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I Am Teaching. Are They Learning?
The Mantra & The Mind Behind It

Dr. Rakshita is denoted by "R" and Prof. Krishna Vedula is denoted by "V" in the following interview.

Faculty are teaching. But we have never been trained to teach. That question has bothered me my entire career.

For Prof. Krishna Vedula, these deceptively simple statements are not a slogan—they are a diagnostic tool. One that forces educators to pause, interrogate their assumptions, and confront an uncomfortable truth: teaching effort does not automatically translate into student learning.

Across six decades spanning IIT Bombay, American research universities, academic leadership roles, and the founding of IUCEE, Prof. Vedula has consistently returned to one core concern: are our systems designed to help students learn how to learn?

This conversation is not about incremental classroom tweaks. It is about rethinking how faculty are prepared, how students are assessed, how institutions define excellence, and how courage—not compliance—drives meaningful educational reform.

Three ideas that anchor this interview:
- Learning autonomy must be intentionally cultivated—not assumed.
- Not all faculty roles should be identical; excellence in teaching and excellence in research are both vital.
- Education systems fail when they fear failure more than stagnation

R: Having worked across academia, administration, and global collaborations, what is the single most important shift engineering education must undergo in the next decade?

V: The most important shift is that we must help students learn how to learn on their own. Education cannot be about spoon-feeding content anymore. Faculty must guide students across a wide spectrum of learning—from understanding fundamentals to creating and designing solutions that are useful to society. Technology and AI will play a role, but they are only tools. The real responsibility lies with faculty helping students develop autonomy as learners.

Prof. Krishna Vedula began his academic journey with a B.Tech in Metallurgical Engineering from IIT Bombay in 1967. After completing his PhD from Michigan Technological University, he spent over four decades in higher education in the United States, including roles as faculty member, department chair, and Dean of Engineering at the University of Massachusetts Lowell. Since 2008, he has been deeply engaged in strengthening engineering education in India through the Indo–US Collaboration for Engineering Education (IUCEE).

R: India produces one of the largest numbers of engineering graduates globally. What separates quantity from quality in engineering education today?

V: Yes, the numbers are large, but not all students enter engineering out of interest or aptitude. Many come because of parental pressure, and most do not directly bear the financial responsibility of their education. Institutions must focus on identifying those with the aptitude and motivation to become good engineers and give them the skills to solve real problems. Quantity alone does not produce quality.

R: How can institutions bridge this gap meaningfully?

V: We must accept that not everyone who enters engineering will become a great engineer—and that is fine. We have to develop and nurture people who can fix the world, not simply produce degrees.

R: Through IUCEE, you have worked extensively at the India–US interface. What have Indian institutions learned from global models, and where should they stop replication?

V: Indian institutions have learned a great deal about pedagogy, problem-based learning, and improving teaching quality. However, where we have gone wrong is in uncritically importing the research-centric model of Western universities. In the US, most faculty enter academia with a PhD and strong research training. In India, many faculty acquire research training while already teaching. Expecting identical research output from both systems is unfair and counterproductive.

R: How should engineering education balance deep disciplinary rigor with interdisciplinary, problem-driven learning?

V: Students need a solid foundation, but we should not spend all our time on depth alone. We must give them enough grounding so that when they face real problems, they know how to go deeper on their own. Interdisciplinary learning works best when driven by real problems, not by artificially mixing subjects.

R: Faculty development has been central to your work. What actually changes teaching practice—policy, culture, or individual motivation?

V: All three are necessary. Individual motivation is where it begins—you must want to be a good teacher. But if institutional culture and policies do not reward good teaching, that motivation fades. When excellent teachers see others being rewarded without similar effort, it becomes demoralizing. These elements are deeply interconnected.

R: Universities often focus on infrastructure and rankings. Where should leadership focus if the goal is long-term academic excellence?

V: Institutions must decide what they want to be and commit to that vision, irrespective of rankings. Define your own benchmarks. Say, "This is the kind of graduate we want to produce," and then prove it. Chasing rankings leads to imitation; defining identity leads to excellence.

R: If you could change one thing about how engineering students are assessed today, what would it be and why?

V: I'd introduce more oral examinations and conversations with students. Assessment today largely measures memorization. We rarely assess higher-order skills like synthesis, design, and critical thinking because they are harder to evaluate. Oral exams are able to focus on those!

R: What concerns you most about the future of engineering education, and what gives you hope?

V: What gives me hope is the quality of students—they are intelligent, energetic, and capable. What concerns me is that we are not mentoring them well enough. Too often, we ask what is wrong with students instead of asking what we, as faculty, should do differently to help them reach their potential.

R: Looking back at your career, what advice would you give young faculty who want to influence education beyond their own classroom?

V: Start by demonstrating impact in your own classroom. Show that meaningful change is possible. Then work with a small group of like-minded colleagues. You cannot change everyone. If you influence even 20% of the faculty over time that can transform an institution.

R: Looking back at your journey—from IIT Bombay to global leadership roles—what experiences most shaped your philosophy as an educator and academic leader?

V: What shaped me most was witnessing how faculty are evaluated and rewarded, particularly in the United States. From the beginning, faculty are told that their promotions depend on how much research funding they bring in and how many graduate students they support. Teaching is acknowledged, but it is never central. I went through that system myself. Once I had tenure, I began to reflect more deeply on what we were actually producing. We were creating clones of ourselves—people doing increasingly specialized research, much of which had little relevance to real-world problems. That is when I started focusing seriously on teaching and learning. Research is important, but if graduates are not coming out with problem-solving abilities and societal awareness, we are failing in our core responsibility.

R: What advice would you give to young faculty who want to influence education at a systems level, not just within their own classroom?

V: The first step is to demonstrate change in your own classroom. You must show that what you are doing is having a real impact on student learning. Without that credibility, nothing else matters. The next step is to develop facilitation skills and work with a small group of like-minded colleagues. Do not expect everyone to change. That is a common mistake. I strongly believe in the 20–80 rule. If you can positively influence even 20% of the faculty over time, that is enough to change the direction of an institution. The remaining 80% will do what they want —and that is fine.

R: If you were designing an engineering college from scratch today, what is one unconventional decision you would insist on?

V: From the very first year, students should start working on real problems faced by society. Let them see those problems early and then teach them what they need to know in order to solve them. Instead of teaching content first and problems later, reverse the process.

R: What role should failure play in engineering education, and are our institutions genuinely designed to allow it?

V: Unfortunately, failure is still treated very poorly in our education system. From childhood, students are taught that failure is unacceptable—that they must score 90%, attend coaching classes, and never fall short. This obsession with success creates deep fear.
But learning is impossible without failure. Think about learning to ride a bicycle—you only succeed after failing many times. Faculty and institutions must allow students to fail and, more importantly, help them learn from those failures. If students are not afraid to fail, they will experiment, take risks, and ultimately learn much more. Right now, fear prevents experimentation, and that is a serious problem.

R: On the Mantra: "I Am Teaching. Are They Learning?" When did this mantra first strike you, and why has it stayed with you?

V: The phrase itself came to me about ten years ago, but the idea had been troubling me long before that. Faculty teach, but we are never trained to teach. We are never asked to take even a single course on how students learn. The mantra is intentionally simple, but its meaning is not obvious. Many faculty respond by saying, "Of course they are learning—I am teaching." That reaction itself shows why the question is necessary. Understanding the mantra takes time, reflection, and humility.

Rapid Fire

R: One word to describe the current state of engineering education in India:

V: Constrained.

R: A teaching practice that is overrated—and one that is underrated:

V: Lectures are underrated. Some forms of problem-based learning are overrated when applied mechanically.

R: If you were not an engineer or educator, what would you have been?

V: A social worker.

R: Your favourite role over the years—teacher, researcher, administrator, or mentor?

V: Mentor—especially while serving as an administrator.

R: A professional risk you are glad you took:

V: Moving into administration to influence decision-making at higher levels.

R: What still excites you about walking into a university campus?

V: The students—their energy, curiosity, and optimism.

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