

# EDUCATIONPLUS

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Salil Sahadevan  
Deepak John Mathew

Can a plant remember? Can a forest converse? Experiments show that pea plants learn to associate the breeze of a fan with light and grow accordingly. If intelligence means sensing and adjusting to a context, then, even the simplest life forms qualify. Intelligence is not limited to a few. In its quiet way, a pea plant shows predictive intelligence.

Biologists have recorded slime molds solving mazes without neurons and trees exchanging signals through fungal networks. None of these systems has a brain, yet they show signs of cognition. Some scientists resist calling it intelligence, while others believe the term needs expanding. Either way, this debate pushes our understanding of what intelligence is and where it resides.

### Beyond humans

It turns out that intelligence is not confined to the brain, or to humans. We are not the only problem-solving species. Being human is a competitive advantage. Cognitive science shows learning spans tools, bodies, contexts, and relationships. Intelligence is not confined to the brain. We need a post-human view of intelligence that is distributed, ecological, and shared. Yet, classrooms still treat learners as isolated processors assessed for recall, speed, and output. This model of intelligence is misleading, assuming higher grades equal higher intelligence.

In the 1980s, Gardner widened the lens to include linguistic, bodily, interpersonal,

## A question of intelligence

How do we promote the many modes of intelligence already in play, not just co-intelligence with AI?



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and other intelligences. Critics say the scheme confuses talents with intelligence and lacks solid psychometric footing. But the debate reminds us that IQ, EQ, or what Gardner said are only partial maps of reality.

When AI intrudes into all learning, we must stop over-rewarding codified knowledge. Learners who adapt to uncertainty or pick up on subtle cues may go unnoticed. Their intelligence is real but illegible to traditional assessment. If intelligence is adapting to complexity, how different would classroom practice be?

Intelligence is not something we have but something that happens between organisms, environments, and interactions. It is relational. So, the educational question becomes: how well does this learner go through the world rather than how smart are they?

### Unboxing the brain

If intelligence is adaptation, we might reward learners who ask better questions over those with quick answers. We would allow real-world complexity in our learning environments and would move away from tidy problems with clear-cut answers. Students would learn to handle ambiguous information, partial data, and shifting conditions. The goal would not be to land on the 'right' solution, but to interpret outcomes and test ideas as they go. Assessment would shift from timed tests to tracking how learners adjust their thinking with new variables. Instead of 'what did you get?', we will ask, 'what did you revise?' Or 'what changed in your thinking, and why?'

In complex systems, an er-

ror is information and a signal. Students can trace missteps and identify what is not working. Learning moves from per- formance to calibration to know how learners refine their fit with problems over time. Rather than controlling knowledge flow, teachers will spot patterns and build contexts for learning, helping students create tolerance for confusion and discomfort. They are two companions of real insight in a fragile world that we are not prepared for. You would not just ask what a student knows, but what kind of system their knowledge enables when it connects with others. This will lead to a sort of collaboration intelligence.

If bacteria and trees exhibit intelligent behaviour, then intelligence is basic. Learning has to bring up something beyond the basics. We must ask: How do we promote the many modes of intelligence already in play, not just co-intelligence with AI? This would broaden what counts as learning success. This is demanding, and expects learners to think with their whole system and also requires institutions to support less measurable, harder-to-standardise learning engagements.

But, it can make humans exceptional. We can notice a stranger crying, feel our chest tighten, and step in, even when no one watches or nothing is gained. If our natural intelligence runs that deep, being human is a competitive advantage in the age of AI.

Views are personal

Salil Sahadevan is Deputy Secretary with the University Grants Commission. Prof. Deepak John Mathew is the founding head of Department of Design at IIT-Hyderabad.

### SCHOLARSHIPS

#### Rupa Rahul Bajaj Scholarship for Women in Engineering

An initiative of Bajaj Auto Limited.  
**Eligibility:** Meritorious female students enrolled in select engineering colleges (list in the link) and have scored minimum 75% in class 12.  
**Rewards:** Scholarship to cover academic needs, mentorship and technical exposure and more  
**Application:** Online  
**Deadline:** October 31  
www.b4s.in/edge/BAJAJI

#### NSP National Scholarship for Post Graduate Studies

Offered by the University Grants Commission, Government of India.  
**Eligibility:** Indian nationals below 30 years who are enrolled in the first year of a PG programme in recognised Indian institutions and whose annual family income does not exceed ₹250,000.  
**Rewards:** ₹15,000 a month  
**Application:** Online  
**Deadline:** October 31  
www.b4s.in/edge/NSPG4

#### AICTE Pragati Scholarship for Girls

An initiative from AICTE  
**Eligibility:** Girls who are Indian nationals in the first year of a diploma or degree programme at an AICTE-approved institution or in the second year through lateral entry and have an annual family income not exceeding ₹800,000.  
**Rewards:** ₹50,000 per annum  
**Application:** Online  
**Deadline:** October 31  
www.b4s.in/edge/ASSST1

Courtesy: buddy4study.com



OFF THE EDGE  
Nandini Raman

I did PCMB in school and have completed a Diploma in Elementary Education. I have explored online courses, but nothing excites me. I am thinking of applying for government exams. Is this a good option? Yashika

Dear Yashika,  
Reflect on the kind of jobs you intend to apply for through government exams and why you are looking at a government job. The most direct path into government service is through the teaching exams such as Central Teacher Eligibility Test conducted by the CBSE or the state Teacher Eligibility Tests (depending on your state). The first exam makes you eligible to apply in Kendriya Vidyalayas, Navodaya Vidyalayas and private schools across India. The second will allow you to apply for primary teacher positions in government schools within that state. You will also need to take the recruitment exams conducted by various bodies such as Kendriya Vidyalaya Sangathan, Navodaya Vidyalaya Samiti, and State-specific Teacher Recruitment Boards. Beyond this, you can also consider Banking Exams, Railway Recruitment Board Exams, State Public Service Commission exams but many of these need a Bachelor's degree as a mandatory requirement.

I did my B.Sc. from a less-known university and am doing M.A. Political Science from IGNOU. I developed an interest in Political Science and International Relations while preparing for the UPSC. What are my career options? Will my educational background be a disadvantage? Name withheld on request

Employers generally focus on your latest and most relevant degree and your skills and knowledge in the tasks that you

## Build real-time knowledge

Uncertain about your career options? Low on self-confidence? This column may help

are assigned rather than your Bachelor's degree. Your M.A. Political Science from IGNOU will be accepted, as IGNOU is a recognised central university. However, some employers (particularly in highly competitive corporate roles or certain academic positions) prefer candidates from traditional universities due to the perception of campus experience, networking, and direct faculty interaction. You can overcome this by showcasing your strong subject knowledge in interviews and demonstrating skills in research, analytical, writing, and your communication skills. Gaining practical hands-on experience is key to building real-time knowledge.

Career options beyond the UPSC include think tanks and research institutions, NGOs in the development sector, media and journalism, academia and teaching and content creation. Roles will range from being research assistant, programme officer to advocacy officer and assistant professor. For the last, you will have to take the UGC-NET.

There will also be specific recruitment drives in the government sector for research and administrative roles in, say, the Ministry of External Affairs or Parliamentary Research Services. Keep an eye on the official websites. You can also consider the State Public Service Commission exams.

I am doing a B.A. Economics, because I was not sure what to do after Class 12. I chose a college in another town to help me build independence. However, I keep thinking that I could have done better, studied at a top university and compare myself to people I know who have gone abroad to study in world-class universities. I am going into a spiral of negative thoughts. Please help me. Name withheld on request.

What you are feeling is common to many bright, ambitious students. However, well done on your move to a new town, as it has placed you in a new environment and got you to experience life out of your comfort zone. Instead of focusing on what might have been, look at what is and what can be. There is no perfect path. So focus on your individual journey. Remember, you don't know what challenges and struggles students in world-class universities abroad are facing. So don't fantasise about others. Focus on developing your skills regardless of your college rank. Look for internships and hands-on experience. Build a strong profile so that you can go abroad for your Master's if you wish. Ensure your physical, mental and emotion well-being.

If you feel overwhelmed, reach out to a trusted friend, family member, professor or mentor. Sharing your feelings can provide new perspectives. If this doesn't help, find a therapist to validate your concerns and get professional help.

B.A. Economics is a valuable undergraduate degree that teaches you to think critically, analyse data, solve problems, and understand complex systems. It will open doors to finance, banking, consulting, data analysis, policy research, and public sector.

You can also explore M.A. or M.Sc. in Economics, Master's in Finance or Financial Economics, Master's in Public Policy or Public Administration or Master's in Data Science or Business Analytics or do an MBA.

My grandson wants to study B.E. Environmental and Sustainability Engineering in a reputed institution. Does this offer good employment opportunities? Venkata Venu

B.E. Environmental and Sustainability Engineering is a highly relevant and forward-looking field. There is increasing global and national emphasis on environmental protection, climate change mitigation, sustainable development, and resource conservation. Stricter environmental regulations and policies (related to pollution control, waste management, water treatment, carbon emissions) create a constant demand for engineers who can ensure compliance and implement sustainable solutions.

Employment opportunities extend across public and private sectors in India and abroad in environmental consulting firms, the manufacturing sector, waste management and recycling companies, water treatment and supply companies, renewable energy companies, infrastructure sector and so on. In the government sector, roles include the Pollution Control Boards, and public sector undertakings such as NTPC, ONGC, GAIL, SAIL and so on.

Reputed institutions offering this programme include IIT-Bombay, IIT-Delhi, IIT-Madras, IIT-Kanpur, IIT-Kharagpur, IIT-Roorkee, IIT-Guwahati, IIT-BHU, IIT-Hyderabad, NIT-Tiruchi, NIT-Warangal, NIT-Surathkal, NIT-Rourkela, Malaviya National Institute of Technology Jaipur; BITS-Pilani, BITS-Goa, BITS-Hyderabad, Delhi Technological University (DTU), Anna University, Chennai; Jadavpur University, Kolkata; and Vellore Institute of Technology, Vellore.

Disclaimer: This column is merely a guiding voice and provides advice and suggestions on education and careers.

The writer is a practising counsellor and a trainer. Send your questions to eduplus.thehindu@gmail.com with the subject line Off the Edge



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## Reroute to reboot

On the rising trend of students switching streams mid-degree

### Tristha Ramamurthy

For decades, a student's academic journey followed a predictable arc: select a stream in school, graduate from college, and enter a defined professional domain. This linearity, once seen as a marker of clarity and success, is now quietly unravelling. Increasingly, students are switching academic streams mid-degree, not out of indecision but in a powerful and thoughtful act of agency. This is a generation growing up in an era of rapid change, global interconnections and dissolving of rigid boundaries. They are attuned to context and understand that adaptability, interdisciplinary

ary thinking, and creativity are imperatives.

### Clarity comes later

Students are just beginning to understand who they are when they are expected to make life-defining academic and professional choices. These early decisions are frequently influenced by what is visible and familiar, such as parental professions, peer preferences, or societal prestige. But real clarity often comes later when they are confronted with new subjects, new ideas, and new possibilities. Exposure to new ideas, disciplines, mentors, and experiences in college plays a significant role in shaping aspirations. When students discover that their initial stream is

not aligned with their evolving identity or interests, the most honest choice they can make is to pivot.

Some discover a latent passion, such as an Economics student drawn to environmental studies, or a Science student intrigued by Philosophy. Others respond to the shifting job market, where hybrid skill sets are increasingly prized, like data scientists who understand ethics, business leaders with a grounding in climate science, or artists who can code. At the intersection of fields, new industries are emerging, and students are paying attention. *The Future of Jobs* report by the World Economic Forum reinforces this point. The careers of

tomorrow are forming at the confluence of disciplines and relevance now trumps rigidity.

To switch streams mid-degree is not to abandon a goal but to redefine it. In fact, the very skills required in the workplace, such as agility, critical thinking and resilience, are being practised when they make these decisions.

### Support

This shift also calls on higher education institutions to be more flexible. For students to move across disciplines without losing momentum or credits, we need academic architectures that support mobility. Interdisciplinary minors, flexible credit systems, bridge courses, and strong mentoring frameworks can empower students to explore without fear. Moreover, we must cultivate environments where it is safe to change one's mind. The courage to pivot stems from a culture that values growth over perfection, and authenticity over conformity. The ultimate goal of education has never been to produce certainty. It has always been to cultivate capacity to think, question, evolve, and to lead. In that spirit, when a student chooses to shift streams mid-degree, they are not breaking down. They are breaking through.

The writer is Provost, CMR University, and Vice President, CMR Group of Institutions, Bengaluru.

### SAVE THE DATE

#### Admissions

Sri Sri University invites applications to its M.Tech. Cybersecurity and Incident Management course, launched in collaboration with SecurEyes.

**Eligibility:** UG in Engineering or Technology from a recognised university  
**Deadline:** October 15  
https://tinyurl.com/7tpas8vk

**Mahindra University**, in collaboration with Virginia

Tech, invites applications for the January 2026 intake of its Ph.D. programme.  
**Eligibility:** UGC-NET scores or Mahindra University's written test and interview.  
**Deadline:** October 31  
https://tinyurl.com/3u8px73y

The University of Sheffield, the U.K., invites applications for its B.Sc. Environmental Science for September 2026.  
**Eligibility:** 75% or 8 GPA in Class 12 including a Science subject.  
https://tinyurl.com/f9zjw3ka



Radhika Shrivastava

Many traditional career paths are changing rapidly in the age of AI, automation, and Machine Learning. Reports say that jobs in journalism, customer service, content writing, data entry and basic analytics may be taken over by AI. But, what students need to ask is how these careers can be reinvented and made future-proof. Job loss is not the issue; it is job evolution. Many entry level and foundational tasks that serve as a training ground are being taken over by AI. This means that a degree is not enough and students need to build skills that AI cannot replace. While the importance of digital fluency cannot be overstated, the skills that make students stand out are those that can't be replicated by AI such as:

**Five human essentials:** Problem-solving, creativity, empathy, communication, and critical thinking are essentials. Those who combine technical competence with emotional intelligence will be the leaders. AI can process data at high speeds, but workplaces will always



# Old jobs, new tricks

“At-risk” careers are being reshaped by digital transformation. In order to thrive, students must embrace this change

value these human skills especially in leadership positions, client-facing roles, or sectors such as health-care and education.

**Specialise:** Instead of opting for generic degrees, students should consider niche specialisations. Management students could specialise in AI-driven bu-

siness strategy; journalism students could explore AI in content curation or data storytelling; retail students could study consumer behaviour analytics or digital logistics. In order to bridge the knowledge gap between domain knowledge and emerging technologies, consider short-term

certifications from institutions that have credibility.

**Internships:** Seek opportunities that expose you to AI tools, data platforms, or digital-first problem solving. These experiences will help you learn how to work with technology rather than against it. Building a chatbot, analys-

ing trends, or developing a digital campaign add technical depth to your skills.

**Ally AI:** Adaptive learning platforms and AI tutors can help students personalise study plans, revise faster, and understand complex material. In addition to practising business simulations, you can create

structured reports and get feedback on your presentations using AI tools.

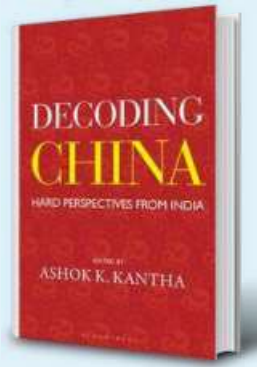
**Stay relevant:** Job-markets in India are rapidly evolving with many companies removing degree barriers, and launching apprenticeships, according to the World Economic Forum's 2025 *Future of Jobs* report. Stay updated with emerging technology, follow industry reports, attend workshops, and keep experimenting. Your ability to learn, unlearn, and relearn matters more than the title of your first job.

**Collaboration, not competition:** AI isn't replacing students; it is challenging them to think differently. It will open more doors for those who can learn quickly and adapt to new tools.

**Choose reinvention:** “At-risk” careers aren't disappearing. They are evolving and being reshaped by digital transformation. In order to thrive, students must embrace this change. A future-ready workforce requires subject expertise, digital agility, specialisation early, and a mindset of continuous learning.

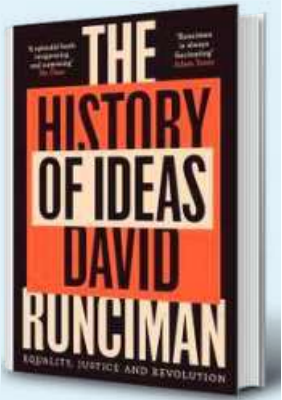
The writer is President, Fortune Institute of International Business (FIIB).

## ON THE SHELF



**Decoding China: Hard Perspectives from India**  
China's remarkable ascent, marked by significant achievements stands as the most important geopolitical development of the past 40 years. *Decoding China: Hard Perspectives from India* explores this phenomenon through an Indian lens. Featuring insights from 21 diplomats, military officials and scholars who have observed the 'rejuvenation of the Chinese nation' under Xi Jinping, the book provides rigorous and evidence-based evaluations of China's internal and external dynamics.  
**Author:** Ashok K. Kantha  
**Publisher:** Bloomsbury  
**Price:** ₹899

**The History of Ideas**  
What can Samuel Butler teach us about how we choose to organise our societies? How did Frederick Douglass not only expose the horrors of slavery but champion a vision of life beyond such power divides? Political theorist David Runciman distils 300 years of thinking about equality, justice and revolution and explores what the very human fears behind these definitive works show about how we understand our world today. From Rousseau to Rawls, fascism to feminism and pleasure to anarchy, this is a tour through the history of ideas.  
**Author:** David Runciman  
**Publisher:** Hachette  
**Price:** ₹699



## Down to the molecule

Manoj Gopalakrishnan, founder and CEO of Algorithmic Biologics, on making molecular testing more efficient and scalable



**FUTURE PERFECT**  
Ananya Ganapathy

The next in the series featuring conversations with entrepreneurs, technologists and researchers about emerging technologies and what students need to know about these fields.

**What do you do?**  
I am the founder and CEO of Algorithmic Biologics (AlgoBio), a biotech start-up. We help make accurate molecular testing affordable at scale, so that the benefits of this molecular information are available to all. This impacts drug discovery, advancements in fundamental biology, and healthcare for everyone from newborns to cancer patients.

**Why is your work important globally?**

Molecular interactions are key to our understanding of life and testing unlocks our ability to understand biology, enabling us to cure diseases, invent new drugs, and even harness living systems to produce novel materials for us. Today, there are many conditions like tuberculosis, safe blood transfusions, newborn screening and rare genetic disorders for which a scientific solution exists. However, these are not deployed due to issues with cost, accuracy, or scale. AlgoBio is making the required molecular tests more efficient so they can be offered to everybody who needs them.

**What is exciting about your work?**

We are at the intersection of Computing and Molecular Science. This means that we often have to reinterpret concepts from Molecular Science and Chemistry in terms of information processing. This challenges us to be creative and to think in new ways. We are a team of software engi-



neers and lab technicians in equal numbers with everyone being in constant conversations with people with completely different backgrounds.

**Any experiences in college that led you to become an entrepreneur?**

I am an accidental entrepreneur. I was a mid-career professor at IIT-Bombay. However, I realised that my innovations could only have the impact I wanted if I started a company. In academia, you want to give each student a different problem. It is very exploratory. Here, I get to go deep with a bunch of excellent scientific minds who are all working together on the same problem, building the system together.

**What should students specifically know about your field?**

We build computers in test tubes. A computer is a box of switches. In Chemistry, a catalyst is a switch for a reaction. If the catalyst is present, the reaction is “ON”; else it is “OFF”. So, using catalysts, one can make a computer in a test tube via chemical reactions. Nature gives us many catalysts in enzymes. Using the power of these enzymes and Nature's toolbox, we are able to build molecular computers that are used to compress information in the test tube before it is pulled out. Moreover, we use these computers to make molecular testing more efficient with our tech stack.

The writer is an avid follower of emerging technologies and their applications.

Divva R. Krishnan

India's insurance penetration remains low at 3.7%, even as gross written premiums grow, revealing a critical disconnect between policy advancement and grassroots impact. The issue is not a lack of demand, but the absence of inclusive and informed dissemination. This is where academia must step in. With financial and risk literacy levels still alarmingly low in rural India, particularly among local governance bodies and households, educational institutions can no longer remain peripheral observers.

**Bridge the gap**

Colleges and universities – especially those offering programmes in Commerce, Management, the Social Sciences, and Rural Development – are uniquely positioned to create a new generation of risk-literate citizens. Rather than approaching rural communities as consumers of insurance, we must reimagine them as co-learners and co-creators of protection frameworks. Academia, with its neutral, credible, and community-rooted presence, can bridge the trust gap that insurance delivery models traditionally encounter and deliver sustained, culturally grounded insurance education.

If India is to transition



## Towards risk intelligence

Academia can embed risk literacy into curricula and expand insurance outreach in rural India through structured academic frameworks

from a compliance-driven insurance model to one of genuine social protection, we must shift from a top-down, policy-push mechanism to a grassroots, knowledge-led strategy. Academia is the missing catalyst, and it must now step forward as a central actor in this transformation. Through student extension programmes, credit-bearing rural immersion projects, social innovation labs, and risk literacy clubs, universities can ac-

tivate their campuses into engines of insurance inclusion. As a credible knowledge delivery channel, colleges and universities can translate complex insurance principles into culturally relevant and locally contextualised information. Its wealth of young, motivated learners allows it to build risk-intelligent citizens from the ground up, delivering last-mile knowledge through structured community engagement, awareness campaigns, and

participatory research.

This also aligns with the NEP 2020 vision of integrating community participation into higher education. Further, academia can catalyse an attitudinal shift in how rural India perceives insurance. When insurance companies approach communities, they are often seen as vested actors with commercial motives. By contrast, academic interventions are received more positively, as they are perceived to be

## Made to measure

Why strategic design education is India's next big leap



who can interpret complexity, craft scalable solutions, and influence executive-level decisions. Sectors such as energy, fintech, healthcare, and mobility require professionals who can seamlessly integrate user needs, digital technologies, and business goals. Strategic designers are becoming the glue in multi-disciplinary teams, driving innovation from concept to launch.

Today, strategic design roles are on the rise in India, and companies now prioritise designers who grasp business metrics, digital ecosystems, and long-term value creation. Designers are no longer just visual experts; they are valued as innovation partners, capable of navigating complexity and shaping business outcomes.

**Education reform**

To meet these shifting demands, Indian Design education must evolve. Traditional design schools are redefining their pedag-

ogy, but radical change is still needed. To equip students for strategic design roles, curricula should blend:

**Entrepreneurship:** Students should be empowered not just to design for companies but to build ventures that solve real-world problems.

**Interdisciplinary collaboration:** Future design leaders must learn to co-create with engineers, business analysts, psychologists, and urban planners.

**Industry engagement:** Practical immersions, live projects, corporate collaborations, and industry labs will bridge the gap between academia and application.

Institutions such as Stanford d.school in the U.S., Aalto University in Finland, and the Royal College of Art in the U.K. have long integrated strategic design into their curricula. Indian institutes must benchmark against such programmes to internationalise their standards and establish global

collaborations.

The future belongs to those who can adapt, collaborate, and innovate. Strategic Design education is uniquely positioned to prepare students to:

**Think systemically:** Understand the far-reaching impact of design decisions on economies, cultures, and ecosystems.

**Innovate responsibly:** Balance business objectives with society, environment, ethics, and policies.

**Integrate technology:** Use AI, data, and digital tools not just for efficiency, but to enhance consumer experience and find innovative ways of creating value.

Strategic Design is not about the what; it is about the how. Not about aesthetics, but innovation. Not about the product, but the process. For India, this modern interpretation of design could be the next big leap.

The author is Director (Growth) at The Design Village.