

## TECHNICAL EDUCATION QUALITY IMPROVEMENT PROGRAMME (TEQIP) PHASE-II

### Improving the Academic Performance of Weak Students through an Equity Action Plan<sup>1</sup>: Guidance Brief

#### BACKGROUND AND OBJECTIVE

In TEQIP-II all institutions applying under sub-components 1.1 and 1.2 are required to prepare and include an Equity Action Plan (EAP). The objective of the Equity Action Plan is “to ensure that all students and faculty in the project institutions have equal opportunity to avail of the benefits of the project with substantial improvement in the performance of weak students.” Once formulated, the institutions are bound to implement their EAP; it will be a part of each institution’s MOU with the project authorities; and the SPFU and NPIU will assess its implementation and the achievement of equity. The Project Implementation Plan (*PIP*, December 2009) gives the overall project EAP on pages 131-134; and the Format for Institutional Development Proposal (Annex IV-(B).a(ii), pages 191-200) requires information about the EAP to be provided at various points. Further, permissible and non-permissible expenditures are listed in Section-7.

In TEQIP-II, data on the transition rate between 1<sup>st</sup> and 2<sup>nd</sup> year will be obtained from the participating institutions. Some such data already obtained from a small number of institutions indicate that this transition rate is usually higher among girls than boys; and often *but not always* lower among SC/ST students compared with the General category, but *usually* not lower among OBC students. However, the gaps vary considerably among institutions, indicating that the issues of dropout, failure or weak performance are institution-dependent – in addition to the caliber of students that enroll in an institution, its management, teaching force, and actions to remedy students’ difficulties clearly have a bearing on the performance of students. The institutions in the above ‘sample’ indicated that they could bring about 10 to 40 percent improvements in their transition rates over each of three years of effort under TEQIP-II. Given the shortage of good technical/engineering skills in India and their importance for national growth and development, it is paramount for TEQIP-II institutions to reduce wastage, improve the quality of their graduates, and ensure their employability.

***The purpose of this brief*** is to identify and describe some interventions that TEQIP-II institutions could make to improve the performance of weak students in undergraduate engineering programs. Although TEQIP-II will include competitively select engineering institutions in the country, even these have some students who are weak at entry and/or perform poorly during their college years. Some students may take several extra years to complete their course; some may fail to secure employment at the end of their degree program because of overall low performance or inadequate skills at the completion of the course. This brief is aimed at reducing these forms of wastage of educational resources and, equally important, of human resources. As equity in the outcomes achieved by students is an important goal of TEQIP-II, the participating institutions must ensure that all students perform well academically and achieve their ‘post-college’ goals, securing good jobs or enter post-graduate

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<sup>1</sup> Based on the study conducted in sample engineering institutions in Gujarat, Karnataka, Maharashtra, and Uttar Pradesh by World Bank during 2009-10.

courses, according to their choice, suited to their capabilities, and in line with the education they have received. In this brief we first discuss who weak students are, and then identify several interventions that are being implemented to help them by the institutions such as those that will be in TEQIP-II, describing in some detail a few that could be implemented widely and effectively with relative ease.

### ***The Equity Study***

This brief is based on a study of fourteen engineering institutions carried out in Gujarat, Karnataka, Maharashtra, and Uttar Pradesh during 2009-2010, including government, aided and private unaided colleges, and some autonomous institutions. At all these colleges Principals, Deans, some founders and top administrators were interviewed; group discussions were held with Heads of Department and cross-sections of faculty; a survey was administered to Final Year students and group discussions held with them; and in-depth interviews were carried out with students who were considered weak by the institute and/or by themselves. This multiple-method approach and wide coverage has enabled both a broad and deep understanding of the subject. In addition, this brief builds on an extensive literature review, a rapid equity assessment carried out in 2009 in Maharashtra and Uttar Pradesh, and practical knowledge accumulated during six years of implementation of the first TEQIP project in 13 States and 127 institutions. An important lesson from these various efforts is that every institution faces a different situation e.g., student body, teacher force and institutional setting. Hence, this brief recognizes that ‘one size does not fit all,’ and aims to provide guidance to the institutions trying to evolve their particular solutions to the problem of weak student performance.

### **WHO ARE WEAK STUDENTS?**

***Characteristics:*** The institutes visited for the Equity study classified as ‘weak’ students those who had a 3<sup>rd</sup> class, had failed more than 40 or 50 percent of their subjects in a given year, and/or had lost a year or more.<sup>2</sup> These students were generally believed not to have attended classes regularly. Some – but not all – had entered with low marks through either the reservations or management quota.

***Low Self-Confidence or Interest:*** In general, poor performance is found to arise from a complex of factors in the individual student’s college experience, only some of which exist prior to entry. The most important among student factors is reported to be a lack of self-confidence, confidence in the medium of instruction, or application due to inadequate interest in the course. These students perhaps do not communicate, do not seek help, and/or have difficulty adjusting to the college environment. The characteristic of ‘weak’ students that was mentioned most widely was their lack of self-confidence, arising partly from inadequate language or communications skills, as well as *leading* to poor communication and participation in the classroom and other academic activities (and extra-curricular activities also in many cases).<sup>3</sup> An explanation sometimes given by faculty and even students for weak

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<sup>2</sup> Falling back by a year or more is known by several names within and across states – for example, in Karnataka the students are known as “back years” while in Maharashtra they are known as “year downs.” The existence of such names is itself an indication of the poor treatment of such students.

<sup>3</sup> On the other hand, some students who participated well in sports were also weak. Having entered on ‘sports quotas’ they missed classes to practice and play their games and were unable to make up their losses, they said, because of a lack of support mechanisms in the college.

performance was ‘distraction,’ i.e., some students lacked discipline, fell into bad habits, or viewed college mainly as a time to have fun. Among these, were possibly some students who, by their own admission, were inadequately interested in their studies. It is significant that the factors that produce weak students even among those who enter college with good marks are more psycho-social in nature than socio-economic. They are thus amenable to improvement during the college years.

**College Factors:** As discussed below, a number of ‘college factors’ also underlie poor performance: (i) poor teaching either because of poor domain knowledge, or poor pedagogy including a lack of interaction and creativity in the classroom; (ii) improper sequencing or unevenness of curricula or syllabi and related issues; (iii) inadequate exposure of students to ‘real world’ situations before graduation, such as visits to industries; and (iv) inadequacy of discussion on performance, counseling and mentoring, to name a few. As it is the combination of factors that ultimately results in ‘educational wastage,’ there is a significant onus on institutions to address both student and institutional issues that cause students – ranging from 10 to 25 percent in the final year - to perform poorly.

**Disadvantaged Groups:** In general, data gathered on final year students in the private colleges did not show that performance was related directly to the student’s sex, caste or tribe status, or religion. In both states, as well as others we have visited in recent years, female students did not have significant academic disadvantage. Many out-performed boys, while the weak performers had some other handicap - social background, language, or self-esteem (discussed above). ‘Weak’ students were not invariably from disadvantaged social groups. In all colleges, there were good-performing students from Scheduled Caste (SC) categories, from rural backgrounds, poor families, first-generation college goers, and first-generation English speakers. Conversely, among the poor performers there were upper caste/class students, well-to-do students from urban areas, and good English speakers. In the Karnataka colleges, we met very few Scheduled Tribe (ST) students. In Gujarat, most government colleges give high priority to intra-state candidates, including ST students. These students were considered the weakest, because they entered with low marks; but this was not stated about SC students who also enter on reservations quotas as their entry marks were higher. It was also stated that SC students get into private colleges on merit (and pay the higher fees). ST students were ‘over-represented’ among the weak performers interviewed.

There were similar nuanced differences among rural students. In Karnataka, rural students did well – perhaps even better than urban students – apparently because their success in securing seats in the top colleges encouraged them to work hard and make the best of their opportunity. Some also felt pressure to do well *because* they hailed from rural backgrounds, would eventually have to support their families, and/or pay back educational loans. In Gujarat, there were many more rural students in the government colleges (than in the private Karnataka ones), and many weak performers among them. As the government colleges charged low fees there were many poor students as well. In the private Karnataka colleges, SC and ST students are charged lower fees but these are still substantial. Some get the fees reimbursed by the government scholarship system, but others who enter on management quotas may take loans to meet their expenses.

**Inadequate knowledge of English:** As engineering textbooks and materials are predominantly in English, inadequate knowledge of English can be a handicap. However, in the Karnataka colleges we

found that poor English did not always mean poor performance – some students who had done their schooling entirely in Kannada language worked hard to learn English and were able to cope by the second year. Students who came from other linguistic communities (e.g., Hindi, Telugu) and had poor English were at a greater disadvantage as the teachers, who spoke Kannada and English, could not explain in other languages. The level of English among students in the government colleges in Gujarat was generally poorer and more strongly related to performance, as teachers also were unable to communicate well in English.

Weakness in mathematics was reported among students who entered directly into second year with a Polytechnic diploma. These students have not studied maths beyond Class 10, nor during their three-year course, so they are at a considerable handicap when they enter second-year engineering which is, even for ‘good’ students, a tough year.

***Timing of Remedial Courses and Repeat Exams:*** An important difference that emerged between institutions in the Equity study that partly explains why some colleges have a large backlog of students in the final year is the timing of the repeat exams that can be taken by students who fail in several subjects. In the better situation, make-up exams are held within a month or so of the original exams, while in the other colleges they are held a semester or a year later. This has two important negative fall-outs – the students have a heavy load as they must take exams simultaneously for both the new semester’s subjects as well as for the subjects they fail; and they cannot attend classes in the subjects they have failed as either the syllabi or the college do not allow this. Thus, they do not get any additional teaching in the subjects in which they are weak unless they resort to coaching classes or other private means. This may in turn result in cumulative failures, leading some students to take six, seven or even more years to complete the four-year engineering course. In the better situation, on the other hand, remedial classes are provided by the college during the month before the repeat exams, which is usually during vacation, and the combination of the additional teaching and exams immediately thereafter enables the students to go on to the next year without a burdensome backlog.

Against this background, we found several practices adopted by institutions to improve the performance of weak students. Broadly, they fall into three categories: (i) student-centered strategies; (ii) strategies to improve teacher effectiveness to deal with weak students; and (iii) strategies beyond the teacher implemented by the college or affiliating university. The strategies are recommended to other institutions and described below to facilitate adoption.

## **STUDENT-CENTERED STRATEGIES TO IMPROVE PERFORMANCE**

***Appointment of Active Student Advisers, Mentors or Proctors:*** The institution can appoint one faculty member for every 10-15 students entering in the first year. This Faculty Adviser/Mentor/ Proctor establishes a close relationship with each student, orients them to college practices, follows their progress regularly (e.g., with at least fortnightly/monthly meetings) and guides them throughout the four-year course. First-year students are important because the transition from school to college and/or from home to hostel is often uncomfortable. However, contrary to the belief that only ‘first years’ require counseling and mentoring, students in all four years need this as different problems develop at different times. While the Faculty Adviser (FA) gives academic as well as personal advice, s/he is not necessarily able to address all problems – but plays a role in guiding the student, putting the student in

touch with the appropriate assistance, and so on. For example, if a student faces financial difficulties, the FA could help him/her seek a loan from the college administration; if someone has adjustment problems, the help of a Counselor may be sought. The relationship is more informal than formal, allowing students to ask for help when they need it and share their problems without fear. The FA discusses student performance, finds out whether there are non-academic reasons for a student's weak or declining performance, and advises on appropriate study or other measures to be taken. The FA might also mediate between a student and other faculty member if necessary, or seek help from a higher-level person (HOD, Dean, Principal). Although students may not be for this next suggestion – the FA may also keep in touch with parents and talk to them when a relevant problem arises. Faculty may be given some professional training in mentoring and counseling to play this role.

***Diagnosing and Tracking Student Performance and Attendance:*** Some colleges start with an initial diagnostic test, supplementing their knowledge of the marks with which students enter the college (Class XII and common entrance test results). Properly devised tests provide information about areas or specific topics in which a particular student is weak, and therefore what additional coaching s/he requires. These colleges also gave information about which topics need to be emphasized by the subject teacher for the student group more widely. It is helpful to carry out such tests particularly before 'tough' subjects begin each semester. The performance of weak students is reviewed by the teacher during the semester, and efforts made to strengthen teaching, and/or provide extra teaching as needed. Reviewing student attendance in connection with performance, and advising students about attending classes, making up classes missed, and getting additional help is also useful. A 'report card' system can be used for each student, and carried through for the four college years.

***Improving Academic Performance:*** Efforts to help students deal with specific academic weaknesses (e.g., in maths) can involve improvements in teacher practices in the classroom – of which many examples are given in the next section, and/or be focused on the weak students. Many colleges offer remedial classes either during the semester (say, in the evenings, on weekends or during periods of preparatory leave) or vacations. Another approach is to provide a two-week period (in addition to preparation leave) when no classes are held but teachers are available to help students address their weaknesses. Extra inputs could also be provided in more innovative ways, such as:

- Tutorial classes where additional problems are solved and students interact with each other in addition to a faculty member or senior post-graduate student.
- Where there are a large number of weak students who cannot be handled individually, a 'Student Academic Support Program' could systematically provide extra classes, extra notes and extra guidance.
- Student and faculty collaborations on projects (which may be integrated in the curriculum) where teachers are available to students formally and informally and focus attention on weak members of the group.

***Enhancing English and Communication and Presentation Skills:*** A college can set up an English language lab where students can listen to tapes and use workbooks to improve their English, particularly spoken English in which they are weakest. Alternatively, holding regular English tutorials which cover both technical and everyday English, and offer the potential of a tutor explaining inadequately understood concepts, can be helpful. Such tutorials can also help students to gain

confidence, for example, by asking questions. Another way of improving English language skills as well as communication and presentation skills is by ensuring that students have opportunities right from the first year to develop and make presentations in the classroom. Weak students need to be given special chances and such opportunities should not be confined to brighter students, as they often are. Since this approach is time consuming, and the syllabi already extensive, teachers need to assess where it can be used to good effect and without running the risk of having to “rush at the end of the semester” which is a common complaint. Students feel that language and soft-skill development should be provided throughout their education (not only in the last two or three semesters, as is commonly done for students to do well in job interviews). The programs need to be interactive and oriented to confidence-building, rather than ‘exam-oriented,’ ‘job-oriented,’ and ‘one-off.’

***Peer Learning Groups:*** Peer learning groups encourage and help students to develop as they find that others have similar problems and get a chance to discuss their academic problems and other issues. Although students feel that they already work a full day, and have to ‘run to catch the bus’ in the case of those who are not in hostels, they also agree that they like to study in groups and it is effective. An organized approach to this involves forming groups of 10-12 students - good and weak mixed, who learn jointly. They can revise lessons after class or on weekends, before exams, etc. and undertake group projects also. Good students can help weak ones – the act of tutoring also helps good students. Peer groups can also help each other. There can be ‘vertical’ integration, i.e., senior students can work with juniors, and student-faculty interactions can also be enhanced, with faculty members being available as resource persons to the student learning groups and even interacting informally with them. A variation of this is the ‘buddy system’ where good and weak students (or senior and junior students) are paired and work together.

## **ENHANCING CLASSROOM AND TEACHER EFFECTIVENESS**

Students including ‘weak’ ones - appreciate good teaching skills and good domain knowledge among faculty, but often point to the difficulties they face with faculty who have less (or outdated) knowledge, and those who are not able to impart what they know because of inadequate teaching skill or experience. Several suggestions emerged from our discussions with students, faculty and administrators in the engineering colleges with regard to improving the effectiveness of teaching to help weak students (as well as others).

***Improving Classroom Practices:*** One of the most critical needs is to ensure classroom sizes in which teachers can give adequate attention to the students and involve them in the daily lesson. To enhance classes teachers could adopt one or more of the following approaches.

- Start by asking students what they know and build their knowledge and confidence by teaching some familiar material and gradually moving to a new or difficult topic.
- Explain the importance of a topic being taught and its relevance to the ‘real world,’ industry, etc.
- Give practical examples particularly when explaining difficult concepts. Balancing theory and practice is an important request from students – which also means giving more time to lab work, projects, industrial visits, internships and apprenticeships.
- Organize lectures by points, including adequate examples in each, using materials beyond the textbook!

- Move around the classroom and interact with students while they solve problems or read texts, or even while just giving the lecture.
- Speak clearly and audibly.
- Use media beyond ‘chalk and board,’ OHPs and power-points - classrooms can be equipped with charts, models, projectors and videos to make instruction more visual and tactile.
- Give feedback to students on their performance and how to improve it. Weak students (and others) say they rarely get constructive feedback; in some instances, they get no feedback at all. Besides making such feedback part of teachers’ responsibilities, they need to be trained in how to provide it.
- Be open to questions and to feedback from students about the teaching contents and style.<sup>4</sup>
- Be available for formal and informal contact after class.

***Increasing Student Participation in the Classroom:*** Both faculty and students agree that student participation in the classroom must be encouraged because it engages students more, builds their confidence, and helps clear their doubts. There are many ideas for teachers to increase student participation, enjoyment and effectiveness.

- Ask students questions at the beginning of each class about the previous lesson, thereby helping them to revise the earlier material and providing continuity.
- Ask students what they have understood in a class after 20-30 minutes, and ask them to summarize the main points at the end of a class.
- Give students a problem at the end of a class to solve and present in the next class.
- Ask students to solve problems on the board, or on paper individually or in groups.
- Divide students into groups and ask each group to research a topic from the syllabus and present a seminar on it. Mixing students of different abilities, or varying language skills, is useful. The groups’ topics may be different or the same – in the latter students present for 10-15 minutes each, showing how an issue can be looked at from different perspectives or different evidence can be collected, etc. Having one group of students present and another ask questions is a good way to get students to interact, think and discuss. This can be extended to solving a problem or doing a more substantial project, and even a multi-disciplinary project. Preparation of project reports by students and their ‘defense’ before the class is also successful.
- Encourage students to ask questions in class, giving extra chances to weak students.
- Increase the amount of ‘hands-on’ work in labs, workshops, and projects (which could involve faculty also). Increase team assignments, encourage and reward teamwork, especially where ‘mixed’ teams (peer groups) have helped weak students improve.
- Give assignments; ask the students to prepare charts and review these collectively with the students, selecting the most useful to display in the classroom. On-line assignments are also useful, as well as other on-line materials including movie clips, simulations, and lab demonstrations.
- Move ‘back-benchers’ to the front, helping to get less confident, bored or disruptive students engaged.

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<sup>4</sup> An approach covering several of the suggestions made by teachers and students in the Equity study was developed by Angelo and Cross (1993) and is recommended by R.V. Hogg and M.C. Hogg (1995) “Continuous Quality Improvement in Higher Education” *International Statistical Review*, 63, 35-48. It consists of ‘five steps’: listen, stop, reflect, write and give feedback. Students begin by listening to a lecture or demonstration. Then, after a portion of the presentation has been completed, the teacher stops. For a few moments the students reflect on what they were doing during the presentation and how their behavior while listening may have helped or hindered their understanding of the information. They then write down any insights they have gained. Finally, they give feedback to the teacher in the form of short, anonymous notes.

- Undertake continuous assessment, ensuring that these results count in the final grade/marks.

### ***Improving Teacher Effectiveness<sup>5</sup>***

***Updating Domain Knowledge:*** The need for having robust and up-to-date domain knowledge is well understood in the engineering sector given the rapid development of technologies, new areas and even concepts. Traditional methods such as sending faculty on exchange programs, to attend conferences, or to do PhDs in cutting-edge institutions are essential but cover relatively few. Some colleges pay all expenses for faculty to present papers at national or international conferences. Some give faculty members leave without pay with liens on their job, while some even provide full paid leave for upgrading qualifications. The best colleges earmark a proportion of their budget for faculty development activities. Improving domain knowledge can also be done for larger numbers of faculty in several ways. Regular faculty seminars on new topics (which could also include senior students); library corners with compilations of recent journal articles, books, textbooks, etc.; seminars and workshops organized jointly with other colleges are some ideas. Industry interactions on campus and joint industry-institute projects can reach more faculty and include students as well. There is considerable scope to innovate and develop broader-based activities that constantly encourage and help faculty (both the young and more senior) to update themselves.

***Training in Pedagogy*** is also recognized as being needed widely for new teachers as well as some senior ones. Under TEQIP-II all teachers in the selected institutions would have at least one week of such training, providing an excellent overview or introduction to the subject. However, much more may be needed, and institutes could devise ways to deepen pedagogical training especially for teachers who really need to improve their teaching skills, and other who are really interested in achieving excellence in teaching, motivated by a desire to develop the young minds for whom they are responsible, to innovate, and so on. International studies suggest that recruiting teachers who are enthusiastic about teaching and passionate about their subject is the best way to produce quality outcomes. One could add: if institutions have not been able to recruit such teachers, they must enthrall the ones they have recruited. “Joyful learning” is as important in tertiary – and engineering – education as it is in primary schooling, particularly in these times when youth are hyper-stimulated through television, the Internet, other forms of media, the marketplace and changing social mores. Training in pedagogy must be designed to deal with weak students. For example, the methods most sought by weak students are ‘interactive methods’ such as those discussed above. Some colleges have used videography for teachers to ‘see’ themselves teach, and obtain feedback from trainers or other teachers.

***Fostering Positive Teacher Behaviors:*** A third important area for improvement of teacher performance is their behavior toward students (especially weak ones). Students report that some teachers not only do not like questions being asked in the classroom, but are also rude about it and, even if approached after class, humiliate or punish the student (e.g., by giving lower marks, etc.). Several approaches are used to improve such behaviors, including Faculty Appraisal, discussed below. An important ‘first resort’ is to counsel teachers who show bad behaviors, help and guide them.

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<sup>5</sup> It should be noted that the Institutional Project Budget proposed for ‘Academic Support to Weak Students’ in Table 29 of the Institutional Development Proposal (p. 196 of the *PIP*) could include the costs of training teachers to deal effectively with weak students. However, the costs of upgrading domain knowledge or general training in pedagogy would need to be included in ‘Faculty and Staff Development.’



Besides having a formal Counselor, some colleges form senior-junior pairs of teachers – the better teacher can help the weaker one, the more ‘expert’ can help the other improve their knowledge, etc. These pairs can sit in on each other’s classes, interact with the other’s students, and provide ‘real time’ feedback and advice.

***Faculty Appraisal System:*** Faculty appraisal can start with a self-assessment form which is rigorously reviewed by the HOD, Deans, Faculty Committee, etc. It can usefully include student evaluations. While some institutes are reluctant to consider student evaluations because they feel that students ‘give lenient teachers high marks and strict teachers low marks,’ others give ‘incentive marks,’ for example, to teachers who work diligently and are appreciated by students. Institutes may find their own way of taking student evaluations of teacher performance and behavior seriously if weak students (who are often the most difficult to handle) are to be helped. In the Faculty Appraisal marks can be given for a teacher’s participation in a range of activities such as:

- Improving students’ examination scores or ensuring ‘no failures’
- E-enabling courses by making materials, manuals, questions and answers available to students
- Helping to improve the library, labs or other teaching facilities
- Helping students to get internships and placement
- Helping to make their department a centre of excellence
- Teaching new courses
- Participating in peer teaching (where faculty give feedback on the teaching style of their peers)
- Using training opportunities provided to them
- Improving their qualifications
- Going to rural high schools and inviting students to the campus to interest them in applying
- Filing for patents

Teachers could be given incentive pay for scoring above a certain level or for specific ‘rare’ achievements such as ‘first publication in a peer-reviewed journal’, obtaining a patent, etc. However, kindly note that such incentives pay cannot be funded out of TEQIP-II funds.

## **BEYOND THE TEACHER**

Several other efforts involving the institution more broadly could help weak students.

***Improvement of Course Curriculum and Content:*** While significant curriculum revision may have been a lengthy and distant affair in the past, it has been made easier with autonomy as each institution can assess student difficulties within its own context (e.g. availability of faculty, numbers and expertise) and make suitable adjustments. Many steps can be taken to assist weak students.

- Include students in the assessment and revision of curriculum – not only good students but average and weak ones so that their needs can also be taken into account.
- Properly sequence curriculum and syllabi – going from the simple to the more complex, and ironing out unevenness. For example, students in some states consider the first-year curriculum to be easy and the second year very hard - covering some second-year concepts in the first year would leave more time in the second year to go over difficult material again. (In other states, students feel that the first year is quite difficult; this difference points to the need for solutions to be contextual.)

- Develop learning objectives. Faculty of a department can get together to design the learning objectives of individual subjects and the overall curriculum. If students are told the necessary learning outcomes in advance, they have a goal to work towards.
- Integrate theory and practicals. Students and faculty feel that time in labs needs to be increased, more project and group work done, and more practical exposure gained (see below). This is not only helpful but essential for weak students.
- Identify appropriate methods and provide the relevant technology for teaching different course contents, particularly to balance theory and practice.
- As discussed above, schedule repeat exams within a few weeks of the original ones, and provide extra classes in the interim to students who must repeat the exams.
- Include members from industry and other institutes in departmental Boards of Studies. They can assess the curriculum and make necessary changes in keeping with new requirements in the industry.

***Augmented Placement Cell:*** An important suggestion concerns the “Training, Counseling and Placement Cell”. Students advocate that this be more interactive – a place where they can interact with an active placement officer, “trained friendly counselors,” other faculty, fellow students, even alumni and industry representatives to get advice on future careers and how they are preparing for them throughout their four years of college and not just “at the tail end”. This would provide guidance, support and motivation. A database on students, present and past, would help them make contacts not only with prospective employers but with others who took up jobs in particular industries, companies, areas, etc. They can also follow progress in job placement of their cohort. This renovated or innovative placement cell could have several important roles in addition to organizing job interviews and securing job placements: organizing industry visits in at least the 3<sup>rd</sup> and 4<sup>th</sup> years which could make a substantial difference to student learning and attitudes; getting good guest lecturers; obtaining ‘real live’ projects from industries; and securing internships for students in the summers.

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