

Some Aspects of Evaluation of the Performance of Engineering Students

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The average I.Q. of students entering engineering colleges in India is about the same as that of entrants in most of the advanced countries in the world, but when they pass out their average quality is inferior. The main reason for this is that, with the exception of a few at the top, the amount of work put in by the Indian students is less. Through out my career of over 40 years as an engineering teacher I used to ask myself this question : What should be done to make our students work hard ?

In the past, the fate of the students was decided in most of the engineering colleges, on the basis of their performance in one examination at the end of the year. So students used to work hard for a few weeks before the annual examination and take it easy during the rest of the session. In some colleges, notably the Thomson college of Civil Engineering, Roorkee, the marks obtained by the students in the mid-session examination were also considered for promotion to the next higher class. So at the Roorkee College students used to work hard before the mid-session as well as the session examination and this was one of the main reasons why Roorkee engineers were superior to engineers from other engineering colleges. The papers at the mid-session examination were set and marked by the staff of the college. Thus at the college there was partly internal assessment and partly external assessment. Since internal assessment was found to be a definite stimulant to hard work, it should have been adopted by other colleges also; but they could not do this because, whereas the Roorkee College was an autonomous institution awarding its own diploma, the other colleges were affiliated to universities which refused to consider the mid-session marks awarded by the staff of the colleges. Since, however, it became clear that internal assessment made the students work hard, some universities during the last few years agreed to give due weightage to internal assessment. When other autonomous institutions, such as the Indian Institutes of technology, were established, external assessment was abolished altogether. The result should have been still greater improvement in the quality of the product, but it was not so.

Internal assessment can improve matters only if one condition is satisfied and that is fair marking by the staff. It has been noticed that many of the teachers award unduly high marks-probably for cheap popularity-with the result that instead of working harder students are putting in much less work, resulting in deterioration of quality.

The tendency to over-marking can be prevented by what may be called the Jaipur scheme. I drafted this scheme when I was the Principal of the Malaviya Regional Engineering College, Jaipur. The scheme was introduced by me in a modified form to begin with. The details of the scheme in its final form are given below :

50% of the marks for each paper were awarded by an external examiner appointed by the University and the remaining 50% by the college staff, the marks being awarded as indicated below :

(i) First test with papers of one hour duration to be held between the start of the session and the mid-session examination.

10%marks

(ii) Mid-session examination with papers of three hours duration.

30% marks

(iii) Second test, similar to the first, to be held between the mid-session and the annual examination.

10%Marks

Total 50% marks

To avoid over-marking a ceiling for average marks earned by a class of students in each subject was fixed and the university had authorized the Principal to moderate the marks awarded by any teacher, so that no teacher could be unduly liberal in marking. The ceiling was fixed on the basis of average class marks in the subject at the University examination plus 5%, the extra 5% was to allow for the fact that the syllabus covered in the tests and mid-session examination was less exhaustive. It was felt that if academicians put their heads together a better method of fixing the ceiling could be devised.

I expected that the scheme would be unpopular with the few students who do not like hard work and my expectations were more than fulfilled. As the session started, the students found that they had to face the first test within a few weeks. This toned down ragging. After the first test the few lazy boys organized a strike on the plea that a teacher had awarded them unduly low marks. This complaint was examined and found to be baseless and the students were informed accordingly. The majority of students who are normal decent boys meekly submitted to the threats of the few lazy boys and joined the strike. I discussed the matter with Shri Mohan Lal Sukhadia in his dual capacity as Chief Minister and Chairman of the College Society and he agreed to give me a free hand in dealing with the strike. I immediately closed the college sine die. Within ten days all the students submitted an unconditional apology for the lapse on their part and declared that they would abide by the discipline and rules and college was reopened.

The Jaipur Scheme was abandoned after some time by my successor, probably because of the general policy of the State Governments to handle student agitations leniently, With the changed atmosphere in the country, students are behaving in a much more disciplined manner, so I feel that the time is opportune to revive the scheme. The scheme will make the students work hard throughout the year and improve the quality of our engineers.

The precaution in implementing the internal assessment scheme viz. introducing a ceiling on the marks would become unnecessary if all the teachers in engineering colleges were men of character. It is very often said that it would be impossible to find hundreds of men of character to staff our engineering colleges. As far as character is concerned India is neither at the top nor at the bottom of the scale, if we consider the world as a whole. I firmly believe that there are more than enough men to fulfill our requirement of teachers. The problem is to select them. In the present system of selection we depend upon the Public Service Commission or Selection Committees which try to assess every thing. For assessing character they depend upon a character certificate which says "As far as known to the undersigned he bears a good moral character". The truth is that in most cases "the undersigned" knows nothing about his character. Character can be assessed by personal contact only. We should select the Principal of the college *with the utmost care* by personal contact and leave him free to recruit the professors who, in their

turn, should have full freedom to select their readers and lecturers. As, in spite of all the care, mistakes can be made in the selections, the services of the wrong choice should be made terminable without assigning any cause and such cases should not be justiciable. There are in some of the advanced countries a number of institutions which have for centuries, maintained a tradition of high standard of academic attainments. The staff of these institutions, I believe is selected by a procedure which, in principle, is similar to the one outlined above. The remarks in this paragraph about recruitment of staff with high character are of a general nature covering all other faculties in a university.

For the proper functioning of engineering and other colleges, teachers of high character are a must. But the changes suggested in the recruitment procedure are of such a revolutionary nature that very few institutions are likely to accept them. If the existing recruitment procedure continues, it is suggested that the Jaipur scheme in which there is 50% internal and 50% external assessment should be adopted for making the students work hard throughout the year. The external assessment in this scheme would exercise some kind of check over the less conscientious teachers.

In conclusion it may be stated that the internal assessment scheme as implemented in most of the institutions has resulted in deterioration of standards and this fact is being realized by the Heads of many institutions. Instead of scrapping the scheme, which is basically sound, the scheme should be modified by introducing into it some kind of check over awarding of unduly high marks by the internal assessors.

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