

## MANAGEMENT OF ENGINEERING COLLEGES

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### ABSTRACT

*The paper gives some ideas on the management of engineering colleges and similar technical institutions which perform the important task of educating and training professional engineers for a rapidly developing country. Attention has been focussed on some vital issues and an insight provided on how these can be dealt with. The procedures discussed are based on author's long and varied experience in technical education in the country and abroad.*

### (1) CONCEPT OF AN ENGINEERING COLLEGE

An engineering college is a dynamic system designed to educate and train professional engineers. The students are the raw material for this system and graduates are finished products from the college.

Within the institution, the learning process is facilitated by interaction amongst teachers, students, technicians and administrative staff of the college. Unlike a manufacturing system, the engineering college is a dynamic system constantly exposed to change in tandem with the changes elsewhere in society. Indeed the typical national level engineering college is a micro-model of the nation in many respects.

The three major components of the

student's learning process are :

- ◆ Getting scientific and technical knowledge.
- ◆ Learning communication and human skills, &
- ◆ Cultivating social awareness and appropriate attitudes.

These components of learning should inculcate amongst the students the following traits :

- ◆ Creativity & innovation.
- ◆ Dedication & hardwork.
- ◆ An excellent deportment.

Besides, the professional engineer must be versatile in the application of three basic principles viz. Safety, Economy & Beauty to the design of engineered systems for the use and convenience of humankind.

These basic concepts are the foun-

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dation of the entire edifice of the education process in an engineering college, which comprises the physical infrastructure and the human inputs from the academic staff, the administrative staff and the technicians and laboratory staff. All these are equally important for providing adequate input to the education & training of students for a 4 - year B.E. degree programme.

## **(2) MANAGEMENT APPROACH**

The above elements have to be integrated into the process to make it harmonious, creative, economic and efficient. This is the primary function of management in technical institutions. For this integration and running of the dynamic system, some basic approaches have been found appropriate to achieve the desired goal. These are briefly listed below :

1. Leadership role at all levels of functioning is critical to the process.
2. Personal example provides the best means of communicating the professional ethos. Teachers have to provide excellent examples.
3. Routine and repetitive tasks must be performed automatically at the same time every year.
4. Teachers must teach, do research and take up Professional Consultancy in equilateral balance.
5. Students are the most valued customers of the engineering colleges and all efforts must be geared to benefit them.
6. Abundant common sense, compassion and firmness must be shown by the teachers in interpersonal relations. Teachers must spend enough time informally with the students.
7. Professor should not spend more time attending seminars/workshops and have less time for teaching.
8. Excellence must be promoted. Professional college must strive to provide quality education and training. For this, dedicated hardwork of all is needed.

## **(3) STUDENT INTAKE**

Some difficulty in the management of engineering colleges springs from the variation in the quality of student intake. Under the best conditions only the students' high IQ is common factor. Everything else is different. The educational process is normally a closed black-box system, rigid, monotonous and without the needed flexibility to respond to the variety of student intake that is being handled. This factor must be fully understood by the managers. There are no hard and fast rules to meet the situations as they arise. Teachers and students have got to keep on learning together and become better team mates in the successful running of the institution.

## **(4) THE ORGANISATIONAL SET-UP AND ACADEMIC PROCESS**

This must be well defined but not too structured. Academic institutions have to work more like organisms, like the human body where each part has a distinct role but the whole is important. The essence of organism's goals must be efficiency..... doing thing right, and effectiveness..... doing the right things. Flexibility is important for a dynamic response to situations.

For routine work, printed formats must be used and procedural routines

must be formalized. Students' counters must operate like bank counters rather than stale musty offices. Excellence in performance must be visibly rewarded. Use self appraisal formats and personal review and discussion for promotion of people. The Personnel Department of the college must undertake Human Resource Development function of the college.

Management of Academic process is the trickiest of all, yet it is also the most important. Difficulties often arise from many misconceptions. Also teachers hold on tight to some opinions on academic issues. There is resistance to change. Battles are still raging between the votaries of annual system and the semester system ! Equally, there are differences over the methods of evaluation of students performance. In the process, creativity in teaching and training are a casualty. Information interaction between the teachers and the students in programmes like co-curricular activities (CCA), are very essential for developing the students ability to think and act independently and creatively as a professional engineer in the making. This programme has to be innovative and requires a lot of dedication amongst teachers to motivate the students.

#### (5) ROLE OF FACULTY :

Some Engineering colleges are as old as 120 years while others are even less than twenty. The inputs to these colleges in respect of finance & infrastructure also vary considerably. The number and quality of staff also vary. This affects the following aspects :-

- ◆ The professional and academic

ethos.

- ◆ Interference by management.
- ◆ Absence of facilities for continuing education or Q. I. programmes.
- ◆ Interaction with industries.
- ◆ Consultancy work by faculty.
- ◆ Level of faculty involvement in professional matters.

These factors affect the quality of faculty recruited to the colleges. Some times the quality of the faculty is as variant as that of students. Problems arise in abundance. The management task is therefore, a constant endeavor to teach the teachers, motivate them and integrate amorphous lot into a dynamic, unified entity with an objective to achieve. Their personal development has to be integrated with institutional growth and students training needs.

Absence of good faculty can lead to strikes. Strikes by students and teachers are not uncommon. Teachers sometimes instigate such strikes by students to achieve their own ends. Strikes and unrest are also caused by the lack of a well defined career-path for teachers.

Technically skilled laboratory staff in the college also feels demotivated and become uncreative for the same reasons. Often pen-pushers get promoted faster while a skilled technician remains a technician all his life. This is not conducive to technical excellence and innovative development.

The management of the colleges have to take note of these defects in the system and take bold steps in redeeming the situation. Every sincere attempt made in this respect galvanizes the faculty into becoming more productive and providing quality services.

Teachers role needs to be better defined. The self appraised and personal development format developed by the I. S. T. E. must be used thoughtfully to help the faculty to understand their role and evaluate their performance against objectives set by themselves in consonance with the role. Management must ensure that faculty are creatively involved as members of well known professional society. Development of an integrated and harmonious approach to teaching, research consultancy and professional activities must be the aim at all times.

Liaison with the industry must be active and productive in real terms. Isolation of engineering college from the mainstream of national development has caused slack in innovation of technology. This must be remedied.

#### **(6) MANAGING OTHER FUNCTIONS**

Besides students and the faculty, the employees of an engineering college constitute the main segment of human resources that need proper management. Human problems are many and generally spring from the activity of trade unions. Management must create the conditions and become a model employer. Grievances must be readily redressed. Listening to peoples' problems is important. Democratic and consultative approach to problem solving is essential. Everyone must be encouraged to participate in the management of the college. This can be arranged by well organised meetings of committees and council with proper agenda, minutes and resolutions properly circulated and implemented in time.

Appeasement is not a democratic gesture. It is a sign of weak leadership.

Training and retraining of employees is very important. Management must provide facilities for in-house developmental programmes for the employees. This will improve their quality of work, change their attitudes and build good morale. The employees stay creative. Employees welfare must be a prime concern of management. Joint activities must become a way of life. This improves team building.

We live in a vast and changing society. The engineering colleges must have a niche in a social psyche. Students, teachers and employees must therefore, be encouraged to interact with society through the media and other organisations. House journals, newsletters, employees and student's magazines must be published for cultivation of good corporate life on the campus.

Often punishment is to be given to students. In such situations, liaison with student's parents proves fruitful. Students go to law courts against punishment. The management has to accept the rules of natural justice and therefore, punishment must be imposed after much thought, never haphazardly. Exemplary punishment must be rare, and very rarely should it be withdrawn. The college leadership needs to have a rare balance of skills in human behavior, sociology, oral communication, listening and empathy commonsense, self discipline and lot of sincerity and good will to meet difficult situations which arise frequently in a college. There is often a battle cry for "Swift action". This being so, swift action may lead to "rash action"

which should be avoided. These do the greatest harm to the institution.

Students living on the campus are to be well looked after. 40% of the teachers time is spent on managing students welfare. Proctorial functions consume time and 20% of the students cause 80% of the problems. Students must be properly groomed about the college environment, organization system, and provided with guidelines for good working procedures for academic work. They must be motivated to achieve excellence in their work. Students need to be trained about "How to study effectively" right at the start. Most of them do not know how to do it.

Proctorial supervision of students in the hostels must be informal, regular and well meaning. Prudish attitudes have to be avoided by teachers. Integrated practical training and visit to industries by the students are a vital part of their curriculum.

Inplant training is most vital in professional grooming of students. Lot of emphasis must be placed on the practical training report and the appraisal of the trainee by the company manager.

## (7) CONCLUSIONS :

Management issues of an engineering college have been briefly set forth. The focus may not be sharp enough, but it is hoped that the ideas thrown up will help managements to improve conditions further. There can not be any hard and fast management guidelines for all times but there are certain fundamental approaches which if adopted by managers may get creatively transformed to become the manager's own unique style of management or leadership.

Institution and subjectivity have their own place. The ultimate test of good management, however, is that the college is running efficiently and effectively to achieve results in terms of creative trained engineers sent out from the portals of the college. Also the faculty and other staff of the college are creatively and happily engaged in the discharge of their vital services to society.

And above all the best test of good management is the constant presence of a burning desire amongst students and staff to constantly improve the existing conditions with a high morale.

