

Why Don't We Study at IITB: Part

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As promised in our last issue, we continue our analysis on why students don't study at IITB, with this article. For those who missed our last issue, this is a part of a series of articles that *InsIghT* has been sporting aimed at examining the role that academics plays in undergraduate student life on campus. In the last issue, our focus was on the pursuit of other passions and its impact on academics while this time we dig into the factors that concern effective teaching and learning.

Teaching

Surveys among our students have consistently shown them to be unhappy with the teaching at IITB. The last survey conducted by *InsIghT* showed that 88% of the respondents feel that one of the important factors why they don't study is because the professors haven't succeeded in generating enough interest in their courses. 72% of the respondents also blame the course content for being too theoretical and lacking an application perspective making it disinteresting.

"Unfortunately, both Teaching and Research are full-time jobs" says Prof. Shivaprasad, the Dean Academic Programmes, "Professors constantly face that tradeoff. Increased focus on one would surely impact the other."

Teaching vs. Research

One oft-quoted factor is that professors have two different jobs to perform here - teach and research. Since the late 1980s, the administration has been putting a lot of emphasis on the research accomplishments of faculty members. It is also important to note that research is the most important factor in faculty recruitment as well as promotion, although course evaluation is also a component. It's not hard to see why it is possible that research could be more interesting while teaching could be relegated to being one of the unpleasant aspects of the job, for many professors.

Large Classes

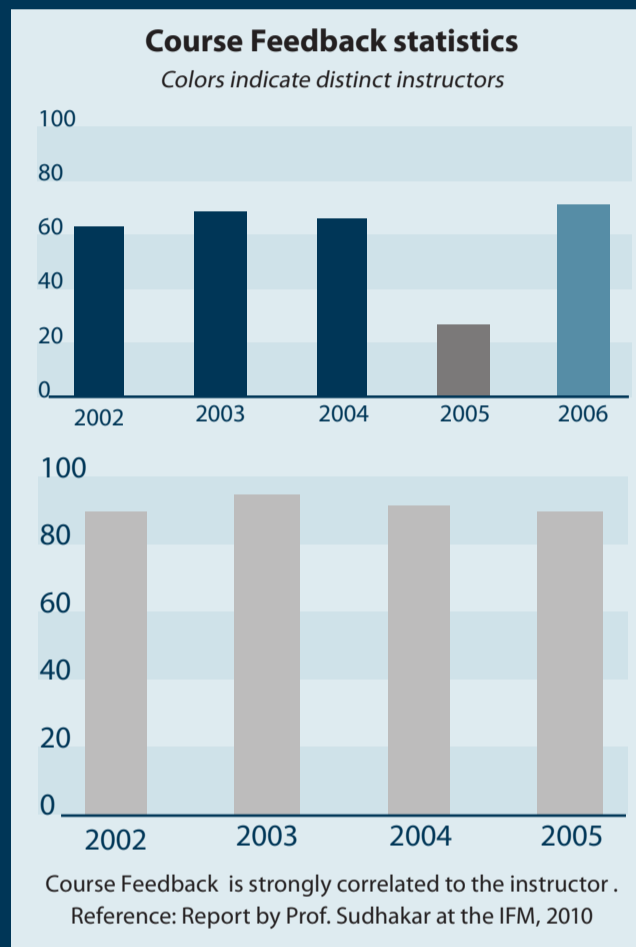
One of the biggest challenges often quoted by professors in recent times is the sudden surge in the number of students. With a shortage of faculty, this directly translates to more students per class. The challenge is further aggravated by the fact that the increase has not been gradual leaving no time for the infrastructure or the teachers (and their courses) to evolve to the change. Only recently has IITB been able to catch up, at least in terms of infrastructure with the completion of the new Lecture Hall Complexes.

Realising the gravity of the challenge, the Senate set up a committee in August 2010 for recommending Norms for Teaching Large Classes.* Apart from various administrative recommendations like auditing the rule-books of all academic programmes, the committee also recommended setting up of a *Centre for Effective Teaching methodologies* with trained professionals for providing methodological support to the faculty. The committee recognises the need for such a centre by noting that training faculty in teaching and making available consultancy services for teaching is ever more important as professors no longer are able to give individual attention as they used to, due to the large classes.

Variation among faculty

All faculty members aren't the same - some are naturally better at teaching and some aren't; some

are more enthusiastic and some less. A study done by Prof. Sudhakar shows that course evaluation for the same course shows huge variation when taken by different instructors. Conversely, it also shows remarkably consistent response over years for the same faculty member. This shows that there is a scope for improvement among some faculty and also substantiates the need for a centre for Effective Teaching in IIT Bombay. See graphs.



Slides as a teaching standard

As the committee also observes, slides are as a very effective way to reduce the effort of the faculty in repeated offerings of courses. When the uploaded slides have all the content, it could make the lectures entirely superfluous making students feel that there is no value addition to them attending classes. Many students want to revert to traditional blackboard teaching which is both effective and interactive and feel that slides should be used merely to augment it.

Need for improved course content

The surveyed students complained that their courses never teach them practical applications, something worsened by out-of-date labs and inadequately trained TAs. They said they have no idea of the bigger picture as regards to their curriculum. Many courses are also archaic in their scope, involve very little hands-on work (too theoretical) and not very challenging - leading to students studying them mechanically for the sole purpose of grades.

Changing role of a teacher

As Prof. Dhamdhere notes, "With the advent of the Internet, students have better access to facts than what a professor would be able to provide in a class and the role of a teacher has reduced to merely being a facilitator. If lectures just cover the contents of a textbook, it makes a teacher's role superfluous. Lectures should be planned in such a way that they try to develop a strong conceptual base in students rather than give out facts. I should emphasise the need for students to develop the ability to think critically." ■

Learning

It is extremely easy for the students to blame the teachers, but the student community too must introspect. *InsIghT*'s survey results show that 75% don't spend any time on academics if there are no upcoming assignments or exams and 80% of students study less than 3 hours a week. Why is it that the student body is so demotivated when it comes to academics?

The Placement Pull

A common theme that arose out of our discussions with both the faculty and the student body is the decreasing relevance of subject knowledge in securing good jobs. For most departments, very few good core companies recruit at IITB. Additionally, real R&D often does not happen in the Indian offices of even the best core companies for which we are usually recruited. Core jobs also often pay far lesser than the

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multitude of non-core options available. Prof. Ballal eloquently attributes this to the paradigm shift in the societal power structure from 'creators of wealth (engineers)' to the 'managers of wealth'. Students hence start investing in 'building their resumes' according to recruiters' expectations.

Misplaced mentoring

A lot of freshmen get carried away with the glitz and glamour of extra-curricular activities and can be easily misled by 'machau' seniors to believe that success in extracurriculars and positions of responsibility can more than make up for poor academics in the placement context.

Our Observations

Based on our research for the article, we at *InsIghT* make the following observations:

1. As recommended by the senate committee, a Centre for Pedagogy is crucial for improving the overall teaching standards at IIT Bombay. MIT, for instance, has had a huge success with its *Teaching and Learning Laboratory*.
2. A mentoring platform for faculty could be set-up by the institute for the senior faculty to mentor the new faculty. The faculty members who're relatively inexperienced at teaching would benefit greatly from this.
3. Professor-student interactions outside lectures are non-existent for most of the students. As a person who has been in the field for many years, a professor could be a much better academic mentor for a student than any senior student could possibly be. There should be proactive steps from both the professors and the students to try to bridge the gap.
4. The Institute Student Mentor Programme (ISMP) can play a crucial role in instilling the right academic culture in freshmen, including a strong sense of academic ethics.
5. A Continuous evaluation pattern should be followed to curb the menace of the "4 days a sem" study. The performance of students in the quizzes

* *InsIghT* has been following up with Professors Sudhakar and Dhamdhere who were a part of this committee on the progress of its recommendations.

2 Teaching and Learning issues

No conducive environment

Nearly 69% of the students felt that no space for a table and a chair in their hostel rooms and the loss of privacy and increased disturbance caused by shared accommodation up till their penultimate year reduces both the quantity and quality of their studies. Many students also stated that Facebook, movies, etc. distract them from academics.

Lack of interest in core branch

A lot of students end up in branches that they are completely disinterested in owing to the dogmatic way in which most fill their JEE preferences - a product of insufficient orientation and societal pressures.

Easy to get a 'decent' grade

A whopping 75% of the students reported that the fact that they feel that they can get a decent grade even by studying for a night prior to the exam greatly reduces their enthusiasm to study every day. Many of our survey respondents expressed that a possible marginal increment in the grade due to a lot of extra study is just not worth it.

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The fact that students feel that our exams today can enable them to 'get by' with such little preparation is something that is extremely alarming in an institute of our standard and should be investigated by instructors. It is imperative that both the course and the examination are challenging enough to require students to put in at least the required number of 'credit' hours every week. ■

during the beginning part of a course should be formative (i.e) should guide the design of the rest of the course, rectifying the difference in expectations of the instructor and the students, if any.

6. Students also express privacy concerns for their marks and grades, where public disclosure could lead to demotivation of the students in the lower rungs. Instructors and TAs could use the individual grading feature on moodle instead of making everyone's scores public.
7. Although the administrative and technical support has improved greatly with the LHC, instructors still complain of technical problems. Active care should be taken to ensure that incidents which disrupt the class activity such as failure of Audio/Video equipments, Air conditioning, etc. are avoided.
8. TAs must be sufficiently trained in the course content/teaching before they are allowed to assist a course. Evaluation for TAs should be performed alongside the present course evaluation for professors. Teaching awards for TAs can also be instituted.

There is scope for a lot of for work and we do have long way to go, but it is about time we started treading that path actively with renewed enthusiasm. ■

What has IITB been doing?

There have been efforts in this regard by various concerned faculty since 2010 when Prof. Sudhakar (Aerospace Engg.) took it upon himself to survey students, professors and analyse the courses and course-feedback within his department. He reported that 39% felt that their lack of interest in academics was teaching or faculty related. This presentation was made at the IFM (Institute Faculty Meet), 2010. He was able to statistically show that the oft repeated complaint 'students are not as good as they used to be' may, in fact, be incorrect. This data also showed that the teaching methodology employed by faculty made an impact on the course. He also identified that IITB lacked in training professors in pedagogy (the science of education).

Later the same year, Professors Sethi (CESE), Sudhakar and Pandey (SOM) made a presentation at the Faculty Academic and Research Meet (FARM). They collected the opinions of many professors and students about their motivation, ethics, and subject knowledge of UG students. Based on this, they mainly attributed the lack of motivation to the failure by faculty in creating enough interest in the core branch and students seeing a future in non-engineering sector. Other factors pointed out were large class sizes coupled with poor infrastructure, and that academic excellence is not well rewarded. The fact that students also consistently had uniformly poor ethical standards is also a huge impediment to

education - something the institute isn't sufficiently addressing.

The issue of large class sizes raised both by students and faculty was taken up by the IITB senate in the same year.

The next spurt of activity on this front happened in January of this year, with the *InsIghT* article occurring concurrently with the very first brainstorming session for the Forum for Academic Culture (FAC) conceptualized by Prof. Dhamdhare. His presentation examines how student de-motivation, large class size, extra-curricular distractions and ineffective teaching lead to a spiral of apathy from both students and faculty. He feels that student de-motivation is partly due to uninteresting courses, and that studying the night before exams is sufficient for most courses. He suggested that to make teaching effective, professors must find innovative ways to encourage group learning.

The FAC, formed after this meeting, held its first public event, focusing on Teaching and Learning in Mathematics courses. An expert seminar on Creating effective learning environments was also conducted by Mr. Yogesh Velankar, a PhD in Engineering Education from Purdue University. A faculty writeup series on teaching ideas and experiences is also planned for the coming months. The FAC solicits active participation from both the students and the faculty. ■

GuruCool

We wanted to showcase some unique methods that professors employ to make their course interesting and possibly add to the coolness factor. Our execution panel asked around among their friends for some "cool" professors/courses and asked to identify what differentiates them. Although it was non-exhaustive and very informal, a lot of names popped up repeatedly. People were asked to write about the respective professors/courses. We have randomly selected three writeups for this print issue. Do watch out for more on our website very soon!

Swati Patankar, BS 403 (Molecular biology)

-Mayank Boob

This is an introductory course for the MSc Biotechnology students, and is also part of a Biosciences Minor for UG students. Instead of teaching the theory as facts and concepts, Prof. Patankar asks us to design experiments to resolve the historical questions related to DNA. She then shows us the actual experiment that had solved the question, the data from it, and how else it could have been interpreted.

Students with not much prior biology experience also enjoy the course because of the unique examination format. Quizzes are based on research papers where students are asked to, for example, show which data points on a curve support a certain hypothesis. Midsem and endsem questions require us to design experiments to test new hypotheses. All in all, it is a unique course in that it is challenging as well as fun.

Prof. Parag Chaudhuri (CSE)

-Neehar Jathar

Prof. Parag Chaudhuri teaches Computer Graphics - both the basic and advanced courses. Although one may argue that graphics is fun by itself, it still takes a lot to keep people interested for 90 minutes in the middle of the afternoon. Prof Chaudhuri's lectures effortlessly mingle mathematics and movies, keeping students hooked to the lecture. However, he can be equally indignant about someone not doing their homework or someone having not seen *Ratatouille*.

His knowledge of computer games and indeed his passion for the same ensures that students are able to connect well with him. To top it all, he holds an animated movie competition where winners receive tickets to a movie of their choice. The Bottom-line - If you are looking for a 'cool' professor, look no further!

Prof. UK Ananthavardhanan (Mathematics)

-Sabareesh C

We had ~10 classes of his in a half-sem course, Complex Analysis (MA 205). I can scarcely remember a moment in these 15 hours when I felt disinterested, or even bored. And I am talking about classes in PCSA!

His exams were gems! The day before the endsem, he released the question paper with a very small portion of each question blanked out. We thought we were in for an easy exam until we realized just how difficult he still could make the paper. Not difficult - challenging. And fun too. He tested us in a variety of question patterns over the half sem, and each held its own. It's not in every course that you see that even the student who scored a DD appreciates the course as much as the one who scored an AP.

Add to it all, he knows more than half the class personally, and takes special interest in answering doubts outside classes (and in class too, of course). He is also a very cheerful guy to talk to, and has been a great mentor/guide in my case. A genius, he knows just how each concept he teaches applies in the practical world, and he thoroughly enjoys discussions with students, all of which hint at how vast his knowledge is. He was recently selected for the Excellence in Teaching Award. No surprises there!

Have you had professors who have used sneaky but cool techniques to keep you rooted to your seats or make you want to wake up at 8:30 just for that one class? Do you know of some methods that a professor of yours adopted that you wish every other professor also does? Do tell us! Send in your writeups to insight@iitb.ac.in ■