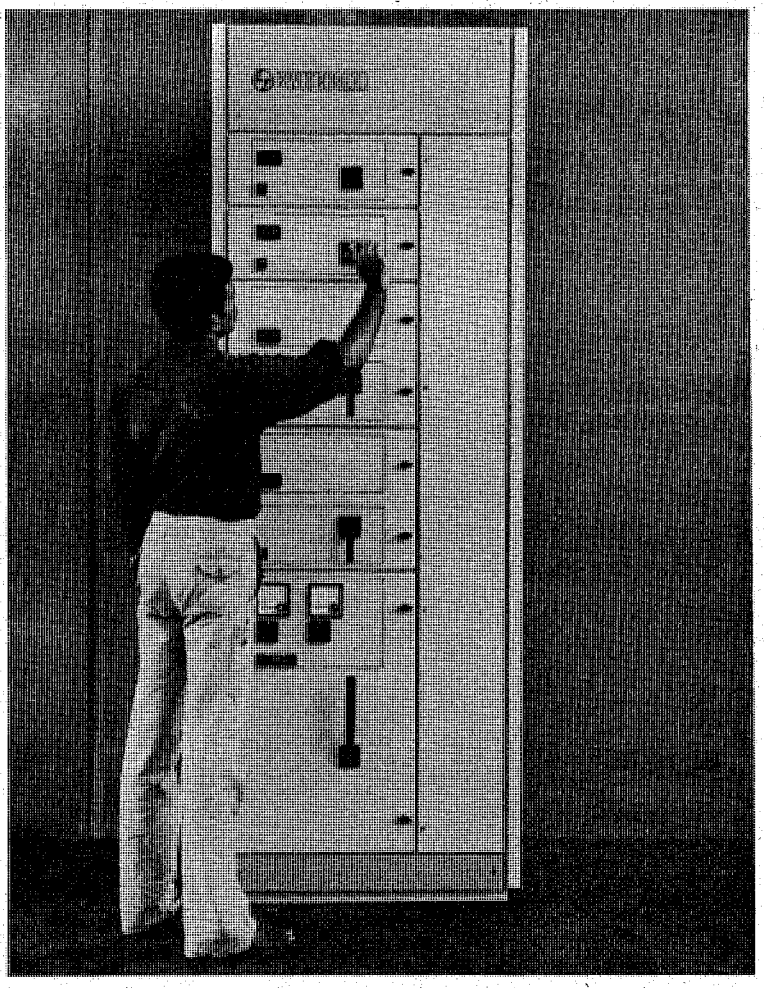


Annexure 7.23

L & T Switch Gear Unit

L & T Switch Gear Unit is used as a process control unit in many industries like chemical, fertilizers, etc. The project sponsored by L & T envisaged improvements in operation problems of the operator and overall aesthetic improvement. Detailed ergonomic studies were made to suggest best positions of different controls taking into account the convenience of people of different height. The modifications in the process of manufacture of the panels and knobs are intended to bring out the 'visual order' and 'appeal' of the unit with a clear communication. The new design helps to project the Company image.

DESIGN : SHIVRAM M.N
GUIDE : A.G. RAO



Annexure 7.24

Modular Furniture Design

A range of chairs for office use and for executives, has been developed using standardised components yet giving a variety of options. The chair seat is ergonomically contoured for better support. A single FRP moulding forms the seat and back. The chair height adjusting mechanism is also simplified. The project was sponsored by Godrej & Boyce Mfg. Co., Bombay.

DESIGN : MISS RATNA SENGUPTA
GUIDE : S. NADKARNI

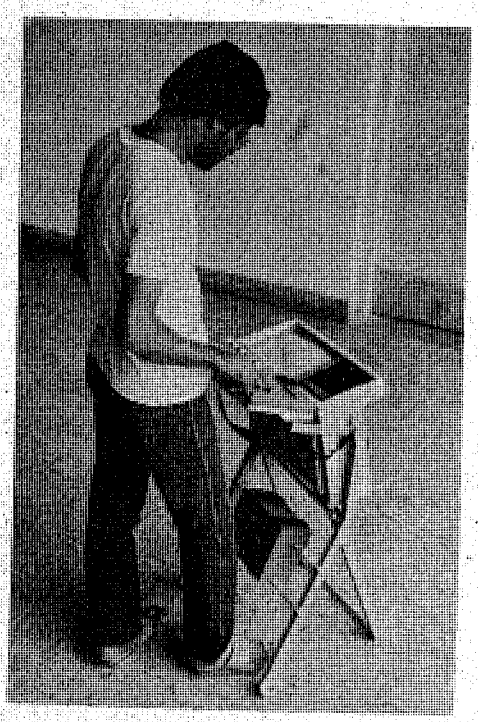
Annexure 7.25

Design and Development of CRT Programming Panel for Larsen and Toubro

With an aim of weight reduction, Aesthetic-improvement, Key Board organisation, component orientation, it was sponsored by L & T for redesign. Operational comfort and convenience was also to be emphasised in new design.

Final design was developed with two basic units, programmer and trolly with detachable power supply. New design provides three different ways of utilizing the product. 1) By keeping on table 2) keeping unit on trolly and sitting on chair 3) keeping unit on trolly and standing. Programmer can be carried with shoulder belt (as weight is approx. 10 Kg) trolly is also semi-foldable and trailable so either it can be carried along with programmer or separately.

DESIGN : MUNSHI M.A.
GUIDE : U.A. ATHAVANKAR



Annexure 7.26

Redesign of Platform Truck

Redesign of platform truck is a typical project developed in collaboration with a manufacturing industry.

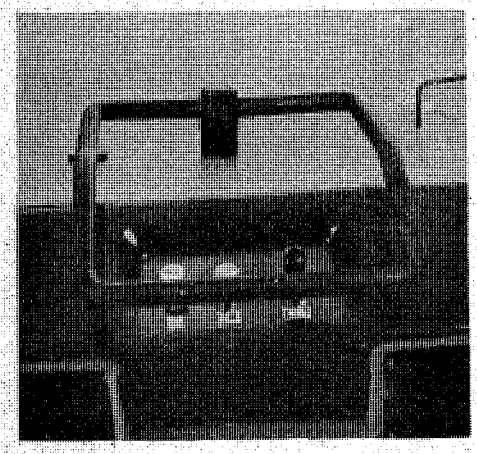
Initially a detailed product planning exercise was done to see the potential of new vehicles, as well as to understand the market position and relative competition for the 2 tonne-diesel truck.

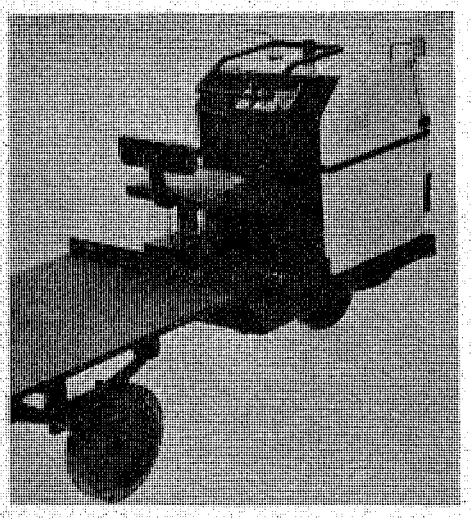
A detailed ergonomic analysis of the diesel truck was carried out to determine the comfort of driver. The critical dimensions that effect comfort were compared with the recommended dimensions. This revealed many problems in the present design.

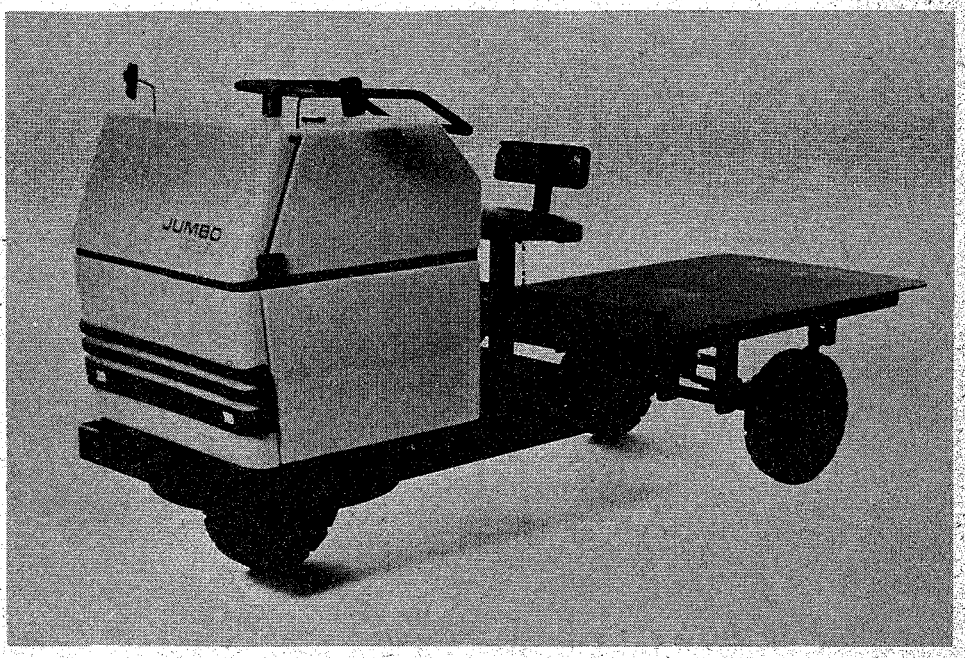
The new design has following features:

The front body is fixed. Only the steering rotates. Driver does not have to assume awkward postures. New steering wheel is designed for easy operation. The controls are rationalised and are easy to operate. The front cover and top cover can be easily opened, saving maintenance time.

DESIGN : NAODHAR S.S.
GUIDE : A.G. RAO







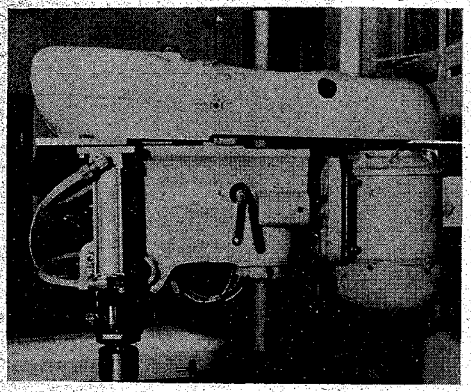
Annexure 7.27

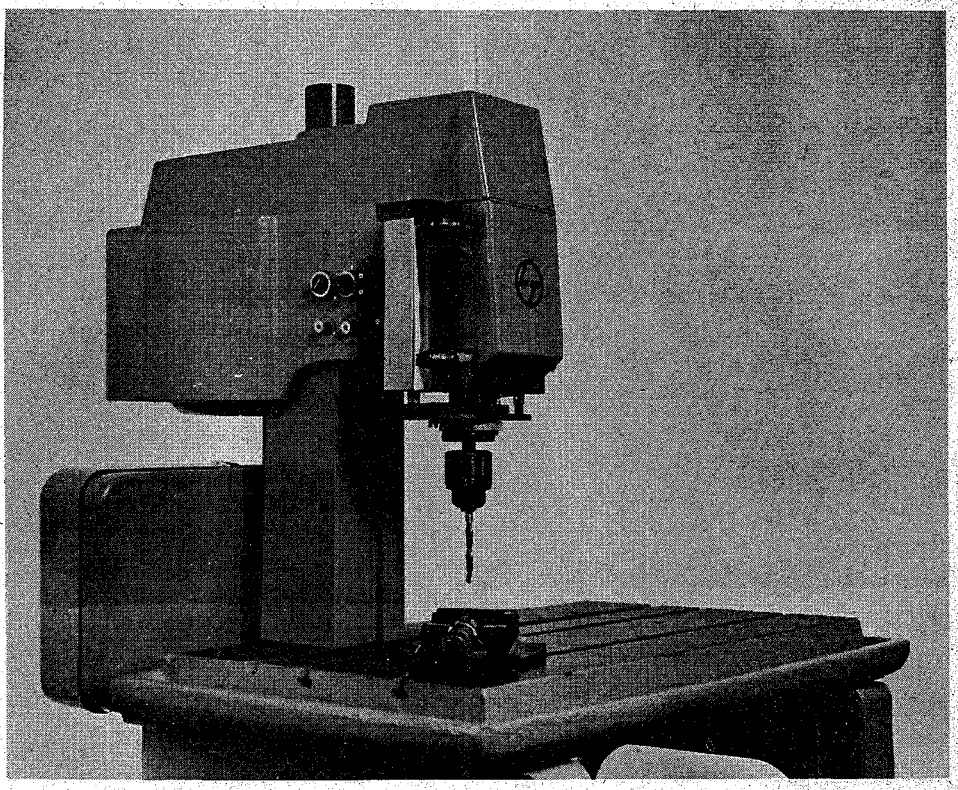
Hydro Pneumatic Drilling Machine

In India very few semi-automatic drilling machines are available. Due to limitation of their precision and efficiency, M/s Larsen and Toubro, Switchgear Process Control Dept. developed their own hydro-pneumatic drilling machine for their internal use.

The project was sponsored to IDC for redesign of this converted machine giving proper considerations for man-machine relationship to improve overall system efficiency. A need was also felt to improve overall aesthetics of the machine with reorganization of various elements of machine to achieve a sophisticated look as well as better relationship between operator, setter and millwright person with the drilling machine.

DESIGN : NAODHAR S.S.
GUIDE : VIJAY BAPAT





MATERIAL LIBRARY

Annexure 7.28

Material Library

During the last decade of experience in Product Design education, it has been our common experience that, the fresh graduates are not fully conversant with different materials, processes and particularly different surface finishings for metals, wood, plastics etc. To expose student to materials processes, Material Library has been set up.

There is normally a long time-lag between western countries and developing countries like India in introduction of new materials process, surface finishes etc. Under UNDP programme our faculty members visited many western countries and they had brought back huge collection of samples, literature etc. which had really helped the Material Library to come up to this size and shape.

Catalogues, samples in following areas are being collected from Indian as well as foreign sources and classified.

. Machine tools, accessories and cutting tools

These are further divided into machine tools for metals, wood, plastics, sheet metals, painting and other allied processes. We have about 2500 catalogues in this category.

. Electronic and Electrical equipments, accessories

These are further divided into domestic use, industrial use etc. We have collected about 2000 catalogues.

. Raw Materials

These are further divided in the form of different sections, shapes in mild steel, aluminium, wood, plywood, particle boards, laminates. About 1800 samples and catalogues are classified and stored for easy access.

. Furniture

As many as 750 Indian as well as foreign furniture producers catalogues are collected which helps in giving impetus to furniture design projects handled by faculty members as well as design students.

. Surface finishings and decorative processes

We have good collection of samples of various materials like metal, wood, plastic with different kind of surface finishing.

. Textiles, fabric - collection of carpets

Fabric, flooring materials, wall-panels, wall-papers samples.

. New material and processes for model making

Last year polyurathane rigid foam material was introduced in the department, for quicker, strudy and large size models.

Manufacturers, Dealers and Prices -

We are updating the information about manufacturers of various materials, their local dealers and current market prices.

The Material Library is very widely used by our past and present students as well as faculty members during various product design projects.

Annexure 8

Publications

IDC	Proceedings of the 1st National Seminar on Design Education
K. Munshi	An article entitled Industrial Design - A Synthesising Profession.
	Article on Design for Comfort for Long Distance Bus Travel in the Journal of Transport Management.
A.G. Rao Dr. G.G. Ray	An article entitled The Ergonomic's Nightmare in Science Today, Sept. 82
G.G. Ray	An article entitled The Relationship between Separate and Whole Body Weights and Volumes in J. Human Ergol.10-34-48, 1981.
	An article Tea-leaf Plucking - Workload and Environmental Studies in Ergonomics. Determination of Whole Body Centre of Gravity in India - J. Human Ergology, Japan.
	Ergonomics in Furniture Design, Inside-Outside, Feb. 1984
Kirti Trivedi	Article Philosophy and Work of Yozo Wakeu Japanese Toy Designer in Inside-Outside.
V.P. Bapat	Article entitled Anthropology for School Children in Science Today, Nov. 1979.
K. Munshi	Article - State of Industrial Design in India - in Asia/ICSID News, Mar, 1981.
A.G. Rao	Article - Education at the IDC - Economic Times.
S. Nadkarni	Industrial Design A Profession is born - Economic Times.
IDC	IDC News 1, 2, 3, 4 featuring the activities of the Centre.
	ABIKALPA - a journal of Industrial Design Centre.
	IDC Output IV
R. Poovaiah	Article - Hospital Sign System published in OTTOGONA (Italy) and Inside-Outside (India).

9. POST-TRAINING EMPLOYMENT

Annexure 9

Post Training Employment

Name of the Student	Employed with
Shri Kumar Nadig	M/s Philips India Ltd., Bombay (Peico Electronics Ltd.)
Shri Jagdish Bilgi	TELCO, Pune
Shri Pradeep Naik	Marathe Engg. Works, Sangli
Shri P. Mukundan	TELCO, Pune
Shri Rajkumar Konar	National Institute of Design, Calcutta
Shri M.N. Shivaraman	S.Y.J. Engg. College, Mysore
Shri Kumar Vimalendu	National Institute of Design, Ahmedabad
Shri M.B. Kulkarni	M/s N.R. Jasani (P) Ltd. Bombay
Shri EVR Murthy	D.C.M., New Delhi
Shri Dinesh Varma	Working with an Architectural Firm at Bangalore
Shri K.M. Banerjee	M/s Ralliwolf, Bombay
Shri Ajitkumar G.	NELCO, Bombay
Shri Mohd. Basha	Sundaram Clayton House,Bangalore
Shri S.S. Naodhar	Josts Engineering, Bombay
Mrs. Kumkum Nadig	Peico Electronics Ltd., Bombay
Shri A.V. Dhokey	M/s Chippundale (P) Ltd., Bombay
Ms. Poornima Saxena	National Institute of Design, Ahmedabad
Shri Y.D. Venkatesh	S.Y.J. Engg. College, Mysore
Ms. Aruna Pai	Free Lance Designer
Shri N.R. Joseph	Working with an Architectural Firm at Trivandrum
Shri Shaikh Khalil R.	Nehru Centre, Bombay
Shri P.G. Yammiyavar	HMT, Bangalore
Ms. Ratna Sengupta	Free Lance Designer
Shri V.S. Deshpande	J.N. Marshal & Co., Pune
Shri S.M. Jambhekar	ORG System, Baroda
Shri P.S. Khambete	NELCO, Bombay
Shri C. Gopinath	Working with an Architect in Bangalore
Shri I.M. Mulla	Kinetic Engg., Pune
Shri V.K. Jagannathan	Free Lance Designer
Shri B.S. Shringesh	Kinetic Engg., Pune

Shri P.S. Gaikwad	Aristocrat Luggage Ltd., Bombay
Ms. C. Sengupta	Advani Orlikon, Pune
Shri R. Mokashi	Kelvinator
Shri M.A. Munshi	Bajaj Tempo, Pune
Shri Pradyumna Vyas	Advani Orlikon, Pune

The remaining students are being interviewed by the following concerns:

1. Uptron India Ltd., Lucknow
2. Sundaram Clayton Ltd., Bangalore
3. Bajaj Electricals Ltd., Bombay
4. Hindustan Motors, Hooghly, West Bengal
5. Blow Plast Ltd., Bombay
6. Tata Burrows Ltd., Bombay

10. IN-HOUSE TRAINING

Annexure 10

In-House Programmes

Title of the Course	Name of the Organization	Faculty/Unesco Expert involved	Duration	No. of Participants
1. Cost Reduction through Industrial Design	Tata Management Training Centre, Poona	U.A. Athavankar	1 day Aug. 1981	30
2. Architecutral Graphics	Sir J.J. School of Architecture, Bombay	U.A. Athavankar	1 day Aug. 1981	40
3. Industrial Design	Crompton Greaves Ltd., Bombay	S. Nadkarni U.A. Athavankar A.G. Rao and K. Trivedi	1 day 21 Jan. 82	22
4. Programme for Policy Makers	State Trading Corp., New Delhi	Prof. Gui Bonsiepe	1 day 5-11-82	25
5. Role of Industrial Design for Small Scale Industries	SISI, GOI, Madras	Prof. Gui Bonsiepe	1 day 9-11-82	60
6. Contribution of Industrial Design	CEDT, IISc, Bangalore	Prof. Gui Bonsiepe & IDC Faculty	3 days 11-13 Nov. 82	25
7. Industrial Design and Technological Innovation	College of Engg., Mysore	- do -	1 day 15-11-82	50
8. Creativity and Problem Solving	Jyoti Ltd., Baroda	A.G. Rao	2 days 24-25 April 83	16
9. Exposure to Industrial Design	Space Application Centre Ahmedabad	U.A. Athavankar	3 days 14-16 April 1983	39
10. Workshop on Ceramic and Potteries	Vishwa Karigar and SIDI Bombay	S. Nadkarni & A. Gaffoor	5 days 9-13 May 83	75
11. Industrial Design in Japan	Indian Merchant Chamber Bombay	Prof. M. Yoshioka	1 day 29. Dec. 82	24
12. Creativity Workshop	SIDI, Bombay	A.G. Rao	1 day 3-4-1983	50
13. Workshop on Design	Space Application Centre, Ahmedabad	IDC Faculty	5 days 25-29 Oct.83	7

11. SHORT TERM COURSES

Annexure 11

Short term courses/ workshops

Sr. No.	Title of the course/workshop	No. of participants
1.	Innovation Management	15
2.	Innovation Management	10
3.	Idea Generation	25
4.	Product Innovation and Management	20
5.	Innovation Management - The missing link in technology transfer	50
6.	Industrial design for Industry	80
7.	Design of Hospital system and Equipment	10
8.	Exhibition of Design work	75
9.	Seeing it different ways	20
10.	Ergonomics in Machine Tool Design	15
11.	Aesthetics in Product Design	30
12.	National Seminar on Design Education	111
13.	Cost reduction through Industrial Design (Tata Management Training Centre, Poona)	30
14.	Architectural Graphics (Sir J.J. School of Architecture, Bombay)	40
15.	Industrial Design (Crompton Greaves Ltd)	22
16.	Creativity and Problem Solving	13
17.	Product Planning for middle level Management cadre	26
18.	Product Planning for top level Management cadre	16
19.	Programme for Policy Makers (State Trading Corpn., New Delhi)	25

20.	Role of Industrial Design for Small Scale Industries (SISI, GOI,, Madras)	60
21.	Contribution of Industrial Design (CEDT, IISc. Bangalore)	25
22.	Industrial Design and Technological Innovation (College of Engg., Mysore)	50
23.	Industrial Design in Japan	50
24.	Industrial Design in Japan (Indian Merchant Chamber, Bombay)	24
25.	Creativity and Problem Solving (Jyoti Ltd., Baroda)	16
26.	Exposure to Industrial Design (Space Application Centre, Ahmedabad)	39
27.	Workshop on Ceramic and Potteries (Vishna Karigar, and SIDI, Bombay	75
28.	Furniture Design for Industries	6
29.	Creativity workshop (SIDI, Bombay)	50
30.	Product Photography	12
31.	Design for Children	38
32.	Design for Children's Text Books	15
33.	Workshop on Design (Space Application Centre, Ahmedabad)	7

12. CONSULTANCY ASSIGNMENTS

Annexure 12

Consultancy Service

Sl. No.	Name of the Concern	Title of the Consultancy Project	Amount Rs.
1.	M/s Astro Optical Industries, Bombay	Design of Hand Held Magnifier	7,205/-
2.	M/s Jyoti Limited,Baroda	Industrial Design of CO_2 Laser Micro Machining System	7,035/-
3.	M/s Crompton Greaves, Bombay	Design of Starter Enclosures	
4.	M/s Cable Corporation of India, Bombay	Development of Functional Layout of the Canteen	13,760/-
5.	M/s Photophone Ltd., Bombay	Advice on Development of New Products	
6.	M/s Vijay Machinery Stores, Bombay	Design of Smoke Detector Enclosure	7,625/-
7.	M/s Thermax Pvt. Ltd., Chinchwad, Poona	Designing of Housing Container for Boilers	5,800/-
8.	M/s Ion Exchange India, Bombay	Design of Water Treatment Plant	
9.	Nehru Centre, Bombay	Design of Laser Exhibition	4,00,000/-
10.	M/s Voltas Ltd. Bombay	Design of Refrigerator Aesthetic Features	13,600/-
11.	M/s Larsen & Toubro, Bombay	Development of New Series of Switchgear Products	25,200/-
12.	Gandhi Bhavan, Bhopal	Design of Gandhi Exhibition	25,200/-
13.	M/s Klass Equipment, Bombay	Design of Klass Accuprinter	14,585/-
14.	Bombay Municipal Corporation	Saki-Vihar Corridor Improvement (L and T)	19,200/-
15.	M/s Jyoti Ltd., Baroda	Design of Laser Beam Centering Device	13,125/-
16.	M/s Thermax Pvt. Ltd., Chinchwad, Poona	Design of Thermax Boiler	
17.	Dept. of Science and Technology, New Delhi	Low Cost Slide Projector for Schools	14,700/-
18.	M/s Larsen & Toubro, Bombay	Heat Exchanger	11,025/-
19.	M/s P.S.A., Bangalore	Design of Micro Computer	12,000/-
20.	National Institute for Visually Handicapped, Dehradun	Casset Mail Box for Visually Handicapped	2,000/-
21.	M/s Hindustan Brown Boveri Ltd., Baroda	Design of DOL Motor Starter	20,065/-
22.	M/s Punjab Agro Industries Corpn. Ltd., Chandigarh	Design and Prototype Making of Solar Cooker	28,350/-
23.	M/s Electronics Trade and Tech.Dev.Corp. Ltd.	Design of ETTDC Symbol	5,300/-
24.	M/s Voltas India Ltd., Bombay	Redesign of Washing Machine	10,500/-

Annexure 13

Objectives of Design and Development Cell

The Product Design and Development Cell at IDC will help in presenting concrete proposals to the industry for commercial exploitation. The above objective can be defined in broader terms as follows:

- to develop prototypes of the products designed at IDC
- to develo prototypes of consultancy projects (if required by the clients)
- to provide complete service to the industry in bringing out products developed at IDC i.e.
  - a) preparing assembly drawings of the prototypes
  - b) preparing part drawings of the prototypes
  - c) locating possible suppliers of raw materials
  - d) providing assistance in mould making etc.
  - e) locating proper marketing organisations for the small scale manufacturers
  - f) preparing cost estimate including break even analysis

  In short, interested clients would be able to take the design and project reports off the shelf.
- assisting students and faculty in development of prototype
- organize information of materials, processes in form of a material library
- to develop and try out innovative ideas so as to keep the spirit of development.

14. STUDENTS ENROLMENT AND GRADUATE OUTPUT

Annexure 14

Students enrolment and Graduate Output (Master of Design in Industrial Design)

Students enrolled

Year	Planned	Enrolled	Students completed the course
1980	15	15	8
1981	15	15	12
1982	15	15	12
1983	15	15	13
	60	60	45

Annexure 15

Programme of Study

Course leading to Master of Design Programme in Industrial Design

The course lasts for 2 academic years (4 semesters)

Students can major in Engineering or Architecture

Subjects	Distribution of hours per week by subjects and semesters	
	I Semester	
	L+	P+
Elements of Design I	0	6
Communication Technique	0	6
Media Investigation	0	6
Product Design I	1	7
Art, Design and Society	2	2
Nature of Materials and Processes	3	7
Studies in Form	0	10
	6	44
	II Semester	
Applied Ergonomics	3	7
Visual Communication	0	10
Product Design II	2	10
Analysis and Organization of Controls and Displays	0	10
Contemporary Trends in Teatre, Film and Art	1	0
Elements of Design II	0	10
	6	47

Subjects	III Semester L+	P+
Design Management and Professional Practice	2	4
Product Planning and Marketing	2	6
Elective Courses		
Advanced Studies in Form	0	10
Product Detailing	0	10
Design Methodology	0	10
Advanced Ergonomics	0	10
Special Project	0	10
	4	26

Project Work	IV Semester	
Project I	0	8
Project II	0	20
Project III	0	40
	0	68

L+ - Lectures

P+ - Practicals

Annexure 15.1

Programme of Study

Course leading to Master of Design Programme in Visual Communication

The course lasts for 2 academic years (4 semesters)

Students can major in Engineering/Architecture/G.D.Art/ B.F.A.

Subjects	Distribution of hours per week by subjects & semesters	
	I Semester	
	L+	P+
Visual Principles Syntactics	0	10
Representational Techniques I	0	9
Photocommunication I	0	6
Visual Design I	2	8
Design and Society	2	2
Semantics	0	7
Visual Ergonomics	0	4
	4	46
	II Semester	
Representational Techniques II	0	6
Photocommunication II	0	6
Visual Design II	2	8
Typography	0	8
Reproduction Techniques	2	7
Communication Theory	2	5
Contemporary Trends in Arts	3	3
	9	43

Subjects	III Semester L+	P+
Indian Thought and Tradition	2	6
Elective I	0	10
Elective II	2	4
Special Project (Seminar)	0	6
	4	26

Project Work	IV Semester	
Project I	0	8
Project II	0	20
Project III	0	40
	0	68

L+ - Lectures

P+ - Practicals

Shringesh, B.S.	Redesign of Autoriksha
Gaikwad, P.S.	Industrial Canteen Furniture
Vijay Kothari	Product Photography Equipment
Ms. C. Sengupta	Sewing Machine
Ms. Indrani Sen	Exploration of Flexible Material Products
Jayesh Panchal	Design of Mini City Car
Vasant Meher	Portable X ray Unit
D. Sudhakar	Alphacomp Phototypesetting Machine
K.V.N. Rao	Slide Loader
R. Theleban	Washing Machine
R. Mokashi	Exploration of Spinning Based Products
M.A. Munshi	Micro Computer for L & T
S. Ghosh	Garbage Collector
Sandeep Mistry	Furniture in Integral Form
S.C. Parikh	Concrete Mixer
Pradyumna Vyas	Visual Possibilities of Turned Wood