The Institution of Engineering and Technology

CHANGING FACE OF GLOBAL ENGINEERING:

Calibrating India's response

Report & Recommendations

Based on IET Academic Roundtable
held on 3 Feb 2024
Chaired by **Prof (Dr) Anil Sahasrabudhe**
(Chair, NAAC, NBA and NETF)

"We need to empower our engineers to lead the way. Not just keep pace."

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Foreword

Prof (Dr) Anil Sahasrabudhe

(Chair, NETF, NAAC and NBA)

In the ever-evolving landscape of engineering, the journey towards excellence demands a blend of innovation, adaptability, and foresight. As we navigate through the intricacies of technological advancements, it becomes increasingly evident that our role as engineers extends far beyond conventional boundaries.

The implementation of the National Education Policy (NEP) 2020 presents a unique opportunity to transform our educational landscape. While the NEP is a positive step forward, further efforts are needed to achieve its full potential.

As we gather around this proverbial table, we do so with a sense of reverence for the challenges that lie ahead and an unwavering belief in our collective ability to surmount them. It is within these hallowed halls that the nexus between theory and practice is fortified, where ideas are refined, and where collaborations are forged that transcend borders and disciplines.

Navigating the landscape of modern education, the integration of Outcome Based Education (OBE) emerges as a pivotal strategy. It calls for a departure from traditional lecture-centric approaches, advocating instead for classrooms characterised by vibrant discussions and collaborative learning. This shift is imperative, fostering an environment where students actively engage with the material, honing their critical thinking skills and preparing them for the dynamic challenges of the engineering world.

Equally crucial is the continuous development of our faculty members, ensuring they remain at the forefront of educational innovation. Internships play a pivotal role in this endeavour, serving as bridges between theory and practice. Recognising the disparities in access, particularly in rural areas, we have embarked on offering online internships, leveraging technology to democratise opportunities.

The emphasis on interdisciplinary learning, critical thinking, and the provision of education in mother tongue, along with recognition of prior learning and multiple entry-exit points, presents a unique opportunity to enhance participation from marginalized communities, particularly rural and tribal students, in higher education. Initiatives such as the APAAR ID linked to the Academic Bank of Credits not only foster innovation but also contribute to the vision of an Atmanirbharta (self-reliant) and Viksit Bharat (developed India) in the era of Amritkaal.

Additionally, harnessing the power of AI enables us to tailor educational experiences to the unique interests and needs of each student, fostering a more inclusive and effective learning environment. Through these initiatives, we strive not only to meet the demands of the present but also to lay a robust foundation for the engineers of tomorrow.

In our quest for excellence, we must embrace the ethos of sustainability, recognising that every technological marvel must undergo the rigorous test of environmental stewardship. Our pursuit of progress cannot come at the expense of our planet's well-being.

Furthermore, the symbiotic relationship between academia and industry lies at the heart of our collective advancement. Institutions must serve as crucibles of innovation, solving the challenges that plague industries and igniting a spark of collaboration that fuels progress. In turn, industries must reciprocate by investing in the education and training of future engineers, ensuring a continuum of excellence that propels us towards a brighter tomorrow.

As we envision the trajectory of engineering education, it becomes imperative to recognise that our journey doesn't end with graduation; it merely marks the beginning. The mantle of responsibility we carry extends beyond the confines of classrooms and laboratories. It encompasses a commitment to enhancing our analytical abilities, nurturing critical thinking, and fostering a spirit of innovation that transcends boundaries. Together, let us harness the power of engineering to forge a future that is sustainable, inclusive, and brimming with promise.

Executive Summary

India leads globally in engineering graduates, producing an impressive 1.5 million annually, yet only 10% of these graduates are expected to secure jobs this fiscal year (TeamLease-2023).
This isn't a hypothetical scenario; it's a stark reality threatening India's dream of becoming an engineering powerhouse. This gap between what they learn and what employers need isn't just a missed opportunity; it's a talent crisis, poised to derail India's innovation engine.

Consider these alarming statistics:

By 2024, 2.3 million jobs in the IT sector might go unfilled (NASSCOM).

92% of graduates need upskilling to join the workforce (India Skills Report).

Our colleges have 1 teacher for 28 students, raising concerns about personalised attention and quality education (AICTE).

These numbers paint a grim picture. **India is churning out engineers, but not the engineers the world needs.** The disconnect between what's taught and what's required is deafening, leaving graduates ill-equipped for the jobs of tomorrow, with the **employability rate being 35%** (Aspiring Minds, 2022). This isn't just about individual struggles; it's about national progress being stifled—India's ambition to be a global leader in innovation hinges on a skilled engineering workforce.

Recognising the critical need for transformative action, the Institution of Engineering and Technology (IET) convened an Academic Round Table Conference titled "Changing Face of Global Engineering: Calibrating India's Response." This gathering facilitated dialogue and collaboration amongst leading academia, institutions, and industry experts.

Led by the esteemed Prof (Dr) Anil Sahasrabudhe, Chairman of NETF, NAAC, and NBA, the collective aim was to identify effective solutions and forge a path towards a reimagined Indian engineering education system that aligns with the demands of the evolving global landscape.

Key Themes:

Where's the Nation headed, and where's the Skill Gap?

India's 1.5 million engineering students might seem impressive, but a 50% skill gap threatens to leave them in the dust of the AI, VR, AR, and sustainability race. Only 2.5% possess the coveted AI skills, while adaptability, problem-solving, and teamwork need a boost across 50% of graduates. (People Matters- Sep 2023)
This underscores the urgent necessity for a dynamic curriculum review process, retaining 50% of core subjects while adapting the remaining 50% to align with current industry demand

Industry as a Teacher:

In today's tech-driven world, the demand for engineering graduates is soaring. Yet, a glaring disparity persists between theoretical learning in traditional education and practical skills sought by employers. A striking 87% of employers express dissatisfaction with graduates' real-world project experience (NASSCOM, 2020)
This emphasises the critical requirement for institutes to integrate industry expertise into every course, mandating early internships and providing skill-focused electives post-internship for targeted skill development.

Connecting Individual Aspirations with National Needs:

Outcome-Based Education (OBE) emphasises practical skills and knowledge, directly relevant to real-life situations, ensuring graduates are well-prepared for the demands of the workforce. By aligning educational objectives with the needs of society, OBE enhances employability and fosters economic growth.
To ensure effective alignment between individual aspirations and national goals, institutions must conduct aspiration surveys in the first semester as an absolute necessity, enabling the precise customisation of training programs to meet individual needs and aspirations. Furthermore, the utilisation of digital platforms is crucial for identifying national needs, matching individual skills, and tracking progress towards achieving national goals.

Evaluating and empowering Educators:

Empowering engineering professors is an investment in the future. Institutes must prioritise faculty-led startups, while also ensuring teachers undergo industrial training to stay updated and aptly mentor future engineers.
Evaluating teachers is a crucial aspect of maintaining educational standards. We hire the teachers and evaluate the researchers. Therefore, it becomes imperative to elevate the significance of industrial engagement, innovation, and entrepreneurship, while also incorporating student and peer feedback to enhance the evaluation process.

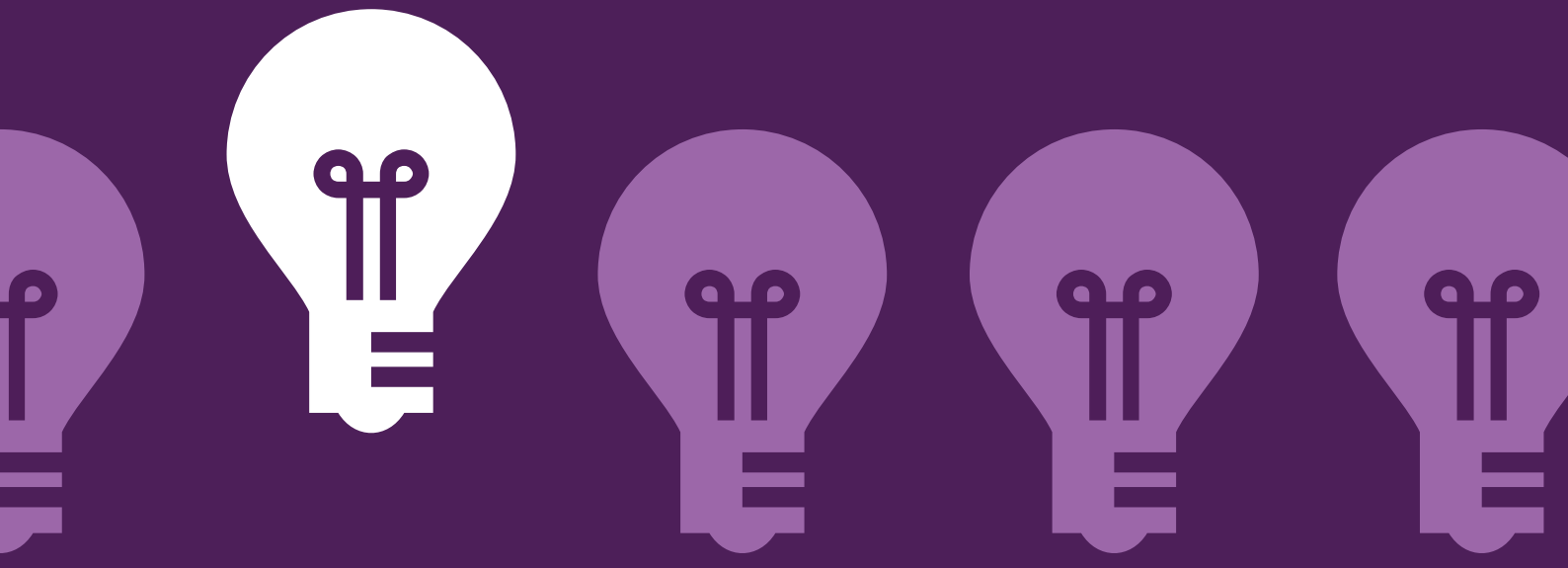
Attracting Global Talent

Securing the enrolment of the finest talent and brightest intellects in Indian engineering institutions, whether within our borders or internationally, is an imperative mission. It demands the promotion of our institutions, highlighting the comprehensive array of resources and opportunities they offer. We must ensure that prospective students recognise that Indian institutions possess all the requirements they seek for their academic pursuits and professional development.
Indian universities must prioritise global ranking and accreditation to attract international students effectively and industries must offer structured internships to foreign students, exposing them to Indian work culture and industry practices.

Tech - Powered Learning

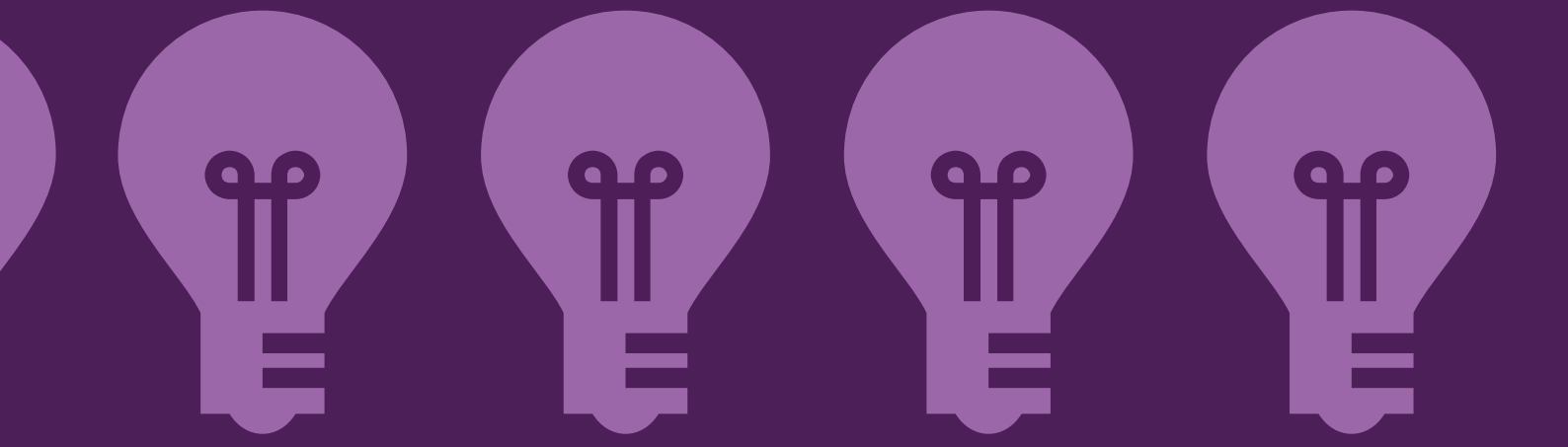
Technology has changed every aspect of our lives and when it comes to engineering education, there are no exceptions. Traditional teaching methods in classrooms, amidst a set curriculum, should become history.
The Regulators must set national standards for technology in education. Create guidelines for including technology in engineering curricula to ensure consistency and quality across institutes.

Recommendations



Recommendations to Policymakers and Regulators

1. Introduce industry-recognised micro-credentials that validate specific skills acquired through various learning pathways, empowering students, and enhancing their employability.
2. Transitioning specialisation from the third semester to the sixth would allow students to develop a comprehensive understanding of various fields before delving deeper into their chosen discipline.
3. Quality and availability of internet infrastructure must become part of the evaluation matrix for NIRF and NAAC.
4. Availability and accessibility of virtual learning and design tools should become part of the evaluation matrix for NIRF and NAAC as well as course accreditation.
5. There must be a scalable mechanism built to handhold academic institutes on the accreditation journey that is recognised by, but independent of the national accreditor
6. A framework must be formulated to create Star Teachers at our engineering institutes.
7. Engagement of Professor of Practice in engineering education must be mandated.
8. Upskilling opportunities for working professionals in flexible timing mode to achieve regular degrees must be created.
9. Priority must be given to allocating research and development funding through industries to academic institutions, allowing industries to directly address pressing challenges and yield impactful research outcomes.
10. The government must provide financial support and technical assistance to industries and institutions transitioning to sustainable practices, while also investing in workforce development and upskilling programs to promote a green economy.
11. In situ, corporate units must be established within academic institutions to encourage collaboration on research and knowledge sharing between academia and industry
12. It is imperative to establish a centralized information submission portal for Higher Education Institutions (HEIs), accessible to accrediting bodies such as NIRF, NAAC, AICTE, NBA, and others. This portal will streamline the submission process, eliminating redundancy and ensuring efficiency in data collection.



Recommendations to Engineering Institutions:

1. Universities must prioritise obtaining accreditation from national and international bodies as it significantly enhances their credibility, quality assurance, and recognition.
2. A policy must be put in place to enable graduates to return to the engineering college and enrol in elective courses aimed at upskilling, thereby promoting lifelong learning opportunities.
3. Teachers to mandatorily complete a 2–3-month immersion program in Industry every 1-2 years to stay connected with market needs and realities.
4. A framework must be formulated to create Star Teachers at our engineering institutes.
5. Engineering institutions must establish Industry Advisory Boards comprising industry leaders to actively engage in curriculum development and program evaluation.
6. Universities must mandate in-house practical training after the first year, followed by two internships of eight weeks each after the second and third years.
7. Mandate collaborative projects between students and teachers in partnership with industries, these will serve as both a learning opportunity and assessment tool for both students and faculty.
8. Universities must prioritise providing global exposure to students by allocating 50 per cent of credits for a particular semester to study abroad programs in various countries.
9. Engineering graduates must attend workshops and seminars focused on the teaching profession, thereby bridging the gap between technical expertise and pedagogical knowledge.

Recommendations to Industries:

1. Industries must collaborate with engineering institutions to clearly outline the specific skill sets required* for entry-level and mid-career positions, as well as forecast and identify the precise skills needed from engineers four years and one year down the line.
2. Implement a mentorship platform to connect students with industry experts, offering personalised guidance and closing the academia-industry gap.
3. Industries must provide real industry problems to academic institutions for solving, thereby fostering practical learning and impactful research collaborations.
4. Invest in equipping universities with industry-standard labs featuring emerging technologies like AI, robotics, and 3D printing.

**The IET Skill Gap Survey will soon be released, and IET aims to serve as a platform to facilitate ongoing dialogue between academia and industry.*

A Call to Action:

The insights that were shared, resonate with an undeniable truth: the conventional framework of engineering education is no longer sufficient in a rapidly evolving world shaped by technology and global connectivity. It's a clarion call to action, urging the Ministry of Education and higher education institutions to meticulously deliberate on these recommendations.

This is not a plea for rushed decisions, but rather an invitation to embark on a collective voyage towards actualising a unified vision for the future of engineering education in India.

Background

In the diverse landscape of Indian education, we find ourselves at a pivotal juncture, poised between tradition and transformation.

From ancient seats of learning like Takshashila and Nalanda to today's institutions, education has been our cornerstone of advancement. Yet, amidst tradition, the imperatives of change loom large. Rapid technological advancements, globalisation, and shifting industry demands compel adaptation and innovation. In the global arena, Indian engineering graduates have made remarkable strides. However, a stark reality persists - a significant portion of graduates face employment challenges.

Private engineering institutes report a 50-70% drop in placements this year (Economic Times, Nov 2023), underscoring disparities within the system.

The glaring contrast between the pinnacle of success and the widespread employment woes highlights the disparities within the Indian engineering education system, echoing the sentiment expressed by eminent economist and author, Mr Pranjal Sharma: "One per cent cannot define the other 99."

It is imperative to analyse the root cause of this situation:

Skill Mismatch:

Outdated Curriculum & Emerging Skills Gap

Inadequate Practical Training & Real-World Application

Soft Skills Deficit: Communication, Teamwork, Critical Thinking

Quality Concerns in Education:

Uneven Standards Across Numerous Colleges

Faculty Limitations: Experience & Knowledge Gap

Systemic Issues:

Limited Industry-Academia Collaboration

Inadequate Career Guidance for Students

Recognising the urgency of the issue, the IET organised an academic roundtable to delve into various aspects of Indian engineering. This roundtable served as a platform for stakeholders from diverse backgrounds, including industry leaders, academic scholars, and regulatory authorities, to come together and engage in substantive discussions. Held over the course of a day, the conference facilitated in-depth conversations on a wide range of topics pertaining to Indian engineering education, including curriculum development, pedagogical approaches, industry-academia collaboration, and regulatory frameworks.

The recommendations shared will serve as a roadmap for transforming engineering education. By heeding these suggestions, Regulators, educational institutions, and industries can equip students for the demands of today's workforce. Embracing these changes fosters innovation and ensures that engineering remains at the forefront of societal progress.

Discussion Summary

Session 1

Global Engineering:
Charting the Path Forward for India's Engineering Excellence

Engineering, at its core, is the art of applying science and technology to solve problems. While the challenges faced by different countries might vary, the spirit of innovation transcends geographical boundaries. This concept forms the foundation of global engineering, a collaborative approach that recognizes the interconnect- edness of the world and leverages diverse expertise to address challenges on a global scale.

As India aspires to become a leading player in this evolving landscape, understanding the direction and addressing the skill gaps are crucial for success.

1. Soft Skills Gap: Only 14.8% of engineering graduates have proficient communication skills (Aspiring Minds, 2023).
2. Digital Literacy Deficit: Just 22% of engineers understand data analysis, and 5.5% have basic programming skills (Aspiring Minds, 2023).

These statistics aren't just numbers; they signify missed opportunities for personal growth, industrial advance- ment, and national progress. We must address these challenges to ensure that the next generation of engineers is well-prepared to meet the demands of the future.

Recognising these challenges, experts conducted a detailed analysis to understand their implications and explore potential solutions.

The first session of the Academic Round Table brought together a diverse panel of experts. Led by Prof. (Dr.) Anil Sahasrabudhe, Chair of NAAC, NBA, and NETF, the discussion delved into the trajectory of global engineering and the existing skill gap. With luminaries like:

- **Dr Amit Dutta:** Director AICTE
- **Prof (Dr) Balvinder Shukla:** Vice Chancellor, Amity University
- **Mr Abhijeet Sinha:** Program Director - Ease of Doing Business and National Highways for EV (NHEV)
- **Mr Pranjal Sharma:** Global Expert Network, Economic Analyst, Advisor and Author
- **Ms Rachna Jindal:** Senior Director, Cognizant
- **Mr Anindya Saha:** Vice President, Wireless Tejas Networks

Key Discussion Points:

01 Beyond Silos:

Breaking down disciplinary barriers is crucial for innovation, as emphasized by Mr Abhijeet Sinha's quote, "From form to reform, we all entered into the age of perform."
This encapsulates the essence of transitioning from mere theoretical frameworks to actionable solutions. Additionally, **incorporating humanities, management, and sectoral hackathons into engineering programs fosters problem-solving skills.**

02 Building a Greener Future:

Prof (Dr) Anil Sahasrabudhe emphasised at the outset, "Every technological innovation should go through the test of the environment, highlighting that engineers should prioritize designing for the planet, not against it.
As a result, it was suggested that universities incorporate sustainability principles directly into the curriculum. Additionally, support for research focusing on environmental challenges and collaboration with industries on sustainable projects and internships were proposed as essential steps in fostering a culture of sustainability among future engineers.

03 A Global Perspective:

Throughout deliberations, the significance of international exchange programs and collaborations in fostering cross-cultural understanding was underscored. Moreover, there is a clear imperative for industries to establish mentorship programs that connect Indian engineers with their global counterparts. Additionally, policymakers were urged to foster an international network of interconnected innovation hubs to facilitate seamless cross-border collaboration and drive collective innovation efforts.

04 Entrepreneurial Spirit:

Building, not just following: Engineers who innovate and create! It is the collective responsibility of policymakers, institutions, and industries to nurture the entrepreneurial spirit and empower them to turn their ideas into reality.

As the session concluded, a shared vision for empowering future engineers through comprehensive reforms emerged.

This is not just about tweaking the system; it's about a revolutionary shift in engineering education. The Institution of Engineering and Technology (IET) shares this vision and actively champions these initiatives to bridge the skill gap and empower engineers for the future.

Session 2

Outcome based Education

From Theory to Practice: Implementing Outcome-Based Education for India'sEngineering Sector

In the ever-changing world of engineering education, a significant shift is happening—one that prioritizes outcomes over processes and innovation over tradition.

Welcome to the era of Outcome-Based Education (OBE), where the focus goes beyond textbooks to emphasise the practical skills, competencies, and knowledge essential for engineers to excel in today's world. In India, this shift isn't just preferable; it's essential. As the nation strives for global leadership in technology and innovation, it must equip its engineers with the necessary tools to tackle challenges, navigate complexities, and drive sustainable progress. Hence, the call for OBE resounds strongly in academic circles, advocating for a transformative approach to engineering education that meets the needs of industry, society, and the nation's aspirations.

The second session delved into Outcome-based Education (OBE), exploring its critical role in propelling India to become a global engineering leader

Moderated by **Prof (Dr) Indranil Manna** President, Indian National Academy of Engineering and Vice Chancellor BIT Mesra Ranchi

The panel comprised diverse experts:

- **Dr Amit Dutta:** Director AICTE
- **Prof (Dr) Ram Prakash:** IIIT Arunachal, Director
- **Mr Anindya Saha:** Vice President, Wireless Tejas Networks
- **Dr Mohammad Rihan:** Professor of Electrical Engineering, AMU
- **Ms Rachna Jindal:** Senior Director, Cognizant

Key Discussion Points:

01 Enhancing Core Discipline Appeal:

Prof (Dr) Balvinder Shukla (Vice Chancellor, Amity University) underscored that "Core engineering will always remain the heart of progress and growth. We need to help people understand how important multi-disciplinary engineering education is for our future." This statement laid the groundwork for the forthcoming strategic discussions.

Experts emphasised the necessity for **Policymakers to ensure that salaries and benefits for civil, mechanical, and electrical engineers** are competitive with those in other fields. **Additionally, they stressed the importance of organizing industry visits and mentorship programs to familiarise students with various engineering domains at an early stage, commencing from middle and high school.**

02 Reforming Examinations

Prof (Dr) Indranil Manna – President, INAE and Vice-Chancellor, BIT Mesra Ranchi asserted, "In my four decades of professional experience, I have never been concerned with aligning question papers to specific levels of Bloom's taxonomy. My focus has always been to push the boundaries of students' intellectual capabilities. Framing a question paper that truly challenges them is far more difficult than simply answering one."

In line with this perspective, examination reforms were discussed to align with Outcome-Based Education (OBE) principles, advocating a shift away from rote memorization towards assessing higher-order thinking skills like analysis, evaluation, and application. **Experts suggested collaborating with industries to design and validate assessments relevant to real-world scenarios, leveraging technology platforms for flexible and personalised evaluation methods.**

03 Addressing Distant Education Limitations:

While acknowledging online learning's potential, concerns regarding its suitability for certain disciplines were raised. The need for in-person interactions and practical training in specific fields was recognised.

The call for Outcome-Based Education (OBE) in India is crystal clear. Embracing this shift isn't just about changing methods; it's a strategic move to equip our future engineers with the skills needed to thrive in today's ever-changing tech world.

Outcome-Based Education (OBE) is not just a suggestion, but an urgent necessity.

This transformation isn't just about improving; it's about investing in excellence, innovation, and global competitiveness. By focusing on critical thinking, relevant knowledge, and practical problem-solving, we're not just creating graduates; we're shaping catalysts for progress and national pride.

Implementing OBE unlocks the vast potential of our youth, driving us towards a brighter, more innovative future. This isn't just a reform; it's a shared mission to shape the destiny of an engineering powerhouse.

This session was a stark reminder that OBE is not just an educational reform; it's an investment in the future. **It's about empowering our engineers to lead the way, not just keep pace.**

Session 3

Technology and attracting foreign students

Embracing Technology and Attracting Brightest and Finest Minds to India's Engineering Future

As engineering education grapples with the challenges of the modern era, the need for innovation and adaptability becomes increasingly evident. Technology serves as a powerful ally, reshaping traditional learning paradigms and opening new avenues for collaboration and growth.

This is not simply about incorporating shiny gadgets into classrooms.
It's about harnessing the immense power of technology to:

- **Democratise knowledge access.**
- **Cultivate critical thinking and innovation.**
- **Bridge theory and practice.**
- **Foster global collaboration**

In this dynamic landscape, India's quest for engineering excellence is not just about embracing technological advancements but also about attracting the brightest minds globally to enrich its academic sphere and drive collective success.

This isn't just about recruitment; it's about embracing diverse perspectives, fostering collaboration, and propelling India to engineering excellence. The vision is classrooms and labs buzzing with discussions and joint ventures fuelled by combined brilliance, enriching our academic sphere, and propelling us toward collective success. Attracting top international students infuses our landscape with new outlooks, promotes cultural understanding, and accesses diverse skill sets.

Recognising this imperative, the Institution of Engineering and Technology (IET) took the initiative by convening a diverse panel of experts from industry and academia.

Moderated by **Mr Pranjal Sharma: Global Expert Network, Economic Analyst, Advisor and Author**

Panellists:

- **Mr Shanker Kaul:** Managing Director, Health Solutions India at Elsevier
- **Dr Rishi Mohan Bhatnagar:** President, Lava | Chair – The IET Future Tech Panel & Congress
- **Mr Shekhar Sanyal:** Country Head & Director, IET India
- **Mr Abhijeet Sinha:** Program Director, EoDB and National Highways for EV (NHEV)
- **Dr Mohammad Rihan:** Professor of Electrical Engineering, AMU
- **Ms Hema Jagota:** Country Director, Clinical Solutions at Elsevier

Key Discussion Points:

01 Role of Technology in Engineering Education:

The session discussed the transformative impact of technology on engineering education worldwide, particularly in India. It highlighted the importance of updating curricula to meet industry demands and integrate emerging technologies like AI, Big Data, and Automation. Additionally, there's a critical need to invest in accessible labs with industry-standard equipment to offer handson experience in real-world situations. Furthermore, establishing innovation centres within companies can foster cutting-edge research, technology development, and collaboration with academia.

02 Attracting International Engineering Students:

The expansion of Indian Institutes globally, like in Dubai, was praised for boosting their global reach and drawing international students. To further enhance this, participating in career fairs and networking events hosted by international student organisations is crucial. Providing postgraduation work opportunities, integrating global perspectives into the curriculum, and creating inclusive communities with career counselling services were also suggested. Additionally, showcasing India's cultural heritage is recommended for fostering a welcoming environment.

The session concluded with a sense of shared purpose and a call to action. Discussions focused on improving academic quality, research output, and international collaborations to enhance India's standing in global rankings. By implementing these strategic insights, India can position itself as a top destination for international engineering students, harnessing their talent and fostering a globalised learning environment that benefits all.

"Core engineering will always remain the heart of progress and growth. We need to help people understand how important multi-disciplinary engineering education is for our future."

Prof (Dr) Balvinder Shukla
Vice Chancellor, Amity University

Speakers

Prof (Dr) Anil Sahasrabudhe
Chair, NETF NAAC, and NBA

Dr Rishi Mohan Bhatnagar
President, Lava International Limited,
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Managing Director,
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Ms Hema Jagota
Country Director,
Clinical Solutions at Elsevier

Prof (Dr) Ram Prakash
IIIT Arunachal, Director

Afterword

Shekhar Sanyal

Country Head and Director, IET India

As the curtains draw on this round table discussion, let us not simply close another chapter, but acknowledge that the catalysts for change are often found in the smallest of sparks. Similar to the mythological tale of Samudra Manthan, where the churning of the ocean brought forth treasures of immense value, our collective efforts have the power to unearth innovations that will shape the future of engineering, akin to discovering the "Amrit" of progress. Today, we stand at a crossroads of opportunity and responsibility - potential and reality, where the decisions we make will shape the trajectory of engineering in our nation and beyond.

The recommendations born from our rigorous discourse must not languish as mere words on paper; they must translate into concrete actions that drive progress and innovation. The collaboration between industry, academia, and policymakers is no longer a luxury but a professional imperative, a strategic alliance essential for navigating the complexities of the modern engineering landscape.

We advocate for an education ecosystem that prioritises outcomes over accolades, producing engineers who are not just technically proficient but also possess the strategic foresight to address the multifaceted challenges of our time. Let us champion a culture of excellence and accountability, where every decision is guided by a commitment to sustainability and global impact.

The Institution of Engineering and Technology (IET) in India is deeply invested in fostering an environment conducive to driving progress in the country. We are committed to catalysing collaboration, meaningful dialogue, and high-impact action for India.

The changing face of global engineering demands a calibrated response from India. This report is a catalyst for us to work together to create a roadmap that will transform India's engineering education ecosystem. This is no longer a matter of choice, but a collective necessity.

Together, let us engineer a better world.

The Institution of Engineering and Technology

The Institution of Engineering and Technology is one of the world's largest engineering institutions with over 154,000 members in 148 countries. It is also the most multidisciplinary institution– to reflect the increasingly diverse nature of engineering in the 21st century. The IET is working to engineer a better world by inspiring, informing and influencing our members, engineers and technicians. Over the last decade, the IET-led think tanks in India have been at the forefront of constructing neutral platforms that work closely with academia, industry and the government to create feasible roadmaps built around segments like Future Technologies, Future of Mobility and Transport, STEM and Education. Being a neutral non-commercial platform, we are able to get various industry leaders from competing organisations as well as representatives of the academia and government on the same platform to build implementable roadmaps. The IET's think tanks are led by member volunteers who passionately want to create positive impact in these areas through technology. If you are interested to play an active role in shaping the future of technologies in India, please write to us at **india-marketing@theiet.in**

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