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## THE UNDERGRADUATE PROJECT AS A PLATFORM FOR INDUSTRY INSTITUTION INTERACTION

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### Synopsis

*There is a gap between the training given in Engineering Institutions and what the Engineering Industries look for in a prospective graduate engineer. Both the industries and institutions are taking steps to reduce the gap. This paper puts forth a suggestion for industry - institution interaction through undergraduate projects. The proposal is for building up of a pool of industrial problems at Departmental, Institutional and Regional level which can be taken up as undergraduate projects. Representatives of concerned industry can also be involved in student viva-voce/Seminar.*

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Engineering Education, is generally kept broad-based and aims at equipping young prospective engineers to face the challenge of change through their productive career by giving them a sound base in basic sciences including mathematics, engineering sciences which provides the bridge between these fundamental disciplines and engineering application and technical arts besides giving them a good background in Engineering Analysis and Design. The industry, on the other hand, generally looks for an engineer who can start getting productive within as short a time as possible after taking up a job. Though many modern industries have come to appreciate the need for formal training programmes of their own to mould the fresh engineering graduate to suit their own particular needs, there is none the less an awareness among all concerned that there is a gap between what the students learn in the engineering institutes and what the industries, who are the main

employers of engineering graduates, want them to know before they take up jobs. There is probably no difference of opinion among all concerned that this gap should be bridged to the extent possible. There is probably also no doubt that even those graduates who take up R & D, teaching and consultancy as careers should have an awareness of the real life practical problems in industries.

Attempts are being made by various technical institutions to bridge the gap through sandwich programmes, by sending the students for compulsory practical training and by taking them for visits to industries during their course, by encouraging faculty to take up industrial consultancy and opportunities to spend some time in the industry, by involving experts from the industry in teaching and in drawing up or updating curriculum and so on. However, as a further step, it is proposed that the project work that the undergraduate students do may also be oriented towards the live problems in the industries, preferably by involving the industry in the same.

Some proposals for involving the industries in undergraduate projects and for giving a greater orientation towards live practical problems in the undergraduate projects are as follows :

The industries to which the students are sent for practical training, may be requested to give the students some small practical projects, part of which they can complete during their summer training and part of which they can carry out in their final year as undergraduate project. The faculty may also be encouraged to go around to the industries concerned so that they are involved in the process of formulating the project and can also, at the same time, supervise the practical training of the students.

The industries, particularly in the neighbourhood, may be requested to give, by individual institutions, a list with a brief write up of industrial problems that the students may undertake. These can form a pool of industrial problems at Institutional level which the students can take up for their undergraduate projects. The regional offices of CEI, and other apex bodies and Board of Practical Training could also take the initiative of requesting all industries to identify small practical problems collected region wise. Institutions can draw practical problems from this common pool also. The companies whose projects have been taken up in a

particular year may be informed and requested to send their executives for the seminars of the students on these projects or for the viva-voce examination of the concerned students, if possible. The companies which participate in campus recruitment may particularly be involved in this exercise as they would be more interested in ensuring that the students have a greater orientation towards solving practical problems.

The faculty could visit the industries in the neighbourhood and try to identify industrial problems for the pool of problems which may be maintained in each department of the Institute.

The alumni of the institute be involved in a big way to help identify industrial problems.

Some of the practical problems relate to development of high technology engineering items, at present imported from developed countries, needed by Indian Industries at large and R & D establishments including those under the Government, like D.R.D.O., I.S.R.O. etc.. Large industrial organisations do not find it commercially viable to take up the development and manufacturing of these items, though they may have the capacity to get or develop the know-how. Small scale sector, which is the best place for producing such items, do not have the means to get or develop the know-how. With the resources at its disposal it will be possible for atleast a few of the better equipped institutions like the IITs etc. to develop the know-how through on-going undergraduate projects. Once the product has been developed to the satisfaction of the user, it can be handed over to an entrepreneur. Indeed the entrepreneur could be the student himself.

The success of the joint projects at undergraduate level by industry and institute through the proposals above would depend largely upon the spirit of co-operation and understanding between the two parties involved and it would be desirable if neither party expects any immediate financial gains out of his interaction.

The above proposals are no doubt brief sketchy but is meant to provoke thoughts, so that detailed mechanisms can be worked out at institutional, regional and national levels for making the undergraduate projects as a platform for interaction between engineering institutions and engineering industries.