

## PROFESSIONAL TRAINING OF ENGINEERING TEACHERS

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### ABSTRACT

*The paper highlights the importance of professional training of engineering teachers. A strategy of training needs assessment at institutional level, occupational level and individual level has been described. Two models for training have been described for inservice training of teachers and preservice training of potential teachers. Significant issues for making the training relevant and reliable are discussed.*

### 1. INTRODUCTION :

Teaching is a fullfledged profession like Medical Practitioner, Engineering Professionals, Advocates and other service professionals.

All profession requires specific amount of knowledge skills and attitudes which are acquired through professional educational programmes. Teaching in engineering education is a combination of two professions i.e. Technology and Teaching. So the person who wants to opt to become teacher in engineering education must undergo two professional programmes which will prepare him to become teacher in engineering education.

This will restrict the persons who have no aptitude to become teacher which may save the technical education from deteriorating or declining in performance because of low commitment and motivation of such teachers towards education. This will also encourage the persons to join

Technical Education who actually have the aptitude to become teacher. The commitment, motivation and performance level of such teachers will be high to improve the efficiency and effectiveness of technical education.

Right from the independence there was emphasis on quantitative expansion of the Technical Education. So its quality (relevance) has not been questioned much in the past. Nowadays the unemployment problem and competitiveness, social and industry demands for quality education, its consequences started questioning about quality of Technical Education.

In the changing and emerging industrial scenario the job of the engineering teacher is not so simple as it used to be and posing variety of challenges to engineering teachers.

These challenges are well recognised in the NPE 1986 and its programme of action which needs as the role of technical teacher performing teaching research, consultancy,

development of learning resource materials and management.

## 2. TRAINING NEEDS IDENTIFICATION

To prepare the teachers for these changing role, systematic training-need-assessment should be done, although need assessment is a complex job, but not impossible. Training need assessment can be done at three levels, i.e. institutional level, occupational level and individual level.

**2.1 Institutional Level Needs:** Training needs at institutional level can be determined in following ways :

- a) Examining the progress/evaluation report of the institution which will highlight the problems/areas of weaknesses which were on priority but not tackled properly and responsible for present crises situation.
- b) The long term and short term development plans of the institution will also depict the areas of training to achieve the objectives of the plan. This type of training can be identified and incorporated when individuals are involved in planning.
- c) Projects which are ongoing or will be launched.
- d) Other requirements of the institution, like Government policy, accountability, etc. will also help in determining training areas.

The training areas at institutional level are shown in diagram 1. This is not an exhaustive list. More areas may be added as per needs identified in 2.1 (a), (b), (c) and (d).

The above areas consists following activities :

### **Curriculum Development, Implementation and Review**

- Identify new and emerging

Technology in which diploma programmes can be started.

- Development of curriculae in new and emerging technology areas.
- Development and testing of instructional material in these areas.
- Implementing the curriculum and reviewing it periodically.
- Reviewing the existing curriculum in their relevance and modifying/revising the curriculum.

### **Industry Institute Interaction**

- Identifying the areas where interaction is possible.
- Managing the interaction activities.
- Obtaining feedback from industry about quality of passouts.

### **Students Evaluation**

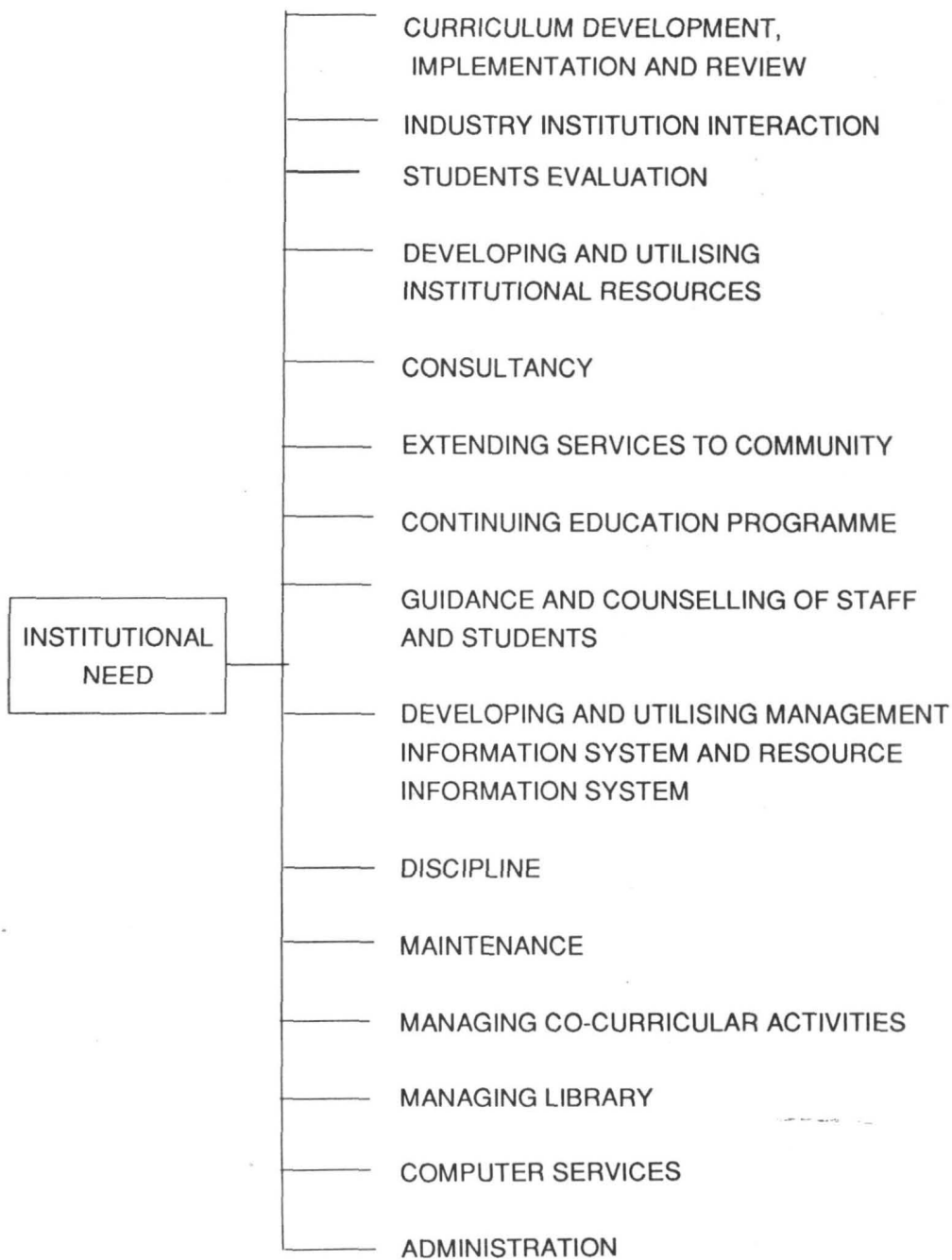
- Developing and using item/question bank.
- Bringing objectivity in testing and testing procedure.
- Making use of formative evaluation for improving the teaching learning process.
- Conducting oral and practical examination and performance assessment.
- Evaluating answer books and preparing final result.

### **Developing and utilising instructional resources**

- Managing the activities of LRDC/LRUC.
- Reviewing the instructional material.

### **Consultancy**

- Conducting the consultancy for internal revenue generation.



**Diagram 1.**

**Extending services to community**

- Managing the activities of N.S.S. , NCC, Community development and other similar activities.

**Continuing Education Programmes**

- Identifying, planning, implementing continuing education Programmes for industries, society and institutional staff.

**Guidance and counselling of staff and students**

- Conducting guidance and counselling activities for students for institutional activities and further growth.
- Conducting guidance and counselling programme for the benefit of the staff.

**Developing and utilising management information system and resource information system for various purposes, like -**

- Students progress records
- instructional material
- staff records
- institution progress
- staff development, etc.

**Discipline**

- Maintaining discipline in the institution and improving inter personnel relationship.
- ★ Conducting Maintenance activities
- ★ Managing co-curricular activities
- ★ Managing Library
- ★ Developing and utilising computer

centre for various activities.

- ★ Administration

**2.2 Occupational Needs:** The analysis of job functions of the teacher in terms of knowledge, skills and attitudes will help in determining the training needs.

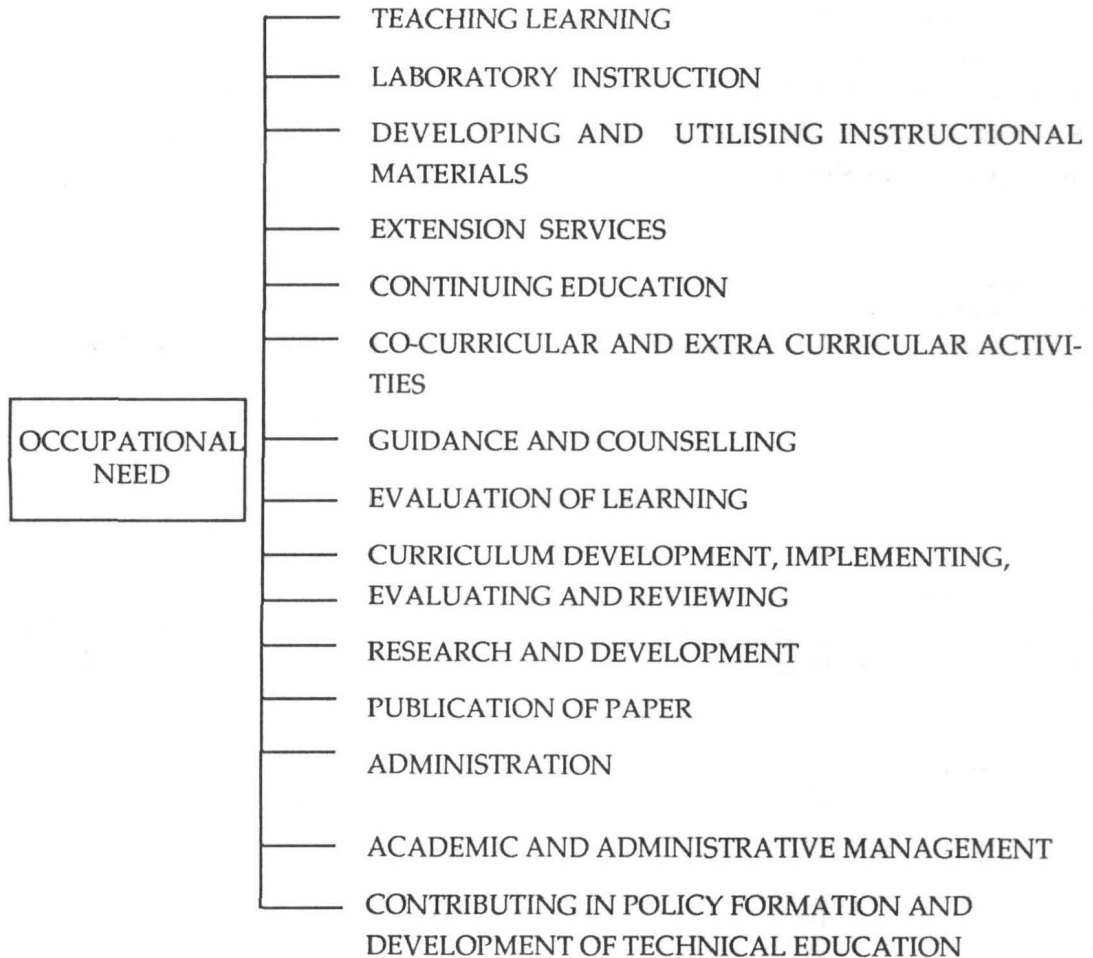
a) The job responsibilities recommended in AICTE Norms.

b) Responsibilities to plan, implement, monitor and review developmental projects.

c) Other role which are performed and not credited anywhere will provide guideline to draw a map of training

programme for inservice teachers and designing graduate or under graduate programme for developing fresh engineering graduate to become professional teacher. The diagram 2 shows that as the teacher gets experienced and promoted to higher posts he is assigned the responsibilities of higher order related to management, innovation, development etc. So training should be a continuous process which will enable the teacher to cope up with changing requirements/needs and to shoulder higher responsibilities.

The areas under occupational needs are mentioned in diagram 2. There may be possibility of overlapping of needs at occupational and institutional level.



**2.3 Individual Needs :** Identification of individual training needs will depend on following :

- his educational qualification
- experience in teaching, industry and research
- content updating
- occupational needs
- institutional needs
- motivation and commitment level
- career advancement needs

This can be periodically determined through performance appraisal system.

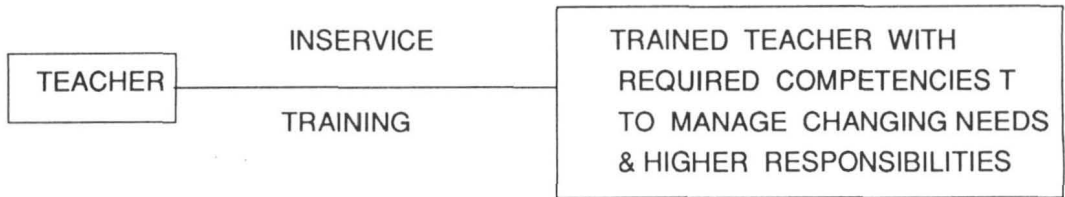
**3. DEVELOPING TRAINING PLAN :**

Based on above three needs the training programme can be designed/adopted/adapted for the individuals or groups. It is not desirable that all teachers should be trained in all areas of working of Technical Education. Considering the needs at institu-

tional level, occupation level, individual level, norms of staff development, resources available, training plans should be prepared. For inservice teacher the training process and its outputs are shown in diagram 3.

4. MAKING TRAINING PLAN REALISTIC :

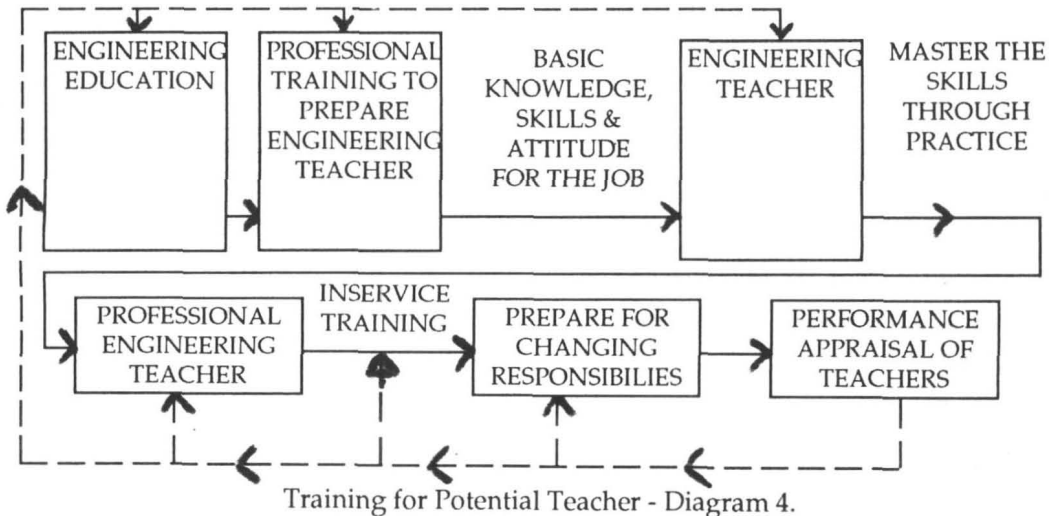
To make the training relevant and reliable following points can be observed.



Inservice Training  
Diagram 3

For potential teachers programmes based on above needs should be strated which will be after engineering degree so that suitable

graduates shall join the teaching profession. For potential teacher the training process and its outcomes are shown in diagram 4.



★ The performance appraisal report of an individual and annual evaluation report of the institution should be examined for validating the training plan.

★ Interviewing the individuals to gain their confidence and commitment to implement the training plan.

★ Administering questionnaire to collect information and opinion for training.

★ Periodic evaluation of the institution by experts.

#### 5. EVALUATION OF TRAINING PLAN :

The training plan so developed should also be evaluated on following parameters.

- Cost benefit
- relevance to present and future needs
- consequences of training
- availability and utility of resources
- problems in implementation

- commitment and motivation of the individuals and their contribution after attaining the training.

#### 6. CONCLUSION

The professional training of the engineering teacher is essential. There should be special training programmes for the persons who have teaching aptitude and wants to become engineering teacher. This training programme may go hand in hand or immediately after engineering degree programme which will encourage right type of persons to join this profession.

There should also be professional development programmes for inservice teacher so that their untapped potential can be utilised for the development of the institutions and bringing qualitative improvements in the Technical Education.

