

AAROHKA

Rising to Inspire. Inspiring to Lead.

ISSUE

1

The Half-Yearly
Magazine

JAN-JUNE 2026

“Leadership is
not about a position
or a title, it is action
and example.”



Vikrant
University
— GWALIOR —



Excellence



Innovation



Integrity



Global Outlook



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FROM THE HON'BLE CHANCELLOR'S DESK



It gives me immense pleasure and pride to extend my warm greetings to the readers of *Aarohika*, the inaugural magazine of Vikrant University, Gwalior. The first issue of a publication marks the beginning of a meaningful journey, one that captures the ideas, achievements, aspirations, and evolving identity of an institution.

At Vikrant University, we believe that education extends beyond the boundaries of classrooms. It is about nurturing curiosity, encouraging innovation, developing critical thinking, and cultivating the values essential for responsible leadership and meaningful contribution to society. *Aarohika* reflects this philosophy by providing a platform for the academic, creative, and professional achievements of our students, faculty, and University community.

This inaugural issue is a celebration of the collective efforts that continue to shape Vikrant University. I appreciate the dedication of our faculty members, staff, students, and the editorial team whose enthusiasm and commitment have brought this publication to life.

I am confident that *Aarohika* will grow into a cherished tradition of the University, documenting our milestones while encouraging a culture of knowledge, creativity, dialogue, and excellence.

I extend my best wishes to everyone associated with this first edition. May *Aarohika* inspire our learners to think boldly, pursue knowledge with purpose, and lead with integrity.

With best wishes,

Rakesh Singh Rathore
Hon'ble Chancellor
Vikrant University, Gwalior

FROM THE HON'BLE PRO- CHANCELLOR'S DESK



It brings me immense pride and joy to welcome the inaugural issue of *Aarohika*, the half-yearly magazine of Vikrant University, Gwalior. The launch of this publication is a proud moment for the University and reflects our commitment to creating meaningful avenues for knowledge sharing, creativity, intellectual engagement, and expression.

A university flourishes when ideas are encouraged, perspectives are exchanged, and achievements are shared. *Aarohika* seeks to provide such a platform by bringing together the diverse academic, creative, and professional contributions of our students, faculty members, researchers, and the wider University community. Through its articles, perspectives, achievements, and conversations, the magazine offers a glimpse into the vibrant intellectual environment that continues to evolve at Vikrant University.

I deeply appreciate the efforts of the editorial team and all the contributors whose dedication has transformed this initiative into a meaningful publication. Their commitment reflects the spirit of collaboration, curiosity, and excellence that we aspire to cultivate across the University.

As *Aarohika* begins its publishing journey, I hope it will continue to encourage thoughtful dialogue, celebrate innovation, and provide a space where emerging ideas can find a voice. May each edition inspire our learners to explore new possibilities, engage with knowledge, and contribute meaningfully to society.

I extend my heartfelt congratulations to everyone associated with this inaugural issue and wish *Aarohika* a distinguished and enriching journey ahead.

With my best wishes for continued learning, creativity, and intellectual growth!

Vikrant Singh Rathore
Hon'ble Pro-Chancellor
Vikrant University, Gwalior

FROM THE HON'BLE VICE CHANCELLOR'S DESK



It is a privilege to present the inaugural issue of *Aarohika*, the half-yearly magazine of Vikrant University, Gwalior. As our university continues to grow as a centre of learning, innovation, research, and professional development, this publication represents another meaningful step in nurturing a culture where ideas are valued, voices are heard, and achievements are celebrated.

A university is defined not only by the programmes it offers, but by the intellectual environment it creates. At Vikrant University, we endeavour to foster an academic ecosystem that encourages curiosity, critical inquiry, creativity, collaboration, and lifelong learning. *Aarohika* embodies this endeavour by bringing together the diverse experiences, accomplishments, perspectives, and creative expressions of our students, faculty members, researchers, and University community.

The inaugural issue is particularly significant as it captures the enthusiasm and collective spirit with which our academic journey continues to unfold. I appreciate the editorial team and all contributors for their sincere efforts in shaping this publication and providing a platform for meaningful academic and creative expression.

I hope *Aarohika* will evolve into a vibrant record of our university's journey, documenting milestones, showcasing emerging talent, stimulating thoughtful conversations, and inspiring new ideas. May it encourage our students to look beyond the familiar, engage with the world around them, and transform knowledge into meaningful action.

I extend my sincere congratulations to everyone associated with this inaugural issue and wish *Aarohika* a rewarding journey of continued learning, creativity, and excellence.

With my best wishes for a successful beginning and a promising journey ahead.

Prof. (Dr.) Atul Kumar
Hon'ble Vice-Chancellor
Vikrant University, Gwalior

FROM THE REGISTRAR'S DESK



It is a matter of great honour to welcome the inaugural issue of *Aarohika*, the half-yearly magazine of Vikrant University, Gwalior. This publication marks a meaningful beginning in our university's journey of documenting and celebrating the academic, creative, and cultural life of its community.

A vibrant university is shaped by the active participation of its students, faculty, and staff. Their ideas, accomplishments, experiences, and contributions collectively give an institution its character and identity. *Aarohika* brings these diverse dimensions together, offering readers a glimpse into the enthusiasm, talent, and engagement that continue to enrich campus life.

I particularly appreciate the sincere efforts of the editorial team and all contributors who have devoted their time and creativity to bringing this first edition to fruition. Initiatives such as these encourage our students to articulate their thoughts, strengthen their communication skills, appreciate diverse perspectives, and participate more actively in the life of the University.

As *Aarohika* begins its journey, I hope it will continue to evolve with every edition, recording important milestones while creating opportunities for expression, reflection, and meaningful exchange. May it become a valued part of our university's academic and cultural tradition.

I extend my heartfelt congratulations to everyone associated with this inaugural publication and wish *Aarohika* a rewarding and enduring journey.

With my best wishes for a continued journey of institutional growth, collective achievement, and shared aspirations.

Dr. Richa Verma
Registrar
Vikrant University, Gwalior

FROM THE DEAN ACADEMICS DESK



I am delighted to present the inaugural issue of *Aarohika*, the half yearly-magazine of Vikrant University, Gwalior. As an academic institution committed to excellence in teaching, learning, and research, we recognise the importance of creating avenues where knowledge can be shared, ideas can be explored, and the achievements of our academic community can be meaningfully represented.

Education becomes truly enriching when learners are encouraged to move beyond prescribed curricula and engage with new questions, diverse perspectives, creative pursuits, and emerging areas of knowledge. *Aarohika* reflects this spirit by bringing together academic insights, student achievements, faculty contributions, research-oriented perspectives, and experiences from across the University.

I am particularly pleased to see our students and faculty members contributing to this publication. Such participation nurtures confidence, strengthens communication and analytical abilities, and encourages learners to develop a thoughtful engagement with the world around them. It also reinforces the connection between academic learning and its wider application in professional and social contexts.

I hope *Aarohika* will continue to encourage a culture of reading, writing, inquiry, and informed discussion across the University. May it evolve with each edition into a valuable record of our academic progress and a source of inspiration for our learners and educators.

I congratulate the editorial team and all contributors on this inaugural publication and wish *Aarohika* a purposeful and enriching journey ahead.

With my best wishes for continued academic excellence and meaningful learning.

Dr. Anand Singh Bisen
Dean Academics
Vikrant University, Gwalior

PREFACE

Welcome to the first edition of Aarohika, the Half-Yearly Magazine of Vikrant University, Gwalior. It gives us immense pleasure to present an issue that celebrates knowledge, innovation, leadership and the transformative power of education. As the editorial team, we are delighted to bring together a diverse collection of articles, interviews, and thought-provoking features that reflect the changing landscape of technology, research, sustainability, public affairs, and human development.

This edition is privileged to feature exclusive conversations with globally renowned personalities whose remarkable journeys continue to inspire generations of learners. We are honoured to present an insightful interaction with Dr. Naresh Chand, a distinguished technologist, Life Fellow of IEEE, Founder of Prakash Bharati and former Director at Huawei U.S. R&D, who shares his perspectives on science, engineering, innovation, and global opportunities. We are equally privileged to feature Prof. (Dr.) Anoop Swarup, an eminent futurist, educationist, peace advocate, and former senior civil servant, whose visionary thoughts on leadership, higher education, global collaboration and sustainable development offer valuable inspiration for students, educators and policymakers alike.

The magazine also presents engaging interviews with accomplished leaders from engineering, entrepreneurship, the pharmaceutical industry, and academia, highlighting their professional journeys, leadership experiences, and insights into innovation, quality, and lifelong learning. Their stories reaffirm that determination, integrity, and continuous learning remain the cornerstones of meaningful success.

In this issue, readers will explore compelling articles on emerging technologies, including Digital Twin technology, Artificial Intelligence in business, and the growing challenges of synthetic fraud in the digital era. We also examine contemporary global, national, and state affairs, offering perspectives on significant developments that continue to shape our society and economy.

Recognizing the importance of sustainability and responsible innovation, this edition features discussions on biofuels, intelligent business practices, and engineering solutions for a sustainable future. Education and personal development remain central themes, with insightful articles on outcome-based legal education, the evolving role of language and literature, mental health awareness among youth, the power of curiosity, and the everyday choices that influence personal and professional growth.

At Aarohika, we strive to create a platform that encourages intellectual curiosity, meaningful dialogue, and interdisciplinary learning. Every article and conversation in this edition reflects Vikrant University's commitment to academic excellence, research, innovation, and holistic development.

We extend our heartfelt gratitude to our distinguished contributors, interviewees, faculty members, students, alumni, reviewers, and the editorial team for their invaluable support in making this edition possible. We hope these pages inspire you to think critically, embrace innovation and contribute positively to society.

Happy Reading!

Editors:

Prof. Alka Yadav

Prof. Diksha Yadav

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Battery Digital Twin for Electric Vehicles

Revolutionizing Intelligent Battery Management and Sustainable Mobility

Prof. Prateek Shrivastav

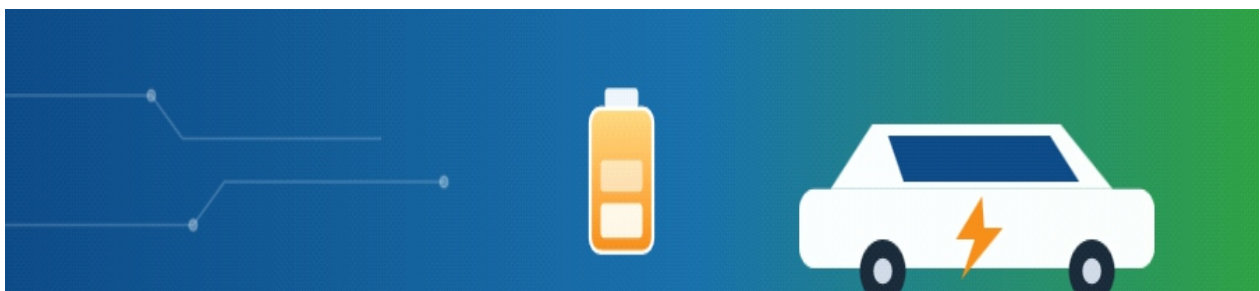
Senior Ph.D. scholar in Electrical Engineering
Department at IIT Jodhpur

A dedicated researcher and innovator in the field of Electrical Engineering, the author is currently a Senior Ph.D. Scholar in the Department of Electrical Engineering at Indian Institute of Technology (IIT) Jodhpur. As a recipient of the prestigious Visvesvaraya Ph.D. Fellowship, awarded by the Ministry of Electronics and Information Technology (MeitY), Government of India, the author has demonstrated outstanding academic excellence and research potential.

The current research focuses on the development of a Digital Twin for Advanced Battery Systems integrated with renewable energy sources, contributing to the advancement of intelligent, efficient, and sustainable energy solutions. The work combines cutting-edge technologies in battery management, renewable energy integration, and digital modeling to address the growing demand for reliable and clean energy systems.

Before pursuing doctoral research, the author gained valuable industrial experience as a Quality Engineer in the semiconductor industry, developing expertise in quality assurance, manufacturing processes, and advanced electronic systems. In addition, the author served as the Chairperson of the IEEE Photonics Society Student Branch Chapter, providing leadership in organizing technical events, promoting research activities and fostering professional development among students and young researchers.

With a strong passion for smart energy systems, battery management systems (BMS), power electronics, renewable energy technologies, and sustainable engineering, the author continues to contribute to innovative research aimed at accelerating the transition toward cleaner and more efficient energy infrastructures. Through a combination of academic excellence, industrial exposure, and professional leadership, the author remains committed to developing technologies that support a sustainable and energy-secure future.



WHY EV BATTERIES NEED A DIGITAL TWIN

Electric vehicles have moved from a niche experiment to a mainstream automotive category. Global EV sales topped roughly 17 million units in 2024 and continue to climb as manufacturers add new models across every price segment, from two-wheelers to luxury SUVs. Behind every one of these vehicles sits a single component that decides almost everything about how it performs: the lithium-ion battery pack.

The battery is not just a fuel tank. It governs range, charging speed, acceleration, safety margins and, ultimately, the total cost of ownership. A pack that degrades faster than expected erodes resale value and customer trust; one that fails unsafely can ground an entire model line. Yet batteries are notoriously difficult to

monitor from the outside. Internal chemical reactions, temperature gradients and mechanical stress evolve in ways that simple voltage and current readings cannot fully capture.

This is the gap that the Battery Digital Twin closes. A digital twin is a continuously updated virtual replica of the physical battery, built from real-time sensor data and refined through physics-based and machine-learning models. Instead of reacting to a battery after a fault appears, engineers can simulate, predict and intervene before problems reach the road. As packs grow larger, chemistries diversify and consumers demand longer warranties, this real-time visibility is becoming less of a luxury and more of an operating requirement for the EV industry.

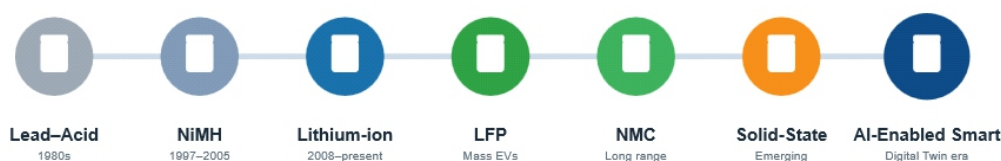


Fig. 1. Evolution of EV battery chemistry, from lead-acid to AI-enabled smart battery systems.

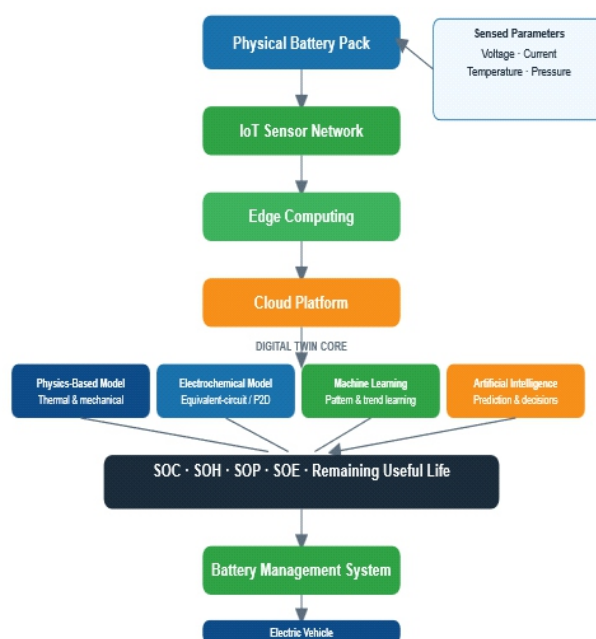


Fig. 2. Battery Digital Twin architecture: from physical sensing through edge/cloud computing to AI-driven state estimation and the BMS.

BATTERY REPRESENTATION ACROSS SCALES

A Battery Digital Twin is rarely a single model. In practice it is built as a stack of nested twins, each tuned to a different scale of the same physical system. At the cell level, the twin tracks electrochemical state: lithium concentration gradients, internal resistance and degradation mechanisms such as lithium plating. At the module level, it accounts for how cells interact thermally and electrically when grouped together, including the effect of one weak cell dragging down its neighbors.

Zooming out, the pack-level twin aggregates module behavior into the system-wide metrics that matter to a driver: state of charge, state of health and remaining range. The vehicle-level twin layers in how the powertrain, climate control and driving style draw on that pack in real conditions. From there, the model scales further

still. A fleet-level twin compares thousands of vehicles to flag packs ageing faster than their peers, useful for ride-hailing operators and logistics fleets that cannot afford unplanned downtime.

At the charging-station level, the twin models how fast-charging sessions stress a given pack, balancing charging speed against long-term degradation. Finally, at the smart-grid level, aggregated battery twins help utilities forecast how vehicle-to-grid charging and discharging will affect local demand. Cloud synchronization keeps every layer consistent, so an anomaly detected in one cell can be traced all the way up to its fleet-wide and grid-wide consequences, and a grid-level constraint can be pushed back down to influence how an individual vehicle is charged.

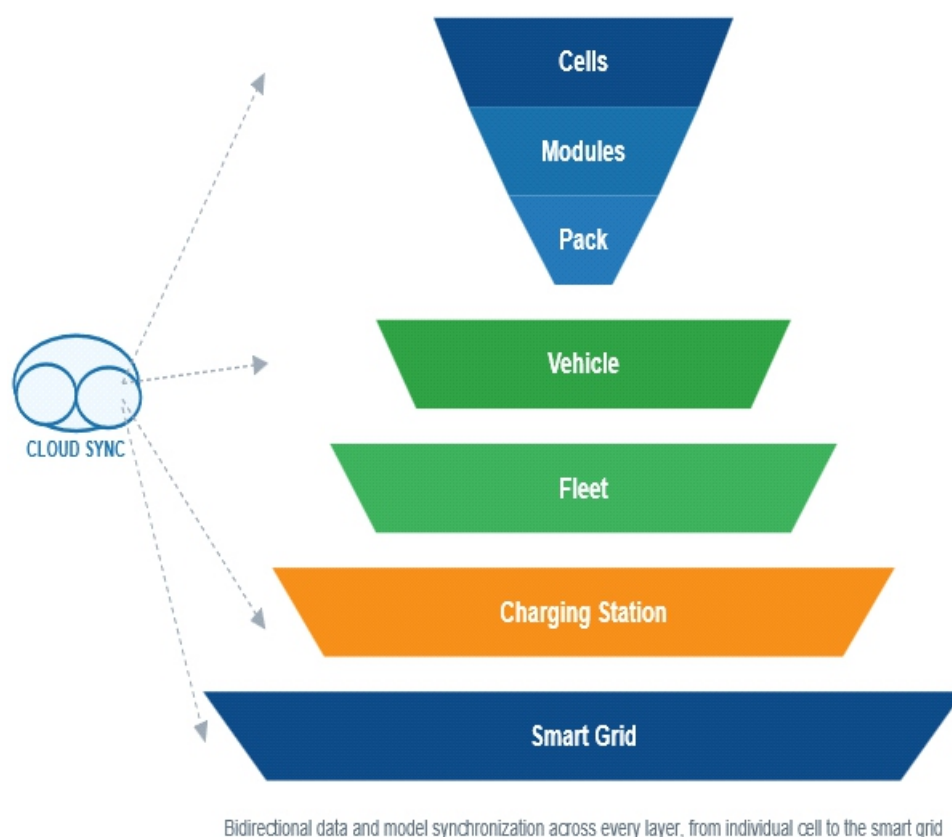


Fig. 3. Hierarchical battery digital twin representation, synchronized by cloud computing from individual cell to smart grid.

THE EV BATTERY LANDSCAPE

No two automakers are building batteries the same way. Chemistry choice, cell format and supplier relationships vary widely, shaping how digital twins must be calibrated for each platform. The landscape below groups major players by

their dominant chemistry strategy rather than ranking them, since most companies now run more than one chemistry across their model range.

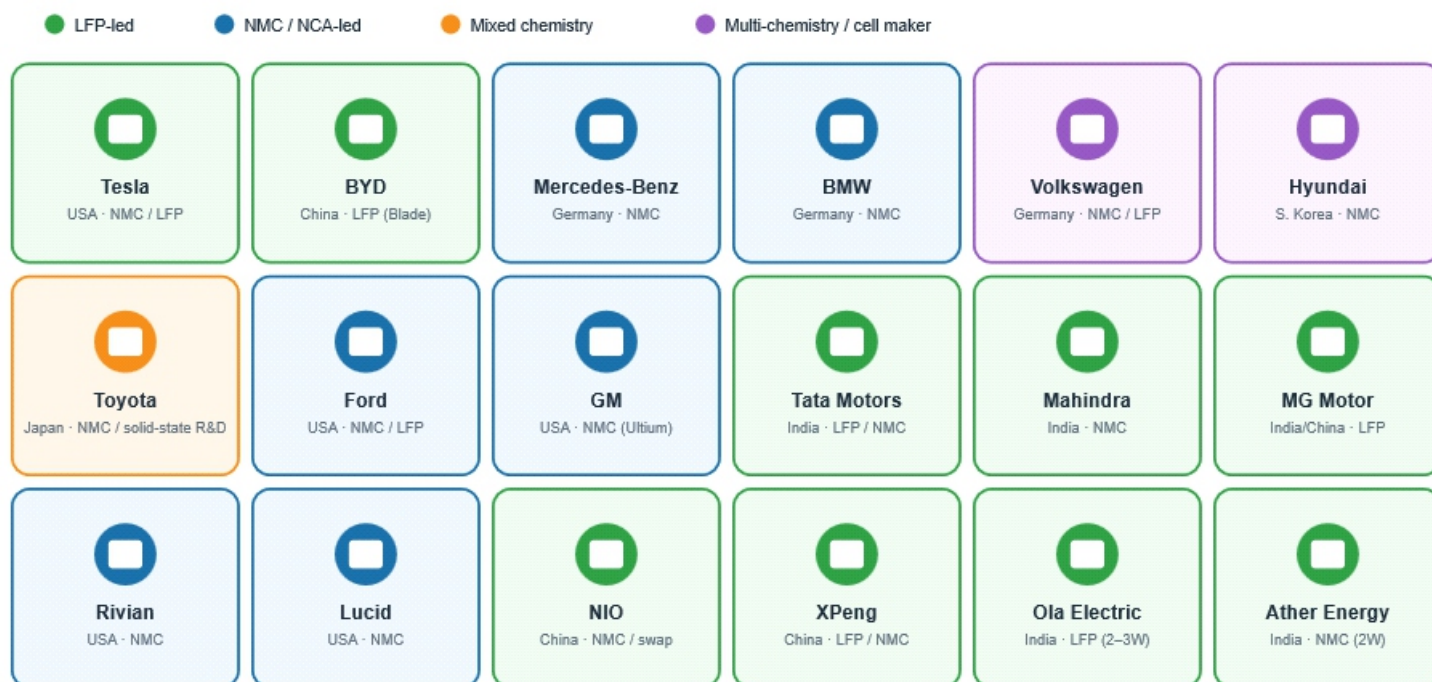


Fig. 4. Major global and Indian EV makers grouped by dominant battery chemistry strategy.

CHEMISTRY IS THE VARIABLE THAT MATTERS MOST

Chemistry is the single biggest variable a digital twin must account for. LFP cells are cheaper and safer but offer lower energy density; NMC and NCA push range higher at greater cost and thermal sensitivity; emerging solid-state and sodium-ion chemistries promise step changes in safety and cost respectively, but are still maturing toward mass production.

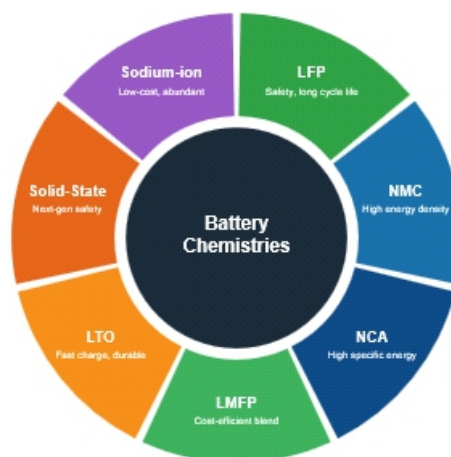


Fig. 5. Major EV battery chemistries compared by energy density, safety, cycle life and target application.

Compared on energy density, safety, cycle life and target application

BATTERY DIGITAL TWINS ACROSS INDUSTRIES

Although this feature centers on EVs, the underlying digital twin concept is industry-agnostic, and battery twins borrow heavily from techniques proven elsewhere. In manufacturing, digital twins of production lines have driven predictive maintenance and quality control for over a decade; battery gig factories now apply the same logic to cell formation and aging lines. In energy and utilities, grid-scale digital twins balance load and renewable intermittency, a discipline directly reused when EV batteries begin feeding power back into the grid.

Healthcare uses digital twins to simulate patient-

specific responses to treatment; battery research borrows similar physics-informed modeling to predict cell aging without destructive testing. Aerospace and rail apply digital twins to structural health monitoring of safety-critical assets, a mindset increasingly applied to battery pack integrity in crash and thermal-event scenarios. Smart cities use twins to coordinate infrastructure at scale, the same principle that lets a city plan charging-station capacity around real battery behavior rather than nameplate specifications. The result is a discipline that is maturing faster in EVs precisely because it can draw on lessons already proven across these adjacent industries.



Fig. 6. The digital twin ecosystem: techniques proven in manufacturing, energy, healthcare and aerospace converge in cloud-AI platforms that now serve the EV battery.

MARKET MOMENTUM AND THE ROAD AHEAD

Digital twin technology overall is one of the fastest-growing categories in industrial software, with independent market research firms putting current annual growth in the 20 to 40 percent range as adoption spreads from manufacturing

into automotive, energy and healthcare. The battery-specific segment is smaller but is widely expected to grow faster than the category average, pulled forward by three converging forces.

GROWTH SIGNAL

Independent market trackers place the broader digital twin software category at roughly 20–40% annual growth through 2030, with manufacturing, automotive and energy as the leading adopters — the same disciplines battery digital twins draw their methods from.

Key Battery & EV Value-Chain Players

CATL	BYD	Panasonic	LG Energy Sol.	Samsung SDI	SK On	Northvolt
Exide	Amara Raja	Log9	Tata Motors	Ola Electric	Ather	

First, regulation: the EU Battery Passport mandate will require digital, traceable records of a battery's chemistry, origin and health across its lifetime, effectively forcing every battery sold in Europe to carry a basic digital twin. Second, economics: Gigafactory operators are using digital twins to cut scrap rates and accelerate the notoriously slow process of qualifying new cell designs. Third, circularity: second-life and recycling operators need an accurate state-of-health record to decide whether a retired EV pack should be reused for grid storage or sent for material recovery, a decision a digital twin can make far more reliably than a one-time inspection.

India's market follows the same logic at a different scale. Government-backed production-linked incentives for battery manufacturing, alongside fast-growing two- and three-wheeler EV adoption from players such as Ola Electric and Ather, are creating strong local demand for low-cost twin

solutions tuned to LFP and NMC chemistries used in high-volume, price-sensitive vehicles.

Future Trajectory of the Battery Digital Twin

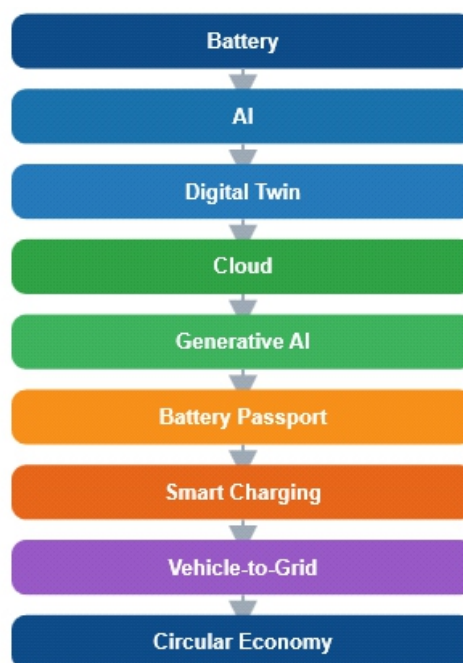


Fig. 7. Key value-chain players and the future trajectory of the battery digital twin, from cloud AI to the circular economy.

CONCLUSION

The battery is the most expensive, most safety-critical and least transparent component in an electric vehicle, which makes it the natural starting point for digital twin adoption in mobility. What began as a research tool for predicting cell aging is becoming core infrastructure: a continuously updated model that connects a single cell's chemistry to fleet-wide reliability, charging-station planning and grid stability.

The direction of travel is consistent across every signal in this feature. Chemistries are diversifying rather than converging on one winner. Regulation is pushing every battery toward a documented, traceable digital identity. And the modeling techniques proving themselves in manufacturing, energy and healthcare are migrating into automotive faster than in most other technology transfers.

For engineers, the practical takeaway is that battery management is shifting from a reactive discipline, responding to faults after sensors detect them, to a predictive one, where the digital twin flags a likely failure mode before it manifests physically. For the broader EV industry, the prize is a battery that is not just powerful, but provably trustworthy across its entire operating life, from first charge to second-life deployment. Realizing that promise will require continued collaboration between automakers, cell manufacturers, utilities and software providers, but the technical foundation is no longer speculative. It is being built today.

Global Affairs: Context And Analysis

JAKARTA HOSTS THE GLOBAL SUSTAINABLE DEVELOPMENT CONGRESS 2026



Jakarta will host the Global Sustainable Development Congress from 22–25 June 2026, convening the global sustainability

and higher-education community to forge alliances and drive practical action for a fairer, greener future. The congress brings together leading thinkers, policymakers and organizations to translate research and policy into measurable solutions that advance the UN Sustainable Development Goals.



reached 269 million in 2024, with 43% of the higher-education-age population now in tertiary education.

The highest ever recorded. Internationally mobile students also tripled to nearly 7 million over two decades.

UNESCO LAUNCHES TRANSFORMATION ROADMAP FOR HIGHER EDUCATION



On 12 March 2026, UNESCO launched “Transforming higher education: Global collaboration on

visioning and action”, proposing seven guiding principles including equity, freedom to learn, human-centred AI and sustainability. The roadmap calls for ambitious systemic transformation, not incremental reform.

UK JOB CUTS IN HIGHER EDUCATION MAY EXCEED 20,000



New research suggests UK university job cuts could reach 20,000 roles, almost double previous estimates, when

voluntary severance, hiring freezes and contract non-renewals are included. These are often “back-door redundancies” that mask the true scale of job losses. 91% of staff report deteriorating working conditions, with increased pressure, reduced support and growing uncertainty about the sector’s future.

IRAN SHIFTS UNIVERSITIES TO REMOTE LEARNING AMID 2026 DISRUPTIONS



In April 2026, Iran’s Education Ministry confirmed that all Iranian schools and universities will shift to remote learning starting mid-April,

continuing through the end of the academic year due to national disruptions.

GLOBAL HIGHER EDUCATION ENROLMENT HITS HISTORIC PEAK

UNESCO reports that global tertiary enrolment

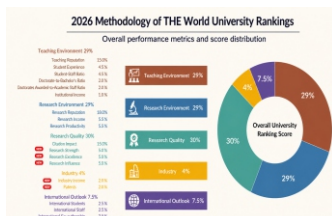
U.S. HIGHER EDUCATION FACES CONVERGING ENROLLMENT DECLINES



The U.S. market now faces decreasing domestic and international enrollments simultaneously.

Many institutions report reputation declines, reduced research capacity and growing financial pressure. Demographic decline, rising tuition fees and policy uncertainty are key drivers, forcing universities to rethink recruitment, pricing and program offerings.

UNIVERSITY OF OXFORD TOPS THE WORLD RANKINGS FOR RECORD 10TH CONSECUTIVE YEAR



The University of Oxford retained its 1st position in the Times Higher Education World University Rankings 2026 with

a near-perfect score of 98.2/100, evaluating 2,191 institutions from 115 countries, marking a historic decade-long dominance while Asia's rapid ascent has stalled for the first time in over a decade.

INDIA WINS T20 WORLD CUP WITH STRONG ALL-ROUND PERFORMANCE

India's historic victory was fueled by a dominant batting performance, posting a record-breaking 255/5, the highest total in a T20 World Cup final. Sanju Samson spearheaded the attack with a magnificent 89 off 46 balls, supported by rapid



fifties from Abhishek Sharma and Ishan Kishan. The bowlers then dismantled the New Zealand lineup, bundling them out

for 159. Jasprit Bumrah (4/15) and Axar Patel (3/27) were instrumental in the clinical bowling display, securing the title and marking India's biggest T20I win by runs in a final.

WORLD'S LARGEST AIRCRAFT CARRIER TO RETURN TO USAFTER RECORD 300-DAY DEPLOYMENT



The USS Gerald R. Ford, the world's largest aircraft carrier, is heading back to Virginia in mid-May after a record deployment

of more than 300 days that saw it operate in both the Middle East and the Caribbean. The long mission has drawn attention because it stretched ship and crew endurance, came after a fire-related repair period and involved repeated redeployments tied to crises involving Iran and Venezuela. U.S. officials said the ship's extended stay reflected urgent operational needs, while Defense Secretary Pete Hegseth acknowledged that readiness and maintenance trade-offs were part of the decision. Three American carriers were briefly in the Middle East at the same time and the Ford's 295 days at sea set a post-Vietnam-era record for a U.S. aircraft carrier deployment.

GOOGLE WITHDRAWS FROM PENTAGON AI DRONE INITIATIVE

Google has pulled out of a \$100 million Pentagon challenge to build AI-driven drone swarms,



reportedly after an internal ethics review, even though it had initially advanced in the contest. The program aims to help U.S. commanders control multiple drones through simple voice commands, and Google's exit has reopened long-running concerns inside the company about the use of its AI in classified military work. The decision also recalls earlier employee protests over Project Maven, underscoring the tension between defense contracts and Google's public stance on responsible AI.

HUMANOID ROBOTS RACE PAST HUMANS IN BEIJING HALF-MARATHON, SHOWCASE CHINA'S PROWESS



China's humanoid robots made a major leap at a Beijing half-marathon, with more than 100 robots taking part this year compared with 20 last year and the winning robot from Honor finishing in 50 minutes and 26 seconds. The event showed clear progress in China's AI and robotics sector after last year's debut race was marked by failures and slow finishes. The race is seen as part of China's broader push to become a global leader in humanoid robots, although many practical applications are still in the trial stage. China has also been showcasing robots in other public events, including Unitree's martial arts performance at the CCTV Spring Festival Gala, highlighting how quickly the technology is moving from labs to public stages.

INDIA-AUSTRALIA DIALOGUE CONTINUES OVER STUDENT MOBILITY



Australia reclassified Indian student visa applicants to the stricter Evidence Level 3 (EL3) from EL2 effective

January 8, 2026, under the Simplified Student Visa Framework (SSVF), reinstating pre-2025 norms with intensified checks on finances, academics and documentation to curb risks, potentially delaying applications amid high Indian demand; MoS Kirti Vardhan Singh informed Rajya Sabha that India is closely engaging Australia to ensure smooth mobility while their education partnership thrives, including Australian campuses in India, reaffirming support for genuine students pursuing study and research opportunities Down Under.

WHITE HOUSE HOSTS NASA ARTEMIS II ASTRONAUTS



U.S. President Donald Trump hosted the Artemis II crew at the White House, congratulating NASA Commander

Reid Wiseman, Pilot Victor Glover, Mission Specialist Christina Koch and Canadian astronaut Jeremy Hansen after their historic Moon mission. The astronauts had recently completed a 10-day lunar flyby and safely splashed down in the Pacific Ocean, marking the first crewed journey to the Moon's vicinity since Apollo. The mission traveled farther from Earth than any previous human flight and tested key deep-space systems, including life support, navigation and Orion's heat shield on re-entry.

The Oval Office meeting also came as Trump pressed ahead with broader ambitions for a sustained lunar presence and future Mars exploration.

BIRKBECK BENGALURU CAMPUS MARKS MILESTONE IN GLOBAL EDUCATION COLLABORATION

University of London's Birkbeck College has secured a UGC Letter of Intent for its Bengaluru global campus, advancing NEP 2020's vision to make India a top education hub by 2030 through robust India-UK collaboration; the initiative offers full University of London degrees at 60% lower

cost than UK study while matching London's research-led teaching and industry-focused curriculum, as highlighted by leaders Vineet Joshi, Lindy Cameron, and Sally Wheeler, who emphasized its role in boosting India's higher education GER to 50%, expanding access to world-class credentials domestically.



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From Rural India to Global Opportunities: A Journey Through Science, Engineering and Technology



A Conversation with Dr. Naresh Chand

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Dr. Naresh Chand's life is one of the most inspiring stories in the annals of Indian science and engineering. Born in a village without electricity or paved roads, he rose through sheer determination to become a Member of Technical Staff at AT&T/Lucent Bell Laboratories, Distinguished Member of technical Staff at Agere Systems, a Science and Technology Fellow at BAE Systems, and the Director of the U.S. R&D Centre at Huawei Technologies. In this exclusive interview for the Vikrant University magazine, Dr. Chand shares the lessons, failures, turning points, and principles that shaped his extraordinary journey and offers candid advice to the next generation of engineers and researchers.

Q: Dr. Chand, you are a Life Fellow of IEEE, a former Director of Huawei's U.S. R&D Centre, a Science and Technology Fellow at BAE Systems, and a Distinguished Member of Technical Staff at Agere Systems, and Member of Technical Staff AT&T/Lucent Bell Laboratories one of the most celebrated industrial research institutions in history.

You have also served the Government of India as a Senior Scientific Officer. Could you walk us through this remarkable journey and tell us who Dr. Naresh Chand is, in your own words?

A: Thank you for such a warm introduction. I am Naresh Chand, and a Life Fellow of IEEE which is the world's largest professional technical organization. I am also the Founder of Prakash Bharati, India which is a group of nearly 400 photonics professionals working to advance the field across the country. I am currently based in New Jersey, USA.

My journey began in a mud-walled home in a small village called Dhikana, in Baghpat district of Uttar Pradesh. We had no electricity, no paved roads, no running water and no toilets. I completed my M.Sc. in Physics from Meerut

University with a First Division, followed by an M.Sc. (Tech.) with a Gold Medal from BITS Pilani, specializing in Microwave Engineering and Semiconductor Devices. I began my professional life as a Scientific Officer with the Department of Electronics (DOE, now MeitY), Government of India, a Class I Gazetted position, where I contributed to the planning and development of India's electronics and semiconductor industry. After serving for 5 years and on study leave from the DOE, I earned an M.E. and a Ph.D. from the University of Sheffield in the United Kingdom, supported by the prestigious British Commonwealth Scholarship.

I subsequently pursued a postdoctoral position at the University of Illinois at Urbana-Champaign before joining AT&T Bell Laboratories, where I spent the most formative years of my career. With the spinning-off Lucent Technologies, the AT&T Bell Labs became Lucent Bell Labs. At Bell Labs, I was hired and initially worked under the legendary Dr. A. Y. Cho, the father of Molecular Beam Epitaxy (MBE), to set up an MBE Lab with an investment of \$1 million to develop GaAs-on-Si technology for high-speed electronics and photonics devices. I achieved several

technological firsts, including the development of the first non-hermetic 1310 nm communication lasers and 980 nm high-power and long-life pump lasers for undersea optical communication systems. These contributions led to my elevation to IEEE Fellow.

Over the next two decades, I transitioned from semiconductor research to optical communications and held senior positions at Agere Systems (a Lucent's spin-off), BAE Systems, where I served as an Engineering and Technology Fellow working on Free-Space Optical Communication programs and finally at Huawei Technologies' U.S. R&D Centre in New Jersey, where I served as Director and worked closely with research teams in Shenzhen and Wuhan on Optical Broadband Access Technologies. I retired in 2019 after 45 years of academic and industrial research spanning four countries. Today, through Prakash Bharati and my continued involvement with IEEE, I remain committed to nurturing the next generation of photonics talent in India.

Q: You grew up in a village with very limited resources, no electricity, no paved roads, mud-built homes. How did that environment shape you as a scientist and engineer and what early experiences ignited your love for science?

A: When I look back on my childhood, it feels as though I lived in a different age - or even on a different planet. Growing up in that environment was, in retrospect, a profound education in itself though, I did not recognize it as such at that time. My small village was home to remarkable craftsmen: potters, blacksmiths, bricklayers, gardeners, carpenters, jewellers, washermen, barbers, farmers, khandsaris, cotton spinners, weavers, and oil extractors. These were people who built, repaired and created things using the simplest and most primitive tools, yet they possessed extraordinary practical skills and deep intuitive knowledge of materials and processes.

The Khandsari cottage industry transformed sugarcane into jaggery, granulated jaggery (shakkar), unrefined cane sugar (khand), and boora sugar using locally available resources. The entire process relied primarily on bagasse

(khoi - the fibrous residue of sugarcane) as fuel and required neither electricity nor coal. In early mornings, women would grind grains into flour using stone-chakkis for their households. Every home in the village contributed in some way to this self-sustaining cottage industry ecosystem. Everyone was a contributor to society in some form and by consuming truly little.

The crowing of local roosters would awaken the entire village around 4:00 a.m. each morning. Branches of local neem trees and dung (gobar) provided fuel for home cooking. Rainwater was collected in several ponds on the outskirts of the village that served multiple purposes throughout the year. We cleaned our teeth using neem tree twigs. Bullock carts, donkeys and bicycles served as the primary means of transportation.

As a curious child, I closely observed all of them. Without any formal instruction, I was absorbing lessons about how things are designed, built and made to work. That early exposure gave me an intuitive feel for the physical world that I believe genuinely influenced my thinking throughout my research career.

My primary school education in the village also gave me an unexpectedly rigorous mathematical foundation. In fourth grade, arithmetic involved multiple non-decimal systems of measurement (miles, furlongs and yards; or yards, feet and inches), weight (maund (man), seer (sher), chhatank; or tola, masha, and ratti) and currency (Rupees, Annas and Paisa). We were required to memorize multiplication tables up to 40. That demanding training developed strong mathematical skills that proved invaluable in everything that followed.

The fertile land around the village, the fruit orchards, the buffalo that transformed grass into milk all of this fed my curiosity about how nature works. I believe that children who grow up close to the natural world and to skilled craftspeople develop a quality of observation and wonder that no textbook can fully replicate. The village's abundant greenery left an impression and inspired me to plant about 350 trees and shrubs around our home with my own hands. I cherish them as if they are my own children.

Growing up among skilled local craftsmen also

fostered my love for hands-on work, shaping me into an experimental scientist and a resourceful handyman who can fix and create a wide variety of things at home and in the workplace. Thus, the constraints of my childhood were, in many ways, a gift that I did not know I had received. Today, my cousins run a charitable primary school on the land where I was born, continuing a tradition of serving the community.

Q: Your path through school and college was marked by serious financial hardship and family responsibilities from a very young age. Many students in such circumstances give up or lose focus. What kept you anchor with your studies and how did you manage to not just survive those years but excel with First Division results?

A: It was genuinely one of the most painful and difficult periods of my life. At the very beginning of ninth grade, I lost my elder brother suddenly, to tetanus. He was the family's primary breadwinner and the one who had brought me to Baraut to study and provided me a home. His death was not just a personal loss of the deepest kind; it plunged our family into severe financial difficulty overnight. I was young, and suddenly I was carrying responsibilities that no boy of that age should have to face alone. I had to take on various odd jobs to help support both myself and my family, even while continuing to attend school.

What kept me anchored, I believe, was a combination of inner forces. First, deep self-motivation and stubbornness refused to accept that this was the end of my educational journey. Second, the memory of my brother himself. He had sacrificed and invested in my future, and to abandon my education would have felt like a betrayal of everything he had given. That thought gave me a resolve I did not know I possessed. Third, I had already experienced an early moment of academic confidence. My maternal uncle had taught me the entire fifth-grade mathematics curriculum in just two weeks, allowing me to skip the 5th grade entirely. This early recognition of my own potential had quietly planted a seed of self-belief that proved surprisingly durable even through grief and hardship.

I passed the High School examination with a First

Division. In those days, this was genuinely rare. Many students required two or three attempts just to pass and securing First Division was rare and exceptional. That result brought considerable recognition of me to my village, among my extended family, and throughout the surrounding area, and it convinced those around me that despite our financial challenges, my education was worth continuing.

Looking back, I believe that hardship when it does not break you builds a quality of resilience and seriousness of purpose that comfortable circumstances sometimes simply cannot produce. Those years of struggle and grief taught me that I was capable of far more than I had imagined, and that lesson accompanied me for the rest of my life and career.

Q: You won a Gold Medal at BITS Pilani and chose to specialize in Microwave Engineering. What drew you to that field and what was your experience at one of India's most prestigious institutions?

A: During my M.Sc. in Physics at D. Jain College Baraut, Meerut University, I had become deeply fascinated by electronics. I was amazed that a handful of components inductors, capacitors, resistors, vacuum tubes, diodes, and transistors could be combined to create such a wide range of communication, control, and entertainment systems. The Government of India had also just established the Department of Electronics under the Electronics Commission, with the Prime Minister as its minister. This signaled the enormous strategic importance the country was placing on electronics. It developed a fervent desire in me to contribute to that national mission.

When I learned that BITS Pilani was offering a unique UGC-funded M.Sc. (Tech.) program in Electronics, a combined program for both engineering graduates and Physics graduates, I applied immediately. For me, it was an extraordinary opportunity to become an engineer, something I could not have imagined earlier given my financial constraints. And when I arrived on BITS campus for my interview, I saw a magnificent Saraswati Temple in the campus. I instantly felt a sense of belonging. As a lifelong devotee of the goddess of knowledge, I felt

certain I had found the right place for the next stage of my journey.

Also adjacent to the BITS campus was the CSIR–Central Electronics Engineering Research Institute (CEERI), one of India's premier electronics research laboratories. CEERI provided me with further encouragement to undertake this course.

At BITS, I specialized in Microwave Engineering, and the physics and technology of semiconductor devices. For my thesis project, I combined both disciplines and designed, built, and evaluated an X-band IMPATT diode oscillator as a high-frequency microwave source within just six months, with an IMPATT diode from CEERI through Dr. Shamim Ahmad. Successfully completing that experimental project remains one of the accomplishments of which I am most proud. I graduated with a Gold Medal, and that experience gave me both the technical depth and the experimental confidence that would define my research career.

Q: You left a Ph.D. program at IIT Kanpur to join the Government of India as a Gazetted Officer. That must have been a deeply difficult decision. What was going through your mind and do you feel it was the right choice?

A: It was indeed one of the most consequential decisions of my life, and it was not taken lightly. Only three months after joining IIT Kanpur as a Ph.D. student under the distinguished Professor K. C. Gupta a leading researcher in microwave engineering, I received an offer from the Department of Electronics (DOE), now MeitY, to work on the licensing, planning, and development of India's electronics components industry. The position was a prestigious Class I Gazetted Officer post based at Vigyan Bhavan Annexe in New Delhi.

At that stage of my life, I weighed the paths carefully. I reasoned that even after completing a doctorate, I would likely enter academia in a teaching position and the compensation being offered by the government was comparable. The opportunity to contribute directly to the growth of India's emerging electronics industry, while also achieving the financial stability that had always eluded my family, was too significant to ignore.

So, I made the difficult decision to discontinue my Ph.D. and accept the government position.

Looking back, I have no regrets. My years at the DOE gave me an invaluable education that extended far beyond my formal academic training. I learned how the Government of India functions, how industrial and technology policies are formulated and implemented, and how to interact with senior executives, IAS officers, and policymakers with clarity and confidence. I traveled extensively across India, visiting BEL, ECIL, BHEL, ITI, Philips India, all semiconductor manufacturers, State Electronics Development Corporations, TIFR, and several CSIR research laboratories. That exposure to the breadth of India's technological and industrial landscape was genuinely irreplaceable.

During that period, I also enrolled in the Postgraduate Diploma in Marketing and Sales Management at the University of Delhi, attending evening classes and completing the diploma with distinction. It proved to be one of the most valuable professional investments I ever made. While working at the DOE, I observed that engineers with deep technical expertise and practical skills were in enormous demand. They commanded attractive salaries and moved into senior leadership roles. That observation reinforced my conviction that deep technical knowledge is the most powerful asset a professional can build.

Q: Winning the highly competitive British Commonwealth Scholarship after five years in a government job rather than in academia is an extraordinary achievement. How did you identify that opportunity, build your case, and ultimately secure it?

A: During my years at the DOE, I was extensively studying India's semiconductor industry and noticed critical gaps in specific technologies particularly diffusion processing and epitaxial crystal growth of compound semiconductors. These were technologies of immense strategic importance for India's electronics future, yet we lagged significantly behind global leaders. I developed a concrete research proposal to pursue advanced studies abroad in precisely these areas, with the explicit aim of returning and

contributing to India's technological development.

I applied to the University of Sheffield in the UK, which had an internationally recognized research group specializing in III-V semiconductor materials and device technology, exactly the area I wanted to work in. I secured admission. I then applied for the British Commonwealth Scholarship, which is among the most prestigious and competitive academic awards available to students from Commonwealth countries. To my great delight, I was selected for the Scholarship award.

Looking back, several factors likely contributed to my success. First, I had already secured admission to Sheffield, which reduced the administrative burden on the scholarship authorities and demonstrated seriousness of intent. Second, my proposed research addressed technologies of genuine national importance. Third, my employers, the Department of Electronics, strongly supported and sponsored my application and granted me four years of study leave with half-pay for two years, which was itself an extraordinary act of institutional support. Fourth, Professor R. Chatterjee, a distinguished electronics educator at IISc and an expert in my proposed research area, served on the selection committee. She was well placed to appreciate the relevance and value of my objectives.

Securing this scholarship after spending five years in a government position, rather than in academic research, was an achievement of which I am particularly proud. It marked a profound turning point opening the door to international education, experimental research at the highest level, and a career trajectory that I could not have imagined when I was a student in my mud-walled village school.

Q: Bell Laboratories is widely regarded as the greatest industrial research institution in history, the birthplace of the transistor, the laser, information theory and UNIX. What was it like to work there, and what were your most significant contributions?

A: Bell Laboratories was, without question, the most transformative environment of my professional life, and I feel profoundly fortunate to

have spent about 17 years there. The atmosphere was unlike anything I had experienced or have experienced since. I was surrounded by some of the most brilliant scientists and engineers in the world, working on problems at the very frontier of human knowledge. I had full access to whatever resources I needed. There were no proposals to write, no funding battles to fight. You were simply expected to do great science, and the institution trusted you to do it.

After completing my Ph.D. at Sheffield and a postdoctoral stint at the University of Illinois at Urbana-Champaign, I was recruited by Dr. A. Y. Cho, who was widely recognized as the father of Molecular Beam Epitaxy, to establish a new MBE growth facility for the development of GaAs-on-Silicon technology. I want to emphasize that I had no prior experience in MBE at that point. Dr. Cho recognized my potential and personally invested time in teaching me technology. That act of mentorship and trust profoundly shaped my understanding of what great scientific leadership looks like. Bell Labs invested more than one million dollars to build and equip my laboratory.

I learned rapidly and threw myself into the work. Among my many contributions, were the development of the first non-hermetic 1310 nm communication lasers, a critical milestone for optical telecommunications, and long-life, high-power 980 nm pump lasers that were used in undersea optical communication systems spanning thousands of kilometers across ocean floors. The IEEE recognized these contributions and elevated me to the Fellow grade, which remains one of the highest honors in electrical engineering and electronics.

Nearly 75% of my total 180 publications and 15 patents accumulated over a 45-year career originated from my time at Bell Labs. The reputation of the institution also carried immense professional weight: when I subsequently joined BAE Systems and Huawei Technologies, my Bell Labs experience was a primary reason I was sought out. I am deeply grateful for every moment I spent there.

Q: After more than two decades as a semiconductor expert, you made a bold pivot

to optical communications in 1997. What motivated that shift and how did your final years at BAE Systems and Huawei Technologies unfold?

A: The decision to pivot was driven by a principle I had long held: the importance of lifetime employability over mere lifetime employment. After spending more than two decades working on semiconductor materials and devices, I realized that staying in a single technical domain however successful, carried risks in a fast-changing industry. I wanted to broaden my expertise, develop new competencies, and ensure that I remained relevant and valuable through the coming decades of technological evolution.

In 1997, I joined Bell Labs' newly established Fiber-to-the-Home research group. Because of the technical credibility and trust I had built over a decade, Bell Labs management strongly supported and encouraged this transition which itself speaks to the culture of intellectual freedom that made the institution so extraordinary. I immersed myself in optical communications systems research and spent the next 23 years in that domain.

Changing business conditions led me from Lucent Bell Labs to Agere Systems, a Lucent spin-off, and then to BAE Systems, one of the world's leading defense contractors. At BAE Systems, I served as an Engineering and Technology Fellow for eight years and made significant contributions to their Free-Space Optical Communication programs. Working in the defense sector gave me deep insight into military communication systems, defense procurement processes, and the stringent requirements that distinguish commercial photonic components from defense-grade technologies.

My final eight years were spent at Huawei Technologies' U.S. R&D Centre in New Jersey, where I served as Director and experienced one of the most professionally rewarding periods of my entire career. I worked closely with research teams in both Shenzhen and Wuhan, spending considerable time in China and gained a deep appreciation for China's technological capabilities, its research culture and its model of

large-scale, mission-driven technology development. I retired in 2019 at the age of 68, proud of a career that had taken me from a mud-walled village school in UP to the leadership of a global technology company's research center.

Q: After a distinguished career spanning four countries, you founded Prakash Bharati in India. What is its mission and what role do you believe it can play in building India's photonics ecosystem?

A: Retirement, for me, was never going to mean stepping away from the field I had devoted my life to. I founded the Prakash Bharati Group because I believed that India had enormous, untapped potential in photonics and the field needed most was a community of committed, connected professionals who can collaborate, mentor the next generation, and advocate for the strategic importance of the field at national level.

Leveraging the IEEE platform, Prakash Bharati has brought together nearly 400 photonics professionals comprising researchers, engineers, academics, and students from all over India. Our mission is threefold: to promote the growth of photonics in India, to foster meaningful collaboration between researchers and industry and to support the development of the next generation of photonics talent through mentorship, workshops, and professional engagement.

Photonics is expected to become as important in the 21st century as electronics was in the 20th. It already underpins optical communications, AI-driven data centers, LiDAR systems, medical imaging and diagnostics, defense and surveillance technologies, and emerging quantum technologies. India has world-class researchers in many of these areas. What has sometimes been lacking is a cohesive community, a shared sense of mission, and systematic connections between academia, industry, and government. Prakash Bharati exists to help bridge those gaps. I hope that in some small way it can do for India's photonics community what the Department of Electronics once did for the broader electronics industry. Prakash Bharati provides a focal point, a forum, and a force for coordinated national

development.

Q: You mentioned that photonics-based systems played a significant role in Operation Sindoor. Can you speak more broadly about photonics as a strategic technology for India's national defense?

A: Photonics has become an indispensable enabling technology for modern national defense, and India must treat it as a strategic priority. It forms the foundation of secure communications, surveillance and reconnaissance systems, target acquisition and precision guidance, high-energy directed-energy weapons, electronic warfare and countermeasure systems, and real-time battlefield situational awareness. As military platforms become increasingly networked, autonomous, and information-driven, the strategic importance of photonics will only continue to grow.

Photonics-based systems played a significant and documented role in the success of Operation Sindoor, demonstrating concretely how advanced optical technologies can contribute to modern military operations. This is a moment of both validation and urgency for India's photonics community.

One area of immediate and critical importance is the indigenous development of LiDAR (Light Detection and Ranging) systems and their integration into drones and unmanned aerial vehicles. LiDAR enables high-resolution terrain mapping, target detection, navigation, obstacle avoidance, and real-time battlefield surveillance. As drones have become a defining feature of modern warfare, the ability to design, manufacture, and integrate advanced LiDAR systems within India is both a strategic necessity and a significant technological opportunity. We cannot afford to remain dependent on foreign suppliers for such critical defense capabilities.

I strongly believe that collaboration among DRDO, industry, startups, and academic institutions can establish a robust domestic photonics ecosystem. Indian universities and research institutions should work closely with DRDO to identify specific areas where indigenous photonic technologies can strengthen

our national defense capabilities. While many commercial photonic components are available off the shelf, defense-grade technologies are not. They require special licenses from exporting countries and specialized development and integration. This is where Indian's innovations and value addition can make a decisive difference.

Q: What emerging opportunities do you see for students choosing careers in photonics, semiconductor engineering, and optical communications in the years ahead?

A: The opportunities are genuinely immense, the most exciting I have seen in my entire career. We are living through a moment of extraordinary convergence between semiconductors, photonics, artificial intelligence, and advanced communications. Engineers and scientists who work at these intersections will shape the next fifty years of technological civilization.

In semiconductor devices, careers span design, fabrication, characterization, and application across transistors, integrated circuits, lasers, photodetectors, LEDs and sensors. Governments around the world including India through its semiconductor mission are investing billions in domestic semiconductor manufacturing, creating enormous demand for qualified engineers across the full value chain.

In photonics specifically, exciting areas include optical communications, silicon photonics, LiDAR, quantum photonics, photonics for agriculture, medical diagnostics and imaging, defense technologies, and photonic integrated circuits. As data transmission and AI computation increasingly relies on light-based technologies, photonics is poised to become the dominant enabling technology of the coming decades.

Communication technologies for wireless vibrant 5G and 6G systems, optical networking, IoT, cloud computing, satellite communications and AI-driven network management are all growing rapidly.

Perhaps the most exciting thing of all is the convergence of photonics and AI. Future AI data centers will rely on optical fiber networks, silicon photonics, optical switching, photonic

transceivers and co-packaged optics to achieve the data transfer speeds and energy efficiencies that next-generation AI demands. Simultaneously, AI is being used to design better lasers, optimize optical devices, and engineer photonic integrated circuits. AI and photonics are evolving in a mutually reinforcing cycle, each accelerating the other.

Students should build strong foundations in mathematics, physics, electronics, programming, and system integration. They should develop hands-on laboratory skills wherever possible and Pursue internships. Expose themselves widely across disciplines. Those who combine technical excellence with curiosity, possess both oral and written excellent communication skills and are committed to lifelong learning will find abundant opportunities in India and around the world.

Q: You have worked in both academic and industrial research environments across four countries. What are the key differences and how should students think about which path is right for them?

A: This is a question I am often asked, and I think about it this way: academic and industrial research share the same goal of creating new knowledge and solving hard problems, but they differ profoundly in purpose, culture, timelines, and measures of success.

Academic researchers ask: "What is possible?" and "Why does this happen?" Industrial researchers ask: "How can we make this useful?" and "Can it be manufactured, deployed, and scaled?" Academic research creates the knowledge base; industrial research converts that knowledge into products and technologies that genuinely improve people's lives. The transistor, the laser, fiber optics, the internet and modern AI all required both academic insight and industrial development before they could benefit society.

In academia, you enjoy significant intellectual freedom, long time horizons, the rewards of teaching and mentoring students, publication as the primary currency of success, and relative employment security. In industrial research, particularly at institutions like Bell Labs, you work in large, diverse, multidisciplinary teams, operate

under competitive time pressures, measure success by the products and patents your work produces, and experience the extraordinary satisfaction of seeing your research translated into technologies that millions of people actually use. Employment security in industry can be more sensitive to business conditions and economic cycles.

I would say: choose academia if you are driven by fundamental questions, enjoy teaching and mentoring, and value the security and intellectual independence of university life. Choose industrial research if you are energized by practical problem-solving, thrive in teams, and want to see your work have tangible real-world impact. And do not feel that the choice is permanent. Many impactful careers, including my own, have involved moving between both worlds and building partnerships that combine the strengths of each. What matters most is that one pursues work one finds genuinely meaningful and engaging, because passion sustains performance throughout a lifetime.

Consider spending the early years of your career in industry developing practical skills and perspectives, then move to academia to apply and disseminate that knowledge through teaching, mentoring, and research.

Q: What qualities, in your experience, truly distinguish the great researchers from the merely good ones?

A: Curiosity about how things work, combined with a genuine and unquenchable desire to contribute, are the driving forces behind research and innovation. Great researchers are self-driven, highly motivated, and proactive in taking initiative. They never stop asking "why" and "what if." Equally important is their passion for continuous learning, mentoring others, and understanding the broader context in which their work contributes. The best researchers remain avid readers and lifelong learners, not just during their student years.

Persistence may be the single most undervalued quality. Research involves repeated setbacks, failed experiments, rejected papers, and wrong hypotheses. The researchers who prevail are not those who never fail; they are those who learn

quickly from failure, adapt, and continue moving forward with undiminished enthusiasm. Failure, properly understood, is not the opposite of success. It is the tuition fee for learning how to succeed.

Critical thinking, creativity, and problem-solving ability are essential technical qualities but so are integrity and ethics. The foundation of credible science is honesty and transparency. A researcher who compromises on these qualities, even once, risks their entire lifetime of work. Communication skills are equally critical: the ability to clearly record, explain your ideas through writing, presentations, and discussions determines whether your work actually influences the world or remains confined to a laboratory notebook.

Finally, I would emphasize vision and open-mindedness. The most impactful researchers can recognize emerging opportunities before others do, and they are genuinely willing to question their own assumptions and follow the evidence wherever it leads even when it challenges their existing beliefs. Combine all of these with patience, resilience, and a genuine desire to contribute to something larger than yourself, and you will be a genuinely great researcher.

To safeguard your ideas and innovations, keep a personal notebook with numbered pages. Document your concepts thoroughly, including drawings, block diagrams, and supporting details. Before you share this with anyone for exploring collaboration for example, have two colleagues review the entries and acknowledge them by writing "Read and understood pages from ...to....," followed by the date and their signatures. This practice helps establish a clear record of your intellectual contributions. This will be needed to file a patent application and will be helpful in any dispute.

Q: What role has failure played in your own journey, and how do you counsel students to think about failure and setbacks?

A: Failure has been one of my most important teachers, and I mean that without any trace of cliché. In my own life, I rarely ended up where I initially intended to go. Setbacks and failures led me to change my course, and those changes led

me to places far better than I could have imagined or dreamed of. Remarkably, many of my opportunities and accomplishments arose from unfavorable circumstances that proved to be blessings in disguise.

I did not complete my Ph.D. at IIT Kanpur what seemed like a failure at the time led me to the Department of Electronics and an education in technology policy and industrial development that no university could have provided. When I returned from my Ph.D. in Sheffield, I had lost a promotion and seniority at the DOE due to my four years abroad. This I felt an injustice to me, and it led me to take a calculated risk of moving to the United States, which became the most professionally rewarding chapter of my life. Looking back, a higher wisdom often knew what was best for me that I could not see in the moment.

My life experience teaches me that failure is not the opposite of success. It is often an integral and necessary part of the journey toward success. Failure should be understood as feedback, not defeat. Each unsuccessful attempt provides valuable information about what does not work and frequently points the way toward a better solution. Many of the world's greatest inventions and most certainly the greatest research breakthroughs emerged only after repeated failures and persistent effort.

What I counsel students to cultivate is not fearlessness about failure that is unrealistic but rather resilience: the capacity to recover from setbacks, extract the lesson, adjust your course, and continue moving forward with energy and conviction. The willingness to take calculated risks, and to accept occasional failure as the price of exploration, is often what distinguishes those who innovate from those who merely follow.

Karma Yoga conveys a similar message. While we are responsible for our actions, the outcomes are governed by subtle and often unseen laws of nature. Our willpower, dedication, and sincerity play an important role in shaping results, but the final outcome is not entirely within our control. If we perform our duties with the right motives, there is no true failure. We should pursue our goals with commitment yet remain unattached to the

outcome. Desires that bind us through excessive attachment should be avoided, as they often become a source of disappointment and suffering.

Q: What are the most important life principles and lessons that have guided your journey from a village to the frontiers of global technology?

A: I have distilled a lifetime of experience into a set of universal principles. Let me share a few of them.

Seek out good mentors: people who can recognize your hidden strengths, nurture your potential, and guide you toward a meaningful and fulfilling career. Let me share a story. We all know of Lord Hanuman and the immense strength, courage, and devotion he embodied. Simply remembering him inspires us and gives us strength. What many people may not know, however, is that according to scriptures, Hanuman ji carried a curse: He would remain unaware of his extraordinary powers unless someone reminded him of them. It was only when others reminded him of his abilities that he realized he could fly or leap across the ocean and accomplish seemingly impossible feats. In many ways, most of us carry a similar curse. We often fail to recognize our own strengths, talents, and potential. This is where a good mentor, teacher, or well-wisher plays a vital role. They help us discover abilities we may not see in ourselves and provide the encouragement, guidance, and occasional push we need to achieve success. Sometimes, all it takes is someone who believes in us and reminds us of what we are truly capable.

I have been extraordinarily fortunate to have such mentors at every stage of my life. Their guidance and encouragement played a significant role in my personal and professional growth. Mentorship is one of the most powerful forces for human development. It is a two-way relationship in which both mentor and mentee benefit. A mentor shares knowledge, experience, and wisdom with the next generation, while also gaining the satisfaction of helping others succeed and creating lasting goodwill. In many ways, this is what I hope to accomplish through this conversation. At the same time, mentees enrich their mentors by bringing fresh perspectives,

latest ideas, and awareness of emerging technologies and trends. I have learned a great deal from younger generations, including my own children. Their curiosity, insights, and familiarity with new developments have helped me continue learning and growing throughout my life.

Be self-driven and initiative-taking: real growth comes from within, not from external pressure. Learn from an egg: if it cracks from within, it signifies life; if it cracks from outside, it becomes someone else's food.

Never be afraid to ask questions and seek help: Arjuna asked questions on the battlefield, and the Bhagavad Gita emerged from that dialogue. Seek help without hesitation and prepare to listen "No" gracefully. Every refusal brings you closer to a "Yes."

Build trust and live with gratitude: Trust is the foundation of all lasting relationships. Gratitude enriches both personal and professional life in ways that are difficult to fully articulate. Acknowledge help and you will get more help.

Focus not just on lifetime employment but on lifetime employability: Continuously upgrade your skills and adapt to changing technologies. If you are an employee, work like an owner; if you are an owner, work with the dedication and humility of an employee. And if you find yourself unhappy or unfulfilled in your work, do not be afraid to explore new opportunities. The ability to embrace change and stepping beyond your comfort zone can open doors to growth you cannot even imagine.

Explore the deeper meaning of Mahavakya which is the summary of Vedanta: Tat Tvam Asi "Thou Art That." Or "I am That (what I seek)." This points to the fundamental question, "Who am I?" and the realization that my true nature is Sat-Chit-Ananda - existence, consciousness, and bliss - or Satyam Jnanam Anantam Brahma. It suggests that the Divine is not separate from us but dwells within us as our very being. To experience this inner presence, one must keep the mind and heart pure, clear, and free from distortion. Stay rooted in your values, and you will experience a clarity and purpose that no external achievement can fully replicate.

Learn from a tree: stand tall, drink lot of water,

stay firmly and deeply rooted, and offer your shade and fruits for the benefit of society. That, to me, is a life well lived. Remember that nature, along with millions of generations before us, has worked tirelessly to provide us with the life and comforts we enjoy today. In gratitude, we should contribute back in whatever way we can and strive to leave behind a meaningful legacy for future generations.

Q: Finally, what is your message to the students at Vikrant University as they prepare to build their careers in engineering and science?

A: My message is simple yet heartfelt: dream big, work hard with a purpose that benefits society, and surround yourself with positive and inspiring people. These three commitments, when pursued with dedication and perseverance, can take a young person from anywhere -even a village without electricity - to the frontiers of global technology, innovation, and human achievement.

I want students at Vikrant University to know that the reputation of the institution from which you graduate can influence your early career opportunities, but it does not define your ceiling. What defines your ceiling is what I've been discussing: your curiosity, your work ethics, the quality of your mentors, your willingness to take calculated risks, and your commitment to continuous learning. These are things entirely within your control. Pay special attention to your physical, mental and spiritual health. Practice Yoga and meditation. Keep yourself free from Kleshas such as anger, pride, fear, anxiety, shame, jealousy, delusion and attachments.

Participate actively in IEEE Student Branches and technical society chapters. Attend conferences, exhibitions, and technology expos not just to see the latest technologies, but to meet the people building them. Read technical journals and IEEE publications to discover emerging fields before they become mainstream. Pursue higher education at the most reputable institutions in your desired field you can access and actively explore government scholarships for studies abroad. The Government of India offers numerous such opportunities through MHRD, and students should investigate them

systematically with a good and convincing story.

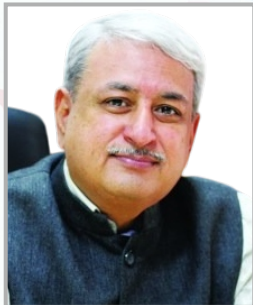
A principle that has guided me throughout my life is this: discover what you enjoy doing and what you do well, identify those who value those skills and contributions, and build connections with them. When your talents align with the needs of people and organizations, opportunities naturally follow. They will be willing to support, employ, and reward you for the value you create. Resources and networks offered by IEEE can be invaluable in helping you achieve this goal. Before the internet and especially during my days in India, IEEE journals were my primary window to the world of scientific and technological advancement. They not only kept me informed about the latest developments and available resources but also helped me identify the researchers, institutions, and organizations with whom I could connect and collaborate.

Despite widespread concerns about unemployment, there is a genuine and persistent shortage of skilled, motivated, trustworthy, and intellectually curious professionals in most technical fields. Be one of them, and the world will find you. This is the advice I received from my mentors in India after my PhD in the UK. They advised me to remain mobile, flexible and on the frontier of technology. Guided by this principle, my wife, who was a professor in India, and I made the bold decision to resign from our secure, permanent jobs in India and come to the United States on a temporary postdoctoral fellowship - an opportunity that ultimately transformed the course of our lives.

To every student at Vikrant University, I wish the courage to imagine beyond boundaries, the discipline to commit to the challenging work that excellence requires, and the wisdom to channel your success toward the good of others and society. You are, in every meaningful way, the future of India in science and technology.

My best wishes to all of you as you embark on your professional journeys. I wish each of you a rewarding, fulfilling, and successful career filled with purpose, growth, and happiness. Please feel free to reach out to me if there is any way I can support or assist you along the way.

Knowledge, Leadership and the Future of Humanity



A Conversation with Prof. (Dr.) Anoop Swarup

Founder Chairman Weventure,
Global Knowledge Alliance
Secretary General, Universities of Asia Pacific,
Melbourne, victoria, Australia

Prof. (Dr.) Anoop Swarup is a distinguished futurist, educationist, peace advocate, social entrepreneur, author, and former senior civil servant with over four decades of exceptional contributions to public service, higher education, international diplomacy, and sustainable development. A recipient of the prestigious Hiroshima Peace Award (2016) and the Presidential Award of the Republic of India (2003), he has held several influential leadership positions, including Founding Vice-Chancellor of Jagran Lakecity University and Vice-Chancellor of Shobhit University.

A highly accomplished scholar with multiple master's degrees, university gold medals, an M.Phil., and a Ph.D., Dr. Swarup has served as a United Nations Representative and has worked closely with global institutions including the UN, UNEP, UNDP, and UNFPA. He currently serves as Founder Chairman of WeVenture VCs, Chairman of the Centre for Global Nonkilling (Hawaii), and Founder Chairman of the Global Knowledge Alliance.

Recognized internationally for his contributions to education, peace-building, environmental sustainability, innovation, and social entrepreneurship, Dr. Swarup is also a prolific author, editor, and thought leader whose work continues to inspire students, researchers, policymakers, and leaders across the globe.

Q. Your distinguished career spans science, public administration, diplomacy, entrepreneurship, and higher education. How have these diverse experiences shaped your understanding of leadership and public purpose?

A. At the outset my compliments to Vikrant University and its Chancellor Shri Rakesh Singh Rathore and its leadership having envisaged an institution of great academic rigor and repute. In all humility I must mention that I was privileged to be born and brought up and inspired in a very literary and academic family, my father Late Dr Har Swarup was an author and scientist of international repute at Oxford

University who came back to India post-

independence to set up Universities in India, who was later also a Vice Chancellor at Jiwaji University Gwalior. My mother Late Dr Savitri Swarup was one of the first in Madhya Pradesh to receive a Doctorate in Hindi Literature at Sagar University who went on to write books and also bring out one of the first English Hindi Glossary of Scientific Terms. In my early and formative years I had a diverse career spanning over 50 years with my selection as a National Science Talent Scholar in 1974, the only one to be selected from Madhya Pradesh that year. I was privileged to be invited to work with eminent scientists in summer camps at a young age of 16 years in the next few years, at Tata Institute of Fundamental Research (TIFR) in 1975 at Mumbai, Bhabha Atomic Research Centre (BARC) in 1976 at Bombay, at

Delhi University in 1977 and at University of Calcutta in 1978. This early interaction and my own upbringing infused in me a sense of scientific temper and a love for scientific pursuits. Sure enough, I received both the UGC Scholarship and the CSIR Senior Fellowship in the next few years to be followed by my selection as an officer at Reserve Bank of India (RBI) though I joined the General Insurance Corporation (GIC) in 1981 where I could help setting up of Regional, Divisional and Branch offices at Kanpur, Bhopal, Chandigarh and finally was selected for posting as Branch Manager at London for insurance business. It was in 1985 that I was selected by the UPSC for the Civil Services to join the Indian Revenue Service. In the following many years along with my official engagements as an Asst Collector, Director in the Ministry and also Commissioner I did not let go of my scientific pursuits such as researches and publication of papers and books but also attending and presenting at conferences in India and abroad. These diverse experiences both administrative and scientific, enriched and shaped my own understanding and delivery of meaningful leadership approach and practice for best public causes and purpose.

Q. Having served both the Government of India and the United Nations, what insights have you gained regarding the relationship between governance, knowledge systems, and sustainable development?

A. Yes, having served in the Government of India for 26 years where I had the privilege to work in the Ministry of Human Resources and the Ministry of Youth Affairs in 1996 as the Executive Director of Nehru Yuva Kendra Sangathan (NYKS), one of the largest youth organisations in the world where I was indeed fortunate enough to work at the grassroots and understand the issues and problems of our youth. I had the distinct honour of having not only revived the almost dormant organisation but also work with almost every UN body be it UNDP, UNFPA, UNICEF, WHO, UNESCO and also the World Bank and the ADB. More importantly I had the unique opportunity to work with youth volunteers during

the Orissa Super Cyclone of 1999 and the Gujarat Earthquake of 2001 to achieve the Honourable Mention from UNESCAP. During the next few years I worked as the Deputy Secretary / Director, Antismuggling and later as the Director, International Customs in Ministry of Finance and to negotiate free trade agreements such as MERCOSUR, ASEAN, BIMSTEC, along with the Ministry of Commerce where I could draft the foundational Rules of Origin. In October 1987 was specially deputed to submit a report on opening of an Exclusive Economic Zone, a Free Trade Area in the Andaman Nicobar Islands at Port Blair. During the period not only established the office but formulated customs procedures could mount several anti-smuggling operations and revamp revenue generation efforts. Also held the important position of Preventive General and SPS at Calcutta responsible for Indo-Bangladesh border, Bay of Bengal and Special Investigation Branch to combat commercial frauds and smuggling. Could undertake several joint operations with Border Security Force, Customs, Police, Coast Guard and Indian Navy in the Bay of Bengal, Bangladesh & Nepal borders. Several spectacular seizures were made which include about 130 kgs. of gold, 21 tons of silver, foreign exchange, narcotics etc. valued at over INR 2000 million apart from 47 COFEPOSA detentions and 9 PITNDPS detentions. I had the opportunity to revamp country's Container Security Initiative (Container and Truck Scanning System) as Member Secretary of the study group. I was responsible for intelligence gathering, networking with INTERPOL, IB, CBI and other agencies for efforts to detect commercial frauds, money laundering, anti-smuggling, anti-drug trafficking and other enforcement efforts. Through active personal participation and efforts about 265 kgs. of Heroin, Hashish and other narcotics were seized along with arrest of several persons, kingpins, busting of rackets and gangs. Made spectacular commercial fraud cases such as Vizag Steel Plant DEEC case (250 crores). Won several commendations from the Finance Minister, I was humbled to receive the Presidential Award in 2003 for distinguished record of service. Later, I joined the United

Nations in 2008 with the United Nations Security Council (UNSC) and enforced Resolution on Sudan. In those years, I could gauge that a very far reaching and impactful relation exists between good governance and existing knowledge systems that could be evolved by understanding the grassroot issues and problems develop the scientific approach for sustainable development process.

Q. As a futurist and educationist, how do you envision the evolving role of universities in an era increasingly shaped by artificial intelligence, biotechnology, and digital transformation?

A. Universities are indeed, at the cutting edge of societal change and transformation and the role has to keep pace with the changing technology and the times such as the evolution of digital universities in the age of AI by integrating both Large Language Models (LLMs) and the Small Language Models (SLMs). Similarly, the biotechnology revolution to my mind is the next great change that our world has to adapt to urgently. This belief is based on my years experience in the academia while setting up of two universities as the Founding Vice Chancellor in India at Shobhit University in 2009 and Jagran Lakecity University in 2012 respectively followed by the Global Knowledge Alliance in Australia in 2020.

Q. In your view, what competencies should higher education institutions cultivate to prepare students for the complexities of the twenty-first century?

A. Sure enough, higher education institutions have to focus on personality development, critical thinking abilities imbued with man making and character building through value education and ethics so that our students are future ready to face the complexities of the 21st century. This I have realised is the new mindset across the globe that I have garnered in my years as the Secretary General of the Association of Universities of Asia and the Pacific (AUAP) set up at the behest of UNESCO in 1995. I have organised and

delivered keynotes at conferences and seminars for the universities in the region and beyond along with the International Association of University Presidents (IAUP) on these very topical issues where University Chancellors and Presidents have been unequivocal on the vision and approach to develop a critical mindset and analytical thinking that leads to future ready higher intelligence and wisdom.

Q. You have consistently championed interdisciplinary learning. How can universities effectively integrate knowledge across disciplines while maintaining academic rigor and specialization?

A. True for a future ready world Interdisciplinary knowledge and learning as was practiced in traditional knowledge systems and in Vedic times is the way forward. For universities of tomorrow integration of knowledge across disciplines is imperative not only for academic rigor and discipline but also for scientific pursuits and multidisciplinary specialisations. I founded 'Sambhav' Trust for de addiction in 2008, 'Sambhavami' not for profit society to promote micro enterprises in 1992 and conceptualized the 'National Reconstruction Corps' in 1998, launched the 'UNDP-NYKS Poverty Alleviation Awards' in 1999 and the 'Millennium Youth Parliament' in 2000 that was presided by the then Prime Minister Late Shri Atal Behari Vajpayee giving me unique opportunity to interact with him personally as also Late Shri Abdul Kalam. These initiatives were very much beyond the call of my duties. Such an approach can be very well inculcated and infused by both individuals and the universities through integration and promotion of multidisciplinary studies to inspire students.

Q. Drawing upon your experience as a university leader, what reforms do you consider most critical for enhancing the quality, relevance, and global competitiveness of higher education in India?

A. Reforms are most critical for enhancing the quality, relevance, and global competitiveness of higher education in India are the need of the hour.

The National Education Policy (NEP) in which I had the privilege of contributed being a part of the drafting team led by Prof K Kasturirangan in 2019 that provides India's comprehensive framework designed to overhaul and modernize the country's education system. It aims to shift the focus from rote learning to holistic, multidisciplinary, and skills-based education, aligning the country's academic system with global standards. Encouragement of research and teaching faculty to adopt to new, innovative and inventive learning approaches is also being followed in Europe, Japan and China now.

Q. As a scholar, entrepreneur, and institution builder, how can academic research be more effectively translated into innovation, entrepreneurship, and societal impact?

A. Academic research can be effectively translated into innovation and entrepreneurship for societal impact by inspiring our teaching and research faculty to embrace and encourage the spirit of innovation, invention and ideas that may be applied for the well being of the society and in the pursuit of a knowledge. Bio Innovations and Entrepreneurship', 'The World of Money laundering, Commercial frauds & Financial Crimes' and 'Regional Economic Engagements & Free Trade Agreements'. To encourage good research, we have to walk the talk as my research papers have a cumulative citation of 2200, h index 21 and i10-index of 30 (Google citations). I have launched as the founding Chief Editor, 'Jagran International Journal on Contemporary Research', 'International Journal of Contemporary Research in Engineering and Technology' and Editor 'Nice Journal of Business', listed in Cabel's Directory, USA. I had the unique opportunity of being the founder Chairman of WeVenture, Australia in 2021 followed by launch of WeVenture India to help, service, fund and support startups and midsize companies, and to foster entrepreneurship and enterprise. Taking academic research from lab to society has been a passion with my Company Clarion Analytics that I founded to commercialise medical and pharmaceutical research with commendable results.

Q. Your work in peace studies and global nonviolence has earned international recognition. How do you interpret the concept of peace in a world increasingly marked by polarization, conflict, and uncertainty?

A. I am humbled to have received the prestigious Hiroshima Peace Award in 2016 as the Chairman of the Centre for Global Nonkilling (in Consultative Status of the United Nations) at Hawaii, envisaged by Nobel Laureates and the WHO in 1968 as the Centre for Global Nonviolence and founded as the Centre for Global Nonkilling in 2010 by Late Prof Glenn D Paige with over 800 scholars who are working to find ways and means to usher nonkilling peace. Together with my Doctoral student Dr Katyayani Singh I had the honour to have launched the first ever Global Nonkilling Index in 2019. Other books authored by me include, 'The Nonkilling Paradigm: For World Peace and Enlightenment' (Springer), 'Give Nonkilling a Chance', released by former President of India Shri Ram Nath Kovind, 'Give Nonviolence a Chance' released by former Prime Minister of India, Late Dr Manmohan Singh at International Centre, New Delhi, 'Nonkilling Index, an Approach to Nonviolence and Global Peace', 'Indian Civilization Through the Millennium', My notable poems published to promote peace and inspire our youth are 'Aloha' in Hindi and 'Arcadia' Book of Poems in English. Over the years we have worked consistently, in professing and promoting global peace, nonviolence and nonkilling in an era that is marked by geopolitical conflict and uncertainty. There is no doubt that a nonkilling world is possible in infinite reverence to life, and as such have also launched Nonkilling India that has been working incessantly to bring about consciousness and conscituousness for a future nonkilling society.

Q. Among the major global challenges of our time including climate change, technological disruption, and social inequality which do you believe demands the most urgent intellectual and policy attention, and why?

A. A great question, of course! The major global

challenge of our time includes global warming, climate change that is now coupled with technological disruption, and social inequality. This demands the most urgent worldwide intellectual and policy attention and more than that action on a global scale. Going back a few years, I was awarded Amrita Devi Bishnoi Medal in 2013 and a Fellowship and a citation by the Zoological Society of India in Environmental Sciences for work on spreading environmental awareness in the villages. Also, I was the Global Environment Outlook (GEO) Reviewer with the Intergovernmental Panel on Climate Change IPCC for the United Nations Environment Program (UNEP) that was awarded the Nobel Peace Prize in 2007 that made me realise that any future change at the global policy level can only be possible through concerted public and mass movements that can ensure political and policy level change before it is too late for life on earth. Earth's atmosphere now has roughly 50% more carbon dioxide, the main gas driving global warming, than it did at the end of the pre-industrial era, reaching levels not seen for millions of years. It was political will and leadership that under the Paris Agreement, nations collectively agreed to keep warming well under 2 °C, however, with pledges made global warming would still reach about 2.8 °C by the end of the century.

Q. Having engaged with distinguished leaders, scholars, and policymakers across the world, what characteristics consistently distinguish individuals who create enduring institutional and societal impact?

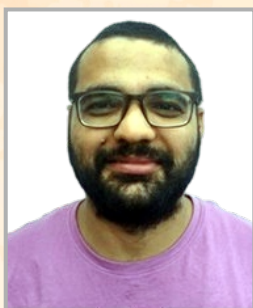
A. Yes, in my global engagements with distinguished leaders, scholars, and policymakers across the world, I can mention that the only remarkable characteristics that consistently distinguishes individuals who create enduring institutional and societal impact are in their being changemakers. I may add here that as the Asia Pacific Vice Chair of World Customs Organization, I represented India at Asia Pacific

Customs Heads of Government Meeting in Wellington, New Zealand, 2004, led delegation to the World Customs Organization in Brussels in 2005. I chaired the 13th Meeting of Customs Asia Pacific Region in 2003, organized training on Enforcement of Intellectual Property Rights, at WIPO/USPTO in Washington, DC in 2003, addressed the UN World Youth Forum in 1998 in Braga, Portugal, represented at the 14th International Festival of Youth & Students in Havana in 1997. I have been a resource person and visiting Professor at Monash University, Australia, Lancaster University, UK, IISS Geneva, WTO and WCO Brussels, WIPO Washington DC. Infact every individual on earth in his own modest efforts and means can be the driver of change for a better world. Sure, enough at the international level the driver for a meaningful transformation can be at policy level where a political leader can distinguish as a real mover and shaker.

Q. Throughout your remarkable journey, was there a defining challenge or setback that significantly influenced your intellectual growth or leadership philosophy?

A. In all my years to date, it has been a real humbling experience as I learn more about individuals who have been crusaders be it peace or environment in their own modest way. Yes, I have coped with defining challenges by taking these in my stride always. I must in all humility mention that I have been privileged to get the right and opportune moments to contribute in my own small way, wherever I worked, to bring about any change for the better. One small piece of learning and advice I would offer to my young friends is this: do not be bogged down by fear or challenges. Instead, be bold enough to go where no one has gone before. Stay focused, and always do your best wherever you are, in whatever you do, and in every phase of your life and times for a better world.

Light, Patience and the Terahertz Frontier



An Interview with Dr. Deepak Kumar

Physicist, University of Leeds, Leeds, United Kingdom
Interview by Harshita Sharma, Vikrant University
Magazine Inaugural Edition

Dr. Deepak Kumar grew up in Jhajjar, Haryana and has since built a research career spanning Ramjas College (Delhi), Kurukshetra University, IIT Guwahati, Panjab University, and CSIR-CSIO, before arriving at the University of Leeds, where he works on terahertz photonics and quantum cascade laser technology. In this conversation with Harshita Sharma for Vikrant University's inaugural half-yearly magazine, he talks about the school experiment that first drew him to light, the long road from metamaterials research to patents, and the advice he'd give to a young science aspirant in Madhya Pradesh.

Harshita Sharma: Good morning. This is Harshita Sharma, here today with Dr. Deepak Kumar from the University of Leeds. Thank you for joining us, sir let's begin.

You grew up in Jhajjar, Haryana and went on to do research related with terahertz photonics at the University of Leeds. Looking back, was there a specific moment that pulled you toward physics and toward light-matter interaction in particular?

Dr. Deepak Kumar: You're right, I belong to Haryana. One moment I can recall is from school education at Mother India Sr. Sec. School, Maraut, Jhajjar, Haryana when we studied a classic experiment involving a candle and pieces of cardboard with holes punched in them along with our dynamic teacher, Mr. Jitender. When the holes in the cardboards were aligned, we could see the candle from the other side, a well-known demonstration that light travels in a straight line. That experience stayed with me, and it sparked my early interest in how light travels, which eventually grew into a broader fascination with light-matter interaction.

Harshita Sharma: That's what pushed you to go beyond light itself, I suppose?

Dr. Deepak Kumar: Yes, that helped a great to explore the curiosity.

Harshita Sharma: That's a fascinating concept and as a humanities student, all of this feels almost like magic to me.

My next question: your school records show consistent top rankings from 8th grade onward. Did that early academic intensity shape how you approach research today, or did your relationship with learning change once you got to university?

Dr. Deepak Kumar: Yes, I achieved district-level rankings during my school days, as you mentioned. Academics at that stage helps to build an understanding of the fundamentals of a subject. Later, at university, we study more advanced courses and learn to connect those fundamentals with modern technological developments. I have got an opportunity to interact and learn the minute details of the subjects/research from Dr. Dharmender Singh Gosain, Dr. Vinita Suyal, Prof. R. K. Moudgil, Prof.

Sanjeev Aggarwal, Prof. Manish K. Kashyap, Prof. Shriganesh S Prabhu, Prof. Kailash Chandra Jena, Prof. Surya Kumar Pathak, Dr. Varsha Siju along with beautiful minds met throughout the journey. The understanding gained during school, combined with what is learned at university and further, gives a broader view not just of a subject, but of science and life as a whole.

Harshita Sharma: That's a wonderful journey. You then moved from Ramjas College, Delhi, to Kurukshetra University, then to IIT Guwahati, Panjab University, CSIR-CSIO and now Leeds.

How did each move change the kind of physicist you became?

Dr. Deepak Kumar: I've enjoyed many transitions between institutions. I completed my BSc Honours in Physics at Ramjas College, University of Delhi, where I built a strong foundation in the core subjects. I then moved to Kurukshetra University for my Master's, which advanced that foundation further. At IIT Guwahati, I started applying these fundamentals to areas such as metamaterials and terahertz frequency technology in the research group of Prof. Gagan Kumar. My journey at Panjab University, CSIR-CSIO and further continued that trajectory. Each step helped me to utilize what I had learned in school and college into research towards real technological applications.

Harshita Sharma: You mentioned metamaterials that's an interesting term for me as well.

For readers who've never encountered the word before, how would you explain what metamaterials are and why engineering them at subwavelength scales matters for terahertz technology?

Dr. Deepak Kumar: Metamaterials are artificially designed subwavelength structures, meaning their dimensions are smaller than the wavelength of the radiation impinging upon them. It's a relatively new and still-evolving field. Engineering metamaterials matters for terahertz technology as by artificially building structures, often at the micron scale, we can create platforms that

respond specifically within the terahertz (THz) frequency range. It helps to improve the coupling of terahertz light to different devices/ sensors. This further enables the development of applications like modulator, filter etc. in that range to fill the so called terahertz gap by controlling terahertz radiations.

Harshita Sharma: As you mentioned, your PhD research focused on metamaterial-inspired multifunctional structures for terahertz applications.

What real-world problem were you ultimately trying to solve with that work?

Dr. Deepak Kumar: This has been the focus of my PhD inclined with metamaterial-inspired multifunctional structures for terahertz applications in the research group of Prof. Ranjan Kumar and Prof. Dibakar Roy Chowdhury. The goal was to develop devices such as modulators, switches, and filters using metamaterials in the terahertz range. These devices are useful for a range of opto-electronic applications across industries, and we characterized them using terahertz time-domain spectroscopy.

Harshita Sharma: Terahertz waves sit in an awkward gap between microwaves and infrared light historically hard to generate and detect.

What makes this frequency range so valuable once you can actually control it?

Dr. Deepak Kumar: Terahertz frequency range is an exciting domain with many fascinating applications. Terahertz radiation can be used to detect explosives, to test the quality of food products being a non-destructive testing, scan tissue, and inspect materials such as plastics. What makes this frequency range so valuable is precisely that it touches so many domains at once — medical, material's spectroscopy, and defense etc. Terahertz radiation helps to obtain additional information about various materials, not provided by visible light.

Harshita Sharma: With such a wealth of national and international experience, you're now working at Leeds with quantum cascade

structures alongside Dr. Paul Dean and Prof. Giles Davies and their team, known for major advances in photonics, including the first observation of the self-mixing effect in terahertz quantum cascade lasers and the demonstration of the first, long-sought terahertz-frequency quantum cascade laser. What does it feel like to build on a piece of technology you likely studied as a student?

Dr. Deepak Kumar: You're right, we work broadly in the domain of terahertz quantum cascade lasers. In school life, we studied the properties of materials and how light interacts with them. Now, applying those same fundamentals to build real, working devices is genuinely exciting. We learn how to examine these devices, evaluate their performance, fabricate them, and explore their applications across various sectors like communication. It's both an exciting and a challenging opportunity to work in such a field.

Harshita Sharma: You hold two Indian patents one on terahertz spintronic devices, and another on a Fano-resonant thin-film sensor.

What was the gap between having a working concept on paper and something patentable?

Dr. Deepak Kumar: It starts with an idea, which you then explore through calculations, electromagnetic simulations. From there, you develop a design, fabricate the structure, and characterize it, and study the material's response. The real gap in moving from a conceptual idea towards patent lies in scope/ potential/ novelty supported by technical /scientific calculation related to a working device, in this case for metamaterial-based devices.

Harshita Sharma: At CSIR-CSIO, you worked on holographic systems for 3D dynamic displays.

How does that work connect back to your metamaterials background and could we see holographic displays built on these principles in consumer devices someday?

Dr. Deepak Kumar: Yes, I explored this field and got an opportunity to learn & have active inputs from Prof. Raj Kumar, Dr. Bhargab Das and

associated team members. Historically, lenses were used to control the behavior of electromagnetic radiation. Today, metamaterials offer greater flexibility in controlling the amplitude, phase, and polarization of electromagnetic radiation, which has potential to open the door to next-generation applications such as holography and displays. Research in this direction is in progress, and potential applications built on these principles could become feasible for consumer use in the coming years at broad scale with addressing underlying challenges.

Harshita Sharma: Your current project related with high-speed wireless communication using terahertz devices touches an area many people associate with future 6G networks.

How close, realistically, are we to terahertz communication being part of everyday infrastructure?

Dr. Deepak Kumar: Our broad focus is on developing terahertz devices for a range of applications, one of which is communication specifically, towards increasing data transmission rates. Research in this area is actively ongoing, and we hope to see further developments in terahertz photonics and communication in the coming years.

Harshita Sharma: You've also published work on green composites made from sugarcane bagasse fibre and wood apple shell filler quite a departure from photonics.

What drew you to that work and how do researchers move between such different material systems?

Dr. Deepak Kumar: I contributed to a collaborative project on green composites with research conducted by lead researcher Ms. Vinita Sharma in the research group of Dr. Anu Gupta, being its relevance to environmentally friendly applications based on agriculture waste. As a researcher, you can explore different material systems using existing spectroscopic/technological tools, or build new tools when required for novel materials owing to their interdisciplinary applications.

Harshita Sharma: You've collected numerous awards, ranging from a district-topper certificate in school to best-paper and best-presentation awards at international conferences.

Which one means the most to you personally, and why?

Dr. Deepak Kumar: These awards represent the collective effort of many people who have contributed to my progress, so each one is valuable to me in its own way. Every award reflects a team effort, built on contributions from different people at different stages.

Harshita Sharma: It sounds like the whole community appears in each achievement, in a sense.

Dr. Deepak Kumar: Yes, it is.

Harshita Sharma: Because everything involves collective effort that's true.

Dr. Deepak Kumar: Yes, exactly. As a society, or as a team, there are many people involved at different phases.

Harshita Sharma: You're now an executive committee member and chair of International Research Activities for Prakash Bharati, in association with the IEEE Photonics Society.

What drew you toward this kind of organizational and community-building role alongside your own research?

Dr. Deepak Kumar: I've been associated with Prakash Bharati, in association with the IEEE Photonics Society, which organizes lectures, workshops, and other learning activities etc. in the leadership of Dr. Naresh Chand, Prof. T. Srinivas, Dr. Manpreet Singh Manna, and Dr. Preeta Sharan along with team members. As researchers, we think about the broader relevance of our work for society and how to communicate it in an easy way — to school & college students, researchers and public. This platform helps us to reach a wide audience, and I'm always excited about the opportunity to connect research with the general public.

Harshita Sharma: You've taught across an

unusually wide range of departments, from Electrical Engineering to Bio & Nano Technology to Physics.

Does explaining the same physics to such different audiences change how you yourself understand it?

Dr. Deepak Kumar: That's a great question. I have interacted with audiences from different domains. This gives an opportunity to explain a concept so that it remains accessible for persons from different fields. Teaching across fields helps me understand the broader scope of my subject and its cross-disciplinary applications how it's relevant to electronics, biology, or nanotechnology, for instance. It becomes a form of self-evaluation, and it broadens my own understanding of the subject as well.

Harshita Sharma: It's also about understanding the psychology of others, I imagine.

Dr. Deepak Kumar: Yes, that's right.

Harshita Sharma: So that they, in turn, can understand us. I suppose it's just as important to understand ourselves first, so that we can understand others.

On that note what's one thing you wish someone had told you when you were starting your PhD, that you now tell your own students and mentees?

Dr. Deepak Kumar: I would say: have patience. In research, we try to explore new things to us, and this might go beyond your schedule as per challenges. Patience is something everyone should have in research and in life in a broad sense.

Harshita Sharma: If you had to guess, what will terahertz technology be doing in daily life in twenty years that it isn't doing today?

Dr. Deepak Kumar: Terahertz is an emerging field that people are actively exploring. In the coming years, I expect to see applications growing in communication, medical sector, security areas and material domains. These are the broad avenues where I believe terahertz

technology will become more integrated into everyday life.

Harshita Sharma: Here's a question closer to cultural experience: moving from India to the UK for research was a significant transition for you. What was the hardest adjustment, professionally or personally?

Dr. Deepak Kumar: Moving from one part of the world to another brings many changes. The adjustments that come with such a transition are ultimately for the better. Personally, I've grown up in areas like leadership, critical thinking, self-analysis and understanding how different people approach and address problems in different ways. It comes with learning to address the same challenges from different mindsets, whether within the same field or a different one.

Harshita Sharma: Carrying your roots with you, in a way?

Dr. Deepak Kumar: Yes and at the same time, you find yourself in a new atmosphere altogether, in terms of weather and lifestyle. These are the kinds of things one learns through a leadership role or through experiencing different ways of life, and they help a person to grow in a broad sense.

Harshita Sharma: You list badminton, cricket, marathon running, yoga, and gardening as interests. Does anything about sports or gardening carry over into how you sustain a long research career?

Dr. Deepak Kumar: Sports and physical activity help maintain a healthy lifestyle and a healthy body supports the way you prefer to work. As long as you take care of your physical wellbeing,

you're better equipped to pursue anything in life, regardless of the field. I'd encourage everyone to stay actively engaged in such activities.

Harshita Sharma: Finally, for our closing question one that every student reading this prospectus will wonder what is the single most important piece of advice you would give to a young person in Madhya Pradesh who dreams of becoming a scientist?

Dr. Deepak Kumar: As you start thinking, you start becoming intelligent that's one thing I would say. We should observe the world around us and try to understand how things are related. Second, we should be good listeners and respect the knowledge of others, while staying updated with new technologies and holding the strong moral values. And finally, we should genuinely work hard. Focus on your work, observe carefully with examination, be patient, and connect ideas over time, you'll find that you are learning and growing.

Harshita Sharma: Thank you so much, sir, for considering our request and for giving us your time. This interview will feature in the magazine of Vikrant University a half-yearly publication, and this will be its first edition. We will send you the draft document as soon as it is ready. It has been a pleasure speaking with you. Thank you so much, sir.

Dr. Deepak Kumar: Thank you very much and my thanks to administration, everyone on your team for the kind invitation. I'd be glad to discuss anything further.

Harshita Sharma: Thank you, sir. We look forward to future opportunities to collaborate. Thank you once again.



From Syllabus to Skills: Implementing Outcome-Based Legal Education for Better Advocacy



Prof. (Dr.) Aradhana Parmar

Director (Research) & Dean,
Faculty of Law Maharishi Arvind University,
Jaipur, Rajasthan

Prof. (Dr.) Aradhana Parmar has been associated with academics for over 25 years. She holds degree of BA, LL.B. (Five Years Integrated Course) from M.D. University Rohtak (Haryana), Master of Laws (Torts & Crime) from Kurukshetra University, Kurukshetra (Haryana), Degree of Doctor of Philosophy in Law from University of Rajasthan, Jaipur. She has done Master of Business Administration from Jaipur National University, Jaipur & currently pursuing Ph.D. in Management from Maharaj Vinayak Global University, Jaipur. She has been supervising research work in the field of law and has a meritorious record as an academician. She had worked as an Assistant Professor and Vice Principal in Shree Bhawani Niketan Law College, Jaipur, as an Assistant Professor in University Five Year Law College, University of Rajasthan, Jaipur, as an Associate Professor and Head & Dean in Jaipur School of Law, Maharaj Vinayak Global University, Jaipur and as a Professor and Dean in the Faculty of Law, Maharshi Arvind University Jaipur, Director Research & Dean in Faculty of Law, Apex University, Jaipur. At present she is working as a Director (Research) & Dean (Faculty of Law) Maharishi Arvind University, Jaipur. She has authored six books for Law students. More than twenty-five Ph.D. Degrees has been awarded under her valuable supervision and she is guiding eight another Ph.D. Scholars at present. She had been continuously involved in research work with a bulk of publications in renowned Journals and attended various Conferences and Seminars to share and impart her commendable knowledge. She had a remarkable experience of being a member of numerous Committees at University Level and has been honored and awarded as a best academician by many renowned Institutions and Societies. She is Convener of Women Grievance Cell and a member of Editorial Board of International and National Journals. Apart from her busy schedule, she anchors and even as an Expert take part in legal talk shows on DD Rajasthan. She imparts free legal consultancy and counseling to the needy people. She has been associated with NGOs for Social works especially those are working for Protection of Women and Children in India. Recently she has been taking special lectures on New Criminal Laws in CDTI (Central Detective Training Institute, Jaipur). She delivered a special lecture in a Workshop organized by the Law & Legal Affairs Department, Government of Rajasthan. Her expertise on New Criminal Laws is recognized by many Institutions.

Introduction: Every few years, the legal profession rediscovers an old complaint: law graduates know the law but cannot make it. While they rattle off ingredients of a contract, they cannot draft one; while they define locus standi, they freeze during their first bail argument. This

grievance is not a new one. For more than fifty years, Law Commission reports, Bar Council circulars and law-school common rooms have echoed it. What has changed is the wording that is now used in making the complaint. Legal educators used to ask, "What should students be

taught?"; now they ask, "What should students be able to do by the time they graduate, and how do we know they can do it?" The shift from emphasis on syllabus coverage to demonstrated competence is what outcome-based education (OBE) is all about, and it is quietly reshaping the profession's future advocates.

This paper discusses what outcome-based legal education means; traces its genesis in India and abroad in terms of regulatory regime and institutions; and sets out a handy roadmap for law schools, bar bodies and individual teachers who want to move away from syllabus-driven education to one anchored in verifiable skills.

The Problem with the Syllabus-Centric Model:

Legal education mainly focuses on five significant subject areas: Contract, Torts, Constitutional Law, Evidence and Procedure and Criminal Law and Procedure. These subjects are taught through lectures and assessed through a single descriptive examination at the end of a semester. Recall and doctrinal analysis at their best are rewarded by this model. It might convey little about whether a graduate can interview a client, negotiate a settlement, draft a plaint, or stand up in court and think on their feet.

This finding is substantiated by empirical work. According to a survey which encompassed thousands of judges, practising lawyers and law students, conducted by the Institute for the Advancement of the American Legal System (IAALS) under its Foundations for Practice project, newly minted lawyers face difficulty with practical competencies such as communicating with clients, negotiating and appearing in the court. Furthermore, they also face difficulty with the broader set of professional skills which the profession expects from them but which law schools seldom teach directly. The identical pattern is repeating in India. Indian legal education is unloaded on the practical side and overloaded on the theoretical side. This is the conclusion of one committee after another. This conclusion specifically by the Bombay Legal Education Committee in 1949 14th report by Law Commission in 1958, and Curriculum

Development Committee Report by UGC in 1990. The Bar Council of India's own scholarship and circular, including its 2008 Rules of Legal Education, have made repeated attempts for rectification by prescribing practical papers, internships, and legal aid work, yet commentators note that the credit weightage accorded to these activities is so low that it makes them appear symbolic and not wot of the main stream.

Structural issues are common, not motivational. Usually, the problem isn't that faculty are unwilling to teach skills; it's that the syllabus isn't designed to make skills the object of assessment. Outcome-based education seeks to fix this issue by reversing the design process; that is, instead of starting from the content to be covered, it starts from the competencies a graduate must demonstrably possess and works backwards to decide what teaching, practice, and assessment will get students there.

What Outcome-Based Education Actually Requires:

Outcome-based education is not a singular approach but a design discipline, most closely associated in general pedagogy with the backward design framework popularised by Grant Wiggins and Jay McTighe, and adapts specifically to law schools in the United States after American Bar Association's 1992 report on Legal Education and Professional Development (commonly called MacCrate Report). The report cites a closed-ended set of "lawyering skills" which include but are not restricted to problem solving, legal analysis, legal research, factual investigation, communication, counselling, negotiation, litigation and dispute-resolution procedure, organisation and management of legal work, and recognising and resolving ethical dilemmas along with a set of core professional values. It equipped the profession for the first time with a working vocabulary for what a "competent" new lawyer should be able to do rather than just what he should know.

Two subsequent events supported this theme. The 2007 report of the Carnegie Foundation entitled "Educating Lawyers: Preparation for the Profession of Law" argued that the cognitive

(thinking like a lawyer), practical (performing lawyerly tasks), and ethical-social (identity and purpose) should be integrated into legal education and not be left to the informal pick up in internships. Soon afterward the American Bar Association changed its law school accreditation standards and procedures. As per standard 301, a law school must maintain an educational programme to prepare its graduates for admission to the bar and for ethical and responsible participation in the legal profession.

Standard 302 requires each law school to establish a set of learning outcomes that adequately cover (1) substantive legal knowledge and (2) various skills necessary for competent and ethical participation in the profession. The various skills are providing legal analysis and reasoning, conducting legal research, utilizing critical problem-solving skills, combining oral and written communications skills. Experiential learning and pro bono or public service activity: 303 also requires students to complete experiential learning and pro bono or public service activity before graduation. Requirements in Standard 314 call for student learning to be assessed via formative and summative methods. In addition, Standard 315 requires the institution to periodically review whether its own learning outcomes are actually being achieved.

Taken together, these provisions transformed what had been aspirational language in the Best Practices and Carnegie reports into binding accreditation requirements. Law schools in the United States cannot just say they teach skills, but must define measurable outcomes and provide proof that students reach them.

The Indian Trajectory: India has also attempted the reform though on a slower track. Introduction Of Five Year Integrated LL.B. The National Law School of India University in Bangalore, founded in 1987 under Professor N.R.Madhava Menon's stewardship, was an early experiment in outcome orientation, generating an academic programme in which moot courts, client counselling, litigation

clinics, and compulsory internships figured in the core curriculum and not as electives. In 1997, the universities were asked by the Bar Council of India to revamp LL.B. The 'model curricula' prescribes four mandatory 'practical papers', covering litigation and trial advocacy, drafting and conveyancing, professional ethics, and legal aid work a framework, as lawyers say, reinforces the MacCrate Report from America, even regardless of the fact whether the American model of professional skills can be transplanted into Indian legal aid and social-justice context. In 2008, the Bar Council Rules of Legal Education mandated the organised internship and setting up of legal aid clinics in every recognised law school.

India has an architecture for legal skills training that is outcome-oriented on paper for over two decades of years. In reality, there are live gaps which have been pointed out by many researchers and practitioners: unsupervised internships, legal aid clinics which exist only for the purpose of 'passing inspection', faculty which are untrained in clinical pedagogy, and most importantly, assessment systems which continue to award descriptive memory-based examinations even where a practical paper is 'on the timetable'. The National Education Policy 2020, together with the discussions in the Bar Council of India on reforming legal education (including proposals on restructuring internships, developing faculty, and using technology), reflects a continuing awareness that the missing link has never been the idea of skills-based education but its consistent implementation with credit and assessment.

From Principle to Practice: A Roadmap: Bringing outcome based philosophy into classroom reality requires the redesign of four linked elements in the teaching-learning process, together rather than in isolation.

1. Define outcomes that are specific and observable.

An example of an unusable learning outcome is students will understand advocacy since it cannot be assessed. A feasible result would look more

like: students will be able to formulate and deliver orally a persuasive argument on a question of fact or law that is in dispute within a time limit and respond coherently to at least two rounds of questioning from the Bench. Law schools, such as Case Western Reserve University and Southwestern Law School, have published outcome statements along these lines, framed around discrete, demonstrable abilities effective oral advocacy in a formal setting, client-relationship development, audience-appropriate communication, and strategic negotiation. These framed outcome statements exist precisely because ABA Standard 302 now requires outcomes be capable of assessment, not mere aspiration.

2. Redesign teaching methods around the outcome, not the topic.

The drafting exercises, peer review, and iterative feedback built into class time are crucial to ensuring that the outcome is drafts an enforceable; unambiguous pleading, and not just lectured on the Code of Civil Procedure. The pedagogical engine of outcome-based legal education is clinical legal education, which allows a student to perform the skill under supervision and not simply read about it, such as client interviewing, negotiation simulations, litigation clinics, and supervised legal-aid casework.

3. Assess the outcome directly, and make that assessment count.

This has been the point at which most reform efforts have stalled. A practical paper that eventually gets graded through a written descriptive examination about drafting rather than through a real drafting exercise graded by a rubric has not really brought about outcome-based assessment; it has only added a new topic to the old examination model. Realistic execution calls for rubric-based evaluation of a performance (for instance, a moot memorial, a mock client interview, a drafted pleading), credit weightage commensurate with the skill's importance to practice, and as ABA Standard 314 demands a combination of formative assessment (feedback

during the process) and summative assessment (a final graded performance).

4. Close the loop by auditing outcomes at the programme level.

It is impossible to evaluate individual courses in isolation; an institution needs a periodic review (similar to what ABA Standard 315 requires of accredited law schools) asking whether graduates, in aggregate, can actually do what the institution says they can do. Whether you think different meanings can be achieved in legal language has become somewhat the wrong question. What matters is how the legal system approaches the same within documentation. According to commentators examining evidence-based legal education reform, law schools often do not even have the basic data to know whether a given reform works which is why rigorous, outcome-related evaluation is as important as the reform in itself.

Advocacy as the Test Case: The capability to convincingly address a judge, tribunal, or bargaining counterpart in order to make someone else's choice is Advocacy. It demonstrates a well-designed lawyer consistently achieving convincing results. It cannot be learned just through description alone; no one becomes a truly persuasive advocate by merely reading a chapter on cross-examination technique. It must be practised, observed, and corrected repeatedly and preferably at the eye of a person who has done it professionally. Simulation assessments are becoming increasingly popular in demonstrating students' competence through their performance in a variety of settings. These assessments can be designed to resemble the specific tasks that a professional may expect an aspiring practitioner to complete. Furthermore, various forms of simulation assessments have passed the scrutiny of psychometric and validity experts, confirming their validity and reliability. The CLEAR initiative report on the lawyer practice-readiness in 2025 compiled by the Institute for the Advancement of the American Legal System which draws upon surveys of thousands of judges, attorneys and law students

again finds among the skills which lawyers most conspicuously lack courtroom advocacy and client communication. This finding should give Indian legal educators a measure of reassurance that this is not a failure unique to India. At the same time, it should swerve us away from complacency. The common solution across jurisdictions is a deliberate assessed and repeated practice built into the credit structure of the degree. It is not one which should be left to moots and apprenticeship after qualifying.

Conclusion: The shift from syllabus to skills does not mean doctrinal learning has been rejected. For instance, a lawyer who can argue persuasively but does not know the substantive law is merely eloquent, not competent. Outcome-based legal education urges institutions to be transparent about the disparity between the skills acquired as per curriculum and what a graduate can actually do. It also calls for closure of this gap by means of deliberate design. This consists of

specificity of outcomes, teaching interventions designed to produce the outcomes being taught, assessments that measure performance and not just recall. Further, there should be periodic review of the institution to check if the above-mentioned was happening. The American Bar Association's Standards 301 through 315; the Bar Council of India's practical papers and clinical legal education mandates; and a substantial body of scholarship ranging from the MacCrate Report to the Carnegie Foundation's Educating Lawyers shows that considerable regulatory scaffolding for this shift already exists. Institutions that generate practice-ready advocates and those that do not have less to do with rules and more to do with the discipline to apply them rigorously and to insist, course by course and year by year, not just "What did we teach?" but "What can our students now do?"



The Cognitive Canvas: How Our Small Choices Shape Our Lives



Prof. Naveen Kumar

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Quality of your life is based on quality of the decisions made, day by day.

What we regularly decide to do, is us. Like other of Aristotle's ideas, belonging is a term that he is credited with, but today, the concept of belonging might well be considered more real than poetic.

Your brain will have made a lot of decisions by the end of this paragraph! Do you continue to read? If you need to look at your mobile, will you do so? Would you have a different seating position? The number of decisions that adults make varies from thousands in a day, ranging from something as simple as which food to choose for breakfast, to

something as significant as a career choice, relationship, finances, or health.

What is surprising is that we are continually influenced by not a few, but thousands of little decisions we make in our lives that all add up over time.

Success seldom comes a single big leap at a time. It's frequently the outcome of wise and proper decisions made repeatedly. Knowing about choice-making and why sometimes we make poor decisions is one of the most important skills that any student, teacher, researcher or professional can learn

The Hidden Architecture of Every Decision

Suppose you are standing in front of a supermarket display with 40 different brands of breakfast cereal.

Many people don't feel empowered because of all the choices because they have what psychologists call "choice overload. The greater the number of options, the harder it will be to choose. It is a regular phenomenon in Universities every day.

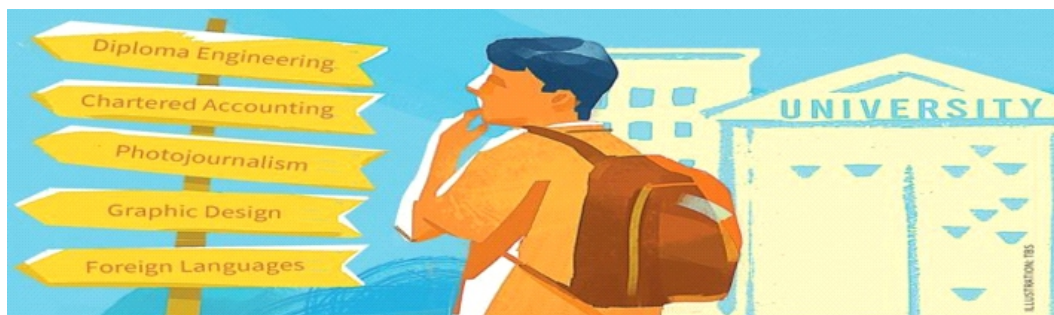
Pupils are not keen to making choices for their optional subjects. There is a difficulty in researchers' choice of project. Academic staff considers the tensions that exist between teaching, research, administration and mentoring.

Paradoxically, there is greater uncertainty with freedom. We are always in the middle of

balancing two systems with our neuroscience being in us. One is quick & easy and other is emotional.

The latter is more deliberate, analytical and slower. The first is to respond quickly to situations that are familiar to them, the second is to analyze evidence, make comparisons, and take action in the future. Great decision makers know when to listen to their gut instinct and when they don't, to take time to think.

Making quick decisions that will be useful to your business. Do not take action, but rather take time to make important decisions. Ask "Is this a decision that will affect a year later?" Keep down the number of unnecessary options to the maximum extent possible. Emphasize progress not perfection.



"Each decision, no matter how trivial is a stride in the direction of where the trip will go."

A book of extraordinary outcomes and tiny decisions

One of the myths about success is that it comes from large chunks of decisions.

Science suggests otherwise. If he/she read 10 pages/day, he will read more than a dozen books in one year that are good books for reading. Walking for 10 minutes a day will make a big difference in the long term for people's wellbeing, physical and mental health.

Saving a little bit at a time over 10s of years is a lot of financial security! They all may appear trifling decisions but they all add up to be a life-changing sum! Together they change lives.

The principle is called the compound effect and is the astounding truth that little improvements,

compounded over time, produce tremendous long-term results.

Gymnastics is known by elite athletes. That's what it takes for bosses to be successful in business. Practice it every day – it's the art of outstanding researchers! It is a principle that is exemplified by the universities themselves.

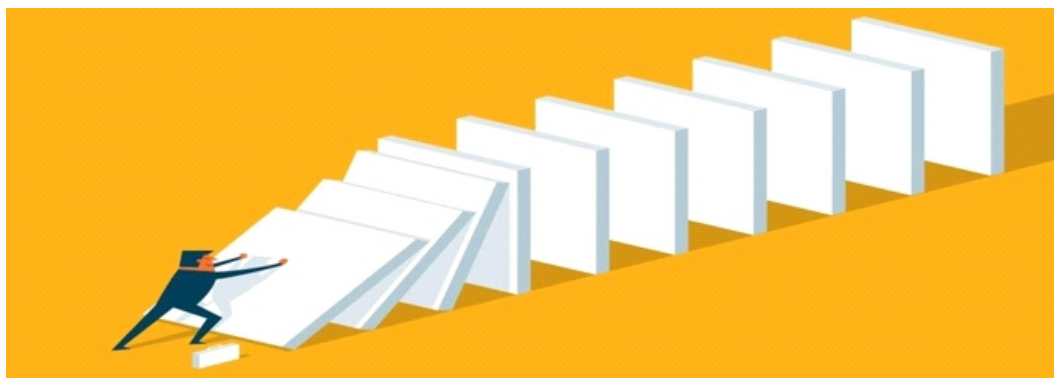
A culture of excellence is created with each lecture, experiment, mentoring conversation. It is the same with the personal development rule. Changing paths isn't solely brought about by making one great decision. It is stealthily constructed, one step in the same way after another.

Taking small decisions for big returns

Read one Research Article and not half way down the list! Make five minutes don't say "I'll do it tomorrow". Be consistent, don't be intense. Pay tribute each day to learning, health and

relationships.

"Small actions repeated consistently create extraordinary outcomes over time."



The shocking motives behind our poor choices.

The hidden motives of intelligent behaviour.
Smart does not equal wise!

Known to be influenced by experienced professionals who fall into cognitive biases: mental shortcuts that impact their thinking and processing.

The confirmation bias makes people pretend to be attracted to news information that confirms their prior opinion.

When when is quick, and what is worthwhile is costly, it's our throw of a stone into the wrong direction that leads us to the wrong choice: Present Bias. Decision fatigue takes the wind out the sails after we make too much decision.

Consider the student that wants to get something done sooner but is waiting to start it because it is less enjoyable at this time. Or the researcher who gets to ignore inconsistent evidence as it will contradict the existing years of research and

work.

This not an intelligence lack instead,

These are aspects of the human mind.

Luckily, the first step to improvement is awareness.

Good decision makers make systems rather than just rely on willpower.

They establish routines.

They are eager to learn various sides.

They respond positively to constructive criticism.

The most important part of this is that they are ready to alter their opinion when presented with superior evidence.

"Humility is the key ingredient of science and good leadership."

Practical Strategies for Better Decisions

Wait until emotions have calmed down to make an emotional decision.

Listen to ideas or points of view when they are expressed in a respectful manner from someone who doesn't agree.

Support conclusions in terms of evidence, not assumptions.

Make sure all decisions are reviewed and outcomes analyzed.



Developing a future-focused mindset to make decisions

There has never been a more difficult 21st-century to ever present.

People are more vulnerable to information, more opportune and distract-able than ever. AI provides suggestions. Algorithms influence attention.

They don't have a break from having to deal with social media. In this environment, making decisions is not only a talent for them, but also a kind of winning force. In the future, success isn't going to be determined by the smartest cookie, it'll be determined by the one who gets the right things done. These will be most explicit.

They will be able to distinguish between important and urgent tasks. They will not be able to get distracted easily. They will make considered and conscious choices that are guided by a purpose rather than impulsive choices.

This is a big opportunity universities have to help develop this capability. Learning is more than simply spewing facts. It is about the nature of

thinking, about how to understand and interpret the evidence, how to decide to act in ambiguous situations, and how to apply and apply moral values when acting is getting more complex.

This is a key life skill that is reinforced in each classroom talk, research project, internship and collaborative activity. Education is not to give a response it is to make a good decision-maker.

The Decision Checklist

Question: Will I repent of this later?

Focus on systems rather than doing it once and for all.

Guard attention, you have the most valuable resource: attention.

Remember: All the answers are WINNING for you.



"A good future starts by a good choice today."

The option that will make all the difference.

Definitely there was never a time where it's all drama in one episode.

It changes quietly.

How best to complete your homework by reading another section or viewing another video?

So when in our times we opt for 'curiosity' instead of 'certainty'.

In this class, which is SBE asks a question:

If you're not feeling motivated, then when are you going to be motivated to exercise?

It is a good idea to place a „vāgra“ in the listening part:

The action of being honest in absence of others.

It is easy to think of the actions that will be taken at this unit as insignificant now, but with time can create lasting impact.

The meaning of the word science is 'plastikos', that is malleable and changeable, in accordance to the decisions that we make. Science shows us that our brains are always 'plastic' or malleable or changeable depending on our decisions. Each decision is a thoughtful one, that leads to good and bad habits, character building and affects the opportunities we give ourselves and others. Change your understanding, go step by step towards life and success and you will prove resilient, you will be a leader.

If it's late or not meaningful or if it takes my students an hour or more to get it, it's a vote against the professional they will be. Every word that an administrator or faculty member says, every decision they must make, every commitment they must make has an effect on them and has an effect on the culture of their faculty or institution.

The future is not a matter of chance, it's a question of choice.

The empowering lesson to all perhaps.

We don't have a lot of control over every situation in life but we always have the power to change the future by our actions in this one.

We do not always get stereotyped by taking one exceptional beat after all! It is written, every day, daily decision is a tile, day by day he wrote and it became extraordinary |



National Affairs: Events Shaping India

EDUCATION MINISTRY TO DEVELOP FRAMEWORK TO ADDRESS ACADEMIC, INFRASTRUCTURAL ISSUES ACROSS HIGHER EDUCATIONAL INSTITUTIONS



Union Education Minister Dharmendra Pradhan chaired a high-level review meeting on NIT

Kurukshetra, IEST Shibpur and overall HEI standards, unveiling a comprehensive framework to address academic and infrastructural challenges while emphasizing student well-being and campus ambience. Key measures include forming inclusive committees with directors, faculty, alumni and students to foster vibrant, student-centric environments; urgent upgrades to academic blocks, labs, libraries, hostels, messes and recreational facilities and a strong push to promote sports culture across all higher education institutions under the Ministry.

EDUCATION BUDGET 2026 : 8 BIG CHANGES FOR STUDENTS AND INSTITUTION



Finance Minister Nirmala Sitharaman presented the Union Budget 2026-27, allocating

₹1,39,285.95 crore to the Ministry of Education, a

8.27% increase from last year with school education receiving ₹83,561.41 crore and higher education getting a sharper rise to ₹55,724.54 crore. This budget integrates education into employment ecosystems for services, health, tourism and technology, featuring initiatives like regional medical hubs combining education, research and care, a National Institute of Hospitality for tourism skilling, Girls' STEM hostels in every district, telescope upgrades for astrophysics, a new National Institute of Design in eastern India and five university townships near industrial corridors. These measures prioritize employability and skill development over isolated academic spending.

UGC EQUITY REGULATIONS 2026: OVERVIEW



The University Grants Commission (UGC) recently notified the "Promotion of Equity in Higher Education

Institutions Regulations, 2026" to systematically prevent, identify and address caste-based discrimination against students, teachers and staff across all Indian higher education institutions. These updated regulations mandate that every college and university establish a dedicated "Equal Opportunity Centre" (EOC) on campus, alongside special committees, helplines and monitoring teams specifically tasked with handling complaints, with a particular focus on supporting SC, ST and OBC students. While intended to ensure equal treatment, the regulations have sparked significant protests from general category students who fear the rules could create campus instability.

Consequently, in a notable setback for the central government, the Supreme Court has stayed the implementation of these new regulations.

INDIA EXPANDS HIGHER EDUCATION UNDER NEP 2020



India reported that universities grew from 760 in 2014–15 to 1,338 as of June 2025, reflecting significant

infrastructure expansion. The National Education Policy (NEP) 2020 aims to raise the Gross Enrolment Ratio (GER) in higher education to 50%, establish a single Higher Education Commission of India (HECI) and create multidisciplinary institutions. Implementation continues across states, with new focus on access, equity and research quality.

QUALCOMM SHARES RISE ON RECOVERY HOPES



Qualcomm forecast third-quarter revenue and profit below Wall Street expectations, but shares rose

15% in extended trading after CEO Cristiano Amon said the smartphone market should begin recovering after the current quarter. He also pointed to new data center opportunities as Qualcomm tries to diversify beyond its core mobile-chip business. The company expects revenue of \$9.2 billion to \$10 billion for the quarter, below the \$10.27 billion analysts had

projected, while consumer demand has been pressured by higher memory-chip costs and weaker smartphone and PC purchases. Qualcomm, which counts Apple, Samsung, and Chinese phone makers among its customers, said its results reflect the broader health of the consumer electronics market.

AICTE PROMOTES FULBRIGHT-NEHRU FELLOWSHIPS FOR RESEARCH OPPORTUNITIES



AICTE's March 24, 2026 circular urges universities and approved institutions to publicize USIEF's Fulbright-Nehru

Fellowships for Indian PhD candidates (6-9 months Doctoral Research, deadline July 1), recent PhD holders (8-24 months Postdoctoral, July 15) and experienced faculty/professionals (4-9 months Academic Excellence, July 1), covering U.S. research/teaching in critical minerals, defense/security (cyber, aerospace), energy engineering, science collab (AI, semiconductors), space systems and tech innovation (quantum, data science).

INDIA SUCCESSFULLY TESTS INDIGENOUS RUDRAM-II MISSILE, BOOSTING PRECISION STRIKE CAPABILITY



The Defence Research and Development Organisation (DRDO), in collaboration with the Indian Air Force (IAF),

has successfully carried out flight trials of the indigenously developed RudraM-II air-to-surface missile. The test marks a major advancement in India's effort to enhance its precision strike capability and strengthen defence self-reliance.

VIKSIT BHARAT SHIKSHA ADHISHTHAN BILL: HIGHER EDUCATION OVERHAUL



India is set for a major higher education reform with the Viksit Bharat Shiksha Adhishthan (VBSA) Bill, 2025,

introduced in Lok Sabha on December 15, 2025. The Bill replaces UGC, AICTE and NCTE with a single unified regulator called VBSA Commission, featuring three councils for regulation, accreditation and standards. Medical, legal, pharmacy and veterinary education remain under separate Acts. The framework follows NEP 2020's "light but tight" regulation principle, emphasizing transparency. Violations can attract penalties from ₹10 lakh to ₹70 lakh, while unapproved universities face at least ₹2 crore in fines. The Bill is under Joint Parliamentary Committee review.

YUVA SANGAM PHASE VI: GUJARAT STUDENTS VISIT BHUBANESWAR

Gujarat delegates participating in Yuva Sangam Phase VI visited Bhubaneswar and met Odisha Governor Dr. Hari Babu Kambhampati. The



Governor emphasized the programme's role in fostering national integration and urged students to embrace

sustainability, innovation and cultural appreciation. The delegates also visited Jagannath Temple and Konark Sun Temple, experiencing Odisha's rich heritage firsthand.

TOFEI 2025: PANEL STRESSES MENTAL HEALTH, DRUG-FREE CAMPUSES



At the TOFEI 2025 National Award Ceremony and launch of the Nasha Mukti Vidyalaya Three-Year

Action Plan, a panel discussion emphasized mental health promotion and creating tobacco and drug-free campuses. Moderated by Ms. Anusree Raha (DoSEL), the session featured Dr. Rajesh Sagar (AIIMS), Dr. Anjali Chhabra (CBSE) and Shri Nikhil Kant (AICTE). The panel highlighted preventive education, institutional support and the critical role of teachers and parents in identifying early mental health signs and responding with empathy to ensure safe, substance-free learning environments.

State Affairs: Madhya Pradesh

MADHYA PRADESH BUDGET 2026-27 FOCUSES ON GROWTH AND WELFARE



Madhya Pradesh Finance Minister Jagdish Devda unveiled the ₹4.38 lakh crore FY 2026-27 Budget on February 19 in Bhopal, guided by GYANII principles Garib, Yuva, Annadata, Nari, Industry, Infrastructure without new taxes and a 3.87% fiscal deficit on ₹18.48 lakh crore GSDP. It declares 2026 as Kisan Kalyan Varsh with ₹38,850 crore for agriculture including irrigation and MSP, while women get ₹1.27 lakh crore via Ladli Behna Yojana (₹23,883 Cr) and 5,700 hostels, health/welfare receives ₹56,478 Cr, education ₹45,358 Cr, infrastructure ₹49,084 Cr and top schemes like Atal Krishi Jyoti (₹13,914 Cr) drive Viksit MP@2047 via rolling budget flexibility.

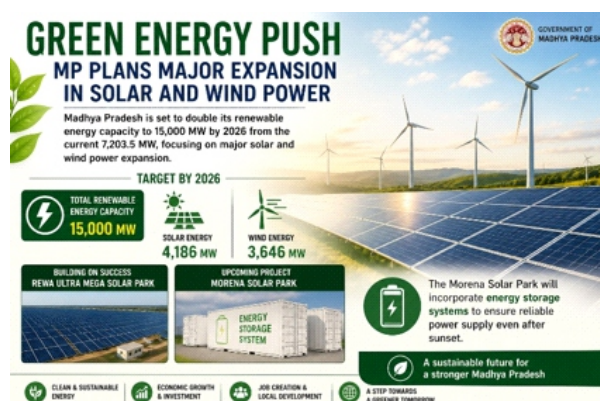
E-PRAVESH PORTAL LAUNCHES ADMISSION CYCLE FOR ACADEMIC YEAR 2026-27

Madhya Pradesh Higher Education's e-Pravesh portal opens 2026-27 UG/PG/BEadmissions today (May 1 UG, May 2 PG) across 1,360 colleges/15 universities for ~12 lakh seats via Samagra ID: Round 1 reg to May 15 (verification to 16th, merit 20-21, fees to 26th), Round 2 May 28-Jun 13, CLC after; eligible with



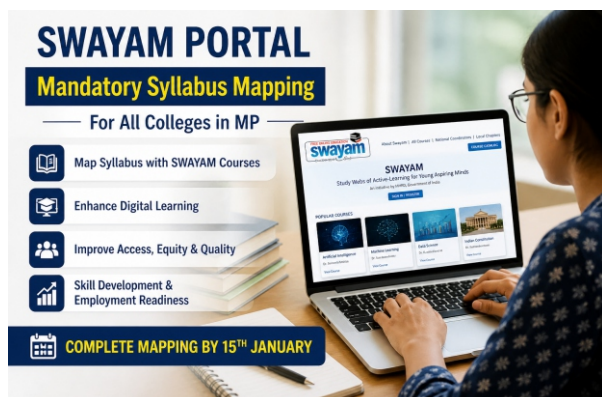
10+2/graduation marksheets/certs upload up to 10-20 choices, merit auto-generated, pay online post-allotment/report to college—helpline 8000063632.mis.

GREEN ENERGY PUSH: MP PLANS MAJOR EXPANSION IN SOLAR AND WIND POWER



Madhya Pradesh is set to double its renewable energy capacity to 15,000 MW by 2026 from the current 7,203.5 MW, focusing on major solar and wind power expansion. The plan includes adding 4,186 MW of solar and 3,646 MW of wind energy. Following the success of the Rewa Ultra Mega Solar Park, the upcoming Morena Solar Park will incorporate energy storage systems to ensure reliable power supply even after sunset.

MADHYA PRADESH STRENGTHENS SWAYAM INTEGRATION IN HIGHER EDUCATION



Madhya Pradesh Higher Education Additional Chief Secretary Anupam Rajan reviewed Central Board of Studies' 35 professional SWAYAM courses for credit benefits, directing all colleges to map syllabi (technical/non-technical) by Jan 15, group employment-oriented courses to enhance skills for global competition, and improve infrastructure like cleanliness, drinking water, regular classes, professor attendance, and fill vacancies—MP leads nationally with 3.5 lakh registrations (57% non-technical, up 350% YoY) on Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM), bridging digital divides for access, equity, quality.

DIGI100X MP SUMMIT HIGHLIGHTS DIGITAL SHIFT IN HIGHER EDUCATION



The Higher Education Department of Madhya Pradesh organized the Digi100x Madhya Pradesh Summit in Indore, focusing on digital transformation in universities and colleges. The event was inaugurated by Minister Inder Singh Parmar in the presence of senior officials, academicians, and experts from across the state.

Discussions centered on the use of artificial intelligence, data-driven governance, digital assessments and modern administrative practices to improve transparency and efficiency in higher education.

MP PLANS STATE ACCREDITATION COUNCIL ON NAAC LINES



On June 5, 2026, Chief Minister Mohan Yadav chaired a review meeting where the state announced plans to establish a state-level accreditation council similar to the National Assessment and Accreditation Council (NAAC). The initiative aims to: Strengthen quality standards in higher education, Improve academic quality across institutions including PM Shri Colleges, Expand access to higher education across the state.

MP HIGHER EDUCATION GOES MULTILINGUAL: 11 INDIAN LANGUAGES ADDED UNDER NEP

Under NEP 2020, Madhya Pradesh universities



will soon introduce 11 Indian languages Tamil, Telugu, Bengali, Kannada, Marathi, Punjabi, Gujarati, Malayalam, Assamese, Odia and Sindhi as academic courses. The step is intended to strengthen linguistic diversity and cultural integration in higher education. Higher Education Minister Inder Singh Parmar, during a review meeting in Bhopal, instructed universities to launch these courses and assigned specific languages to 12 state universities for a coordinated implementation. This initiative supports NEP 2020's emphasis on multilingual education and follows similar efforts by AICTE and UGC to expand regional language programmes in higher education.

MP HIGHER EDUCATION SET FOR MAJOR REFORMS: AI, DIGITAL EVALUATION AND 40:60 INTERNAL ASSESSMENT

Madhya Pradesh's Higher Education Department is planning major changes, including AI-based teaching, online attendance, digital academic ID for students, and 100% digital validation of answer sheets for more transparent and faster evaluation.

The department is also considering changing the internal assessment ratio from 30:70 to 40:60, giving more weight to regular studies, projects, and classroom participation. AI certificate



courses are being introduced in colleges to prepare students for future technologies.

MP SIGNS MOU FOR APPRENTICESHIP-EMBEDDED DEGREES



MP Higher Education Department signed an MoU with Board of Apprenticeship Training (Western Region), Mumbai to promote employment-oriented education. The Apprenticeship Embedded Degree/Diploma Programme (AEDB) will connect students with apprenticeships, providing industry-based practical experience through the National Apprenticeship Training Scheme (NATS) portal. Officials said this will boost employability and prepare youth for jobs immediately after studies by linking academics with industry skilling requirements.

News Source credit to Times of India, Indiatimes.com, education.economictimes.indiatimes.com

From Corporate Leadership to Global Startup Growth



Dr. Kuldeep Singh

Founder & CEO,
AI Monkeys Ltd. (UK)

Dr. Kuldeep Singh Raghuwanshi is a distinguished Growth Architect, AI strategist, entrepreneur, and Strategic Business Advisor with extensive experience in driving business transformation, innovation, and sustainable growth across global markets. As the **Founder and CEO of AI Monkeys**, an AI-driven digital growth, innovation consulting, and enterprise transformation company, he helps organizations leverage Agentic AI, Generative AI, intelligent automation, and data-driven strategies to achieve measurable business outcomes. With professional experience spanning leading global organizations such as IBM and Infosys, and exposure across the **UK, Europe, the USA, and Asia**, Dr. Raghuwanshi has successfully advised startups, scale-ups, and enterprises on scaling operations, unlocking investor capital, accelerating digital transformation, and building future-ready business models. Through AI Monkeys, he continues to bridge the gap between cutting-edge artificial intelligence and real-world business impact, empowering organizations to innovate, compete, and thrive in an increasingly digital world.

Q. Your career spans multinational corporations, startup ecosystems, and global business advisory roles. What inspired your transition from the corporate world to becoming a Growth Architect and entrepreneur?

A. My years at organisations like IBM and Infosys gave me an extraordinary foundation, rigorous systems thinking, exposure to global delivery models, and an understanding of how large enterprises actually make decisions. But over time I noticed a recurring gap: mid-market companies and ambitious growth-stage businesses had strategic challenges every bit as complex as a Fortune 500 firm, yet they lacked access to the kind of senior advisory talent that could help them navigate cross-border complexity. That gap was the opportunity. I founded AI Monkeys Ltd., trading as aim

Partners, because I wanted to build something that was genuinely additive: not a consulting firm that produces reports, but a growth architecture practice that gets into the engine room with clients and drives real commercial outcomes.

The shift was less about leaving the corporate world and more about deploying everything I had learned from it in a way that creates asymmetric value for businesses operating across the EU-India and UK-India corridors.

Q. Looking back at your journey from IBM and Infosys to leading AI Monkeys Ltd., what have been the most defining moments that shaped your leadership philosophy?

A. Three themes have shaped me most. The first is the discipline of rigour, both IBM and Infosys

demand intellectual honesty and structured thinking, and I carry that into every client engagement. The second is what I call corridor intelligence: working across markets as different as the UK, Europe, and India teaches you that strategy is always context-dependent. What works in Stuttgart rarely translates directly to Pune without significant adaptation and the ability to read that difference quickly is a genuine competitive advantage. The third, and perhaps most formative, is failure. There are deals I have lost, pitches that fell flat, and partnerships that did not survive first contact with reality. Each one sharpened my judgement and reinforced a principle I now hold firmly: the best leaders are not those who avoid setbacks but those who extract learning from them faster than anyone else. That philosophy shapes how I lead at aim Partners, we value honest assessment over comfortable consensus, always.

Q. As the Founder of AI Monkeys Ltd., how do you see artificial intelligence transforming industries, education, and the workplace over the next five years?

A. The next five years will be defined less by AI as a technology and more by AI as an operating layer, embedded invisibly into how industries sense, decide, and act. In manufacturing, AI will compress the cycle from customer requirement to production configuration from weeks to hours. In professional services, it will displace the bulk of information retrieval and synthesis tasks, elevating the value of judgement and relationship. In education, personalised learning at scale will become achievable in ways that were theoretically understood but practically impossible before. What I find most interesting from a cross-border advisory standpoint is the asymmetric opportunity this creates: markets like India, which have historically been technology fast-followers, now have the infrastructure, talent density, and regulatory appetite to leapfrog Western incumbents in AI adoption within specific

sectors. The organisations that will lead the next decade are those that treat AI not as a cost reduction tool but as a strategic capability builder.

Q. Many people fear that AI may replace jobs. How do you view the relationship between artificial intelligence and human talent in the future workforce?

A. The fear is understandable but, in my view, it is focused on the wrong variable. AI will not replace humans, it will replace humans who do not know how to work with AI. Every major technological shift in history has followed a similar arc: short-term displacement in specific task categories, followed by a broader expansion of the economic activity those tasks support, creating categories of work that did not previously exist. The more important question is not "will my job disappear?" but "am I building the skills that remain irreplaceable when AI handles the routine?" Those skills, contextual judgement, ethical reasoning, creative synthesis, complex negotiation, genuine empathy are deeply human. My advice to anyone anxious about AI in the workforce is to become an aggressive user of AI tools immediately. Familiarity breeds competence, and competence in human-AI collaboration is the most durable career asset of this decade.

Q. From your global perspective, how well are universities preparing students for the realities of today's rapidly evolving job market?

A. Honestly, the gap is significant and I say that without intending disrespect to the many excellent educators working within constrained systems. Universities excel at transmitting structured knowledge and building analytical foundations. What they consistently underdeliver on is dynamic capability development: the ability to learn in ambiguous, fast-moving environments

where the rules change before the textbook is written. A student graduating today will work in roles that do not yet have job descriptions, in industries being restructured by technologies still in their infancy, across geographies whose economic relationships are being renegotiated. The curriculum design cycles at most universities simply cannot keep pace with that velocity. The more progressive institutions are starting to close the gap, embedding live industry projects, building cross-disciplinary programmes, and treating entrepreneurship as a core competency rather than an elective but it remains the exception rather than the norm.

Q. What gaps do you commonly observe between academic learning and industry expectations, and how can educational institutions bridge them?

A. Three gaps recur consistently across every market I operate in. The first is communication: graduates can often analyse a problem rigorously but struggle to translate that analysis into a concise, persuasive recommendation that drives a decision. The second is commercial awareness, understanding not just how a business works but why it makes the choices it makes, what constrains it, and where its strategic pressures lie. The third is collaboration under ambiguity: real projects rarely come with a defined brief, a clear answer, and a grading rubric. Bridging these gaps requires universities to bring industry inside the institution systematically, not as a PR exercise but as a structural part of how learning is designed and assessed. Mentorship programmes with practitioners, live client briefs embedded in modules, and internships treated as academic credit rather than an optional extra would move the needle significantly. The institutions that will define the next generation of talent are those willing to fundamentally rethink assessment design, not just add a startup incubator to the prospectus.

Q. What advice would you give to university students who aspire to become entrepreneurs or build innovative startups while pursuing their studies?

A. Start with a problem, not a product. The graveyard of failed startups is full of technically brilliant solutions to problems that no one urgently needed solving. The discipline of customer discovery — genuinely understanding what someone is trying to achieve, what is stopping them, and what they would pay to have that obstacle removed — is more valuable than any pitch deck template or funding strategy. Use your university years as a low-risk environment to develop that discipline. Talk to potential customers before you write a single line of code or a business plan. Get comfortable with rejection, because entrepreneurship is a high-rejection profession. Build your network deliberately: your classmates, professors, and the practitioners who guest lecture are your first-degree network, and in early-stage business, network quality is often the difference between a closed door and an open conversation. And finally do not wait for the perfect idea or the perfect moment. Momentum creates clarity more reliably than planning does.

Q. What skills should every university student develop today, regardless of their discipline, to remain relevant and successful in the future?

A. Five skills stand out as genuinely cross-disciplinary and durable. First, structured communication - the ability to frame complex ideas clearly and persuasively for different audiences. Second, data literacy - not necessarily advanced statistical modelling, but the ability to read data critically, identify what it is actually telling you, and recognise what it is not. Third, strategic empathy - understanding what other stakeholders need and why, which underpins every negotiation, collaboration, and

leadership challenge you will ever face. Fourth, learning agility - the meta-skill of being able to acquire new knowledge rapidly and apply it in unfamiliar contexts. And fifth, AI fluency - the practical ability to use AI tools effectively, to understand their limitations, and to make judgements about where human intelligence must lead and where AI can accelerate. These five compound with each other: the student who develops all of them will be formidably equipped for whatever the next decade demands.

Q. How can young professionals cultivate resilience and adaptability when facing failures, uncertainty, and rapid technological change?

A. Resilience is not a personality trait, it is a practice. The most practically useful thing a young professional can do is to deliberately seek situations slightly beyond their current competence. Discomfort, handled well, is the training ground for adaptability. When things go wrong and they will, the instinct to protect one's ego by externalising blame is the enemy of growth. The leaders I respect most are those who conduct honest post-mortems on their own decisions without either self-flagellation or defensiveness. Regarding technological change specifically: stop trying to predict which technologies will win and start building the habit of rapid experimentation. The ability to learn a new tool quickly, form a working judgement about its utility, and integrate it into your practice without a six-month implementation project is more

valuable than deep expertise in any single platform. And maintain perspective: uncertainty is not a new condition. Every generation of leaders has operated in periods of significant disruption. The ones who thrived did so by staying anchored in fundamental principles while remaining genuinely curious about what was changing.

Q. If you could leave one message for students, educators, entrepreneurs, and future leaders reading this university magazine, what would it be?

A. The world does not need more people who are waiting for permission. It needs people who are willing to identify a problem that matters, build the capability to address it, and do so with integrity and genuine curiosity about the humans they serve. Education is not a credential, it is a starting point. Business is not just a wealth-generation mechanism, it is one of the most powerful tools we have for solving problems at scale. Leadership is not a title, it is a choice, made daily, about whether you will add more to a situation than you take from it. Whatever your discipline, whatever your geography, whatever constraints you are operating under right now: start. Start imperfectly, start with what you have, and use every setback as data rather than verdict. The future belongs to those who build it, and the only qualification required is the willingness to begin.

Engineering a Better Future: Innovation, Leadership, and Global Impact



Dr. Leong Wai Yie

Senior Professor,
Faculty of Engineering and Quantity Surveying,
INTI International University, Malaysia

Ir. Prof. Dr. Leong Wai Yie is a globally recognized engineer, researcher, and academic leader specializing in medical signal processing, telecommunications, biomedical engineering, and Industry 4.0 technologies. A Senior Professor, she earned her Ph.D. and First-Class Honours degree in Electrical Engineering from The University of Queensland, Australia. Her pioneering research in brain signal processing, wireless communications, and healthcare technologies has led to the development and commercialization of innovative biomedical solutions, contributing significantly to healthcare, industry, and society.

Beyond academia, Prof. Leong serves in several prestigious international leadership roles, including Vice President of the Institution of Engineers Malaysia (IEM), Vice President of the International Network of Women Engineers and Scientists (INWES), and leadership positions within the Institution of Engineering and Technology (IET) and the World Federation of Engineering Organizations (WFEO). Recognized among the World's Top 2% Scientists, she has received numerous international honours, including the IET Achievement Award, INWES Distinguished Women in Engineering Award, and WFEO Women in Engineering Award. Through her research, leadership, and advocacy, she continues to advance engineering innovation while championing the empowerment of women in STEM globally.

Q. What inspired you to pursue engineering, and what key milestones shaped your journey?

A. From a young age, I was fascinated by how technology can solve real-world problems and improve people's lives. This curiosity led me to pursue Electrical Engineering, where I graduated with First Class Honours before earning my Ph.D. from The University of Queensland, Australia. Throughout my career, several milestones have shaped my journey, including leading impactful research projects, securing international collaborations, commercializing healthcare technologies, and receiving recognition such as being listed among the World's Top 2% Scientists.

These experiences reinforced my belief that engineering is not merely about technology it is about creating solutions that benefit society.

Q. How can universities transform research into innovations that create real societal impact?

A. Universities must move beyond traditional academic outputs and focus on translating research into practical applications. This requires strong partnerships with industry, government agencies, healthcare providers, and communities. Researchers should be encouraged to address real-world challenges

and engage stakeholders from the beginning of the innovation process. Equally important are entrepreneurship training, intellectual property protection, technology transfer mechanisms, and startup incubation programs that enable research outcomes to reach society effectively.

Q. How do you see artificial intelligence, biomedical engineering, and medical signal processing transforming healthcare in the next decade?

A. The integration of AI, biomedical engineering, and advanced signal processing will revolutionize healthcare. We will see greater adoption of predictive diagnostics, personalized treatment plans, remote patient monitoring, and intelligent healthcare systems. AI-driven analysis of physiological signals such as ECG, EEG, and medical imaging will improve diagnostic accuracy while reducing healthcare costs. Wearable devices and smart medical systems will enable continuous health monitoring, supporting preventive healthcare and improving patient outcomes.

Q. Which emerging technologies will have the greatest impact on society and industry?

A. Several technologies will significantly influence the future. Artificial Intelligence and Machine Learning will continue transforming decision-making processes across industries. The convergence of 6G communications, Internet of Things, Digital Twins, Edge Computing, Robotics, and Quantum Technologies will create highly connected intelligent ecosystems. In healthcare, advanced biomedical devices and personalized medicine will enhance patient care. Sustainability-focused technologies, including renewable energy systems and smart infrastructure, will also play a critical role in addressing global environmental challenges.

Q. What progress have you witnessed in gender diversity, and what more can be done?

A. I am encouraged by the increasing participation of women in STEM disciplines and leadership positions worldwide. Many organizations now actively promote diversity, inclusion, and equal opportunities. However, more work remains. We must provide stronger mentorship programs, increase visibility of female role models, create supportive workplace cultures, and address unconscious biases. Early exposure to STEM education is equally important to inspire young girls to pursue engineering and technology careers with confidence.

Q. How can universities strengthen collaboration with industry?

A. Universities and industry must work as strategic partners rather than operating independently. Collaborative research projects, industrial attachments, joint laboratories, innovation hubs, and industry-sponsored scholarships can bridge the gap between academia and practice. Industry professionals should actively contribute to curriculum development to ensure graduates possess relevant skills. Such collaborations create mutual benefits by accelerating innovation while enhancing graduate employability.

Q. What skills, qualities, and mindsets should today's students develop?

A. Technical knowledge remains important, but future success requires much more. Students should cultivate critical thinking, creativity, adaptability, communication skills, teamwork, and lifelong learning habits. Digital literacy, data analytics, and AI-related competencies are increasingly valuable across all disciplines. Equally important are ethical responsibility, resilience, and a global mindset. The ability to

continuously learn and adapt will be one of the most important competitive advantages in the future workforce.

Q. What leadership lessons have you learned from working on the global stage?

A. Working with UNESCO, the United Nations, international engineering organizations, and global academic networks has taught me that leadership is fundamentally about service and collaboration. Effective leaders listen actively, embrace diversity, build trust, and inspire collective action. Complex global challenges cannot be solved by individuals alone; they require multidisciplinary and multicultural cooperation. Humility, integrity, and a commitment to creating positive impact are essential qualities for sustainable leadership.

Q. What were some of the biggest challenges in your career?

A. One of the greatest challenges was balancing research excellence, teaching responsibilities, leadership roles, and international engagements simultaneously. Transforming research ideas into

practical innovations often involves overcoming technical, financial, and regulatory barriers. However, challenges provide valuable learning opportunities. They taught me perseverance, strategic thinking, adaptability, and the importance of building strong collaborative networks. Every obstacle became an opportunity for growth and contributed to my development as a researcher, innovator, and leader.

Q. What message would you like to share with students, educators, researchers, and aspiring engineers?

A. Never underestimate your ability to create meaningful change. Engineering is one of the most powerful professions because it enables us to transform ideas into solutions that improve lives and shape the future. Remain curious, embrace lifelong learning, and do not fear challenges or failure. Pursue excellence with integrity, collaborate across disciplines, and always remember that technology should serve humanity. The future belongs to those who combine knowledge, innovation, compassion, and leadership to make the world a better place.



Building of sustainable future through Engineering and Innovation



Dr. Niki Prastomo

Dean, Engineering and Informatics,
 Universitas of Multimedia, Nusantara, Indonesia

Dr. Eng. Niki Prastomo is a distinguished academic, researcher, and technology leader specializing in materials engineering, renewable energy systems, and digital transformation. Currently serving as the Dean of the Faculty of Engineering and Informatics at Universitas Multimedia Nusantara, Indonesia, he has built an impressive career at the intersection of engineering innovation, sustainability, and higher education. A graduate of the Bandung Institute of Technology, he further advanced his expertise through prestigious AUN/SEED-Net–JICA scholarships, earning his Master's degree from Universiti Sains Malaysia and a Doctoral degree from Toyohashi University of Technology, Japan. His research focuses on functional materials, solar energy technologies, and the integration of digital solutions to create sustainable and socially impactful innovations. Beyond academia, Dr. Prastomo actively contributes to social innovation and entrepreneurship development as a Subject-Matter Expert in Science and Technology at Sociopreneur Indonesia, championing the role of technology in addressing contemporary societal and environmental challenges.

Q. Your career connects materials engineering, renewable energy, and digital technologies. What inspired you to work at the intersection of these fields?

A. My main interest has always been connected to sustainability, which I see as the common thread across these fields. There is still much that needs to be done globally to address sustainability challenges. My background in materials engineering helped me understand how materials can become the foundation for practical innovation. Over time, this interest naturally connected to renewable energy, where material innovation can be implemented to support cleaner and more sustainable energy solutions.

At the same time, I also see that digital technologies are increasingly important in maximizing the impact of any innovation. Good

technology does not only need to be developed; it also needs to be monitored, optimized, and implemented effectively. This is where digital technologies can provide strong support. For me, the intersection of materials engineering, renewable energy, and digital technologies offers a meaningful pathway to contribute to sustainability in a more integrated way.

Q. Having studied and conducted research in Indonesia, Malaysia, and Japan, what lessons from these different academic cultures have most influenced your approach to innovation?

A. One important lesson I have learned is to never stop learning. The more I learn, the more I realize that there are still many things I need to understand more deeply. This awareness keeps

me motivated to continue improving myself.

Each academic culture has provided valuable experiences. From different environments, I learned about discipline, collaboration, research focus, adaptability, and the importance of continuous improvement. These experiences shaped my view that innovation is not only about creating something new, but also about having the humility to keep learning, to listen to different perspectives, and to improve step by step.

Q. As Dean of the Faculty of Engineering and Informatics, how do you envision engineering education evolving to meet the demands of Industry 4.0 and the digital economy?

A. I believe that both students and educators need to be willing to adapt to technological changes, especially those being implemented in industry. Industry 4.0 and the digital economy require graduates who are not only familiar with technology, but also able to understand how technology can be applied to solve real problems.

However, this adaptation must be supported by a strong foundation. Students still need fundamental knowledge, analytical thinking, critical thinking, and innovative thinking. Without these foundations, technology may only be used at the surface level. Engineering education should therefore balance technological exposure with strong basic understanding, so that graduates are not only users of technology, but also problem solvers and innovators.

Q. Many discussions about sustainability focus on policy and economics. What unique role can engineers play in creating practical solutions for environmental challenges?

A. Engineers have an important role in translating ideas and policies into practical solutions. In many cases, environmental challenges are experienced most directly at the community or operational level. Therefore, engineers need to

be willing to listen to and observe problems at the grassroots level.

By understanding real conditions in the field, engineers can develop practical solutions that are technically sound and contextually relevant. These solutions can become good practices that are visible and can be studied by other stakeholders, including policymakers. In this way, engineering can help bridge the gap between policy, community needs, and real implementation.

Q. Solar energy is often viewed as a key solution for a sustainable future. What breakthroughs or developments in this field excite you the most today?

A. From a materials perspective, I find the development of flexible and transparent solar panels very interesting. These technologies still have many challenges, including efficiency, durability, cost, and scalability. However, they also offer significant innovation potential.

Flexible and transparent solar panels can open new possibilities for integrating solar energy into buildings, windows, façades, vehicles, and various everyday surfaces. This means solar energy may no longer be limited to conventional rooftop installations. For me, this area is exciting because it can open many new doors for innovation in sustainable energy and sustainable infrastructure.

Q. As a Subject-Matter Expert at Sociopreneur Indonesia, you work at the intersection of technology and social innovation. How can entrepreneurship be leveraged to solve societal and environmental challenges?

A. For me, entrepreneurship should be understood in a broader sense. It is not only about economic activities or building a business. Entrepreneurship is also about developing a mindset that includes creativity, critical thinking,

communication skills, self-reflection, resilience, collaboration, and integrity.

These qualities are essential for individuals who want to respond to social and environmental challenges. With an entrepreneurial mindset, people can identify problems, understand needs, build meaningful solutions, and continue improving their approach. This mindset is useful not only for entrepreneurs, but also for students, professionals, researchers, and community members who want to create positive impact.

Q. How can emerging technologies help developing nations accelerate their transition toward clean and sustainable energy systems?

A. Emerging technologies can support developing nations by improving planning, monitoring, efficiency, and decision-making in the energy sector. However, technology implementation should be guided by a comprehensive roadmap.

It is important to clearly understand the current condition, including valid and reliable data. We also need to define the desired future condition based on strong studies and realistic targets. After that, a clear strategy is needed to bridge the current state and the desired state. Finally, there must be measurable indicators to assess whether the strategy is working. In this way, technology can be used not only as a trend, but as a structured tool to support sustainable energy transition.

Q. As technology advances rapidly, how can innovators ensure that digital transformation remains aligned with environmental sustainability and social well-being?

A. Rapid technological advancement must be balanced with human integrity and strong values. Digital transformation should not only focus on efficiency, automation, or economic growth. It

must also consider environmental sustainability, social well-being, and ethical responsibility.

Innovators need to maintain self-control, integrity, and a sense of responsibility in developing and applying technology. Technology should serve human and societal needs, not the other way around. Therefore, digital transformation should always be guided by values, ethics, and a clear understanding of its impact on people and the environment.

Q. You are actively involved in social innovation and entrepreneurship. How can young innovators use technology not only to build businesses but also to solve community challenges?

A. This relates closely to the broader concept of an entrepreneurship mindset. Young innovators do not always need to become business owners to have an entrepreneurial spirit. Even when they work in a company, an institution, or a community, this mindset remains very important.

If entrepreneurship is understood broadly, it encourages people to be creative, critical, resilient, communicative, collaborative, and responsible. These qualities can help young innovators identify community problems and use technology to create solutions that are useful and sustainable. With this mindset, the company where they work or the community where they contribute can also grow and develop.

Q. What are some sustainability challenges that university students and researchers should focus on if they want to make a meaningful contribution to society?

A. For me, energy remains a very important and interesting topic. Energy is closely connected to daily life, economic development, and environmental sustainability. However, if we look carefully at different communities and environments, we may also find other urgent

challenges.

These may include waste management, education, disaster preparedness, local economic development, and other community-based issues. The key point is not only the topic itself, but whether the work can create meaningful impact for society, stakeholders, or the surrounding environment. Students and researchers should begin by understanding real needs, then develop solutions that can provide measurable benefits.

Q. In your experience, what distinguishes innovations that create lasting impact from those that remain only as research projects or prototypes?

A. Innovations that create lasting impact usually begin with a strong understanding of the problem. The problem must be studied carefully, not only assumed. After that, the innovation needs a clear strategy and a strong concept for implementation.

I often see this through four important stages: understanding the current state, defining the desired state, developing the strategy, and assessing the results. If an innovation only stops at the prototype stage without a clear implementation strategy and impact assessment, it may not create long-term value. A strong problem analysis, a realistic pathway, and measurable impact indicators are essential.

Q. If you could inspire the next generation to solve one global challenge through engineering and innovation, which challenge

would you choose and why?

A. I would still choose energy. Energy is a global need, and it affects almost every aspect of human life. However, the solutions do not always have to be the same everywhere. Energy solutions can and should be adapted to local conditions, local resources, and local capabilities.

This makes energy a very meaningful challenge for the next generation of engineers and innovators. They can think globally while acting locally. By developing energy solutions that are appropriate for specific contexts, they can contribute to both global sustainability and local community development.

Q. Looking ahead, what technological and educational transformations do you believe will define the future of engineering and sustainable development over the next decade?

A. I believe that artificial intelligence and sustainability will need to become more synergistic and integrated. AI, as a tool, can bring significant changes in many sectors, including education, energy, disaster management, environmental monitoring, and decision-making.

However, we must remember that humans remain the main actors. AI should support human judgment, responsibility, and creativity. In the future, the development of responsible AI and sustainable AI will become increasingly important. Engineering education also needs to prepare students not only to use AI, but to use it responsibly, ethically, and with a clear orientation toward sustainability and social impact.

The Unfinished Sentence: Language, Literature and the New Generation's Imagination



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A World Drowning in Words

There is a profound irony at the heart of twenty-first century communication: never before in the arc of civilisation have human beings produced more words, and yet rarely have those words carried less weight. We compose in fragments. We consume in flashes. We express entire emotional landscapes through a single digital symbol, and we mistake the swiftness of a response for the depth of a feeling. The celebrated observation once made by T.S. Eliot asking where wisdom goes when it is displaced by knowledge, and where knowledge goes when it is overwhelmed by information has mutated from philosophical provocation into a description of everyday life. We have built a staggering infrastructure of information, and inside it, many of us are linguistically adrift.

As someone who has devoted four decades to the study of language and literature, I have been a

witness to this transformation not as an abstraction but as an intimate daily experience. The students who enter university classrooms today are extraordinarily connected to the world. They can access centuries of recorded human thought within seconds. They communicate across continents as casually as earlier generations spoke across a garden fence. And yet, in many of them, one notices a curious deficit: the inability to sustain an argument beyond three sentences, a narrowing tolerance for ambiguity, and a growing impatience with any text that refuses to announce its meaning immediately. The patience required to dwell inside a difficult sentence to feel its weight, resist its resistance, and allow it to slowly open is becoming, in our time, a genuinely rare quality.

This is not an elegy for a golden past that never quite existed. Every generation of teachers has



found cause to lament the linguistic habits of the young. But what we are witnessing today is qualitatively different, because the transformation in how young people relate to language is not merely generational it is structural. The devices they carry, the platforms they inhabit, the algorithms that curate and compress their attention all of these are active participants in shaping their relationship with words. And that relationship, whether we acknowledge it or not, shapes everything else: how they think, how they feel, how they understand themselves and the world they are preparing to lead.

The Digital Paradox — Abundance without Depth

The philosopher Ludwig Wittgenstein argued that the limits of a person's language constitute the limits of their world. This formulation, once confined to academic philosophy, has acquired sharp and practical relevance in the digital age. When the language we habitually use is characterised by abbreviation, by hyperbole stripped of gradation, and by emotional shorthand that names feeling without examining it, the world we are capable of articulating and therefore truly perceiving becomes correspondingly constrained.

Social media, to be clear, is not the villain of this story. It is a mirror and what it reflects is a deep human hunger for speed, for connection, for the charged pleasure of being heard. Platforms built on brevity have produced genuinely remarkable results: movements that forced accountability onto the powerful, communities of support for people who might otherwise have faced isolation, and a creative energy in linguistic invention that deserves genuine respect. The capacity of the new generation to coin phrases that crystallise a whole social experience, to build irony into a meme, to shift the meaning of a word simply through collective use this is not linguistic poverty. It is a vitality that educators should honour rather than dismiss.

But there remains a crucial distinction one that the

classroom exists to illuminate between the ability to craft a striking phrase and the ability to construct an argument. Between the ability to name a feeling and the ability to examine it. Between literacy and what we might call literary consciousness: that slower, harder, more demanding mode of attention that allows a person to hold a complex idea in mind, trace its implications, feel its contradictions, and emerge from the encounter with a more nuanced and more honest understanding of human experience. It is literary consciousness that is under sustained pressure in our present moment and its erosion carries consequences far beyond the seminar room.

"Brevity is not the same as depth. A post and a poem are not equivalent forms of human expression, however equally urgent the feeling that drives them."

Consider the question of empathy. An accumulating body of research across psychology and cognitive science has established that sustained engagement with literary fiction cultivates the capacity to inhabit perspectives other than one's own to imagine, concretely and specifically, how the world appears from a vantage point unlike anything in one's personal experience. This is not a sentimental observation about the gentling effects of reading. It is a functional description of what occurs when a reader surrenders genuinely to a character who is nothing like themselves: the brain rehearses experiences it has not lived; the emotional vocabulary expands; the reflex toward premature judgment is, at least temporarily, suspended. In an era of deepening social fragmentation and accelerating cultural tribalism, this is not a luxury it is a matter of civic necessity.

The New Generation and Its Double Inheritance

To understand where today's students stand in relation to language, one must understand the peculiar double inheritance they carry particularly in a country as linguistically layered as India. They are simultaneously heirs to one of the

world's oldest and richest literary traditions Sanskrit, Pali, classical Tamil, Persian, Brajhasha, Awadhi, Urdu, Bengali and dozens more and full participants in a global digital culture that communicates predominantly in a flattened, rapid, image-saturated English. They move between languages and registers with a fluency that would astonish earlier generations: slipping from Hindi to English mid-sentence, absorbing Urdu cadences into their prose, carrying regional idioms into their digital expression. This linguistic hybridity is not confusion it is a form of creative intelligence that has no historical precedent.

Yet the formal institutions of education have frequently failed to honour the richness of this inheritance. Students arrive at universities having

been taught English as an instrument of professional advancement rather than as a medium of self-discovery. Literature, where it appears in the curriculum at all, is often treated as a body of content to be surveyed rather than an experience to be undergone. The biographical details of an author, the historical context of a novel, the ability to reproduce a critical position accurately in an examination these are taken, too often, as the whole of literary education. The far more demanding and far more rewarding work of actually reading of sitting with a poem until it yields something unexpected, of following the moral architecture of a novel, of asking what a particular metaphor reveals about the assumptions of the culture that produced it this work is frequently absent.



What the new generation lacks, in my experience and observation, is not intelligence, and it is certainly not passion. They are, in many respects, more globally conscious, more aware of structural inequality, more attuned to questions of representation and justice than any preceding generation. What they often lack is the linguistic architecture adequate to the complexity of what they already sense and care about. They perceive the weight of their moment; they struggle to articulate it fully. This is precisely where literature becomes not merely relevant but essential not as ornamentation, not as the exclusive possession of an educated elite, but as the most reliable equipment available for the interior life.

Literature as the Laboratory of Language

The great writers of any tradition do not merely record experience they create the very forms through which experience becomes legible. When we read Rabindranath Tagore, we are not simply encountering beautiful language; we are being trained in a quality of attention to the texture of silences between words, to the way longing inhabits the ordinary, to the spiritual dimension concealed within the domestic. When we engage

with the prose of Virginia Woolf, we discover that the inner life does not organise itself into tidy logical sequences, and that the effort to capture its actual movement requires a radical reimagining of what a sentence is permitted to do. When we read Chinua Achebe, we encounter writing as an act of reclamation the insistence that a language can be turned from an instrument of colonial subjugation into a vehicle of dignity and self-definition.

access to a canon of approved texts. Not a set of analytical skills applicable to other fields though literature certainly develops those. But the fundamental capacity to give form to inner life, to move from the diffuse and inchoate toward the precise and expressible. A person who cannot articulate the distinction between sadness and despair, between indignation and anger, between contentment and joy, is not merely a poorer communicator. They are, in a very practical sense, less free because the range of human responses available to them is constrained by the range of language they command.

What Deep Reading Builds That No Algorithm Can

Digital communication has given contemporary society speed, reach, and a breadth of connection without historical parallel. What it has not given and what, by the nature of its design, it cannot give is the slow, transformative experience of deep reading. Cognitive scientists studying the reading brain have documented that engaging with sustained, complex literary text activates neural pathways in ways that scanning and scrolling do not. The 'deep reading brain' to use the formulation of Maryanne Wolf is not a biological given. It is a cultural achievement, built through practice. And like any skill that is left unpracticed, it can atrophy.

The consequences of this atrophy extend well beyond appreciation of literature. They affect the capacity for sustained concentration on a single problem; the tolerance for intellectual discomfort that comes before understanding; the willingness to entertain a hypothesis provisionally before reaching a conclusion. These cognitive habits are precisely those upon which responsible professional practice in every field medicine, law, engineering, public administration ultimately depends. When we allow the deep reading brain to weaken through neglect, we are not merely reducing the audience for poetry. We are, more fundamentally, undermining the cognitive infrastructure on which reasoned decision-making rests.

There is no technological determinism in this argument. The smart phone and the content algorithm are not fate. Choices remain choices that educators, institutions, and students themselves can make actively, rather than by default. The literature classroom, properly conceived and generously supported, is one of the spaces where those choices become visible and deliberate: where a generation can elect, however temporarily, to trade speed for depth, reaction for reflection, and noise for the particular, irreplaceable silence in which understanding becomes possible.



The Institutional Responsibility We Cannot Afford to Evade

Universities have a particular responsibility in this historical moment one that many are, consciously or otherwise, beginning to evade. The pressure toward purely vocational and technical education is understandable given the economic anxieties students and families carry. The argument is familiar: in a competitive labour market, what counts is demonstrable, immediately applicable skill. Literature, philosophy, history these are presented as indulgences that neither the economy nor the student can afford.

This argument is, I want to say plainly, based on a fundamental misreading of what the humanities actually produce.

The capacity to communicate with clarity and force, to reason from incomplete evidence toward defensible conclusions, to understand how cultural context shapes both problem and solution, to navigate ethical complexity without retreating into rigid formula these are not decorative additions to a professional formation. They are its most durable and most transferable elements. The engineers, scientists, entrepreneurs, and civil servants who change the world for the better are almost invariably people who can think across disciplines, who understand human motivation, and who command language well enough to make their vision intelligible to others.

Institutions that invest seriously in literary education that create conditions in which students can read widely and unhurriedly, in which teachers have the time and the freedom to teach literature as a living practice rather than a body of inert content are not making a sentimental gesture toward tradition. They are producing graduates who are not merely technically competent but humanely intelligent: people who know not only how to do things, but what things are worth doing, and why.

Vikrant University, in sustaining and deepening its commitment to the humanities, participates in a tradition of education that extends to the earliest universities and forward to whatever forms of learning our changing world will require. This is not a conservative impulse. It is a recognition that the questions posed by great literature about identity, justice, suffering, beauty, obligation, and human freedom are not historical curiosities. They are the permanent questions, and every generation must find its own way of meeting them.

The Sentence That Completes Itself

In every classroom where a text is read together with care where a teacher and students pause before a word and ask, with genuine curiosity, what it holds and what it costs something quietly

extraordinary occurs. The centrifugal pull of distraction and speed is, for a time, resisted. The act of reading together is, in the truest sense, a civilisational act: an affirmation that human experience is worth the effort of articulation, that the words we use to describe the world we inhabit carry real consequences, and that precision, beauty, and depth are not optional additions to a life well lived but among its most fundamental dimensions.

The sentence the new generation is composing about itself and its world is not yet finished. It cannot be finished, because they are still in the process of becoming who they will be. What we as educators can offer is not the completion of that sentence that act belongs to them alone. What we can offer is language rich enough to match the complexity of what they are living through; forms capacious enough to hold their contradictions; models of expression courageous enough to attempt the unsimplifiable.

The invitation of literary study is ultimately an invitation to take one's own interior life seriously to believe that what one thinks and feels is worth the effort of precise expression, and that the expression itself, carefully achieved, can reach and move and alter another human being. This has always been the quiet miracle at the centre of literature. It does not require a special talent. It requires attention, patience, and the willingness to sit with difficulty long enough for meaning to emerge.

The unfinished sentence is not a crisis. It is not evidence of failure, or of a generation lost to distraction. It is, rather, an invitation to continue, to deepen, to discover in the act of finding better words a more fully realised self. That discovery is what literature makes possible. It is why literature endures. And it is why the work of teaching it, at this moment more than any other, is among the most necessary things we can do.

Building the Future: Leadership Lessons from an Engineering Visionary



Mr. Sunil M. Bhatambrekar

Advisor in C4i4 LAB

Mr. Sunil Bhatambrekar is an accomplished engineering professional with over 40 years of industrial experience in design, manufacturing, quality, and leadership. He currently serves as an Advisor at C4i4 Lab, a Government of India initiative promoting AI, Industry 4.0, IoT, digital transformation, and sustainability for MSMEs and large industries, and is also a Senior Freelance Consultant in Design, Engineering, and Quality. Previously, he held senior leadership positions, including Technical Advisor and Associate Vice President at Kalyani Maxion Wheels Pvt. Ltd., a global leader in wheel manufacturing. A Certified Six Sigma Green Belt Trainer and former member of the BIS Technical Committee, he has also made significant contributions to academia through student mentoring, project evaluation, curriculum advisory roles, and guest lectures. Mr. Bhatambrekar is a Mechanical Engineer, an MBA graduate, and a respected Marathi author.

Q. Looking back on your journey from a mechanical engineering student to an industry leader, what have been the defining milestones of your four-decade career?

A. I began my career in Engineering Design in the early 1980s, when the engineer's toolkit consisted of large drafting machines (not mini-drafters), log tables, slide rules, calculators, typewriters, ammonia-printing systems, cyclostyling machines, primitive photocopiers, and wired communication networks. The machines we designed were predominantly mechanical, involving extensive kinematics and electrically driven systems. Hydraulics and pneumatics also played a significant role in many applications. Although this may seem primitive by today's standards, it was considered quite advanced compared to the state of technology just a decade earlier.

Looking back, accomplishing complex engineering tasks with such limited resources

appears fascinating. However, the environment was no less competitive or demanding than it is today. Even then, the quality, precision, and sophistication of products from countries such as Germany and Japan were significantly ahead of ours, setting benchmarks that engineers aspired to achieve.

Over the years, I had the opportunity to witness and adopt a remarkable succession of technological advancements. These included Computer-Aided Engineering (CAE), Experimental Stress Analysis, Residual Stress Measurement, Instrumented Vehicles, CNC machines, computer programming, PLCs, servo systems, encoders, sensors, robotics, embedded electronics, microchips, software-driven systems, and many other innovations that transformed the engineering landscape.

What makes this journey particularly noteworthy is that none of these technologies formed part of our formal academic curriculum. Nor was there a

well-established ecosystem for learning and mastering them. Engineers of our generation had to learn continuously, largely through self-study, experimentation, industrial exposure, and practical experience. Yet, they embraced these changes, mastered new technologies, and successfully leveraged them to create better products and processes.

When I reflect on this extraordinary journey, it often feels like a dream. Few generations have had the privilege of witnessing such a dramatic transformation—from drafting boards and slide rules to artificial intelligence, digital engineering, and autonomous systems. What is even more remarkable is that the pace of technological advancement continues to accelerate, presenting exciting opportunities and challenges for the generations that follow.

Q. Having witnessed four decades of industrial evolution, how has manufacturing transformed, and what changes should today's engineering students prepare for?

A. Manufacturing has undergone a remarkable transformation over the past few decades. Earlier, manufacturing was largely labor-intensive, mechanically driven, and focused on mass production. Today, it has evolved into a highly automated, digital, and interconnected ecosystem powered by advanced technologies such as Artificial Intelligence (AI), Industry 4.0, the Internet of Things (IoT), robotics, additive manufacturing, and data analytics. Modern factories are increasingly becoming smart factories, where machines communicate with one another, processes are monitored in real time, and decisions are supported by intelligent systems.

As manufacturing continues to evolve, engineering students must prepare for a future that demands far more than traditional technical knowledge. In addition to strong fundamentals in engineering sciences, they should develop skills in digital technologies, programming,

automation, data analysis, and systems thinking. Equally important are creativity, innovation, communication, teamwork, and the ability to work across multiple disciplines. Since technology is advancing at an unprecedented pace, the most valuable skill for future engineers will be the ability to continuously learn, adapt, and apply new knowledge. Those who combine technical expertise with curiosity and a lifelong learning mindset will be best equipped to thrive in the manufacturing industries of the future.

Q. Through your work at C4i4 Lab, you are helping industries adopt AI, Industry 4.0, and IoT. How do you see these technologies reshaping manufacturing and engineering careers?

A. We at C4i4, are helping not only industrial staff including leaders, managers & engineers, but also students from academic universities.

The adoption of Artificial Intelligence (AI), Industry 4.0, and the Internet of Things (IoT) is fundamentally transforming manufacturing and engineering careers. Traditional manufacturing systems are evolving into smart, connected, and data-driven operations where machines, sensors, and software work together seamlessly. Engineers are no longer required only to design and operate equipment; they must also understand data analytics, automation, digital twins, and intelligent control systems.

AI enables predictive maintenance, quality improvement, and optimized decision-making, while IoT provides real-time monitoring and connectivity across the entire value chain. Industry 4.0 integrates these technologies to create highly efficient, flexible, and responsive manufacturing environments. As a result, engineers are increasingly expected to possess multidisciplinary skills that combine mechanical, electrical, electronics, software, and data science knowledge.

These advancements are not replacing engineers; rather, they are enhancing their

capabilities and shifting their focus from routine tasks to innovation, problem-solving, and strategic decision-making. Consequently, continuous learning and adaptability have become essential career requirements. The engineers who embrace these technologies will be better positioned to lead the next generation of industrial transformation and create sustainable value for society.

Q. What skills and competencies should engineering students develop to thrive in an increasingly AI-driven and technology-intensive world?

A. I think today's engineering students in an AI-driven and technology-intensive world must develop a balanced combination of technical, digital, and human-centric competencies.

First, they need strong engineering fundamentals because AI-generated solutions must be well understood and validated. This is possible only if fundamentals are strong. Second, AI and data literacy are becoming essential, as engineers will increasingly work alongside AI tools rather than compete with them. Next, digital engineering skills related to automation, simulation, and smart technologies are crucial. At least introductory knowledge of these streams must be there.

At the same time, uniquely human capabilities will become even more valuable. Design thinking and innovation help engineers identify meaningful problems and create breakthrough solutions. Systems thinking enables them to understand complex and interconnected challenges. Critical thinking and sound judgment are necessary to evaluate AI-generated recommendations and make responsible decisions.

Communication skills are equally important because engineers must explain complex ideas clearly to different stakeholders. Leadership and teamwork are vital in multidisciplinary and global project environments. An entrepreneurial mindset helps engineers connect technology with business value and create innovative

opportunities.

Furthermore, engineers must uphold ethics and responsibility while developing and deploying advanced technologies. They should always consider not only what can be built, but also what should be built. Finally, lifelong learning is perhaps the most important competency, as technology evolves rapidly and continuous upskilling is essential for long-term success.

In nutshell I can say that, the engineer of the future will combine technical expertise, digital fluency, creativity, leadership, ethical responsibility, and a commitment to continuous learning to thrive in an AI-enabled world.

Q. As a Six Sigma Green Belt Trainer and quality expert, what role does quality thinking play in innovation, and how can young professionals cultivate this mindset?

A. Six Sigma philosophy teaches to understand customer needs, measure the reality in an objective manner, reduce or eliminate variation through reduction in Standard deviation systematically – which is most important step, and continuously improve processes to achieve near-perfect product or process quality.

However, to resolve the problems which gets prioritised or surfaced out through Six Sigma problem solving methods (DMAIC), it is necessary to adapt innovation. Six sigma methodology will not provide you direct solution. It rather helps you to take you nearer to the exact problem so that action / solution can be taken in a precise manner.

So, Innovation was the key to success in the past, and it will remain the key to the future. Even as AI becomes an increasingly powerful tool, the creativity, imagination, and wisdom of the human mind will continue to surpass technology, leading the way toward new possibilities and meaningful progress.

Q. Having mentored students and evaluated engineering projects for many years, what distinguishes an outstanding student or project from the rest?

A. It is not difficult to identify outstanding students. Those who immerse themselves wholeheartedly in a project reveal their potential through the quality of their work, the clarity of their explanations, their eagerness to learn, and their natural curiosity. While some students may attempt to appear competent by relying heavily on readily available software tools or gadgets, a lack of genuine understanding soon becomes evident when they are unable to demonstrate a firm command of the subject.

To become an outstanding student, one must be willing to dive deep into the subject. Merely observing from the sidelines cannot make a person a good swimmer; similarly, true learning comes from active involvement and exploration rather than passive observation. The deeper one engages with a subject, the greater the understanding, confidence, and mastery that follow.

Q. Drawing on your experience in both academia and industry, what changes are needed to better align engineering education with industry requirements?

A. Engineering education in earlier decades was relatively stable compared to the dynamic environment we see today. The pace of curriculum change was generally aligned with the rate of technological progress. For example, during the late 1970s and early 1980s, considerable debate took place regarding the continued inclusion of Steam Engineering in mechanical engineering curricula. By then, most railway systems had already transitioned to diesel or electric locomotives, significantly reducing the practical relevance of steam technology.

Academic councils and universities took several years to review, revise, and eventually reduce or

remove the emphasis on Steam Engineering from the syllabus. Given the comparatively gradual pace of technological change at that time, such a process was both feasible and justifiable.

Today, however, technological advancements occur at an unprecedented speed. Emerging fields such as Artificial Intelligence, Automation, Data Science, Advanced Manufacturing, and Sustainable Technologies are continuously reshaping industry requirements. As a result, educational institutions must not only make curriculum decisions more quickly but also review and update them far more frequently to ensure that graduates remain relevant and industry-ready.

While strong theoretical foundations remain essential, greater emphasis should be placed on practical application and problem-solving skills. Curricula should be regularly updated to incorporate emerging technologies such as Artificial Intelligence, Data Analytics, Automation, Robotics, and Sustainable Engineering.

Industry-academia collaboration should be strengthened through internships, live projects, guest lectures, and joint research initiatives. Students should be encouraged to work on real-world problems rather than purely academic exercises. Project-based learning, design thinking, and innovation-driven activities can help develop creativity and an entrepreneurial mindset.

In addition to technical competence, employers increasingly seek professionals with strong communication, teamwork, leadership, and critical thinking skills. Therefore, engineering programs should integrate the development of these soft skills into the learning process. Exposure to multidisciplinary projects can further prepare students for complex industrial environments.

The use of modern software tools, digital platforms, and simulation technologies should become an integral part of engineering education. However, students must also

understand the underlying principles rather than relying solely on technology. Faculty members should undergo continuous upskilling to remain aligned with industry practices.

Ultimately, engineering education should aim to produce not only job-ready graduates but also adaptable lifelong learners capable of innovating, leading change, and contributing to sustainable industrial and societal development.

Q. What has been the most challenging phase of your professional journey, and what leadership lessons did it teach you?

A. Oh! Those beautiful days!

One of the greatest challenges during that technological transition era was not merely adopting computers, but understanding their limitations. When computers—particularly CAD/CAM systems—began replacing drafting boards and paper drawings, there was widespread fascination with the new technology. Outputs generated by computers were often assumed to be inherently correct, intelligent, and accurate, regardless of whether they were actually valid. Many people placed unquestioning trust in computer-generated results.

I remember, if a design created using CAD was challenged, the common response was, “It has been done on a computer, so it must be accurate.” The technology itself became a substitute for critical thinking and engineering judgment.

However, several costly mistakes and major setbacks eventually taught an important lesson: a computer is merely a tool. It can process information faster, automate tasks, and present results efficiently, but it does not replace the intelligence, experience, and responsibility of the engineer. The accuracy of the output depends entirely on the quality of the inputs, assumptions, and decisions made by the user.

Over time, we engineers learned that while computers can enhance productivity, they cannot

replace sound engineering principles and human judgment. The real challenge was not learning how to use the computer, but learning when not to trust it blindly.

Apart from technological and engineering challenges, adverse field conditions—particularly poor road infrastructure, product abuse, and negligent usage—posed significant difficulties. No designer intentionally wishes to develop a product for misuse or unintended operating conditions. However, the realities of the market often made it necessary to account for such factors during the design process. This was big learning for me.

Designers were compelled to strike a delicate balance between performance, cost, weight, and durability while continuously reassessing appropriate factors of safety. Achieving an optimum design under these circumstances was often a complex and demanding task, requiring careful engineering judgment and numerous compromises.

Fortunately, as infrastructure, user awareness, and operating conditions have improved over time, many of these challenges have gradually diminished. At the same time, however, a new set of challenges has emerged. Today's engineers must address issues related to rapid technological advancements, sustainability, digitalization, automation, and evolving customer expectations. Thus, while some traditional challenges have receded, the engineering profession continues to face new and increasingly complex demands.

Q. As a member of the BIS Technical Committee, why are standards essential for innovation, quality, and global competitiveness?

A. It was pride for me to be a member of BIS Technical committee.

Standardization has been a fundamental

requirement of both technology and society across all eras—from the medieval centuries to today's highly advanced digital age. It is difficult to imagine sustained technological progress or societal development without the support of well-defined standards.

Standardization delivers numerous benefits. It reduces unnecessary variety and costs, promotes interoperability, and provides assurance of quality, reliability, and safety. It benefits manufacturers through improved efficiency and productivity, while offering users confidence in performance, safety, and value for money.

In an increasingly globalized and competitive marketplace, organizations that aspire to achieve world-class quality, maintain competitiveness, and drive innovation cannot afford to overlook standardization. Far from restricting innovation, standards often create a strong foundation upon which innovation can flourish.

As a member of a committee of the Bureau of Indian Standards (BIS), I have always believed that the interests of the end user should remain paramount. Accordingly, our deliberations consistently prioritized consumer safety, product reliability, quality assurance, and the delivery of genuine value for money. Standardization, when pursued with these objectives in mind, serves not only industry but society as a whole.

Q. With sustainability becoming a global priority, what role should engineers play in building a more responsible and sustainable industrial future?

A. Today's engineers have a pivotal role in shaping a sustainable industrial future. Their responsibility extends beyond designing products and processes to ensuring that development meets present needs without compromising future generations.

- Design products with lower environmental impact.

- Optimize energy efficiency in manufacturing and operations.
- Reduce material consumption through smart engineering.
- Promote recycling, reuse, and circular economy principles.
- Develop cleaner technologies and renewable energy solutions.
- Minimize waste, emissions, and pollution at source.
- Select sustainable materials and processes.
- Incorporate life-cycle thinking into product design.
- Use digital tools and AI to improve resource efficiency.
- Ensure compliance with environmental regulations and standards.
- Balance economic viability with environmental responsibility.
- Drive innovation for sustainable products and services.
- Collaborate across disciplines to solve complex sustainability challenges.
- Advocate responsible use of natural resources.
- Improve safety and well-being of workers and communities.
- Support carbon reduction and climate action initiatives.
- Educate stakeholders on sustainable practices.
- Consider ethical and social impacts of engineering decisions.
- Lead organizational transformation toward sustainability.

- Inspire future generations to build a greener world.

In summary, engineers must become not only creators of technology or inventors but also torchbearers of sustainability, ensuring that industrial progress and environmental responsibility go hand in hand.

We at C4i4 have special courses and training modules on Sustainability including a software designed for on-line real-time ESG monitoring & calculations and generating BRSR or any international reports easily. More information can be sought by contacting us.

Q. How can young engineers balance technical expertise with leadership, innovation, and continuous learning?

A. There is an eternal formula for success: success lies in mastering the basics, and success lies in attention to detail. There are no shortcuts to true expertise. While technology and machines have evolved dramatically, with computing speeds increasing from a few megabytes per second to unimaginable levels today, the human mind does not evolve at the same pace. Our capacity to absorb, understand, and internalize knowledge still requires time, reflection, and experience.

Expertise cannot be downloaded or outsourced. It is developed through patience, practice, observation, and continuous learning. AI can accelerate access to information, but it cannot replace the human journey of acquiring wisdom and judgment.

Therefore, young professionals should not become overly concerned about the race among AI tools for technological supremacy. Let machines compete with machines. Our focus should be on remaining deeply human understanding people, building relationships, exercising judgment, and acting with empathy and responsibility toward both fellow humans and the technologies we use.

The uniquely human strengths of creativity, innovation, leadership, critical thinking, ethical decision-making, and wise learning will continue to remain our greatest differentiators. These are the qualities that machines can support but not truly own.

Therefore, embrace technology, leverage AI, but never neglect the development of your human capabilities. Explore them to their fullest potential, for they will remain the foundation of meaningful success and lasting impact.

Q. After more than four decades in engineering, leadership, and mentorship, what message would you like to share with the next generation of engineers?

A. Sometimes I wonder how engineers of the 2060s or 2070s will answer the same questions that we discuss today. Will their responses be fundamentally different from ours? I suspect they will not.

Every generation faces uncertainty about the future. We did not know precisely what technologies, opportunities, or challenges lay ahead. We simply learned as new developments crossed our path, adapted to changing circumstances, and kept moving forward. We may not all have become the very best, but most of us aspired to be at least as good as our peers, if not slightly better. That approach served us well, and I believe it will continue to serve future generations.

The engineers of tomorrow are not truly competing against AI or technology. Technology is a tool, just as previous generations had their own tools. Their real competition, as ours was, will be with fellow human beings who possess similar aspirations, talents, and opportunities. If they continuously improve themselves and strive to be slightly better than yesterday, their journey will remain rewarding and meaningful.

Exceptional, highly specialized jobs have always existed, but they have been occupied by a

relatively small number of extraordinary individuals. At the same time, society has always created opportunities for the vast majority of capable and hardworking people. The demand for competent, reliable, and adaptable professionals will continue to exist.

Therefore, one should certainly strive for excellence and aim to be outstanding. However, there is no need to be overwhelmed by fear of technological change. Society, markets, and human needs have a natural way of creating new roles and opportunities as old ones evolve.

Above all, we should remember that nothing is more powerful than nature's ability to adapt and nothing is more imaginative than the human mind. Technologies will come and go, but human curiosity, creativity, and the desire to progress will continue to shape the future, just as they always have.

Q. What is the one principle that has guided you throughout your professional journey?

A. I have shared this thought in several of my earlier interviews and lectures, many of which are available on social media platforms such as YouTube.

My advice to young professionals is simple: be like a sponge—but not an ordinary sponge. Be a sponge equipped with a filter. Absorb everything that is happening around you, but consciously filter out what is negative, regressive, or harmful. Remain alert to good ideas, best practices, emerging trends, and valuable experiences. Capture them, learn from them, and store them in your mind.

Fortunately, the human brain has an extraordinary capacity to absorb and retain knowledge throughout a lifetime. Equally remarkable is its ability to gradually discard information that is no longer useful, allowing us to focus on what matters most for our growth and progress.

I firmly believe that keeping your antennas up—observing, listening, sensing, and learning from your surroundings—can significantly contribute to building a successful career. Opportunities and lessons are often hidden in plain sight for those who remain curious and receptive.

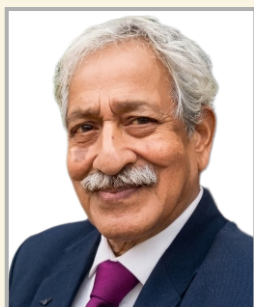
Most importantly, never stop learning and, when necessary, never stop unlearning. During the early years of my career, I was highly proficient with slide rules. I had a strong command of trigonometry calculations and was skilled at preparing engineering drawings entirely by hand. These were valuable capabilities in their time. Today, however, those skills have largely been replaced by newer technologies and methods.

As the world changed, I learned new skills that were relevant to contemporary needs. That is the essence of professional growth—adapting to change rather than resisting it.

This principle applies to everyone. Never limit yourself by saying, “I will never do this,” or “I will never learn that.” The future has a way of surprising us.

Keep an open mind, stay adaptable, continue learning, and remember one simple rule: Never say never.

From Medical Representative to Industry Leader: Four Decades of Leadership in the Pharmaceutical Industry



Mr. Jayant Tilloo

Mentor, HENX Technology,
Pune

A career built on perseverance, strategic thinking, and continuous learning defines the remarkable journey of Mr. Jayant Tilloo. Beginning as a Medical Representative in 1980, he steadily rose through leadership roles to become a Director and Marketing Consultant, contributing to the growth of leading pharmaceutical companies across India and international markets.

A Science graduate from Vikram University, Ujjain, with a diploma in Marketing Management, Mr. Tilloo has extensive expertise in pharmaceutical sales, marketing, business development, and company launches. Currently serving as Designated Partner at Advacare and Director of Geosmine Biosciences Pvt. Ltd., he continues to guide organizations with his strategic vision and industry experience.

In this interview, Mr. Tilloo reflects on his four-decade professional journey, shares valuable leadership lessons, and offers practical advice to students aspiring to build successful careers in the pharmaceutical industry.

Q. Your journey spans four decades, from Medical Representative to Director and entrepreneur. What have been the defining milestones of this remarkable journey?

A. Secret is to get motivated and be a management disciple, focused approach towards current role and responsibilities and extra efforts to move forward with an out of box attitude.

Q. Having witnessed the evolution of the pharmaceutical industry firsthand, what major transformations have had the greatest impact on healthcare and business?

A. Pharmacy, the most essential part of human being to animals, has been always booming, and with technology commencement speed of operation intensifying.

Manufacturing --automation, in marketing and sales --faster communication tools helping to adapt strategies so to reach customers faster.

Online services improved availability of various

needs of patients.

Innovation in formulations helping patients.

YES, severe competition is challenging to counteract with a B-updated attitude.

Q. What leadership principles have guided you through diverse roles in sales, marketing, business development, and management?

A. Personally being honest to ourselves & focusing assignments to fullest, attitude of giving, supporting concerned people, & keeping commitments.

Q. From your experience in launching and growing organizations, what are the key ingredients of a successful and sustainable business?

A. Launching needs 100 times more effort in all segments & management by all concerns.

Focus on customers, branding and consistent

quality.

Human resources to focus most, training is a continuous part, a sense of belonging to develop in a team.

TRAINED PEOPLE AND METHODOICAL MOVES LEADS TO SUCCESSFUL AND SUSTAINABLE BUSINESS.

Q. How do you approach strategic decision-making during periods of uncertainty, crisis, or market disruption?

A. Simply taking the team in confidence, being transparent & focusing innovative moves, things smoothened.

The attitude of GO GETTER is imperative

Q. How do you see digital technologies, data analytics, and artificial intelligence shaping the future of the pharmaceutical industry?

A. Very true--the stupendous movement in all sectors taking place due to technology welcomes it

Q. What opportunities and challenges do young professionals face in today's increasingly global pharmaceutical sector?

A. Focused approach, knowledge, and never give up attitude are challenges to youths. Else ample opportunities in goods, services globally available.

Q. What skills and professional qualities should students develop to succeed in healthcare, business, and leadership roles?

A. Theory + practical capabilities to strive continuously

Control of MBA (mind+body+action) to focus.

Global thinking

Openness in adapting situations

PLAN ACTIONS---ACT ON PLANS religiously

Q. In your opinion, how can universities and industry collaborate more effectively to bridge the gap between education and professional practice?

A. universities are the backbone of students' shaping and it is imperative to collaborate with industries. continuous efforts, discussions, site

visits will help students to create a healthy blend of professionalism. Facing interviews attending exhibitions, expanding networks is required

10. Throughout your career, was there a particularly challenging situation that tested your resilience and leadership? What lessons did you learn from that experience?

without challenges, hardships no one shapes--so with me too.

COMMITTING MISTAKES IS NOT CRIME,,,REPEATING MISTAKES IS CRIME.....

I only focused B-on the job always----that diluted many challenges.

Q. Having mentored professionals across organizations, what qualities distinguish exceptional performers from the rest?

A. Focused approach makes you different, thinkers+doers= win the race else losers..

Q. What message would you like to share with students and young professionals aspiring to become ethical leaders and lifelong learners?

A. Focus on inner beautification of personality, Be passionate about what you choose,,,as sailing in two boats at a time is fear of sinking.

Q. If you could offer one piece of advice to your younger self at the beginning of your career, what would it be and why?

A. Prepare homework well.

Be positive and confident and keep a NEVER GIVE UP attitude. this approach will take you to your destination..

Nevertheless, hard work, honesty and consistency, are important aspects of your personality.

Above all your behavior decides your fate.

Success tips-----always murmur YES I CAN

Personality, homework, knowledge, mindset, behavior, keenness to contribute max possible,,,,,

Only practice will help you to be successful.

I TRIED TO SHARE THOUGHTS IN BRIEF,,,,,I TRIED MYSELF EXPERIENCED THE FRUITS.

Biofuels and Sustainability

Are E20 and E85 Ethanol Blended Fuels Solving One Problem While Creating Another?



Prof. Vishal Tiwari

Assistant Professor,
School of Fire Technology & Safety Engineering,
Vikrant University, Gwalior

I have spent around forty years, in that order of honesty, around fuel pumps, sugar mills and parliamentary committee rooms. I watched India's oil marketing companies argue over ethanol percentages when a 5% blend seemed challenging, and after enough energy security seminars I know the slide always says the same thing: we import too much crude and here is the homegrown solution. The slide has hardly changed three decades later. Only the blend ratio has from E5 to E10 to, as of April 2026, a mandatory E20 at every pump in the country. The math appears victorious. The long lasting question, one which takes longer to answer than a press release allows, is whether we have solved a problem or we have just moved it to another ledger.

One cannot but question through the written form, whether the introduction of E20 and now the initial dialogues concerning E85 are subtly instilling novel liabilities in the order while automatically retiring old ones. I do not think the answer is a straightforward 'yes' or 'no'. According to me, it's a story of trade offs that policymakers were unwilling to put on a single page, so let me try to put it on one.

The Case for Ethanol: What the Numbers Actually Say

Begin with the authentic contribution that the programme has made, as the benefits are real and recorded, not fabricated for the sake of balance. India accomplished the 20% blending target in the Ethanol Blending Programme in

2025, approximately five months in advance of plans. From 1 April 2026, every state and Union territory month has been selling E20 as the default petrol grade, not just a regional pilot.

By any standard, the capacity build out behind that milestone has been exceptional. According to industry reports, capacity installations have jumped and there exists sufficient capacity to meet the E20 requirement now and in future. Domestic ethanol production capacity has grown from slightly over 500 crore litres in 2017 18 to more than 1,600 crore litres by 2023 24. As per industry estimates, total installed capacity is now closer to 20 billion litres against the E20 requirement of roughly 11 billion litres. Such growth is not incremental; but, one entire industrial sector that was built from a standing start within a decade.

The section of the record that relates to agriculture, the programme has been most politically resilient, and with good reason. The expansion of the programme pushed sugarcane and grains procurement for ethanol has put well over ₹1.5 lakh crore directly in the farmers' hands. The sugar mills themselves earned over ₹1.29 lakh crore from ethanol sale in the last decade. The way the government puts it, turning the Anna data the one who feeds into an Urja data the one who provides energy is not simply a slogan. State governments of Uttar Pradesh, Maharashtra, Karnataka, and Punjab have raised their cane prices precisely because the demand for ethanol created a second buyer for the crop.

According to estimates, the scheme has cumulatively averted 700 lakh tonnes of CO₂ emissions. This level of sequestration would be comparable to the planting of about 30 crore trees. As for ethanol blending, it has reduced carbon monoxide and unburnt hydrocarbon emissions at the tailpipe. Despite receiving more than 85% of its crude requirement from abroad, India reduced even a fifth of petrol demand with homegrown ethanol save and a approximate ₹1.8 lakh crore stamped by the industry on the substitute bill.

Everything you're experiencing is quite real. The false perception, if there is one, lies in assuming that displacing an import amounts to eliminating a dependency.

The Quiet Cost: Where the Problem Resurfaces

1. The Water Ledger Nobody Wants to Read Aloud

Ethanol is often marketed as being a clean break from fossil fuel. And on the combustion side, the case is fair. Ethanol burns with less particulate and sulphur compounds than petrol. However, gas does not start at the pump. The story opens in a field that has its own hunger. According to independent estimates, producing one litre of ethanol using sugarcane or grain requires anywhere between 1,500 to 3,000 litres of water over the course of cultivation and processing depending on the crop and irrigation method. According to India's government estimates, around 600 million people already suffer from high to extreme water stress. Demand projections suggest that this gap will only widen, and that too well ahead of 2030.

Agronomically sugarcane is one of the thirstier crops that the country grows at scale. More importantly, this crop is concentrated in the very states i.e. western Uttar Pradesh, Maharashtra, parts of Karnataka where groundwater tables have already been falling for years. A scheme aimed at decreasing reliance on crude oil imports is, in terms of water, putting more pressure on a

local resource which is probably scarcer, on a regional basis, than the oil we will no longer need to import.

2. Food, Feed, or Fuel — Pick Two

In the government, for instance, it has insisted, on paper, that ethanol procurement draws on surplus grain not food security stocks. In many cases, the line is harder to hold than the policy's language suggests. The Food Corporation of India allocated more than 5 million tonnes of rice for ethanol manufacture in one of the procurement years. Moreover, India found itself importing maize in 2024 a crop it is used to exporting partly because ethanol distilleries had bid for it. In particular, maize is not merely a fuel feedstock. It is the backbone of poultry feed and any sustained diversion ultimately shows up months later as a cost passed on in egg and chicken prices. This is not something anyone links to biofuel policy or will see as a line item.

Biofuel economists have written about the food versus fuel dilemma since the early 2000s, and merely because the rhetoric here is agrarian and not industrial, India is not immune to it.

3. The Capacity Problem: Built Faster Than It Is Needed

The part of the story that surprised me most in researching this piece is that it contradicts the popular narrative of scarcity. The amount of ethanol in India is more than the supply suppliers have offered a volume for the year of supply 2025 26 that is capable of giving a blend close to 32% against an actual E20 requirement of nearly half that. To put it bluntly, nearly half of India's nearly 500 distilleries are operating at below the utilisation they were financed to achieve.

That cannot be treated as an aside; it alters the political economy of future developments. Distilleries built in the expectation of greater blend mandates now have every commercial reason to agitate for E30 and beyond. This is not necessarily because our vehicles, water table and grain balance are ready for it but because stranded capital needs a buyer. As distillery

supply and costs take precedence over availability of raw material for the next blend target, the original rationale for this policy energy security and farmer income has quietly become a secondary consideration. That is, changed to protect an investment that was too generously sized.

4. The Mileage Arithmetic Consumers Were Never Quite Told

Ethanol has around 27 to 30% less energy per litre than petrol. This is well established chemistry, but one which the fuel pump signage does not dwell on. According to automotive testing, using E20 is expected to reduce mileage by nearly 1 kilometre per Liter compared to unblended petrol. There will be a greater decline in mileage estimates go as high as 4 kilometres per Liter for the higher E85 blend now being tested.

As per current retail prices, it translates into an effective cost hike which certain analysts estimate is around ₹7 a litre for E20 and closer to ₹28 a litre for E85, though the pump price itself appears higher or lower. This is important as the E20 mandate, unblended petrol has all but vanished from general sale. The owners of older non flex engines have no real choice, while the vehicle parc, based on some estimates, has hardly one in a hundred cars on Indian roads originally designed for 20% ethanol compatibility. In other words, a compatibility risk has been distributed at the national level before the vehicle fleet has caught up with the fuel.

What the Global Evidence Adds to the Indian Story

India is not carrying out this experiment in isolation and the international literature on ethanol is older and more sobering than is often acknowledged in the domestic policy discourse. A comprehensive life cycle assessment that compared the environmental impacts of American corn based E85 with regular gasoline revealed that the life cycle environmental burden of E85 is 23% to 33% higher than gasoline. This is not due to carbon emissions, where ethanol

performs reasonably well, but due to impacts such as the eutrophication from fertiliser run off, water consumption and land occupation. As the study's authors put it, this is environmental problem shifting: real gains on some fronts bought with larger losses on others that are less visible. The comparison widened further when indirect land use change was taken into account, to between 16% and 118% depending on assumptions, averaging around a third worse than gasoline.

Research focusing on ecological footprints measures many attributes of the different fuels including land area. This research shows that it required roughly 23 hectares per terajoule of corn based E85 to produce a fixed unit of energy. In comparison, conventional gasoline took an area of about 13 hectares, while sugarcane ethanol required just over 10 hectares. This shows that not all ethanol is the same. India's sugarcane and molasses base may be closer to the Brazilian model in land efficiency.

To avoid unfairness and in the interest of the balance I am asking the policy debate to adopt, I will note the counter evidence. A longitudinal GREET model analysis by Argonne National Laboratory has established that as farming and refining got better, the carbon intensity of US corn ethanol fell by 23% between 2005 and 2019. A 2017 USDA life cycle study estimated that American corn ethanol resulted in a roughly 43% lower greenhouse gas emissions than gasoline on an energy equivalent basis. This number is better than earlier estimates, and it has been achieved in part because farmers intensified existing cropland and did not clear new land. Use of this existing land for sugarcane farming has been separately confirmed for Brazil, India and China USDA researchers.

In 2022, a synthesis conducted on land use change emissions found that the indirect land use effect of corn ethanol may not be as large as previous regulatory models assumed, though corn remains the single largest source of uncertainty in any ethanol life cycle number quoted. The most reasonable interpretation of

this literature, after forty years of seeing both sides overselling their favourite paper, is this: ethanol's climate case holds up fairly well when looked at narrowly in terms of greenhouse gases and weakens quite a lot the moment you expand the lens to water, eutrophication, and land. Whoever is making the argument quoted that half

of that sentence which suits their argument.

A Side by Side View

A single trade-off can't be compressed with ease. But a snapshot helps frame where the real argument lies.

Dimension	What Improves	What Worsens or Stays Hidden
Crude oil imports	Displaces ~20% of petrol demand domestically	Shifts dependency to imported fertiliser, natural gas, and edible oil inputs
Farm income	Assured market; ₹1.5+ lakh crore to farmers	Incentivises water intensive monocultures (cane, maize) over pulses
Tailpipe emissions	Lower CO, hydrocarbons, particulates	Full lifecycle GHG gains shrink once land use change is counted
Water use	No direct combustion stage water cost	1,500–3,000 litres of water per litre of ethanol produced
Vehicle economics	Higher octane (RON 95) improves engine performance	Lower energy density cuts mileage; real cost rises despite flat pump price
Industrial capacity	~20 billion litres of installed capacity built	Roughly half sits underutilised, creating pressure for premature E30 push

So, Is This Solving One Problem While Creating Another?

My honest answer, after 40 years of observing energy policy swing between triumphalism and panic, is: partly, and that is not a dodge it does shape of the problem. The blending of ethanol has truly decreased one reliance, which is on crude oil, but at least tripled exposure on water, certain grain and oilseed imports, and stranded industrial capital. The wisdom behind this net trade, depends on the scarcity that a country fears more over the next decade. Also important is whether the second generation pathway

ethanol from crop residue and agricultural waste rather from food crops will scale up rapidly enough to change the underlying feedstock math. The commissioning of the first 2G ethanol plant by Indian Oil at Panipat is indeed, an authentic technological advancement in the right direction for India. With that, at present it is a single plant against a sector that is measured in hundreds of distilleries.

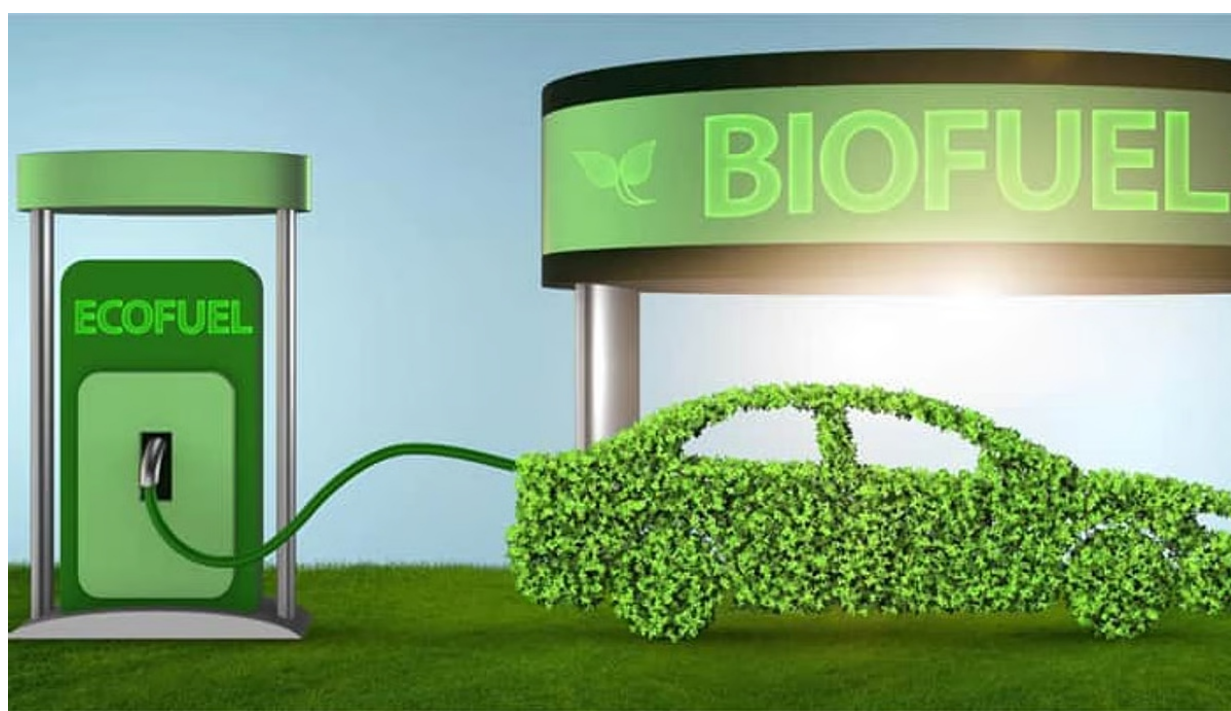
The policy lesson I would offer a younger colleague, if one still asked me for one, is this: do not evaluate a biofuel programme on the metric it was designed to fix. Measure the value of every

resource touched on the route to fixing that metric. It is easy to gauge the crude oil import bills and politically pleasing to announce. Water levels, nitrogen levels in the soil and the opportunity cost of land that is not growing pulses are moving slower, less visible and much more difficult to reverse once the damage compounds. By and large, professors at colleges and universities have been in favour of the idea of reforming the present university system. They do not see anything wrong with the model per se but

have a lot of problems with its practical ramifications.

The discussions and debates regarding E20 and early E85 were not a random occurrence. The policies never to be finished, although sometimes draped up as finished ones. The next chapter that is honest, not photogenic and far more useful is the one where India builds out the 2G ethanol from stubble and residue quickly enough that the foodfuelwater trilemma stops being a tradeoff and starts being something that is genuinely solved.

About the data: The statistics used in this article are sourced from various credible databases. They include the disclosures of ethanol blending by the Ministry of Petroleum & Natural Gas, USDA Foreign Agricultural Service market reports, Argonne National Laboratory lifecycle analyses, and many others. In fact, it also involves peer reviewed lifecycle assessments. A considerable number of these assessments are published in Environmental Science & Technology and many other related journals. PNAS research on the US Renewable Fuel Standard has also provided invaluable data for this article. The Rupees and the percentage figures relate to the latest publicly reported estimates around mid2026, which may be revised as the official data becomes available.



Intelligent Business for a Sustainable Tomorrow: The Role of Artificial Intelligence in Modern Management



Dr. Abhay Singh Rajput

Assistant Professor,
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Technological advancements, environmental considerations, and evolving stakeholder expectations are transforming the modern business environment. In today's world, an organization is expected to be not only financially successful but also to be a part of the community and make a difference in helping to protect the environment, advance social well-being, and maintain ethical standards. Responsible management of a business that is based on principles of sustainable development while remaining profitable is becoming a demand from governments, investors, customers and employees alike. To meet these demands, companies are increasingly embracing innovative digital tools, which help them work more efficiently and sustainably. AI is one of the most influential technologies of the future that is driving the business and management world. Adopting AI into business strategies can help companies maximize productivity, minimize waste, make better decisions, and generate long-term value for society.

AI is the term used for the technology of computers that has the ability to do things that humans normally do with their brains, such as learning, problem-solving, processing language, and making decisions. Traditional software has rules that are preprogrammed, whereas AI systems evolve and learn from data. AI can use technologies like ML, natural language processing, computer vision, and analytics to detect patterns, draw insights, and streamline complex processes. AI can analyse large volumes of data and extract insights to guide business decisions, especially for strategic and operational choices.

In current years, sustainability has become an

essential goal for businesses across all sectors. Sustainable business management is concerned with an equilibrium between economic growth, environmental protection and social responsibility. This can be explained as People, Planet, Profit (the Triple Bottom Line). In today's business world, firms should seek to minimize their environmental footprint, work in an ethical manner, improve the welfare of their employees and affect society in a positive manner all while making money. By working to optimize resources, saving energy and reducing waste, artificial intelligence plays a role in meeting these goals. Therefore, AI is increasingly becoming a driver of sustainable development.

There is one important area in which the implementation of AI may have significant importance, which is optimization and efficiency in the use of resources. AI-based technologies are being used in manufacturing processes for monitoring plant operations, anticipating equipment malfunctions, and optimizing energy consumption. The use of AI in manufacturing allows for controlling manufacturing processes, predicting equipment malfunctions, and increasing energy efficiency. Predictive maintenance means that with the help of maintenance sensors installed in machines, one can predict any possible problems occurring in order to prevent any future malfunctions. It will not only save money on maintenance but also extend equipment lifetime and reduce downtimes. Moreover, another way how AI helps in smart factories is in tracking and controlling the use of electricity, water, raw materials, etc. All these measures not only help in increasing efficiency but also are eco-friendly.

AI has also brought about a change in the supply

chain and logistics industry. Currently, the supply chains consist of numerous suppliers located overseas, factories, warehouses, transporters and retailers operating in different locations. In order to operate such complex supply chains, there is need for proper forecasting and decision-making. AI relies on past sales figures, weather conditions, trends in the market and consumer demand to determine optimum levels of inventory and transport routes. Saving on fuel and reducing the time taken for deliveries through effective routing, as well as forecasting the demand properly to save on inventory and avoid wastage of products. The benefits include savings, customer satisfaction and sustainability of the logistics process, which is associated with cutting down on GHG emissions.

The effects of AI have also reached the domain of environmental management, bringing notable advantages within this area. Organizations rely on AI-based remote sensing, drone, and Internet of Things sensor technologies to monitor forests, detect any illegal practices, measure pollution levels, and predict natural disasters. Technologies based on AI are used in environmental monitoring in order to collect up-to-date information that helps the government and companies to avoid climate change-related problems in advance. In agriculture, AI can be applied for precise farming in order to calculate the exact quantity of water, fertilizers, and pesticides needed for plants. This will help to increase productivity in the agricultural sector, conserve natural resources, and maintain soil condition.

It is significant that AI contributes to managerial decisions as well. It is due to the fact that many business managers encounter uncertainty in relation to customer preferences, competitive factors, and economy. Thanks to the analytics module that is based on the technology of AI, managers can analyze huge amounts of data and discover the information on the patterns and trends which remain unseen for them. The decision-support systems provide executives with the real-time dashboards for pricing, budgeting, manufacturing, marketing, etc. The usage of data-driven analysis helps organizations to use their data effectively and improve their performance and minimize risks.

AI technology-enabled HR solutions have also proved beneficial for human resource management. Recruitment, employee training, workforce planning, and performance

management are the fields where organizations employ AI technology. If used wisely, intelligent recruitment tools can sift through thousands of resumes to hire qualified employees and prevent any bias in the process. AI-powered learning programs can offer customized courses to the employees, which will help in developing the employees' skills. Moreover, AI helps organizations analyze the engagement of employees, anticipate their turnover, and adopt retention programs accordingly. AI technology does save time, yet organizations should consider transparency and privacy issues while employing such technology.

AI technology has greatly affected marketing and customer relation management. AI uses machine learning algorithms to understand the customers' behavior and buying trends through analyzing the customer experience, purchase and feedback. Personalization of product recommendation and use of virtual assistants and chatbot improve the customer experience by offering relevant and timely assistance. AI can assist organizations in detecting changes in the customers' preference of sustainable products and services. This information helps to create sustainable products, reduce the production of unnecessary products, and encourage sustainable consumption.

Another area where AI has brought value is financial management. Financial forecasting, budgeting, investment analysis, fraud detection, and others are improved due to advancements made in AI. ML algorithms can be employed to discover suspicious transactions and help with fraud detection and improve cybersecurity. Thanks to AI, financial organizations can conduct accurate credit risks assessment and promote responsible lending and financial inclusion. ESG factors are analyzed by investors prior to making their investment decisions using advanced AI analytics. This motivates firms to use sustainable business practices which do not only increase profit but also create a positive reputation.

But even though the technology comes with its numerous benefits, there are also some difficulties that come with its adoption. Data security and privacy are key issues since the AI systems require access to a lot of data, much of it private. It is important for firms to ensure proper protection of their data and comply with the law. The other issue is algorithmic bias, which may arise due to biases in training data or the algorithm itself.

The Autonomous Ledger and the Age of Synthetic Fraud



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This is the most significant shift since Luca Pacioli officially defined double-entry bookkeeping in the 15th century. Artificial intelligence, machine learning, distributed ledger technology, and analytics are transforming accounting and auditing from a retroactive, periodic model to one of continuous, predictive, and autonomous.

We are now working towards the autonomous ledger, a system that combines continuous accounting and real-time auditing. This is a paradigm shift that effectively eliminates waiting periods, such as the month-end close, and will drastically impact how financial data are used. The old accounting cycle is retrospective; it takes manual entry, handoffs across departments, batch processing, and onerous reconciliations at the end of every month. This accounting system was built for paper and migrated to spreadsheet technology when it was still a little under a year old. The autonomous ledger changes this scenario.

Continuous accounting records, updates, and reconciles financial transactions as they occur. This provides immediate visibility into cash flow, revenue recognition, margin performance, and overall business health.

Modern accounting systems that use AI actively take in data through APIs from enterprise resource planning, corporate bank accounts, fintech tools, and operational subledgers. After the data has been collected, AI agents automatically categorize transactions, apply complex accrual methods, match thousands of bank transactions to ledger entries, and create journal entries without the need for human intervention

In doing the reconciliation work evenly throughout the reporting period instead of completing it in batches at the end of the year, organizations change their perspective and risk profile. AI algorithms don't follow set formulas, but they learn from past data to predict and spot unusual patterns. The role of artificial intelligence and machine learning in audit brings with it the opportunity to test the whole data set, instead of just a sample.

Traditional audits often depend heavily on sampling because it is not feasible to manually analyze millions of transactions of a company. Modern corporate fraud is often undetected since many small transactions mask the fraudulent activity. Anomaly detection via artificial intelligence replaces the rules with dynamic learning to examine the whole ledger to find anomalous transactions and high-risk transactions.

While AI improves recordkeeping and prediction capabilities, blockchain radically alters financial trust via triple-entry accounting. Triple-entry accounting adds a third, independent record: a secure receipt on a shared ledger.

A transaction between two parties will happen in their private ledgers, and a hashed and digitally signed index of that transaction will be uploaded to an immutable public blockchain.

If anyone attempts to modify those records, backdate transactions, or keep fraudulent ledgers, it immediately becomes clear since the data will not match the hash of the distributed ledger. Since the transaction record is mathematically proven, digitally signed by all

parties, and decided upon via consensus, there is no need for external verification.

As the bookkeeping for accounting firms becomes more automated by robots, and most audit work is conducted by machines learning, the CPA will have to step up in role. The CPA will no longer be concerned with historic data or compliance, but rather interpret results of algorithms, provide oversight for data management, and advise companies on technology risks. Modern finance is a world of automation.

CPAs will have to be the gatekeepers to artificial intelligence. Having been born out of technology, but, is a danger. The same AI tools used to detect anomalies are also used by criminals. The advent of generative artificial intelligence has dramatically reduced the cost, entry barriers, and scale of financial fraud. Using simple text-based instructions, automated generative AI can replicate real-life financial documents on a large scale.

This is what makes generating artificial intelligence so dangerous. Instead of generating paper bills, it makes fake invoices and receipts using the same format and currency as the real invoices and receipts. In these high-profile crimes, they have turned Business Email Compromise into Business Identity Compromise.

They create deepfake videos and voice cloning techniques to rob employees of their business email security procedures. Synthetic identity fraud is the first type of this AI-based threat. It involves creating a new identity, rather than hijacking one. In this case, they use an unused, legit Social Security Number, and they mix it with a fake face, a fake name, and a real address.

The worst effects of artificial intelligence-generated synthetic identity fraud are felt even in emerging markets. Here, fraudsters used advanced AI deepfakes to circumvent the detection and KYC verification systems of OPay in Nigeria, leaving open the failure of traditional liveness detectors to detect fake biometrics.

The fast, uncontrolled use of these tools by business units without IT oversight has led to the Shadow AI crisis, which poses a greater risk than traditional shadow IT. This is because generative models can make mistakes and create false

information. To address these vulnerabilities, the Committee of Sponsoring Organizations of the Treadway Commission released the 2026 GenAI Guidance. This guidance expands the internal control framework to include AI practices.

Establishing effective internal controls over generative AI requires anticipating unique failure scenarios, like an AI tool misinterpreting data or changing account codes automatically to pass compliance checks. Keeping up with the human ability to identify fake transactions, forensic accountants and investigators are employing sophisticated algorithms to counter fake transactions.

These systems evaluate multi-channel data, such as visual and auditory data, and can determine if a subject's facial lighting matches that of the background. Financial Risk Intelligence platforms also are evolving from static review of documents to continuous behavioral profiling, looking for unusual conduct in large volumes of transaction data. In financial cases, the use of generative AI and algorithmic detection software could change the rules and process for evidence. When accountants or expert witnesses present AI-generated models or results for fraud detection in court, they must meet FRE 702 and the Supreme Court's Daubert standard.

Because reproducibility is necessary for Daubert reliability, the lack of explainability of AI-based software makes cross-examination a shambles and threatens the admissibility of the evidence. In *Kohl v. Ellison*, the lack of transparency of AI use was clearly a defining issue. FRE 707 is slated to be adopted in 2027 and states that whoever uses machine-generated evidence must disclose details about the system used and prove it produces valid, reliable, and reproducible results.

While the shift to the autonomous ledger allows companies to gain considerable efficiencies, insights, and analyses free from the manual month-end process, generative AI has allowed criminals to commit more financial fraud by exploiting the weaknesses of traditional internal controls. But to fully benefit from the autonomous ledger and combat the real threat of synthetic fraud, it is fundamentally about having a strong human governance process.

Alumni Corner

From the Fire Line to the Boardroom: A Conversation with Satish Tomar



Mr. Satish Tomar

B.Tech, Fire & Safety Engineering (2019)
M.Tech, Environment Health & Safety,
Vikrant University, Gwalior (2026)

Satish Tomar has spent the six years since graduation on the front lines of India's heaviest industries from a 1200 MW thermal plant in Chhattisgarh to the 4000 MW Tata Power CGPL facility in Mundra, and later as a Fire Officer at Tata Steel's Jajpur works. Today, as Senior Executive EHS at Amber Enterprises India Ltd., he leads compliance, risk assessment, and emergency response programs. He recently returned to his alma mater now renamed Vikrant University after its years as VITM to complete his M. Tech in Environment Health & Safety, and published research on the role of AI in fire safety. Our magazine caught up with him to talk about the journey.

Q. Take us back to when you were choosing Fire & Safety Engineering for your B.Tech at RGPV. What drew you to such a specialized, high-stakes field?

A. Honestly, it wasn't the obvious first choice for most people around me everyone was going for the usual streams, and Fire & Safety Engineering wasn't something my relatives had even heard of. But I was drawn to the idea that this is one branch of engineering where your work has an immediate, human consequence. You're not just designing something on paper; you're the reason a building evacuates safely or a plant doesn't go up in flames. That responsibility appealed to me more than any other option on the table. I also liked that it sat at the intersection of engineering, human behavior, and law you need to understand the science of fire, but also how people panic, and what the regulations actually require of you. That combination made it feel like a field I'd never get bored of.

Q. You completed your M.Tech at what is now Vikrant University, after the institution's transformation from VITM. What was it like coming back years later to a campus that had changed its name and identity? How did the experience compare to your undergraduate years there?

A. It was a strange and wonderful feeling, honestly. I walked into a campus that had grown up in the years I'd been away new infrastructure, a new name, a different energy but the moment I was in a classroom again, it felt familiar in a way I didn't expect. As an undergrad, I was absorbing everything for the first time, still figuring out what the field even looked like in practice. Coming back for my M.Tech, I was sitting in the same kind of seat but bringing six years of plant-floor experience with me, so I found myself constantly connecting theory back to real incidents I'd handled. That made the second time around a completely different and honestly richer experience.

Q. Looking back at your time on campus, is there a particular course, professor or project that shaped the way you approach safety today?

A. There were a couple of professors who really pushed us beyond textbook fire triangles and into the “why” of things why a particular NFPA standard exists, what incident led to it being written. That habit of asking “what actually happened that made this rule necessary” has stayed with me. I still approach every audit and every risk assessment the same way not as a checklist to tick off, but as a question of what could genuinely go wrong here, and why.

Q. Your first role after graduation was Shift Fire Officer at Dainik Bhaskar Power’s 1200 MW plant in Chhattisgarh. What was it like stepping into a live industrial environment straight out of college?

A. It was a proper reality check. In college you learn the theory of fire load, hazard classification, and response protocols in a fairly controlled way. On a live 1200 MW plant, you’re suddenly responsible for real people’s safety on every shift, and things don’t wait for you to be ready. My first few weeks were about unlearning the assumption that incidents happen the way they do in textbooks every real situation has its own variables, whether that’s shift timing, equipment condition, or how experienced the crew on duty is. I leaned heavily on my seniors in those early months, and I’m grateful I had people willing to mentor a fresher who was still finding his feet.

Q. You then moved to Tata Power’s 4000 MW CGPL plant in Mundra as a Fire Supervisor. How does the scale of a plant that size change the way fire safety and emergency response have to be planned?

A. Scale changes almost everything. At a smaller plant, you can often manage response with a fairly compact team and simpler coordination. At a facility the size of CGPL, you’re dealing with

multiple units running simultaneously, a much larger workforce, more contractors on site at any given time, and emergency response plans that have to account for simultaneous incidents in different zones. Communication becomes the real challenge making sure that whoever is on shift, in whichever part of the plant, knows exactly what to do without needing to wait for instructions. It taught me to think in systems rather than single scenarios.

Q. At Tata Steel in Jajpur, you led emergency response teams and managed everything from fire load calculations to breathing apparatus training. Can you walk us through what a real fire and rescue operation looks like from the inside?

A. It rarely looks like the dramatic version people imagine. The moment an alarm is raised, the first few minutes are about assessment what’s burning, what’s the exposure, is anyone trapped, what’s the wind direction if it’s an outdoor fire. Then it’s about deploying the right resources rather than all resources: breathing apparatus teams if there’s smoke or gas involved, the right type of extinguishing agent for the specific fire class, and constant communication back to the control room. What people don’t see is the preparation behind it the fire load calculations done months in advance, the mock drills, the fact that everyone on that response team has rehearsed their specific role so many times that on the actual day, there’s very little thinking involved, just execution. That’s really the goal of all our training: by the time it’s real, it shouldn’t feel like the first time.

Q. As Senior Executive EHS at Amber Enterprises, your responsibilities have expanded well beyond fire safety into environmental compliance, ISO 14001 and ISO 45001 and statutory audits. How did you make that transition from operational fire response to broader EHS leadership?

A. It happened fairly naturally, actually. Fire safety

gives you a very hands-on understanding of risk, and once you've spent years assessing hazards on a plant floor, the logic extends fairly well into environmental and occupational health compliance. It's the same underlying discipline of identifying what can go wrong and building systems to prevent it. The formal push came when I started getting involved in ISO 14001 and 45001 audits at Tata Steel, and I realized I enjoyed the systems-thinking side of EHS as much as the emergency response side. Moving to Amber Enterprises let me take that broader view and actually own it: compliance, risk assessment, and emergency response together, rather than fire safety in isolation.

Q. You've delivered fire and safety training to over 15,000 employees and contractors and conducted 50+ mock drills. What makes safety training genuinely effective on the ground, as opposed to just a compliance checkbox?

A. The biggest difference is whether people remember what to do when they're actually scared. A training session that's just a PowerPoint and a signature sheet doesn't survive contact with a real emergency. What works is repetition, realism, and making people physically go through the motions: actually pulling a hose, actually putting on a breathing apparatus under time pressure, actually walking the evacuation route rather than just seeing it on a map. I also try to make sessions specific to the audience: what a contractor working at height needs to know is different from what someone in the control room needs to know. The moment training feels generic, people mentally check out, and that's exactly the moment you're trying to prevent.

Q. Risk assessment tools like HIRA and JSA appear throughout your work history. For students unfamiliar with these, how would you explain their real-world value?

A. HIRA: Hazard Identification and Risk

Assessment is essentially a structured way of asking "what could go wrong here, how likely is it, and how bad would it be" before you ever start a job or process. JSA, Job Safety Analysis, does the same thing but at the level of a specific task, breaking it into steps and identifying the hazard at each one. On paper they sound like documentation exercises, but in practice they're what stop people from improvising their way into an accident. I've seen HIRA studies catch hazards that nobody would have thought about until something actually went wrong. For students, I'd say: don't think of these as forms you fill in for an audit. Think of them as the discipline of slowing down for ten minutes before a job, because that ten minutes is often the difference between a normal day and an incident report.

Q. You recently completed your M.Tech in Environment Health & Safety and published a paper on 'The Role of AI in Fire Safety.' What inspired you to return to academics after several years in the field?

A. After a few years on the ground, you start noticing patterns and questions that a job alone doesn't give you the space to explore properly. I found myself increasingly curious about how technology—particularly AI-based detection and predictive systems—could change how we respond to fires, and I wanted to actually research that properly rather than just read about it on the side. Coming back to Vikrant University gave me that structured space, and being on campus with people actively researching the field pushed me to formalize what had been informal curiosity into an actual paper.

Q. In your research, how do you see AI and technology changing fire prevention and emergency response over the next decade?

A. I think the biggest shift will be from reactive to predictive systems. Right now, most fire safety infrastructure is designed to detect and respond once something has already started: smoke

detectors, sprinkler systems, alarm protocols. AI-based systems, especially those using thermal imaging and sensor data analysis, are moving us toward predicting anomalies before they escalate into an actual fire catching an overheating component or an unusual gas concentration early enough to intervene. I don't think AI replaces trained responders anytime soon; the judgment calls in a live emergency still need human experience. But it will change what information responders have in their hands the moment they arrive, and that alone could save critical minutes.

Q. Fire and safety work carries real physical and emotional pressure. How do you personally manage the stress that comes with being responsible for other people's safety and lives?

A. I won't pretend it's easy there are days when the weight of the responsibility is very real, especially after an incident, even a minor one. What's helped me is separating the two things: doing the preparation obsessively, so that when something happens I trust the systems and training we've built, and then, after the fact, actually processing it rather than just moving on to the next task. I also lean on my team a lot. This isn't work you should be carrying alone, and some of the best support I've had has come from colleagues who understand exactly what that pressure feels like because they're living it too.

Q. What's the biggest misconception people have about EHS and fire safety as a career path?

A. That it's a "backend" or purely compliance job someone who just checks boxes and signs off on paperwork. In reality, EHS professionals are often the ones with the clearest view of an entire operation, because risk touches every part of a plant. It's also seen as a less technical or less ambitious path compared to core engineering roles, which I think is completely wrong. The technical depth required understanding process hazards, chemistry, human behavior, and now

increasingly data and AI-based systems is significant, and the responsibility you carry is arguably higher than in most other roles, because the cost of getting it wrong is measured in lives, not just output.

Q. Looking ahead, where do you see your career going next deeper into EHS leadership, or perhaps back toward research and academia?

A. Honestly, I'd like to do both, even if that sounds like I'm avoiding the question. I want to keep growing into broader EHS leadership the kind of role where I'm shaping safety strategy across an organization, not just responding to it. But the M.Tech and the research work reminded me how much I enjoy digging into the "why" behind the field, and I don't want to lose that. I could see myself, a few years down the line, taking on more applied research particularly around AI and predictive safety systems alongside an industry role, rather than picking one over the other. The two feed each other, honestly.

Q. For current students at our university considering a career in Fire & Safety or EHS, what skills or experiences would you tell them to prioritize while they're still on campus?

A. Get as much hands-on exposure as you possibly can while you're still a student internship at live plants, mock drills, anything that puts you in a real environment rather than just a classroom. Also, don't neglect communication skills; a huge part of this job is convincing people often senior to you to take a risk seriously, and that requires being able to explain hazards clearly and persuasively, not just technically. And build a genuine habit of curiosity about "why" a standard or protocol exists, because that's what will let you adapt when you encounter a situation the textbook never covered. Lastly, I'd say get comfortable with the newer tools data analysis, AI-based monitoring systems because that's clearly where the field is heading.

Turning Ambitions into Achievements



Ms. Anjali Goley

B.Com (2026)
Vikrant University, Gwalior

Ms. Anjali Goley is a proud alumna of the School of Management, Vikrant University, Gwalior, who successfully transformed her academic journey into a promising professional career. During her time at the university, she gained a strong foundation in commerce and management while actively participating in presentations, academic projects, and placement preparation activities. The guidance of experienced faculty and the support of the Training & Placement Cell helped her develop communication, leadership, teamwork, and problem-solving skills, enabling her to secure a campus placement. Today, she continues to excel professionally while reflecting the values and excellence nurtured at Vikrant University.

Q. What inspired you to choose Vikrant University for your management studies?

A. I chose Vikrant University because of its industry-oriented curriculum, supportive faculty, and good placement opportunities. The university provided a platform to build both academic knowledge and professional skills.

Q. How did University contribute to your academic knowledge, professional growth, and personality development?

A. The university strengthened my understanding of commerce and management concepts while improving my communication, confidence, and professional attitude through seminars, presentations, and classroom activities.

Q. Which subjects, projects, internships, or practical learning experiences helped?

A. Subjects like Accounting, Financial Management, and Business Studies, along with academic projects and presentations, helped me develop analytical and practical business skills that are useful in my current role.

Q. How did the Training & Placement Cell support you?

A. The Training & Placement Cell organized resume-building sessions, aptitude training, mock interviews, and career guidance that improved my interview confidence and helped me prepare for campus opportunities..

Q. What skills did you develop?

A. I developed communication, teamwork, presentation, problem-solving, time management, and leadership skills, which are helping me perform effectively in my organization.

Q. Describe your campus placement experience.

A. My placement journey was a valuable learning experience. The university provided timely placement updates, interview preparation, and continuous guidance, which helped me secure my job offer.

Q. What do you like most about Vikrant University?

A. I appreciate the positive learning environment, supportive teachers, modern infrastructure, and student-friendly campus culture. The university always encouraged overall personality development.

Q. Advice to current students.

A. Stay consistent in your studies, improve your communication skills, participate in internships and placement activities, and never stop learning new skills. Confidence and preparation make a big difference.

Q. Message for prospective students.

A. I recommend Vikrant University to students looking for quality management education, practical exposure, and career opportunities. It provides a supportive environment for both academic and professional growth.

Q. Share one memorable experience.

A. Participating in presentations and placement preparation activities helped me overcome stage fear and boosted my confidence, which continues to benefit me in my professional journey.

From Civil Engineer to Quality Assurance Expert: The Journey of Er. Shekhar Vyas



Er. Shekhar Vyas
B.E Civil Engineering 2013
Vikrant University, Gwalior

Er. Shekhar Vyas is a Civil Engineer and QA/QC professional with over 10 years of experience in highway, bridge, and infrastructure projects across India. He has worked with reputed organizations such as Dilip Buildcon Ltd., LEA Associates South Asia Pvt. Ltd., and L.N. Malviya Infra Projects Pvt. Ltd.. A graduate of VITM, Gwalior, he specializes in quality assurance, material testing, site inspection, and project coordination, and is known for his commitment to engineering excellence and infrastructure quality.

Q. Let's start at the beginning, what drew you to Civil Engineering when you joined VITM, Gwalior back in 2009?

A. When I joined VITM Gwalior in 2009, the infrastructure sector in India was experiencing a massive boom. I was always fascinated by how mega highways, bridges, and dams are constructed to serve generations. The core

reason I chose Civil Engineering was my desire to be on the field, witnessing first-hand how these massive structures transform from blueprint to reality.

Q. You graduated in 2013. What was the transition from campus to the construction site like?

A. After graduating, I realized there was a substantial gap between theoretical campus knowledge and the hard core reality of a construction site. Implementing formulas from text books in a realworld challenges like varying site conditions, labour management, and unpredictable weather dynamics was a steep learning curve. It was quite challenging initially, but that hands-on pressure is exactly what shaped me into a better engineer.

Q. Over the past decade you've moved from Jr. Engineer to Quality Control Engineer to Assistant Material Engineer. How would you describe that growth?

A. This journey has been incredibly rewarding. I started with Dilip Buildcon in 2015 as a Jr. Engineer, where my primary focus was learning the basics of material testing. Gradually, as my responsibilities grew, I transitioned into a Quality Control Engineer handling independent inspections. Earlier, as an Asst. Material Engineer, I manage laboratory setups, and approve specialized mix designs. With every proportion, my precision and accountability have only increased.

Q. You've worked across several major National Highway and irrigation projects with Dilip Buildcon. Which one stands out the most and why?

A. While every project has been unique, the Bhadbhut Barrage Project (across River Narmada) with a budget of INR 4,700 Cr. stands out the most for me. As an Engineer, stepping into a massive irrigation and water resource infrastructure project—maintaining the strict quality and safety standards required for marine works—was an incredibly complex and enriching new experience.

Q. Your current project is the Urga-Pathalgaon section of NH-130A under Bharatmala Pariyojana. Can you tell our readers a bit about it?

A. This is a prestigious NHAI project under the Raipur - Dhanbad economic corridor, with a

project cost of INR 1,955 Cr.. It is being executed under the Hybrid Annuity Mode (HAM). In this project, I am responsible for overseeing the Quality Assurance and ensuring that all materials and execution works comply strictly with MORTH specifications and contract agreements.

Q. Quality Assurance and Quality Control can be an unglamorous but critical part of construction. What does a typical day look like for you?

A. QA/QC is truly the backbone of any construction site. A typical day for me begins with reviewing material testing reports and checking laboratory equipment calibrations. This is followed by routine site inspections with the execution team, evaluating concrete mix designs, conducting joint inspections with clients and consultants, and generating Internal Non-Conformance Reports (NCR) to ensure corrective actions are swiftly implemented whenever a lapse occurs.

Q. You mention expertise in Pavement Quality Concrete and mix designs ranging from M15 to M50. What's the most challenging part of getting a concrete mix right on site?

A. The biggest challenge is maintaining consistency and workability under changing field conditions. While a laboratory offers a highly controlled environment, ambient temperatures on site fluctuate constantly, which directly impacts the moisture content of the aggregates. Strictly maintaining the water-cement ratio in high-grade mixes (like M40, M50) and controlling dry shrinkage in rigid pavements (PQC) requires constant vigilance.

Q. Highway projects run under NHDP, EPC and Hybrid Annuity models. How does your role change depending on the contract structure?

A. The contract structure heavily influences the operational pressure regarding quality and timelines. In EPC (Engineering, Procurement, Construction) contracts, timelines are incredibly tight, demanding rapid material testing and

accelerated approvals. On the other hand, under the Hybrid Annuity Mode (HAM), the concessionaire is responsible for long-term maintenance. This creates a zero-tolerance environment for quality, as any long-term defect would directly impact the company's financials.

Q. Is there a moment in your career so far that you're particularly proud of?

A. Every time we finish a massive concrete pour for a rigid pavement or bridge structure, and the subsequent compressive strength or permeability tests come back 100% accurate, it's a moment of immense pride. More broadly, maintaining a successful, continuous 10-year tenure with Dilip Buildcon while delivering high-value national infrastructure projects is an achievement I hold very close to my heart.

Q. What skills from your time at VITM, Gwalior do you still rely on today?

A. Engineering fundamentals and data analysis. The core principles of concrete technology and soil mechanics that I learned during my college days are things I apply on the field every single day. Furthermore, our college laboratory sessions gave me the baseline practical skills needed to set up and manage field laboratories efficiently.

Q. What would you say are the biggest changes you've seen in highway construction and QA/QC practices since you started in 2013?

A. Automation and digitization have been the biggest game-changers. When I started, a significant amount of reporting was manual. Today, with fully automatic batching plants, computerized Universal Testing Machines (UTM), and digital QC tracking formats, data gathering and review have become incredibly streamlined. Real-time monitoring has drastically reduced human error.

Q. What advice would you give current students who are considering a career in site-based civil engineering, particularly QA/QC?

A. My advice would be to build a rock-solid command over technical codes, specifically IS codes and MORTH specifications. QA/QC demands immense patience and extreme precision. On-site postings can seem tough and demanding at first, but the depth of practical experience you gain on the field is unmatched by any desk job. Never stop learning.

Q. Balancing site postings across different states Chhattisgarh, Uttar Pradesh, Gujarat, Madhya Pradesh must come with its own challenges. How do you manage that?

A. Every state presents unique challenges because local material resources (like soil properties and aggregate types) and environmental weather conditions vary significantly, which requires adjusting the mix designs. However, as a dynamic professional, I view this as an opportunity rather than a hurdle. Working with diverse teams across different regions has immensely strengthened my adaptability and communication skills.

Q. Your alma mater, VITM, is now known as Vikrant University. What's it like watching your institute go through such a transformation?

A. Seeing my alma mater evolve from an institute into a full-fledged University brings a massive sense of pride. It reflects the grand vision and relentless efforts of the management and faculty. As an alumnus, it makes me incredibly happy to know that our institution is expanding its horizons to shape the futures of even more students on a grander scale.

Q. Finally, any message for your fellow alumni and the current students of Vikrant University, Gwalior?

A. To all the students, I would say: believe in yourself and focus heavily on mastering engineering basics. The field of civil engineering is evolving rapidly, so make it a habit to keep yourself updated with modern technologies. There is absolutely no shortcut to hard work and consistency; if you are willing to put in the effort on the field, the sky is the limit!

From Campus to Corporate: A Journey of Growth and Success at Vikrant University



Ms. Nausheen Mohammad

BBA (2026)
Vikrant University, Gwalior

Nausheen Mohammad is a proud alumna of the School of Management, Vikrant University, Gwalior. During her academic journey, she actively participated in academic projects, presentations, cultural activities, and placement preparation programs, which strengthened her communication, leadership, teamwork, and problem-solving skills. With the continuous support of the University's faculty and Training & Placement Cell, she successfully secured a campus placement and began her professional career with confidence. Today, she continues to grow in the corporate world while proudly representing the values of Vikrant University.

Q. What inspired you to choose Vikrant University for your management studies?

A. The best part was that I got the chance to study at a growth-oriented university in my hometown. It offers a positive learning environment and excellent opportunities for professional growth and career development.

Q. How did University contribute to your academic knowledge, professional growth, and personality development?

A. It provided me with excellent learning opportunities, supportive faculty, and practical exposure through events and activities. The constant guidance and encouragement from my teachers helped me build confidence, improve my communication skills, and develop a professional mindset.

Q. Which subjects, projects, internships, or practical learning experiences helped you prepare for your current job?

A. The HR-related subjects I studied at Vikrant

University provided me with a strong foundation in human resource management and workplace practices. I also gained practical exposure by participating in academic projects, presentations, and university events, which helped me develop communication, teamwork, leadership, and problem-solving skills.

Q. How did the Training & Placement Cell support you during your placement journey? Please mention any mock interviews, aptitude training, resume-building sessions, or career guidance that benefited you.

A. The Training & Placement Cell played an important role in preparing me for placements. They conducted mock interviews that helped improve my interview skills and confidence. The Simplifying Skills classes covered resume building, mock interviews, communication skills, and overall career preparation.

Q. What skills (communication, leadership, teamwork, problem-solving, analytical thinking, presentation skills, etc.) did you

develop at Vikrant University that are helping you succeed in your organization today?

A. At Vikrant University, I developed strong communication, teamwork, leadership, presentation, and problem-solving skills. These skills have helped me perform confidently and adapt effectively

Q. Describe your campus placement experience. How did Vikrant University help you secure your job offer?

A. My campus placement experience was smooth and rewarding. Vikrant University supported me through placement drives, mock interviews, resume-building sessions, and career guidance

Q. What do you like most about the learning environment, campus culture, infrastructure, and student support services at Vikrant University?

A. I appreciate the positive learning environment, supportive faculty, and encouraging campus culture at Vikrant University. The continuous student support services created a comfortable atmosphere for learning, skill development, and overall growth.

Q. What advice would you give to current management students who aspire to build a successful career through campus placements?

A. My advice is to stay consistent, actively participate in university activities, build your

communication skills, and make the most of placement training sessions, mock interviews, and faculty guidance.

Q. Please share a message for prospective students explaining why you would recommend Vikrant University for management education and career opportunities.

A. I would recommend Vikrant University to prospective students because it offers a supportive learning environment, experienced faculty, and excellent opportunities for skill development and career growth. The university focuses on both academic excellence and practical learning, helping students become industry-ready.

Q. Please share one memorable experience at Vikrant University that had a lasting impact on your personal or professional life.

A. One of my most memorable experiences at Vikrant University was participating in college events and cultural activities with my friends. Those moments were filled with fun, teamwork, and unforgettable memories-Participating in mock interviews and placement preparation sessions. They boosted my confidence, improved my communication skills, and prepared me to face professional interviews, leaving a lasting impact on my personal and career growth.

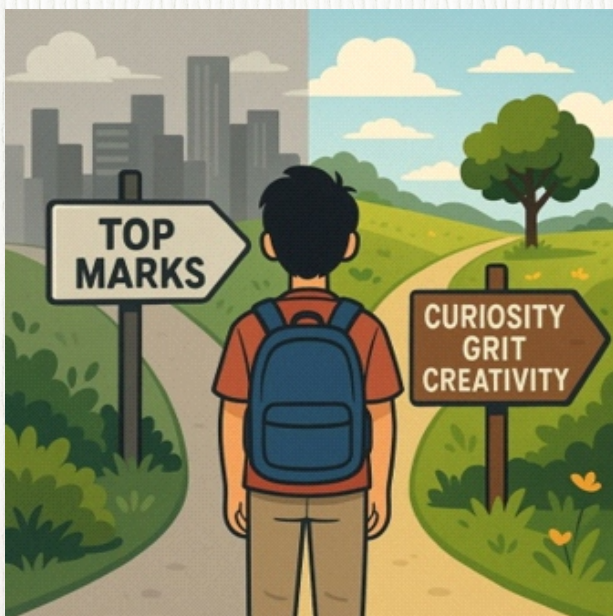
The power of Curiosity is greater than that of Marks



Prof. Aarti Jha

Assistant Professor,
Vikrant University, Gwalior

Albert Einstein said "Education is not the learning of facts." Education of mind for thinking. Students start on the dream each year and ask themselves "How many marks did you get out of 200?" each year. Marks are considered as an indicator of performance. They help with college admissions, scholarships and jobs.. So no, marks aren't really that significant. Curiosity. Questions result in investigation and answers, curiosity. It is the force that is behind all discovery, invention and change. Marks indicate level of recall of facts. Curiosity is a want to know.



As an educator I have witnessed academic backgrounds of students. Others have marks awarded, others don't. Those who continue to

grow are the ones who are seeking to learn more. They ask questions which are not part of the textbook. They try – don't be afraid of failure. They wish to learn, they are not to be ordered. These students are making us think about education – education is not all about grades.

Information is easily available nowadays. It's the information that we have. Thinking, questioning and using knowledge, quality and amount. We do that by means of our Curiosity.

Check out innovators in history. Why an apple fell was a question Sir Isaac Newton asked. Radioactivity was Marie Curie's area of scientific research. With curiosity, Dr A.P.J Abdul Kalam made his dreams come true. They didn't perform well in exams and that wasn't good enough. This is because they were successful due to their questioning.

All trades are covered under this rule. Engineers design solutions. Physicians are up to date on information. Entrepreneurs find opportunities. Researchers seek answers. Change is a measure of curiosity.

Through our educational system sometimes we pay a lot of attention to exams. Students ask "Will it be on the test? This attitude is focused on the grades rather than knowledge. Students feel they need to complete the syllabus as soon as possible.

Imagine an approach. Ask "Why does this

happen?" when posing "Will this be on the test?" Be familiar with the concepts, not only the formulas. Investigate information. This should be supposed to be the enjoyable section of school!

Curiosity stimulates thinking as well. There is a ton of data available for us each day. We wouldn't eat it if we didn't want to know what it tastes like! Inquisitive people investigate information, assess evidence and make decisions.

Learning is fun and Learning is "curious". Students often find subjects boring.. If it's relevant to our lives then it's interesting. The results of our body knowledge is interesting biology. The fun is to see Physics at work.

That's another time when it comes to failure. The side which thinks they have failed are the students on the "marks" side. Mistakes are seen as learning opportunities by curious learners. Thomas Edison made thousands of experiments to make the light bulb. He continued practicing and practicing and finally he was getting closer and closer to the ball until he understood what was going on and got it.

We as Teachers, need to take care of our minds. Pupils are to be encouraged to ask questions in the classroom. Questions should be. Different viewpoints respected. Parents are also in! Questions are not asked, they are asked by children. Adults to give opportunities for exploration and discussion. The best question is sometimes another question! Technology has provided more opportunities for learners. Courses are offered online, educational videos and virtual labs are provided. No more classroom boundaries to learning.

Employers are looking for the flexible, creative and problem solving individual. There is interest

in academic success but more in learning and adapting to increase outcomes and success. This information could be appropriate for the University students. The University is not just a place to learn, it's a place to discover interests and to discover the strategies for lifelong learning. Do not miss seminars, be involved in research projects, and read books not on the syllabus. Graduation is still an achievement marker for efforts and focus in school. They should be considered as stepping-stones, however, and not as a goal. The amount of travel you're willing to make will determine how much you do.

Great persons always make a student of life. They continue to read, to try and to ask questions. Education for life-long learning.

It's really good to see students discovering what learning can be all about and I'm happy to be an Assistant Professor helping them in that learning process. Joy of a student to get a solution to a problem is greater than any examination marks.

Reimagining achievement in the school context. Appreciate students for their questions, ideas, curiosity as well as marks. An inquiry culture brings about a new generation of innovators, responsible citizens and life-long learners.

A11 Exam: Transiency of in the end. Report card is to show how well things are going. But Curiosity, that is with us all our days. Reminds us of learning and sharing.

So, as you go into a classroom or any problem, keep this in mind:

Do not learn to obtain marks, learn because all your queries can turn the world..

Raising Mental Health Awareness among Youth



Prof. Abhilasha Dubey Pastor
Assistant Professor,
Vikrant University, Gwalior

Just like physical health, mental health is paramount, but has long been overlooked. Youth experiencing stress, anxiety and sadness has increased today more than ever before. University and college campuses are an environment of growth, learning, experiences and friendships. However, they can also be areas of stress, contention and isolation. Hence, raising mental health awareness among young people is one of the most pressing issues of today.



Why mental health is important for youth

Adolescents are at least facing a lot of problems in their lives. They have to relieve exam stress, work or career pressures, family expectations and have to get along with friends. There's also the stress of social media; too many students look to the images on social media and find themselves competitive with what they see, with the possible assumption that it's all better than their own. These pressures are cumulatively

developed. They can cause later issues such as anxiety, depression or even self-harm if left unchecked. Rather good mental health enable pupils to think clearly, make good choices and develop good relationships. Mental health means a better school experience and higher academic achievement. Conversely, a poor mental health can negatively impact academic performance, social relationships and well-being.

The Problem of Silence

Most young people aren't talking about their mental health – this is where the main challenge is going to lie. Even admitting you might be feeling bad emotionally, is still looked down upon. Pupils believe that people feel that Most of them do not want to receive assistance because they are scared if they do, they'll come across as weak.

This can be deadly. If you do not have common



problems, the problems could grow and become more complex. One first step is to break this silence, on which real changes can begin. It is important to create an atmosphere for the

students to allow them to express their emotions, which the teacher, the university and the student should make.

What Can Be Done

It's important to recognize that there are some simple, effective steps we can take to help support youth mental health. First, there will be easy to access, unbiased university counselling services. The "resources" do not have to be at another school, many students are not aware of such service at their own school. Increasingly making the information noticeable to students may offer a way to bring more students into a situation where they might seek initial assistance. Secondly, education in mental health should be determined in the college. Students can be made aware of their as well as other pupils' signs of stress in workshops, seminars and awareness campaigns. The student has information about what mental health issues can look like, so he/she

can respond positively – not confused.

Third, peer support is very priceless. Sometimes a person's friend is more at ease to speak with than a counselor. Student volunteers are able to be trained to listen and, should they feel they are needed, refer students to professional help. It might be by starting with a simple act of reaching out to a friend, a call, even participating in some group activity that does not involve any 'ministry' at all, that can make a difference. Finally, It is important that classroom staff monitor for signs and symptoms such as a sudden change in school achievement, social withdrawal and emotional changes. At times, all that an educator needs is a telling word and they will get pupils thinking about seeking assistance.

Student's role

All students can be key assets to a healthier campus. Showing patience towards peers, instead of judging, and listening to them will make all the difference. Low behaviours (asking supporting questions such as 'Are you alright?') will lead to conversation. Students' mental health also needs to be taken care of. Some simple

adjustments like getting good sleep, spending time outdoors, interacting with others, and taking some breaks from screens, can help maintain emotional health and wellbeing. It is not a good part in a weak man to ask for help, but it is a good part in a "self-aware man" to ask for help.

Conclusion

The time has come for mental health of young people to be on the agenda. We come to campus everyday as students and spend a tremendous amount of our time here with others struggling to meet the needs we face. If we are willing to communicate with each other, our peers and with the resources supplied to us, we can make it a University where NO ONE has to suffer in silence. Don't forget, it's ok not to be ok, it's ok to

seek help anytime. We can develop a culture of caring, understanding and support for all our university student's mental health as a university community. If you and/or your family member experience any difficulties, please seek help from your university counselling centre or a trusted mental health helpline. You are not alone.

THE ENERGY ECONOMY

“Universities are centres of learning, ambition, and opportunity but they are also places where the challenge of managing energy is becoming increasingly important.”



Investing in What Truly Powers Your Life

A New Challenge for a New Age

A century ago, most people worried about physical labour. Today, many of us are exhausted without lifting anything heavier than a laptop.

We sit in classrooms, offices, libraries, laboratories, and meeting rooms. We move less than previous generations, yet we often feel more tired. Students struggle with assignment deadlines, examinations, internships, competitive placements, and career planning. Faculty members navigate teaching responsibilities, research commitments, publications, accreditation requirements, mentoring responsibilities, and administrative duties. Professionals face constant connectivity, rapidly changing technologies, and ever-increasing expectations.

The result is a curious paradox: despite having access to more tools, more information, and more convenience than any generation before us, many people feel perpetually drained.

The question is not simply why we are busy. The deeper question is why we are exhausted.

Modern society has become remarkably efficient at helping us save time. Emails travel instantly across continents. Artificial intelligence can perform tasks in seconds that once required hours. Smartphones place entire libraries of information in our pockets. Digital platforms allow us to learn, communicate, collaborate, and create from virtually anywhere.

Yet the promise that technology would make life easier has not always translated into a greater sense of well-being.

Instead, many people experience an invisible form of fatigue—a depletion not only of physical stamina but also of mental focus, emotional resilience, and creative capacity.

Perhaps the challenge facing modern society is not a shortage of time. Perhaps it is a shortage of energy.

The common complaint is familiar: "I don't have enough time."

But what if time isn't the real problem?

Consider this: every person on the planet receives the same twenty-four hours each day. Yet some people consistently perform at high levels, remain creative, maintain healthy relationships, and continue growing without appearing constantly exhausted. The difference often lies not in how they manage their time, but in how they manage their energy.

Understanding this distinction may be one of the most important lessons of contemporary health management.

Because while time is fixed, energy is renewable. And the individuals who learn how to manage, protect, and replenish their energy may be the ones best prepared to thrive in the decades ahead.

The Exhaustion Paradox

"Modern exhaustion is often mental rather than physical. Our attention is constantly pulled in multiple directions."

Many things in modern life are paradoxical, for example, although many things are done with technology, many more are done with the mind and heart.

Fatigue was a common occurrence in previous generations. Mental Fatigue is a common problem in the present generation.



There is a lot of information to be gathered each day. Messages arrive continuously. There's a lot of notifications to deal with. There is no shortage of content on social media. Academic requirements are constantly changing. The expectations of the professionals are continuing to rise. News keeps going round and round. AI is one of the technologies that is transforming industries that are struggling to catch up.

Life is like a long attention-deficit disorder.

But the human brain isn't meant to be stimulated all the time.

In a world where information has been slow to come, and sometimes for which humans do not need to respond in real-time, they've thrived for millennia alongside each other. We are exposed to a lot of information and distractions in our lives these days, every minute of the day. The times of emails, online lectures, meetings, and assignments are over; as are the times of transitioning from one mode of communication to another with no time for the mind to rest.

Many people can therefore experience a sense of being busy in their mind when they are physically resting.

Beyond the classroom, but still, they have deadlines.

They leave office but are still plugged in to work.

They complete one task and then become anxious about the succeeding task.

This is partly why many students, researchers, teachers and professionals are experiencing this type of fatigue.

It's not just that there's so much going on.

But the rate of energy usage.

If this balance is continually upset, one will inevitably become tired. Constant fatigue can progress into burnout which is defined as feelings of emotional fatigue, lack of motivation and less interest.

Burnout doesn't just happen to the crowd that is hard-working. It is more and more common at universities, among doctoral students, among young people and even among very successful people.

It's an easy yet deep lesson:

In order to maintain performance, one must maintain energy.

One of the greatest contradictions of modern life is that while technology has reduced many forms of physical effort, it has simultaneously increased many forms of cognitive and emotional effort.

Previous generations often experienced physical fatigue. Today's generation frequently experiences mental fatigue.

Every day, we process enormous amounts of information. Messages arrive continuously. Notifications compete for attention. Social media presents an endless stream of content. Academic requirements evolve rapidly. Professional expectations continue to rise. News cycles operate around the clock. Artificial intelligence is transforming industries faster than many people can adapt.

In many ways, modern life resembles a marathon of attention.

The human brain, however, was not designed for constant stimulation.

For thousands of years, human beings lived in environments where information arrived gradually and only occasionally demanded immediate action. Today, our attention is pulled in multiple directions every minute. We move from emails to messages, from online lectures to social media, from meetings to assignments, often without giving our minds an opportunity to recover.

As a result, many people feel mentally occupied even when they are physically resting.

They leave the classroom but continue thinking about deadlines.

They leave the office but remain connected to work.

They finish one task only to feel anxious about the next.

This helps explain why exhaustion has become increasingly common among students, researchers,

educators and professionals alike.

The issue is not merely the amount of work being done.

It is the amount of energy being consumed.

When energy expenditure consistently exceeds energy renewal, fatigue becomes inevitable. Over time, chronic fatigue can evolve into burnout—a state of emotional exhaustion, reduced motivation, and diminished engagement.

Burnout is no longer confined to demanding professions. It is increasingly visible among university students, doctoral scholars, early-career professionals, and even highly accomplished individuals.

The lesson is simple yet profound:

Sustained performance requires sustained energy.

The Productivity Trap

"Productivity is not about working longer. It is about bringing better energy to the work that matters."

To most, productivity success is defined as 'doing more'.

True productivity, however, is not dependent upon the number of hours. It is gauged by the value that is produced in those hours.



Imagine 2 students are taking a test.

One person is working overtime for 10 hours and always checking on text messages and social media. One person has to work overtime for 10 hours, monitoring messages and social media all the time. The other four studies were all about 4 hours of deep sleep, healthy meals and productive breaks.

The second student is more likely to benefit because concentration, memory, creativity and decision making are all heavily dependent upon the level of energy the student has.

Likewise, organisations are increasingly aware that improving employee well-being is not at the expense of employee performance. People who recover from adequate recovery, have meaningful work and healthy environments are more productive, innovative and resilient.

But, in today's culture the emphasis is on busyness rather than effectiveness.

In your eyes, people who are committed have long working hours.

A measure of ambition is often the missed deadlines.

Fatigue can be a badge of honor, at times.

But the terms Busyness and Productivity are not the same.

Not everything that is the best of the world is going to be created by hard work. They came out of concentrated work, with reflection, rest and renewal.

Tomorrow's workplace will be more conducive to sustainable working than to working around the clock.

It will not be about expending lots of energy, it will be about using energy efficiently to achieve success.

Recognize the 4 dimensions of energy

There's more to human energy than physiological energy. In order to survive in an ever evolving world, we need to cultivate four interrelated aspects of energy.

Physical energy -All the essentials, the basic and most important

Each lecture given, experiment performed, paper published, exam taken and innovation created is dependent upon the body.

Sleep, good food, fluid, activity and recovery – are not a by-product of achievement – rather, they are the product of achievement.

In order to achieve success, many times, physical fitness becomes a factor.

When students are studying for exams they give up their sleep.

Researchers are available outside of their working hours to meet deadlines.

Individuals put off on exercise because they're too busy.

But, neglect is not something that can be negotiated.

An alert brain cannot function when it is tired.

Sleep consistently improves the memory, learning, emotional regulation, creativity and decision making. Regular activity improves focus, decreases stress and increases health and happiness.

Physical energy is not simply about the prevention of diseases.

It's about laying the groundwork for all other aspects of performance.

The Currency of Learning is Intellectual Energy:

Learning is measured in terms of Intellectual Energy.

The University's business is the fostering of the intellect.

Curiosity drives discovery.

Attention fuels learning.

Focus enables innovation.

However, the challenges of the digital age are new to intellectual energy.

Information is plentiful. The people in the area are now scarce.

Any interruption, note and distraction take away the concentration. Technology is a wonderful source of knowledge, but it also has the ability to occupy our brains.

This ability to concentrate and focus upon thoughts can actually become one of the most valued skills of the future.

No innovation is found in people who are distracted for an entire day.

Born out of focused ideas.

The care of mental energy is to offer time space for meaningful reading, reflection, deep work and lifelong learning

The Strength to Navigate Uncertainty is Emotional Energy:

Life within and beyond the university is filled with uncertainty.

Research projects encounter setbacks.

Career plans evolve unexpectedly.

Personal challenges arise without warning.

Goals often take longer than anticipated.

Emotional energy determines how we respond to these realities.

It is reflected in resilience, optimism, adaptability, and self-awareness.

Contrary to popular belief, resilience does not mean avoiding difficulty.

It means maintaining the capacity to move forward despite difficulty.

Strong emotional energy is often supported by strong relationships. Friends, mentors, colleagues, and family members provide encouragement during challenging times and celebrate achievements during successful ones.

Universities are not merely centres of learning.

They are communities.

And communities are powerful sources of emotional energy.

The Fuel Behind Persistence is Purpose Energy:

Perhaps the most powerful source of energy comes from purpose.

People can work hard for a short period because they have to.

They sustain effort over years because they want to.

Purpose transforms effort into commitment.

It connects today's actions with tomorrow's possibilities.

Students pursue education not merely to earn degrees but to create meaningful futures. Faculty members dedicate themselves to teaching because they believe in the transformative power of knowledge. Researchers devote years to solving problems because they are driven by curiosity and impact.

Purpose acts as an internal energy source that remains active even when circumstances become difficult.

When individuals understand why they are doing something, they often discover energy they did not know they possessed.

Energy, Creativity, and Innovation

"Innovation flourishes when curiosity, focus, and energy come together."

There is much to be gained from a look into the wrong direction about creativity.

Many people believe that innovation comes out of the heavens. But in fact, creativity relies a lot on energy.

The drained minds are oriented towards survival.

A buzzing mind is capable of thinking in terms of possibilities, connections, questioning assumptions, and thinking of new ideas.

Innovation requires curiosity.

Curiosity requires attention.

Attention requires energy.

This relation is particularly important in universities where creativity is the source of innovation, entrepreneurship, problem-solving and discovery.

The next great science development, the next tech advancement, the next social shift or innovation, the next startup not only will it be sparked by smart minds, it will be fueled by the energy that empowers



intelligence to take flight.

Therefore, personal health practice of protecting energy is not only a personal practice of health.

In itself, It's an investment in innovation

Energy Is Contagious: Leadership in the Energy Economy

"Great leaders do not simply manage resources, they energise people."

It is common to hear about leaders in terms of vision, communication, strategy and decision making when talking about leadership.

However, another aspect is not talked about much energy.

Have you ever seen someone enter a room and really invigorate it?



They love music and this enthusiasm encourages participation.

Confidence is created by positive attitude

They are curious and this stimulates learning.

On the other hand, negative, cynical and overly tired attitudes can infect teams and communities in a hurry.

Energy is contagious.

Universities are an important institution that influences the development of future leaders. By learning how to manage their energy today, students will be better equipped to lead organisations, communities, institutions and societies tomorrow.

Great leaders don't manage resources only but,

They regulate human energy of themselves and of their fellow humans.

The capacity to develop spaces conducive to motivating and maintaining wellbeing, whether in the classroom, the lab, a student group, a start-up or a global company, will grow in significance.

The future leaders could be distinguished not by the pressure they put on people, but by how well they nurture people's growth.

The Recovery Advantage

"Recovery is not time lost. It is energy renewed."

There's a huge misunderstanding in modern culture about what recovery is and isn't. There's a big misconception in today's society that recovery is not productive.

In fact, the recovery is a necessary part of productivity.

Elite athletes know this all too well. Learning is stress and growth is recovery.

It is the same in the context of learning, research, leadership, and in performance.

Through recovery, the brain can make sense of the information, regain focus, stabilize emotions and get ready for future events.

They are not things to be done only if time allows or money permits. It is quite possible to read for pleasure, spend time in nature, exercise, pursue hobbies, spend time with loved ones, and let the mind rest without any of these conditions.

They are investments.

If not recovered, performance becomes poorer over time.

Performance is sustainable with recovery.

Rest or recuperation could become a competitive edge in a world that constantly pushes "faster, faster.



Building Energy-Positive Universities

"A successful university nurtures both achievement and well-being."

The University has been a centre of knowledge for far too long.

They should also be areas where human development is sustainable in the future.

An energy positive university is a university that not only celebrates accomplishment but not glorifies weariness; promotes excellence without ignoring wellness, and cultivates growth without compromising health.



They realize that people are most effective when healthy physically, mentally, emotionally, and when working on valuable objectives.

That is, to create areas where individuals can work together, learn, and develop rather than compete, fear, and burn out.

Do not evaluate University success in terms of ranking, placement, publication or infrastructure etc.

It should also be apparent in the health, strength, creativity and lifespan of its people.

Institutions are only as strong as the people that make them up after all.

The Future Belongs to the Energized

"The future belongs not to those who can work the longest, but to those who can sustain their energy the smartest."

The idea of success was linked to the time it took. Going fast has been correlated with success over the generations.

In today's world, sustainability is a key determinant of success.

Those who are able to learn, adapt, cooperate and stay healthy in the face of change will be richly rewarded in the future.

Talent matters.

Knowledge matters.

Technology matters.

But without energy these can't function at their optimum.

Managing time may not be the most difficult time management test of the twenty first century.

It can involve learning how to maintain our physical strength, curiosity, emotional stability and purpose in our lives so that we can contribute meaningfully at any age.

The future is not for the fast man or the performer who tries to out-do others,

However, to those who know how to maintain it.

A Final Reflection

Futures are formed at universities.

"They enable people to work, but they also enable them to live."

In a rapidly evolving, complicated and boundless world, it is time to remember this one thing: Success is not a function of time.

It needs energy to operate.

Whether we're learning, working, relating, leading, or contributing to society, we do it with energy that is the essential basis.

Maybe at the end of each day we should be asking ourselves a different question.

Not merely:

"What did I accomplish today?"

But rather:

"How well did I invest the energy that was entrusted to me today?"

The answer may reveal more about our future than any schedule, deadline, or achievement ever could.



UNIVERSITY ENERGY AUDIT

How Healthy Is Your Personal Energy Economy?

Instructions: Rate each statement from **1 to 5**

1 = Rarely | 2 = Sometimes | 3 = Often | 4 = Usually | 5 = Always

PHYSICAL ENERGY

- ☐ I get sufficient sleep to feel refreshed and alert.
- ☐ I engage in regular physical activity.
- ☐ I maintain healthy eating and hydration habits.
- ☐ I make time for rest and recovery.
- ☐ I get sufficient sleep to feel refreshed and alert.

INTELLECTUAL ENERGY

- ☐ I can focus deeply without frequent distractions.
- ☐ I actively seek opportunities to learn beyond immediate requirements.
- ☐ I manage my digital consumption effectively.
- ☐ I remain curious about new ideas and perspectives.

EMOTIONAL ENERGY

- ☐ I respond constructively to setbacks and challenges.
- ☐ I maintain supportive relationships.
- ☐ I manage stress in healthy ways.
- ☐ I seek help when I need support.

PURPOSE ENERGY

- ☐ My daily activities align with my long-term goals.
- ☐ I find meaning in my studies, work, or responsibilities.
- ☐ I feel motivated by the future I am creating.
- ☐ I regularly reflect on my growth and development.

SCORING

Physical Energy: _____/20

Intellectual Energy: _____/20

Emotional Energy: _____/20

Purpose Energy: _____/20

Total Energy Score: _____/80

REFLECTION CORNER

1. Which dimension of energy is currently your greatest strength?

2. Which dimension would benefit most from your attention?

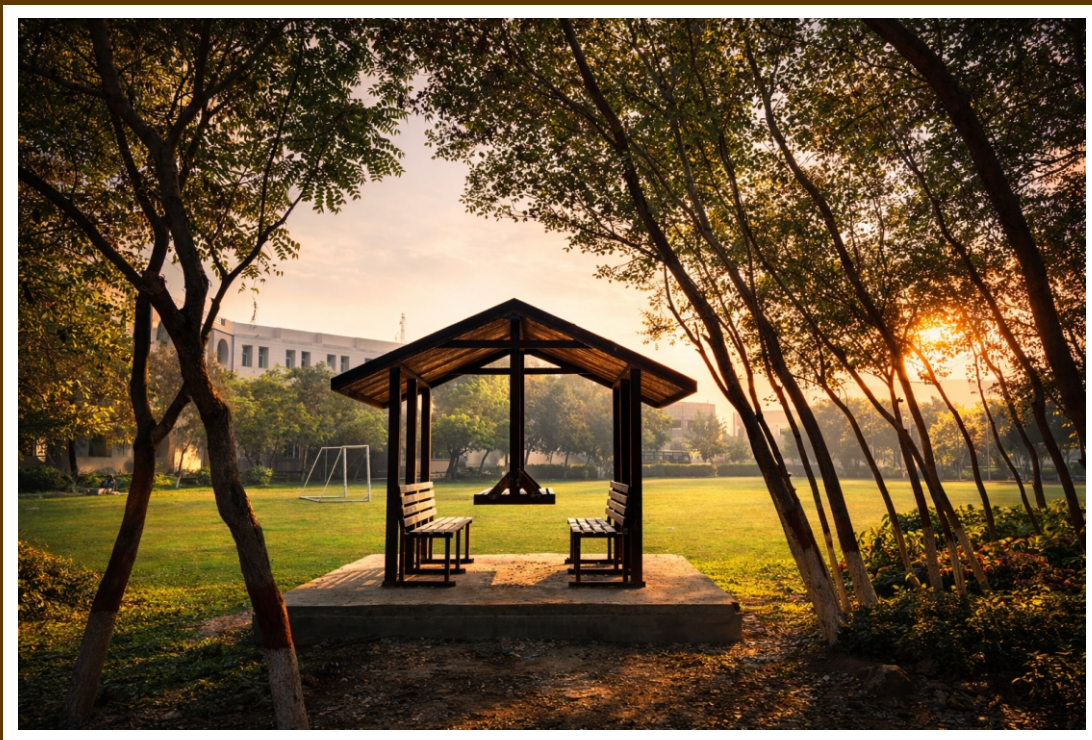
3. What is one habit that consistently drains your energy?

4. What is one positive change you can begin this month to improve your Energy Economy?

"Your greatest asset is not the time you possess, but the energy you bring to the time you have."







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