

IMPROVING ACADEMIC CLIMATE OF POLYTECHNICS

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SYNOPSIS

Efforts are being made in the development of polytechnic education through World Bank Assisted project where a huge sum of money is being pumped into the system. The thrust areas are Capacity expansion, Quality improvement, and Improvement of efficiency. While faculty are being sent for training, sophisticated equipments are being procured and buildings are being constructed, there seems to be very little change in the method of curriculum implementation. Teaching-learning in polytechnics in specific, and the overall academic climate of the polytechnics in general, seem to remain more or less unchanged thereby raising a very pertinent question as to whether this huge investment would bring the desired change in the system ! This paper has suggested a strategy for curriculum implementation where teaching, research, and developmental activities are integrated so as to make polytechnic job more challenging, motivating and satisfying and as a result create a better academic climate within the polytechnics. Although the strategy suggested is aimed towards polytechnics, it should be equally applicable to other institutes of same or higher level.

1 INTRODUCTION

The faculty of polytechnics are doing good work in terms of training students through class-room and laboratory instruction. However, many of the teachers feel that mere teaching the same course content over the years is a routine activity devoid of any challenge. The teaching activity is mainly institutional based, class-room oriented and teacher centred. The static syllabus (in spite of curriculum revision taking place), and the examination system mostly trying to evaluate information gathered by students, make teaching-learning activity a stereotype one. The academic climate of the institute in general is dull and the involvement of teachers in curriculum activities other than class-room teaching is minimal. The newly recruited teachers lose their enthusiasm in learning within a short time, some leave the

system as early as possible. Recommendations have been made through various committees to provide career development opportunities to attract and retain good teachers in the system. While the above is essential, attempts are also required to be made to create opportunities for deriving job satisfaction by those who work in the system. The requirement is therefore to create conditions where the teachers would be able to integrate their teaching functions with the related research and developmental activities and thus creating an academic climate where both teachers and students will derive satisfaction in teaching and learning.

R&D activities, as applicable to the functions of polytechnic faculty may be classified into two broad areas namely the

engineering area and the educational technology area. In this paper an attempt has been made to provide guidelines for strengthening R&D activities in these two areas.

2 FACTORS EFFECTING ACADEMIC CLIMATE OF POLYTECHNICS

The main factor which contributes towards better academic climate of an institute is the quality of tasks its members are performing. Challenging and meaningful tasks motivate students and teachers alike to perform and derive satisfaction from the outcome. In polytechnics, the teachers are mostly engaged in teaching a given syllabus over the years for which hardly any preparation is required after one or two years of teaching experience. The student evaluation system is such that the students need to acquire certain knowledge specific of the course content. The method of certification of students does not reflect in totality the abilities acquired by a student. For teachers, the criterion for career development is not mainly on his academic performance but on other factors like seniority, qualifications etc. The management system, as it seems, has very little time and willingness to spend on quality improvement of actual teaching-learning activities as also to the steps to be taken and support to be provided in improving the quality. As a result the polytechnics, unlike other professional institutes, continue to offer an environment where both students and teachers alike perform stereo type activities thereby not offering an attractive place of study/employment.

Better grades, time scale promotion, etc., is believed by many, would bring change. But in actual practice, in many a situations, this has shown to yield marginal effects only.

3. STRATEGIES FOR IMPROVING ACADEMIC CLIMATE

A number of strategies may be thought of for improving the academic climate of an institute. Some of them are :

- i) Enable polytechnics to offer diploma, higher diploma, technician degree, and continuing education programmes for working technicians, thus providing a challenge to the faculty to teach higher courses;
- ii) Create pay scales and promotional avenues similar to IITs and other engineering colleges; and
- iii) Create a culture of research and development within the institute by proper design of curriculum implementation strategies.

This paper lays more stress on (iii) above, at the same time realising that other two strategies or a mix of all the above could be a more practical one.

4. STRENGTHENING R&D IN ENGINEERING AREA

Strengthening research and development activities in engineering areas by the faculty would involve preparation of a problem bank in consultation with the industries, formation of R&D groups in the departments depending upon the specialities of faculty members, development of faculty competency through need based training, and providing scope for undertaking interdisciplinary problems.

4.1 Preparation Of Problem Bank In Consultation with Industries

This activity may be undertaken by the faculty in different departments. To start with, a limited number of problems may be identified. The problem bank may be enlarged/reviewed/updated from time to time by constant interaction with world of work. Small and medium scale industries in the neighbourhood of the polytechnics must be explored for identifying problems.

Research organisation like DST, DOE, CSIR, DRDO etc. may be contacted departmentwise by indicating interest in which the institute/department will be able to contribute. Information may also be collected about the research being undertaken at these organisations and attempts be made to get some projects sponsored by these organisations.

4.2 Formation Of R&D Groups In The Departments

Research groups may be formed at departmental level with one of the faculty members as the coordinator. The faculty members should volunteer for undertaking research projects as identified in the problem bank. The competency of the faculty for doing such type of activity should be developed basically by working for such R&D projects. However, need based short duration training programmes may also be offered to such faculty. Existing provision of training of teachers in industry must be utilised for this purpose. There will be need for establishing developmental funds in each department to be operated by the project leader. This fund will be utilised for carrying out research work as well as for building up additional facilities at the institute and also for additional manpower, if required.

4.3 Providing Scope For Undertaking Interdisciplinary Problems

A number of industrial problems are basically interdisciplinary in nature and as such could be better solved only with the help of group of individuals having specialisation in different areas. Such projects, therefore, should be carried out by drawing faculty from different departments. Depending on the type of R&D project, such interdisciplinary groups may be formed by drawing faculty from different departments and leader of the group having the expertise/speciality in the major contributing area.

4.4 Development Of Faculty Competency Through Need Based Training

Every faculty of the institute should try to develop specialisation in a particular area within the broad area of his/her specialisation. Comprehensive plan for faculty development at the departmental level as also at the institute level may be prepared and the facilities available for faculty development may be utilised for this purpose. Further, faculty competency may be developed through their participation in the R&D activities.

5 STRATEGIES FOR STUDENT'S INVOLVEMENT IN R&D ACTIVITIES

By proper design of instructional strategies, it should be possible to involve students in project activities either in industries or at the institute as an integral part of their study of given subjects. The projects could be either formulated by the teacher or preferably taken from industries. For example, students of first and second year could be given teacher made projects whereas advanced students could be given real life problems of industries.

A survey of small and medium scale industries, if undertaken, would show that a large number of problems exist about which either the industries are not aware of or do not have the required expertise. Identification and defining such problems would be the task of teachers while preparing a problem bank.

6. STRENGTHENING R&D IN EDUCATIONAL AREAS

This would involve identification of problems in the polytechnics, Directorates of Technical Education, Boards of Technical Education, Ministry of Human Resource Development etc. and carrying out the project activities. Problems already identified in the World Bank Project would form the priority areas. For effective

contribution of faculty in educational research, training of faculty in such research activities may be organised/conducted through both, on the job and off the job training programmes, as also through their involvement in various projects.

7. PREPARATION OF ACTION PLAN FOR STRENGTHENING R&D ACTIVITIES

To strengthen R&D activities the following action plan is suggested :

- i) Identify one faculty in each department to coordinate R&D activities of the department;
- ii) Prepare a list of journals where research work could be published;
- iii) Ensure that each faculty either publishes atleast one paper in a year or presents one paper in a national seminar every year;
- iv) Bring in flexibilities in rules and regulations where required, to encourage R&D culture;
- v) Create developmental fund/research fund similar to organisations like Indian Institute of Science, Bangalore;
- vi) Encourage faculty to become members of national/international organisations devoted to R&D activities;
- vii) Workout flexibility in rules and regulations for encouraging and facilitating R&D activities so as to remove procedural hurdles and to avoid delay in arranging men, material, and other required facilities depending on the nature of the project. This is required because waiting time for most of the sponsored projects by industries will be small and therefore, the problem solutions may have to be delivered within a reasonable time.
- viii) Develop a reward system on the basis of teachers' actual innovative performance in academic activities;
- ix) Evolve a more meaningful and comprehensive student evaluation and certification system.

8. CONCLUSION

To start with, polytechnic faculty may undertake educational projects which are of immediate need of the polytechnic education system. Such projects could be sponsored by the respective DTEs, and could be carried out in association with some resource institutions like TTI, ISTE etc. (to give an example, a project could be as to how to plan and conduct short term training programmes for polytechnic faculty so as to increase participation and also to improve efficiency). In engineering areas, the projects could be identified in association with local industries. Some of the engineering projects could be of developmental type (for example, problems could be in the areas of electricity consumption in industries; design, estimating and costing, optimal use of resources, etc).

Sponsored projects should earn revenue to the institute. Where the bulk of the receipts of such project output would go to the developmental funds, incentives may also be given to the faculty members actually contributing to such sponsored projects. Interdisciplinary projects sponsored by outside organisations may be allocated to a particular department or a group depending upon the nature of such projects.

Thus, by providing a research orientation to the activities of polytechnic faculty, it should be possible to elevate the image of these institutes to the outside world as also create meaningful involvement and motivation of the faculty in academic activities; This, in turn, would help generate an academic climate in the Institution, which today is totally absent in most of the Polytechnics.

9. REFERENCES

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