

PROFESSIONAL TRAINING FOR ENGINEERING TEACHERS

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ABSTRACT

The paper examines the need for professional training for engineering teachers towards more creative and wholesome learning process in the technical institutions. A preliminary approach to course design for professional training has been discussed. This could form a basis of discussion within the profession. In particular, feedback from teachers in practice would be very helpful in determining the contents, duration and modus operandi for the training programme finally adopted.

1. INTRODUCTION

The need for enhancing the quality of engineering education has been recognized the world over (1) In particular, approaches to engineering training, including further and continuing education of engineers in an era of advancing technology have been examined in this regard (2) The concepts of Total Quality Management (TQM) as developed for industries have been incorporated into the principles and tools of education (3) The end of the cold war has resulted in the creation of global economy in which innovations in engineering, management, finance and marketing will together help rapid economic development. The revolution in electronics is rapidly blurring the difference between engineering disciplines, and engineering colleges are revamping their programmes to make

them more practical and responsive to industry (4) The Indian Society for Technical Education (ISTE) has attempted. (5) to help engineering teachers to improve their class room presentations and training skills. Such efforts need however to be strengthened in view of the disquieting report about the state of engineering education in the country which says, among other things, "the technical education system in the country has become obsolete as it is unable to attract and retain talented engineers, and only the mediocre are taking to the teaching profession" (6).

OBJECTIVES OF PROFESSIONAL TRAINING

It is a well known fact that a large percentage of engineering teachers working in engineering colleges have practically no industrial experience, nor any formal training in the basic principles

of teaching- learning process. After the introduction of the Quality Improvement Programme (QIP) in the seventies, most teachers have acquired postgraduate education and research experience upto the Ph. D degree level. However, there has been very limited Industry-Institution interaction thus making such research irrelevant to the industry. This scenerio is not conducive to produce, from the portals of engineering colleges, wholesomely developed professional engineers who can meet the challenge offered by the global economy of "moving from a developing nation, to that of a globally effective one" (7). The professional training of engineering educators is therefore, a vital need which must fulfil the following objectives

- i) Inculcate wholesome and integrated professional approach to engineering education.
- ii) Learn how to keep on learning life long.
- iii) Understand principles of adult learning and thereby develop skills to generate an atmosphere in which creative teaching and wholesome learning can happen.
- iv) Understand the relationship of concepts in Management like TQM and HRD with engineering education.
- v) Develop innovation and creativity.
- vi) Professional orientation and development of teachers including interaction with business, industry, society and professional institutions.
- vii) Engineering teachers must learn to use the faculties of the right and left hemispheres of the brain in their education (8).

- viii) Cultivate a flexible and positive attitude of mind which together with technical knowledge and other skills provide the foundation for excellence.
- ix) Learn about curriculum design, education technology, and training methodology.

DESIGN OF PROFESSIONAL TRAINING PROGRAMME

A systematic approach to training depends on vigorous review of present situation; clear statement of objectives; and balanced assessment of alternative ways of achieving those objectives. The training goals must clearly state what is expected to attain through the implementation of the training system. Formal training should enable teachers to learn the skills of creative teaching, improve performance of their task, and learn how to keep up-to-date in their specialised fields.

Quality of their output as measured through effective training of students will be enhanced. Job satisfaction of teachers and their commitment to long term objectives of engineering education will be better. Professional training of engineering teachers will provide a well trained work force required to meet the growing demand of training over 3,00,000 engineers and technologists in the years 1995 - 2000.

Some questions need to be asked before designing a relevant training programme. One set of these questions relate to the participants and the other to the objectives of the training. One should have answers to the following questions

- (1) Why have the trainees chosen teaching as a career ?
- (2) Do they possess the attributes to enable them to become

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