

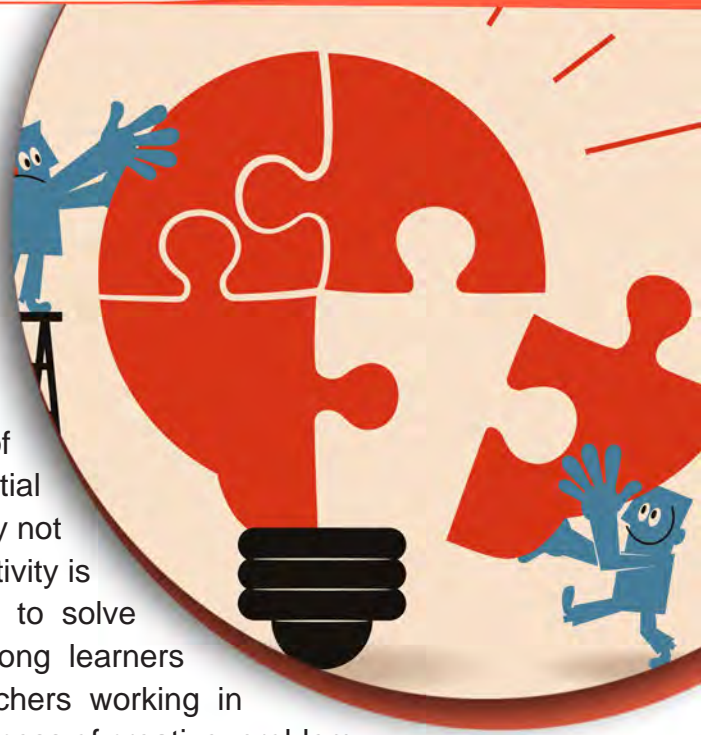


A COMPREHENSIVE TRAINING POLICY FOR TECHNICAL TEACHERS

Module 7: Creative Problem Solving, Innovation and Meaningful R and D

RATIONALE

There has been increasing emphasis on research and development, creativity and innovation due to globalization, intense competition and rapid technological developments. Society is facing a number of challenges that require novel responses. Products have shorter life cycles and there is a need to develop new products that meet the needs and expectations of customers. Creativity and innovation have become essential for survival of any organization or industry. Creativity may not lead to innovation but for any innovation to happen, creativity is essential. Thus it is essential to develop capabilities to solve problems creatively, innovate and undertake R & D among learners of 21st century. The module aims at enabling the teachers working in technical institutions to understand the concept and process of creative problem solving, innovation and R & D so as to enable them solve problems faced creatively and innovate the processes, products, and services in institutions or in their own areas of specializations; and to ensure development of these capabilities among the learners. In addition, the module aims at enabling the teachers to undertake research to improve the relevance, efficiency and effectiveness of various sub-components of technical education system. The objectives of the module will be achieved through e-content, e-tutorials, discussion forum assignments, and project work.



MODULE OUTCOME

After completing the learning tasks in this module, the learners will be able to:

- ❖ Solve problem creatively.
- ❖ Innovate the process, services and products etc. in work life.
- ❖ Build effective teams for R and D
- ❖ Undertake research to improve the various sub-components of technical education system.

CONTENTS

Unit 1

- Creative Problem Solving- Concept, Process of Creative Problem Solving, Techniques of generating focussing ideas/Options
- Innovation- Creativity, Invention & Innovation , Concept of Innovation, Types of innovations - Incremental and radical Innovations; process innovation, product innovation, service innovation, technological innovation; Models of Innovation used in various generations of innovation, Process of Innovation- Idea generation and mobilization, Advocacy and Screening, Experimentation, Commercialization and Diffusion and implementation; Creating Conducive Environment for Innovations; Benefits of Innovations.
- R&D Through Team Work - Concept, Characteristics of effective teams, Principles for Building Effective Teams.

Unit 2

- Research in Technical Education- Research in Technical Education: An Introduction, Review of Relevant Literature; Selecting & Defining a Research Problem, Selecting & Describing Methodology of Research- Descriptive Research- Survey Research, Case Study research, Content Analysis Research, Correlation Research, Ex-Post Facto Research, Experimental Research; Action Research; Sampling Techniques, Measuring Instruments; Collecting data; Analysis of Data; Formulation of Research Proposal, Writing a Research Report, Evaluation of Research Report.

