

TECHNOLOGY EFFECT ON COMPARTMENTALISATION

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SYNOPSIS

Due to the fast technology changes and their interdependence on each other present technical education is unable to meet the requirements of industry. In this paper an attempt is made to analyse the present system and the requirements of change in syllabus frequently. Important role of the generalists rather than specialists has been touched upon.

Introduction :

The craze for Engineering Education due to the recognition of 'Bachelor of Engineering/Technology' as a status symbol resulted in bringing up more than 300 Engineering colleges by 1990 in the country. The No. of courses offered by these institutes increase every year bringing a new charm to the name of the course rather than new material contents. For example the course contents of Telecommunication Engineering, Industrial Electronics, Instrumentation may not have a large variation as the basic course structure has to be same to understand basic electronics fundamentals. Probably the need for accommodating senior teaching faculty as Heads of Departments has paved way to create more and more new departments and new courses.

Asset creation/utilisation :

Through the increasing competition in creating new departments and new courses,

we can observe the accumulation of large assets in terms of equipments and services. These facilities are getting multiplied and concentrated in reputed organisations. On the other hand, few organisations do not have the minimum requirements to meet the laboratory equipments as stipulated in curriculum. The students complete their courses without going through the awareness of recent development in different fields. Recognition/permission of creating a technical educational institute, therefore, calls for stipulation of stringent standards in terms of library, laboratory and workshop facilities.

Teaching facilities :

In a recent study conducted on electronics education and manpower development, it is observed that the pattern of teaching faculty employed by different academic institutions are at variance. The National Institutes and Universities recognised by Central Government are having more than 50% faculty members with Doc-

toral qualification and remaining with post graduation. The graduates and diploma holders are seldomly used for teaching job and are predominantly utilised in laboratory and workshop. This is an ideal case and capable of providing required inputs in line with technology upgradation in different fields.

The quality of teaching faculty decreases as we go down from National Institutes to Regional Engineering Colleges, Degree Colleges and Polytechnics. The faculty in majority of the Polytechnics are only with Diploma level having little exposure to the advancement in technology. Teachers from Polytechnics and Degree Colleges have limited opportunities to increase their fundamental education through advanced studies offered by IIT's under quality improvement programme. The status of teaching faculty of a major backbone force of the industry coming in terms of operators and technicians with qualifications from ITI's and other certificate courses does not attract any attention. Majority of the institutes are having equipments of 2-3 decades old manned by lowest qualified staff. Expecting a good technician from these institutes is not fair. No doubt efforts put in by Department of Electronics in promoting the computer education and consumer electronics courses at few institutes has changed the scene to some extent. However, the condition of teaching faculty at these institutes are also required to be improved.

Compartmentalisation :

Due to the factors mentioned above, every year new courses are offered by various educational institutes to attract more and more students in a particular branch. For example under the Chemical Engineering main branch we have Polymer Technology, Plastics Technology, Chemical Engineering and many other. Under Electronic branch, we

have Industrial Electronics, Power Electronics, Devices, Communication, Computers, etc. The field computer itself generates a large number of sub fields like hardware, software, artificial intelligence, simulation engineering, etc. Actually the list is never ending and continues to increase year by year. But if one looks at the subject matters or the syllabus of all these courses it is found that about 80% of the course contents remain same in a particular field. Only a paper or two offered in the specialised field brands a student as a graduate in that particular field.

To illustrate the effect of technology on present day education, let us consider an example. A unit manufacturing EPABX (Electronic Private Automatic Branch Exchange) will be considered as an electronic unit and the engineers from digital electronics and telecommunication are attracted to the job opportunities offered by them. A production engineer of such a unit needs not only the knowledge of electronics and communication but also a significant part of it in terms of utilisation and properties of mechanical and plastic parts. Majority of electronics equipments need the knowledge of three branches namely electrical/electronic, mechanical and chemical. In such a situation, a person having a degree in very specialised subjects gets debarred himself from the various opportunities available to him and has to remain un-employed many times. The sandwich courses offered by some of the IIT's are more appropriate to the existing situation. Imparting the basic knowledge of engineering subject should be the objective of institutes offering this type of education. An association with industry during the course or after the course should open more avenues to utilise the basic knowledge.

Similarly present day advancements in mechanical engineering field using Com-

puterised Numerically Controlled machines (CNC) utilise the knowledge of electronics and computers to a large extent. All chemical processing industries depend highly on sophisticated instrumentation which needs the understanding of electronics. Interestingly the communication between the chemical engineer and an electronic engineer is more important to visualize the requirements before implementing necessary instrumentation.

Conclusion :

To get the advantage o technological advancement, distributionof assets in terms

of equipments and experienced teaching facultyhas to be done evenly to all institutions. The institute should work to propogate the fundamental engineering principles to all students to make them suitable to take up assignments in any field with a little introducing/training in that field. The requirement of industry is not of specialists but majority of them need generalists. The departments like production, quality control field service support and testing need generalists rather than specialists in a particular field. It is very appropriate for the authorities concered to look into the matter to change the syllabus meeting the requirements in the present context.

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