

## TECHNICAL TEACHERS' TRAINING INSTITUTE, CHENNAI

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### 1.0 PREAMBLE :

Technical and vocational education is an important component of the economic and social development of the country. The maintenance of standards of this sector is vital. By early 60's, the Technical Education System in the country had witnessed rapid expansion in terms of increased number of polytechnics and intake levels in the broad disciplines of Civil, Electrical and Mechanical Engineering accompanied by small beginnings in the diversification of courses. The then prevailing situation came in for heavy criticism on several counts. It was seriously felt that the curriculum was a diluted version of degree courses; the teachers were not proficient in instructional processes; the instructional media and materials were neither adequate nor appropriate; the management of institutions was devoid of professionalism and the quality of the products was not in conformity with the job profiles of technicians. Warranted by such deterioration of standards, the Government of India had initiated sev-

eral measures for consolidation, further diversification and quality improvement of the system. As one of the measures, four Technical Teachers Training Institutes were set up with the main objective of assisting the State Governments in the respective regions in their efforts towards improving the quality of technician education and its products.

The Technical Teachers Training Institute (TTTI), Chennai, was established during 1964-65 as a key catalyst institution for ensuring quality in technician education in South India comprising the States of Andhra Pradesh, Karnataka, Kerala and Tamilnadu and the Union Territory of Pondicherry.

### 2.0 OUR MANDATE :

The mandate of the Institute is to take initiatives to offer need-based HRD programmes through appropriate modes and develop curricula and instructional resources. It will also foster research and offer consultancy and extension services for the total development of polytechnics and other technical and

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vocational institutions, the Directorates managing these institutions, business, industry and service sectors and the community at large. In carrying out these, the Institute will collaborate with national and international agencies interested in and/or deriving benefits from technical and vocational education including business, industry and service sectors.

### 3.0 VISION STATEMENT :

Technical Teachers' Training Institute, Chennai (Madras) is a nodal human resources development institute for planning, designing, developing, organizing and evaluating quality training programmes, research studies, and learning packages for technical and vocational education, industry and community. The institute strives continuously and vigorously to further enhance its sensitivity to environmental changes and reach greater heights of excellence through active collaboration with national and international agencies on projects and programmes aimed at quality improvement of technical education systems.

### 4.0 MISSION STATEMENT :

The Technical Teachers' Training Institute, Chennai is a resource institute established by the Government of India for Quality Improvement of Technical Education in our country and in the Southern Region, in particular.

- We offer quality, flexible, relevant and cost effective programmes in HRD for Technical Vocational Education Systems.
- We demonstrate leadership by or-

ganizing dynamic and leading edge programmes to meet the changing current and further needs of our clients.

- We offer expertise and services in a wide variety of ways and in different modes that are appropriate to our clients in Industry, Business, Service sectors and Community at large.
- We are committed to create an environment which promotes congenial learning, collaborative decision making and promoting a sense of belongingness and accountability which bring out the best in our human resources.
- We are committed to help solve problems in Technical Vocational Education and in tackling issues in a reactive and / or proactive manner, by research, development and extension activities.
- We establish and foster close links with national and international agencies involved in Technical Vocational Education.

The Southern region of the country comprising Andhra Pradesh, Karnataka, Kerala and Tamilnadu and the Union Territory of Pondicherry has the largest number of technician institutes with the largest intake of students. The region, thus produces the largest number of technicians. TTTI, Chennai has the stupendous task of having to cater to the needs of the largest sector of technician education in the country.

TTTI, an autonomous organization has made substantial and significant contributions towards improving the

quality of technical education in all its aspects. Though during the initial stages the emphasis was on training of teachers, over the years the emphasis has gradually changed to assisting the state governments and the polytechnics in the region towards improving their educational processes and products. This has led to diversification of the institute's activities to suit the requirements of the clientele system.

Followed by critical analysis of the identified long and short term needs, TTTI, Chennai introduced several programmes and activities relating to

- Developing methodologies and adopting them for design, evaluation and revision of curricula of on going programmes and new courses.
- Preparation and distribution of instructional materials in the form of text-books, work books, laboratory and drawing manuals.
- Fabrication and supply of educational media such as working models, multimedia learning packages, tape slide sequences, educational films and video programmes.
- Introduction of examination reforms for promoting learning and bringing in greater objectivity in the tests and examinations by making use of validated test questions.
- Development of the competence of the staff in the main areas of Subject updating, Industrial training and Educational technology through long, modular and short term courses leading to award of Diplomas, Degrees and Certificates in

Technical Teaching.

- Development of strategies and extension of services in Institution Building processes for efficient and effective performance.

## 5.0 RESOURCES AND FACILITIES :

2 hostels to cater to the board and lodging requirements of our students are located in the campus of the Institute. Type-A hostel with sharing bathroom can accommodate 80 persons. Type-B hostel with attached bathrooms can accommodate 50 persons in single rooms.

A 175 seating capacity Smt. Indira Gandhi Auditorium is acoustically constructed and is designed for use in national seminars, cultural programmes, social and other academic activities.

The Institute derives its strength and the capabilities to cater to the ever-growing demands of the client system from its staff. The members have a high academic and industry background. They bring into all their activities the diversity of their experience and expertise. They represent a variety of Engineering and other disciplines including Educational Management and Rural development. Our Faculty are :

- Training consultants to determine needs of the system.
- Educational Planners to design need-based, user friendly, participant oriented courses and workshops.
- Instructional Designers to design, develop, monitor and evaluate instructional processes for educational and training.

**Our Supporting Staff :**

- Include Administrative and Clerical personnel, Technicians, Production personnel and other support staff.
- Lend experiences and contribute to the overall functioning of the institute.

**6.0 ACHIEVEMENTS :****6.1 Curriculum Development ;**

Curricula for several courses offered in the Southern region have been designed and developed by adopting scientific and systematic methodologies, using the information on technician job profiles and involving practicing teachers, industry representatives and educational administrators.

A large number of teachers have developed adequate competencies for undertaking curriculum construction, evaluation and revision exercises on their own and with the help of the Institute.

The curricula are relevant, need-based and apt to produce the right type of technicians, if implemented effectively. Nevertheless, there is a feeling in some quarters that their contents are a bit heavy and theoretical in nature.

**6.2 Staff Development :**

Under the Quality improvement Scheme of the Government of India, TTTL, Chennai, offers a variety of short courses, seminars and workshops. These are conducted at the Institute campus at Chennai, Extension Centres at Madurai, Bangalore, Kalamassery and Hyderabad and individual Polytechnics. These programmes are of duration varying

between 1-4 weeks. These programmes are identified on the basis of systematic needs analysis and they are characterized by the use of need-based, user friendly, participant centred and androgogically sound approaches of instruction. Areas of short term courses :

- Content Updating
- Curriculum Development
- Instructional Material and Media Design
- Evaluation
- Educational Management and Administration
- Rural Development
- Instructional Design and Delivery System
- Guidance and Counselling
- Induction Training
- Industry-Institution-Interaction
- Entrepreneurship Development
- Educational Research

TTTI has recognised the impact that staff development has on the quality of student learning. It has also recognised the needs of different categories of technical teachers to design and offer the following long term programmes.

Ph.D. in Engineering Education, Educational Technology and Civil Engineering.

M. Tech. Ed. - Master of Technical Education.

B. Tech. Ed. - Bachelor of Technical Education.

Dip. T. T. - Diploma in Technical Teaching.

PGDTCA - Post Graduate Diploma In Teaching Computer Science and

Applicances.

Dip. Sc. T. - Diploma in Science Teaching.

Dip. TESP - Diploma in Teaching of English for Specific Purposes.

Cert. E.T. - Certificate in Educational Technology

Cert. T.T. - Certificate in Technical Teaching.

The salient features of the long term programme are :

- Attachment of industries for hands-on experience relevant to the field of training
- Instructional skill training through micro and macro teaching experiences in simulated situations and / or real situations through teaching practices in polytechnics.
- Content updating in identified areas.
- Project work in the area of specialization.
- Orientation to use of computers.

The long term teacher training programmes and short courses for staff development have enabled a vast majority of the teachers to update their knowledge in chosen subjects and related industrial practices and acquire skills in the application of pedagogical principles in classroom management and student personnel administration.

There is evidence to indicate that almost all the trained teachers are utilising these acquired talents and techniques in varying degrees to improve their instruction by preparing teaching plans in advance, employing a variety of methods during delivery of instruction,

providing frequent guidance to slow learners and changing teaching styles on the basis of feed-back obtained from the students.

Though the instruction is centred around conventional methods such as chalk and talk, tutorials, assignments, demonstrations and verification type of practicals in the laboratories, the teachers are trying to ensure active participation and involvement of students for maximum learning through graded assignments, question-answer sessions and learning by doing.

A variety of instructional materials such as text books, work books, laboratory and drawing manuals and other forms of self-instructional modules have been produced with the involvement of experience teachers handling the concerned subjects.

### 6.3 Instructional Materials and Media :

The students and staff find several of these materials very useful and appropriate as they meet the curricular requirements and are written following the pedagogical principles facilitating learning.

Some of these materials have, however, not been utilised adequately for reasons such as easy availability of standard text books in the market, publication of similar materials by the polytechnic teachers, probable inadequacies in the materials themselves and the tendency of the students to refer to cheap guides flooding the market.

The teachers and the students have expressed a need for immediate production and supply of instructional materials in subjects hitherto not attempted particularly in Computer programming,

Entrepreneur development, Micro processors, Environmental engineering, Conversion of existing materials to S.I. units and the like which are newly introduced in the curricula of courses.

A wide range of instructional media comprising charts, slides, OHP transparencies, working models, demonstration trolleys, multi-media learning packages, educational films and video programmes have been developed with the assistance of teacher trainees during their training programmes in the Institute.

Many of these media materials have a very high potential for enhancing the quality of instruction in classrooms and laboratories in terms of unfolding the complexity of the concepts and intricacies of the internal mechanisms and bringing real life situations and processes into the classrooms.

Some of these media materials have been replicated and given to the polytechnics on cost basis. A few of them have been entrusted to commercial producers for mass production and wider dissemination.

#### 6.4 Testing and Evaluation :

The Institute has assisted the polytechnic system in introducing reforms in testing and evaluation procedures by adopting semesterisation of courses, increased weightage for internal assessment, objective type of tests for performance assessment and Table of Specifications for paper-setting to ensure total coverage of the syllabus and abilities to be tested.

A large number of teachers have been trained to acquire relevant competencies for implementation of the re-

forms and they have also contributed several thousands of items/questions facilitating the Institute to set up an Item Bank having computer facility for storage and retrieval for setting test papers.

Many of the trained teachers are using these acquired competencies for objectively assessing the performance of the students in class tests, assignments, laboratory work, workshop exercises and project work. Some State Boards of Technician Education have used the Item Bank facility for construction of end examination question papers.

#### 6.5 Consultancy and Extension Activities :

TTTI, Chennai, has reputation of having strong and varied linkages with business and industry. The Institute has contributed to this relationship through support for development of competent trainers. This reputation and experience has resulted in demands from the industries and business for training of trainers. This Institute has also established professional relationships with educational institutions and organizations and universities to work in areas of common interest.

Our clientele includes a wide range of manufacturing, service and utility companies and institutions. Some of our clients are :

- Academic Staff Colleges
- Ashok Leyland
- Bharat Heavy Electricals Limited
- Brakes India Ltd.
- Cement Industries
- Department of Atomic Energy
- Department of Electronics, Govt. of India



- Engineering Colleges
- Environmental Training Institute
- Indian Air Force
- Indian Institute of Technology
- Indian Navy
- Jawaharlal Nehru Technological University
- Metro Water
- NCERT
- Neyveli Lignite Corporation
- Regional Engineering Colleges
- Sugar Industries
- Sundaram Clayton
- Tamilnadu Electricity Board
- Tamilnadu Pollution Control Board
- Tamilnadu Water Supply and Drainage Board.

Programmes offered are in the form of :

- Continuing Education Projects
- Instructional Material / Media Development
- Instructional Resource Development
- Modular Programmes
- Seminars
- Training the Trainers Programmes.
- Video Production
- Workshops.

#### **6.6 World Bank Assisted Project for Strengthening Technician Education :**

Since 1991 the Institute has been extending its support to the state governments in implementing the World Bank Assisted Project. This seven-year project is intended to strengthen facilities for technician education in most of the states.

The Institute is actively involved in planning and implementing various programmes and activities to meet the identified requirements of project states in the southern region. The Institute is extending its experiences and expertise to the State Project Implementation Units (SPIUs) and the National Project Implementation Unit (NPIU). The institute has been extending its assistance to the project states in conducting staff development courses for the polytechnic staff. For the successful implementation of World Bank Assisted Project the institute has prepared and supplied details of equipment required for polytechnics.

TTTI, Chennai being one of the co-partners in the project also prepares reports for the periodical review meetings held for formative evaluation of the project.

#### **6.7 International Collaboration :**

The Institute has over the years established professional links with international organizations. During the early years, the collaboration was in the form of secondment of faculty from the United Kingdom. It has received support in the form of equipment and technical assistance from UNDP, ODA and Colombo Plan Schemes. It has extended its expertise and services to UNESCO, both at Paris and Bangkok, Commonwealth Secretariat, London and Colombo Plan Staff College for Technician Education, Manila. The Institute is an associated centre of APEID of UNESCO. The activities under collaboration are in the form of :

- Course Development
- In-country Training Programmes
- Participation in international Semi-

nars / CD Workshops

- Research Projects
- Secondment of Faculty
- Strengthening media facilities
- Training Programmes for Overseas Teachers
- Design and Development of Training Packages

#### **Canada India Institutional Co-Operation Project :**

This Human Resources Development Project which commenced in 1992 is in its second phase. The project is aimed at integrated development of 13 selected polytechnics - four each in Karnataka and Kerala, and five in Tamilnadu. TTTI, Chennai is one of the major partners in the project along with the Association of Canadian Community Colleges and Indian Society for Technical Education. TTTI, Chennai was involved in the planning, design and implementing training programmes in all project areas and more specifically in areas of Environment, Teacher Training and Open learning. During the second stage of the project the TTTI has assumed full responsibilities for (i) Environment Awareness (ii) Curriculum Development including evaluation of student performance and (iii) Policy Development and Systems Planning.

#### **Fellowship Implementation Programme under ADB Project for Council for Technical Education and Vocational Training, HMG, Nepal :**

TTTI, Chennai is involved in planning, developing, implementation and evaluation of training programmes in five major areas for the Council for Technical Education and Vocational

Training, HMG, Nepal. This project aims at upgrading the professional and teaching skills of teachers. The areas chosen under the project are :

- Engineering Related Vocations (Electronic Equipment Maintenance, Refrigeration and Air-Conditioning, Auto/Diesel Mechanism, Machinery Repair and Maintenance and Skill Testing).
- Agricultural Related Vocations (Food/Fruit Processing and Packing, Live Stock and Animal Health, Dairy Technology, Fishery).
- Tourism Related Vocations (Cookery, Baking / Pastry, Lodge Management, Trekking)
- Health Related Vocations (Community Health Education)
- Office Management Related Vocations, (Video Production, Office Management and Instruction, Computer Skill Upgrading).
- Audio Visual Aids.
- Computer Repair and Hardware Maintenance.

#### **Consultancy Project for Technical and Vocational Education Section, Ministry of Health and Education, Bhutan, under UNDP :**

In the first phase, staff development plans for the Royal Bhutan Polytechnic and the Royal Technical Institute and plans for setting up Learning Resource Centre at RBP were developed through Need Analysis done through questionnaire and on site interview of the target audience.

Implementation of staff development plans over a period of five years is envisaged in the next phase.



**6.8 Achievements 1990-97 :**

<b>NUMBER OF TEACHERS TRAINED</b>	
Polytechnic staff through long term programmes	321
Overseas teachers	200
Polytechnics staff through short term courses and workshops	11500 (Person week)
Number of Diploma/Post diploma programmes for which curricula in subjects developed/revised : Programme Involving subjects	112 3500
No. of ETV Programmes developed	38
No. of Polytechnics for which assistance provided to Implement MPEC system	17
Standard list of equipment : (diploma programmes)	20
No. of CAI Packages produced	10
No. of Community Polytechnics for which assistance Provided annually	130
Staff development project for Nepal CTEVT-ADB project	110 (Person months)
Project on Training modules for WB-DANIDA-CMA-HRD Project	2
No. of participants trained for other organizations such as Industry, Educational Institutions, CPSC etc.	1398
No. of modules for Continuing Education	20
Staff Development Programme for RBP, RTI under UNDP	1
Planning for the Establishment of Learning Resources Centre at RBP, Bhutan	1
UNESCO Fellowship in Biochemistry for Nepal	1
Educational Research Evaluation	13
UNICEF Sponsored Training in Rural Sanitation	3
CIICP Environment Programme	4