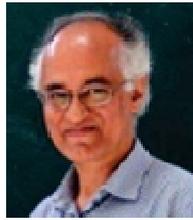


A Unique Pedagogical Experiment: The 5-Week Induction Programme (5WIP) at IIT Mandi



**Prof. Timothy A.
Gonsalves**
Director, IIT Mandi



Dr. Devika Sethi
Assistant Professor
IIT Mandi

A potter, when shaping a vessel, pays a great deal of attention to the shape, symmetry, texture, surface and the material of the object. She is perhaps aware of—but not overly preoccupied with—the future contents of the vessel. On the other hand, teachers in the higher education system in India, are trained to focus almost exclusively on the information that they are charged with imparting to their students. In India—with its stark variations in the population’s economic background, exposure to technology and to the English language — there are pronounced differences in abilities and skills among college-entering students.

Yet, today all these students are lumped together and given a brief introduction to the new environment of the IITs (academic, and also social) in which they are to find themselves for the next four years. It is assumed that from the next day all will be able to absorb, with equal ease, the lecture material, and rise to their teacher’s expectations. Additionally, it is assumed that they will be able to make friends across linguistic and regional barriers, participate in extra-curricular activities, and generally, emerge from their IIT after four years as polished, well-trained individuals and good citizens. Given the rigorous entrance exam to get into IITs, when students drop out from the IITs, or are unable to cope, the general public is unable to understand the paradox. Why does this happen?

Questioning the assumption that all students are equally well-equipped, intellectually and even emotionally, to handle the major transition from school to an IIT is the first step towards understanding this paradox. The next step is to identify ways in which all students can be treated as unique individuals, with their specific strengths and weaknesses. It is difficult for a teacher to handle students with diverse backgrounds in the classroom. So, an alternative is to give all students a chance—before their rigorous, grade-oriented classes begin—to acquire the critical skills that will enable them to follow lectures with ease, gain the confidence to ask questions of their teachers, and to feel at ease in their new home: the IIT residential campus.

These steps were carefully conceptualized in the 1st edition of IIT Mandi's *5-Week Induction Programme (5WIP)*, which began with the new B.Tech batch (150 students) of 2016. As many as 60 of the 100 faculty members of the Institute were involved in organizing and implementing the programme in a voluntary capacity. Not only does this speak volumes for their commitment to the Institute’s ethos, but it also distinguishes this programme from that of other institutes where such training may be outsourced to other agencies and consultants.

In *5WIP 2016* at IIT Mandi, students spent their first 5 weeks in an intense 6 am to 10 pm daily programme before regular classes began. The components of the 5WIP may be classified into four categories: Exploring Engineering, Academic Skills, Life Skills, and Inspirational Activities.

In **Exploring Engineering** (duration: 24 hours), through interactive group-work, students were exposed to the excitement of real-world engineering. Faculty members from different engineering disciplines guided students to discover what exactly a career in engineering entails. Students were given carefully chosen projects to create, including a boomerang and a circuit board, and were encouraged to experiment with conceptual and material tools. This module opened up for the students exciting vistas of the 4 years ahead. It demystified engineering and students learnt that branch is not important in real-world engineering.

The **Academic Skills** component is intended to bring all students up to a minimum level in skills essential for the rigorous IIT classes. This includes English and Computer Proficiency modules (13 hours each). Each student, irrespective of his/her initial proficiency level, spent these hours acquiring or honing his/her English and computer skills. As students were in randomly chosen groups, students who were better at a skill/subject were encouraged to help their

group members. At the same time, the more skilled students were also given optional, more challenging assignments. Other skills were acquired in the Communication and Soft Skills (9 hours) and Visual Thinking (9 hours) modules. Visual Thinking, a critical skill for engineers, was an activity based module in which students learned the power of pencil sketches for engineering design. For example, they had to conceptualize and sketch all components of a metro station.

In the **Life Skills** component, students were encouraged to explore the inter-connected worlds of self, family and society, i.e. human values (16 hours). The idea was to equip students with the capacity to reflect on their decisions and actions, to develop their values and ethics, and to conduct themselves in society with maturity and finesse. By participating in a variety of sports, including yoga (56 hours, in early morning and evening) and creative activities (a theatre workshop, visual arts and music for 30 hours), students tasted a range of extra-curricular activities, some of which may turn into hobbies for life.

These components were complemented by the **Inspirational Activities**. Here, eminent speakers from all walks of life were invited to address students. Club Introductions, Film Screenings and other Evening Activities (45 hours) kept students happily occupied in the evening hours. On Saturdays, students were taken on visits to old age homes and orphan-ages, and participated in tree-plantation and cleanliness drives (23 hours).

Assessments of the programme have been very positive. According to the Dean Students, Dr. Suman Kalyan Pal, the programme *“improved the communication skills of freshers and made them open up; it helped them absorb IIT Mandi traditions (academic, cultural and social) quickly. Areas of improvement in the programme are being identified.”* The Head Counsellor, Ms. Lishma Anand, who has interacted closely with several batches, observed: *“The 5WIP has had a positive impact on student life. They are confident, communicative, have made friends and are well-settled in the hostels. Usually this happens at the end of the first year. Compared to previous years only a few first year students have approached me with homesickness, academic or communication issues.”* In the anonymous feedback solicited from students, one student spoke for many when s/he said that: *“5WIP made our transition from school life to college life easy. The activities in 5WIP allowed us to make new friends and initiated a healthy interaction with the seniors and faculty members.”*

In my Director's welcome to the new batch, I highlighted that whereas in the past teachers would drill knowledge and skills into students, in a rapidly changing world this is no longer enough. Knowledge and skills have a much shorter shelf-life now. With the IIT Mandi philosophy of learning to learn, students could no longer expect teachers to spoon-feed information to them. The 5WIP was, therefore, intended to help students become more self-sufficient and self-confident. Assessments at the end of the programme indicate that these aims have been met much beyond our initial expectations. IIT Mandi faculty are now gear-ing up for 5WIP 2017 with renewed enthusiasm.

Our 5WIP is characterized by several unique features, of which we would like to list four:

- (1) Students are mentored in small groups of 20 by faculty, and not by external experts. This facilitates bonding between students and faculty which enriches the rest of the 4 years.
- (2) There is great emphasis on the excitement of engineering, leading into the regular curriculum.
- (3) There is considerable emphasis on the creative arts and sports as well for holistic development of the students.
- (4) The unique Himalayan location of IIT Mandi facilitates outreach activities directed towards the Himachali community.



Team Activity



Lunch at Mess



Campus Cleaning



Morning Exercise

We began with the metaphor of the potter, a creative soul, and we end with the metaphor of the swimming coach. The 5WIP at IIT Mandi is the equivalent of a rigorous but compassionate swimming coach, who knows that throwing learners in the deep end is rarely beneficial. For every learner who learns to swim after such a drastic introduction, there are many others who struggle, suffer and fail to learn, and develop a life-long fear of water. The coach understands the importance of teaching her charges how to appreciate the beauty (and danger) of the water, gauge its temperature, help other swimmers, and gradually progress from the shallow to the deep end of the pool in gentle, but enjoyable, steps and strokes. The 5WIP represents a brief but intense period of handholding as we watch our students—not just the brightest or the most articulate, but all, without exception—plumb the enchanting depths of the oceans of life and of learning.

Inspired by the experiences of IIT Mandi, IIT Gandhinagar, IIT BHU and IIT Patna, the IIT Council has recommended that all IITs run an induction programme of at least 3 weeks duration. MHRD has likewise requested all engineering colleges to follow suit.

Understanding Life through Physics

- Concept of Gravity Says...One can be always Attractive....
- Concept of Bulb Says Shining is an outcome of Resistance.....
- Concept of Battery Says your Potential is because of both your Negatives & Positives....
- Concept of Elasticity Says. There is a Limit to bear a Strain....
- Concept of Diode Says ...Rectify your Negatives....
- Concept of Quantum Says...whatever Hill, Well or Barrier comes...u have Definite Probability to come out....
- Concept of Relativity Says...if U don't understand anybody don't worry...put yourself in DIFFERENT frame of reference....
- Concept of e raise to x Says be cool don't get DIFFERENTIATED whatever worst happens...
- Concept of Current Says...whatever direction the electron flowsCurrent should always Origin from Positive....
- Concept of Interference Says...it can be Constructive / Destructive depends on Phase Relation.....