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DQ-CMR T-SCHOOL EMPLOYABILITY INDEX SURVEY 2024 08

PRACTICAL EXPERIENCE & ADAPTABILITY TO EMERGING TECH THE KEY

The Survey provides a detailed analysis of employability and industry readiness in India's engineering education sector.

CHECK OUT THE TOP 100 T-SCHOOLS COMPLETE LISTS INSIDE!

FROM FUNNEL VISION TO GUN-BARREL VISION 40

Eyeing the future of tech skills and aiming for the bull's eye, engineering talent must be sharpened to meet evolving industry demands—and perhaps it's already happening.

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Entrepreneurship on campus—just as an OEM builds its own cars, students are now crafting their own ventures. Who better to understand the system and take the leap?

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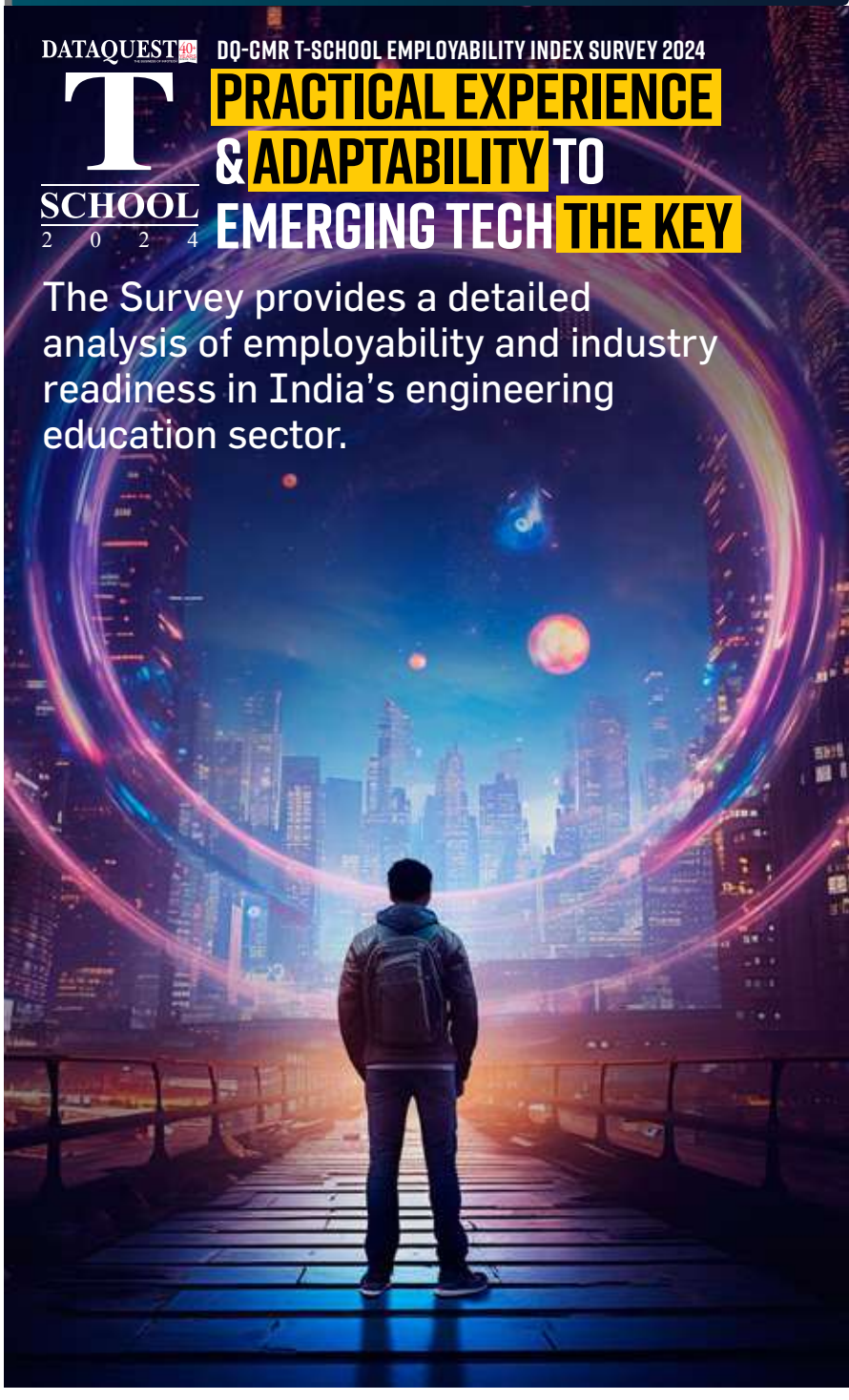

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BRAIN GOING 24X7X365 THANKS TO TECH

Sunil Rajguru
sunilr@cybermedia.co.in

There was a time when we could do nothing from sunset to sunrise but sleep. Even with the invention of fire and the lamp, it was just about enough to do basic tasks, and you would be awake a little bit longer. With the invention of electricity, you could theoretically do anything for 24 hours but still the bedtime got merely extended.

There were inventions that would see you through the night: Books, the radio and TV. Still, everything seemed to have a cut-off time. The dam burst with the proliferation of night shifts, 24-hour TV, the Internet and video games. Now you could do anything 24 hours a day. In many cities in the world nightlife flourished.

But all this was for recreation. The common man worked fixed hours and wouldn't dream of working all night. In the early days factories had fixed long shifts and at the end of it you simply went home. Even when it came to blue collar jobs in the evening you switched off your computer in the office and went home.

That way the first real work disruptor that sent you towards a 24-hour day was the laptop. You could take your work home. You could use it in the car, bus, train, plane and cybercafé. You could take it with you on vacations.

The ultimate extender of them all joined the ranks: The smartphone. More convenient than the laptop, now you could check your work emails all the time. People have extended their waking hours into the night thanks to it and check it first thing in the morning groggy eyed. Our eyesight is deteriorating as are our schedules and quality of sleep. We are already cyborgs with the smartphone becoming a personal unattached device. How long before the device becomes attached? Neuralink and AI will take us to the next level—we can be connected with the world even while sleeping.

Are we destined to be just another device? There are billions of devices already in play. What if the human being became a device connected to all the millions of data centers and hundreds of millions of IoTs? The term Internet came from: Interconnected network of computers. It will soon be an interconnected network of devices, data centers, IoTs, sensors and humans. We will be just another cog in the wheel. Another bit in the byte.

In the end we will probably be networking 20 hours a day and sleeping 4 hours a day. And in those 4 hours of sleep, we would still be connected to the Internet and do something productive. Is this the future of our evolution? Is this the singularity?

Practical experience & adaptability to emerging tech the key

The 2024 DQ-CMR T-School Employability Index Survey presents an in-depth analysis of the evolving landscape of engineering education in India, particularly in terms of employability and industry-readiness. This survey, conducted across a diverse range of engineering institutions, sheds light on critical developments, trends, and challenges that are shaping the future of BE/BTech graduates in the Indian job market.

By Himanshi Pant

As the Indian economy undergoes rapid transformation driven by technological advancements and shifts in industry dynamics, engineering colleges play a pivotal role in preparing the next generation of professionals. However, the job market for BE/BTech graduates is becoming increasingly competitive, with employers seeking candidates who possess not only technical expertise but also practical experience and adaptability to emerging technologies. Our study highlights how engineering institutions are responding to these demands through strategic initiatives, technological integration, and curriculum enhancements, while also identifying areas where further improvement is needed.

RESEARCH METHODOLOGY AND KEY OUTCOMES

The T-School Employability Index Survey for 2024 attracted participation from a diverse range of prestigious educational institutions, including National Institutes of Technology (NITs), Indian Institutes of Information Technology (IIITs), and both private and government-affiliated schools. This broad involvement underscores the survey's significance in assessing the employability landscape within technical education.

By including such a varied array of institutions, the survey captures insights from both established centres

RESEARCH METHODOLOGY

The DQ-CMR T-School Employability Index Survey for 2024 was executed through a meticulous three-phase approach:

PHASE 1 – DESK RESEARCH AND GROUNDWORK

In the initial phase, the EdTech Practice at CMR conducted an extensive desk study to update and expand the relevant information within its EdTech Knowledge Base. This comprehensive groundwork was essential in laying a solid foundation for the survey.

The groundwork phase had two primary objectives:

i) Identification of Technical Schools: A comprehensive list of technical institutions across India was compiled, including both government and private schools established before 2020 that offer undergraduate degrees such as B.E., B.Tech., or their equivalent.

ii) Engagement with EdTech Professionals: Key decision-makers involved in the placement process at these institutions were identified and contacted.

Following the desk research, an official invitation was extended by DQ and CMR to the shortlisted institutions and representatives, inviting their participation in the nationwide survey. This systematic approach ensured the engagement of a diverse range of technical schools and influential EdTech professionals, contributing to a robust and credible survey outcome.

PHASE 2 – PRIMARY RESEARCH

Building on the shortlisting process in Phase 1, CMR's EdTech Practice initiated contact with the selected T-Schools and their key decision-makers. The primary research phase employed a combination of face-to-face, telephonic, and online interviews to gather comprehensive data on campus placements and hirings. These interviews were carefully scheduled to facilitate meaningful discussions, ensuring the collection of relevant and insightful information.

PHASE 3 – PERCEPTION COLLECTION

Beyond collecting factual data, the CMR EdTech team also gathered perceptions of top engineering colleges in terms of placements. This feedback was sourced from a wide range of EdTech specialists, including Principals, Deans, Chancellors, Vice Chancellors, and Senior Professors. The engagement of T-Schools and HR professionals through interviews was a crucial aspect of this phase, allowing the survey to extract pertinent insights and statistics related to campus placements and hirings.

> ACCORDING TO OUR SURVEY, 64% OF COLLEGES HAVE IMPLEMENTED MOBILE APPS FOR TRACKING STUDENTS' PROGRESS DURING PLACEMENTS.

of technical excellence and emerging educational entities, enhancing its credibility and providing a comprehensive view of student outcomes.

The active engagement of these institutions reflects a collective commitment to aligning technical education with industry demands. Their participation contributes to ongoing discussions on employability trends, skill development, and the evolving relationship between academia and industry.

Notably, the survey demonstrated extensive geographical coverage, ensuring representation from T-Schools across all major states in India. This broad geographic representation enriches the survey's insights, capturing regional nuances in employability trends and practices.

The data collection process for the survey was systematic and rigorous, utilizing a standardized questionnaire with over 25 carefully designed questions. This was followed by meticulous verification to ensure data accuracy and integrity. CMR Analysts further engaged with key stakeholders to gain deeper insights into the nuances of placements facilitated by the T-Schools.

The collected data underwent a thorough analysis, including a normalization process to allow for fair comparisons across institutions. This multi-dimensional evaluation resulted in an overall employability index, ranking institutions based on their performance and contributions. The comprehensive approach provided a nuanced understanding of the employability landscape within India's technical education sector.

TECHNOLOGICAL INTEGRATION IN PLACEMENT PROCESSES

In an era where digital transformation is reshaping every industry, engineering colleges are increasingly adopting technology to enhance their placement

MOBILE APPS USED FOR TRACKING STUDENT'S PROGRESS

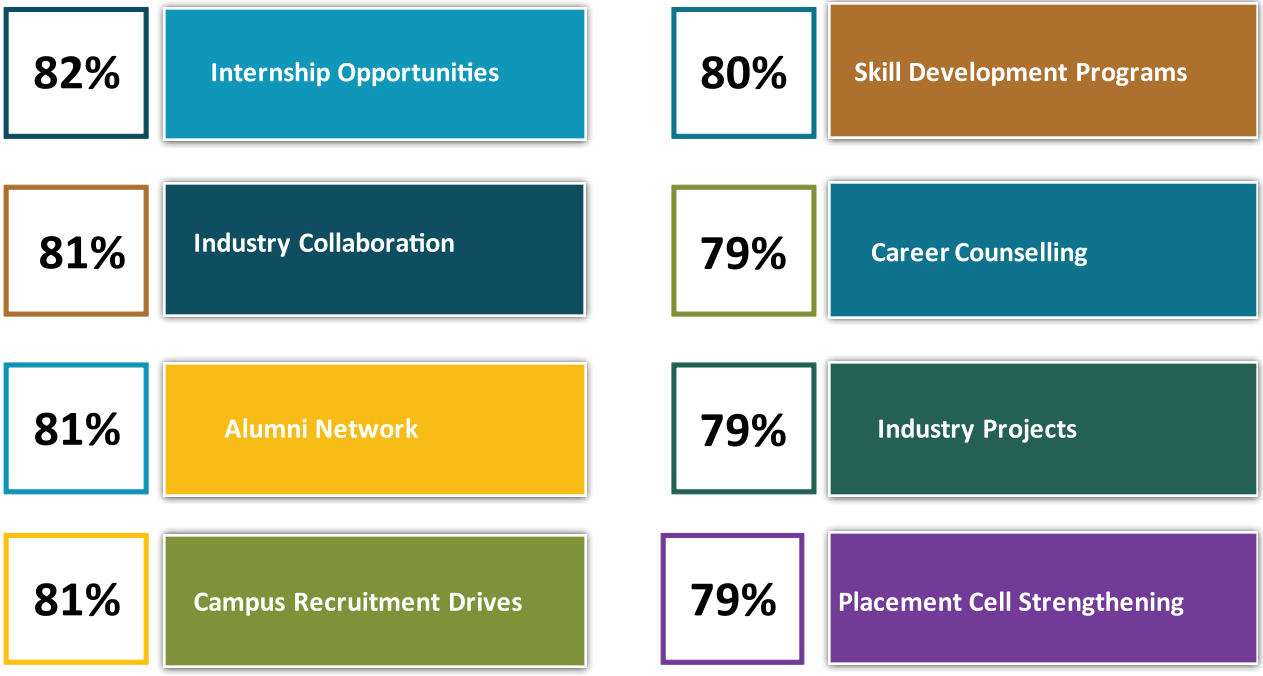
processes. According to our survey, 64% of colleges have implemented mobile apps for tracking students' progress during placements. This adoption of technology reflects a broader shift towards data-driven decision-making and real-time monitoring, allowing institutions to provide more personalized and effective support to their students.

This trend is particularly important in the context of the current job market, where employers are looking for graduates who are not only technically proficient but also adaptable to new technologies. By using mobile apps, colleges can better track the development of their students' skills, monitor their placement readiness, and identify areas where additional support may be needed. This proactive approach helps ensure that students are better prepared to meet the demands of the job market, ultimately leading to higher placement rates and better career outcomes.

STRATEGIC ENHANCEMENTS IN CAMPUS PLACEMENT

Our survey reveals that engineering colleges are taking significant steps to enhance their campus placement efforts in response to the competitive job market. Notably, 82% of colleges are focusing on increasing internship opportunities, recognizing

STEPS TAKEN FOR IMPROVING CAMPUS PLACEMENT



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the value of practical experience in improving employability. Internships provide students with hands-on experience, exposure to real-world challenges, and the opportunity to build networks within the industry—all of which are critical for securing job offers post-graduation.

In addition to internships, 81% of colleges are enhancing their industry collaboration, alumni networks, and campus recruitment drives. These efforts demonstrate a holistic approach to improving employability, where institutions are not only preparing students academically but also ensuring they are well-connected with potential employers. By strengthening ties with industry partners, colleges can offer their students more opportunities to engage with the professional world, gain insights into industry expectations, and secure employment.

Furthermore, 80% of colleges are driving skill development programs aimed at equipping students with the technical and soft skills that are in high demand in the job market. These programs are crucial for bridging the gap between academic knowledge and practical skills, ensuring that graduates are not only knowledgeable but also capable of applying their knowledge in a professional setting.

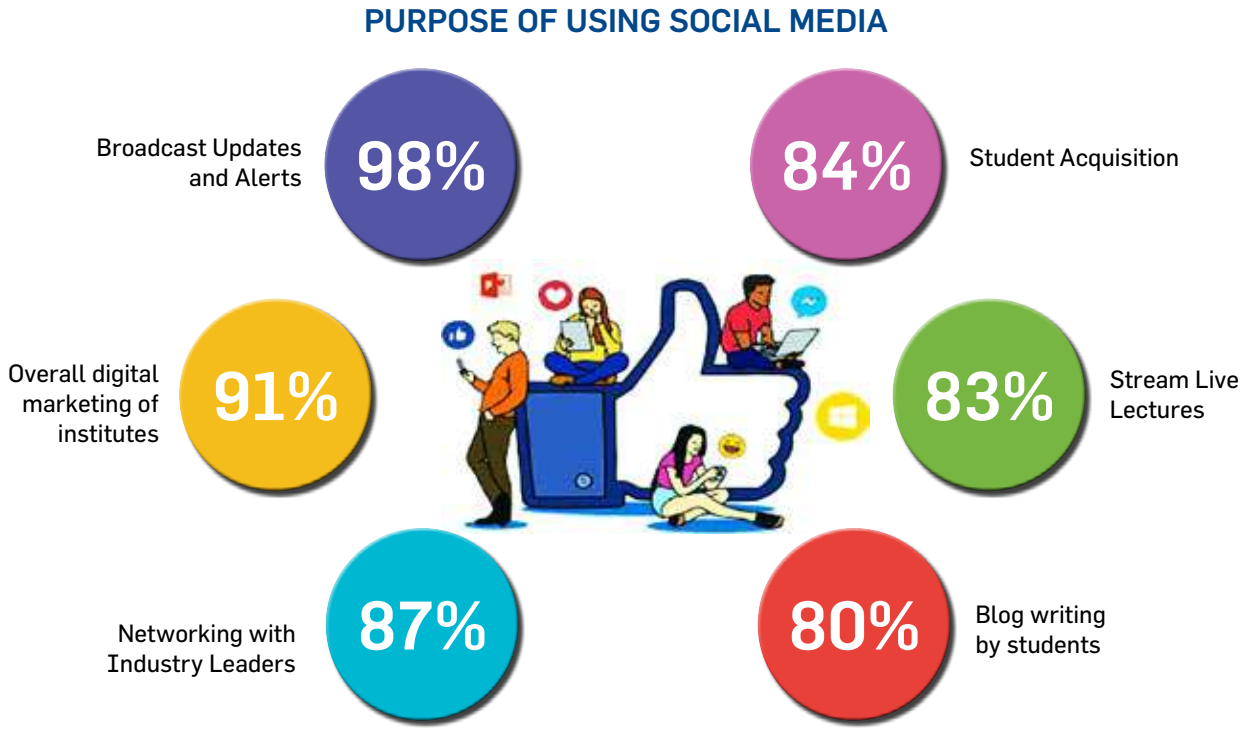
LEVERAGING SOCIAL MEDIA FOR INSTITUTIONAL GROWTH

In today's digital age, having a strong online presence is essential for institutions seeking to attract top talent, engage with industry leaders, and maintain a competitive edge. Our survey reveals that over 80% of engineering colleges have embraced social media as a tool for broadcasting updates and alerts 98%, digital marketing of their institutions 91%, and networking with industry leaders 87%.

Social media is being used strategically to enhance the institution's brand image, reach prospective students, and build relationships with key

INSTITUTES HAVING ACCOUNT ON SOCIAL MEDIA PLATFORMS

> SURVEY REVEALS THAT OVER 80% OF ENGINEERING COLLEGES HAVE EMBRACED SOCIAL MEDIA AS A TOOL FOR BROADCASTING UPDATES AND ALERTS 98%, DIGITAL MARKETING OF THEIR INSTITUTIONS 91%, AND NETWORKING WITH INDUSTRY LEADERS 87%.



stakeholders. The use of social media for networking with industry leaders highlights a shift towards more proactive engagement with the professional community. By establishing themselves as thought leaders and innovators in the education sector, colleges can attract more attention from top-tier companies, ultimately leading to better placement opportunities for their students.

INCUBATION CENTRES AND INDUSTRY PARTNERSHIPS

Our survey findings indicate that 91% of engineering institutions have established incubation centers, with 77% of these centres being supported by industries. This collaboration between academia and industry is essential for fostering innovation, entrepreneurship, and the development of new

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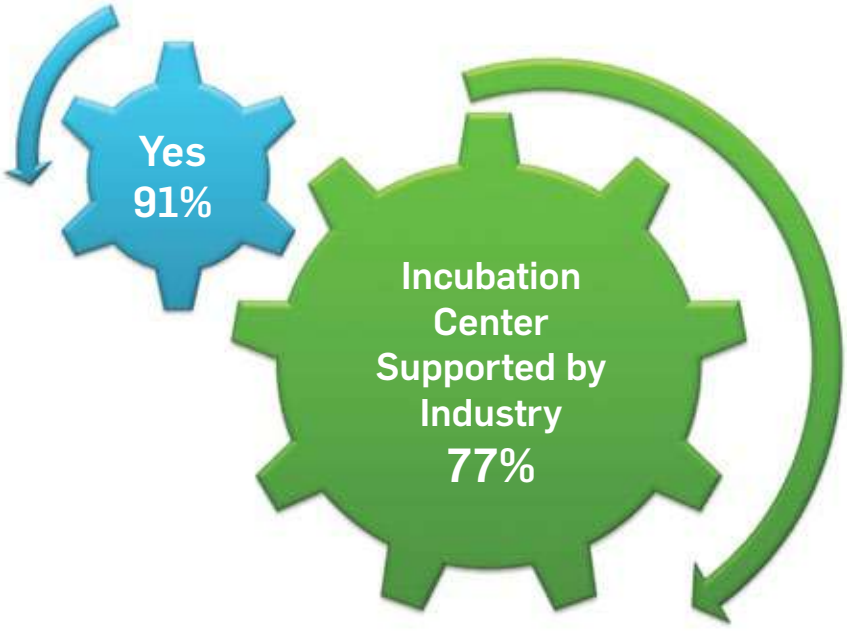
INCUBATION CENTRE IN INSTITUTE



technologies. Incubation centres provide students with the resources, mentorship, and support they need to transform their ideas into viable businesses, thereby enhancing their employability and contributing to the growth of the startup ecosystem in India.

Moreover, 95% of colleges have signed Memorandums of Understanding (MoUs) with various industries, further strengthening their ties with the professional world. These partnerships are critical for providing students with access to industry expertise, resources, and opportunities for hands-on learning. They also facilitate knowledge exchange, allowing colleges to stay updated on the latest industry trends and incorporate them into their curricula.

PLACEMENT TRENDS AND JOB MARKET DYNAMICS

Despite the numerous efforts being made by engineering colleges to improve employability, the current job market for BE/BTech graduates presents several challenges. While the average number of students opting for placements in 2024 slightly increased to 629 from 617 in 2023, the average number

PLACEMENT TRENDS

2022	2023	2024
Average of Maximum Salary per annum INR 20,63,000	**Average of Maximum Salary per annum INR 27,00,000**	**Average of Maximum Salary per annum INR 24,85,000**
Average of Number of students opted for placement - **589**	Average of Number of students opted for placement - **617**	Average of Number of students opted for placement - **629**
Average of Number of companies visiting campus - **111**	Average of Number of companies visiting campus - **133**	Average of Number of companies visiting campus - **128**
Average of Number of students of final year batch got placed - **492**	Average of Number of students of final year batch got placed - **570**	Average of Number of students of final year batch got placed - **509**
Average of Median Salary per annum - **4,84,000**	Average of Median Salary per annum - **6,00,000**	Average of Median Salary per annum - **5,88,000**

of companies visiting campuses decreased from 133 in 2023 to 128 in 2024. This decline is also reflected in the average number of final-year students placed, which dropped from 570 in 2023 to 509 in 2024. Additionally, the average maximum salary per annum fell from ₹27,00,000 in 2023 to ₹24,85,000 in 2024.

These trends suggest a tightening job market, where competition for job opportunities is intensifying. Several factors could be contributing to this scenario, including economic slowdowns, shifts in industry hiring practices, and an oversupply of graduates in certain fields. The decline in salaries and placement rates indicates that while the demand for engineering talent remains strong, employers are becoming more selective, prioritizing candidates with specialized skills and practical experience.

CURRENT JOB MARKET FOR BE/BTECH GRADUATES

The job market for BE/BTech graduates in India is characterized by both opportunities and challenges. On the one hand, there is a growing demand for specialized skills in areas such as AI, Machine Learning, Data Science, and Cybersecurity. These fields are expected to see significant growth in the coming years, and graduates with expertise in these areas are likely to be in high demand. On the other hand, the overall market remains highly competitive, with many graduates vying for a limited number of positions.

The decline in placement numbers and salaries observed in our survey suggests that while there are opportunities available, graduates need to differentiate themselves by acquiring specialized skills, gaining practical experience, and demonstrating adaptability to new technologies. Employers are increasingly looking for candidates who can hit the ground running and contribute to their organizations from day one.

TECHNOLOGICAL ADOPTION IN EDUCATION

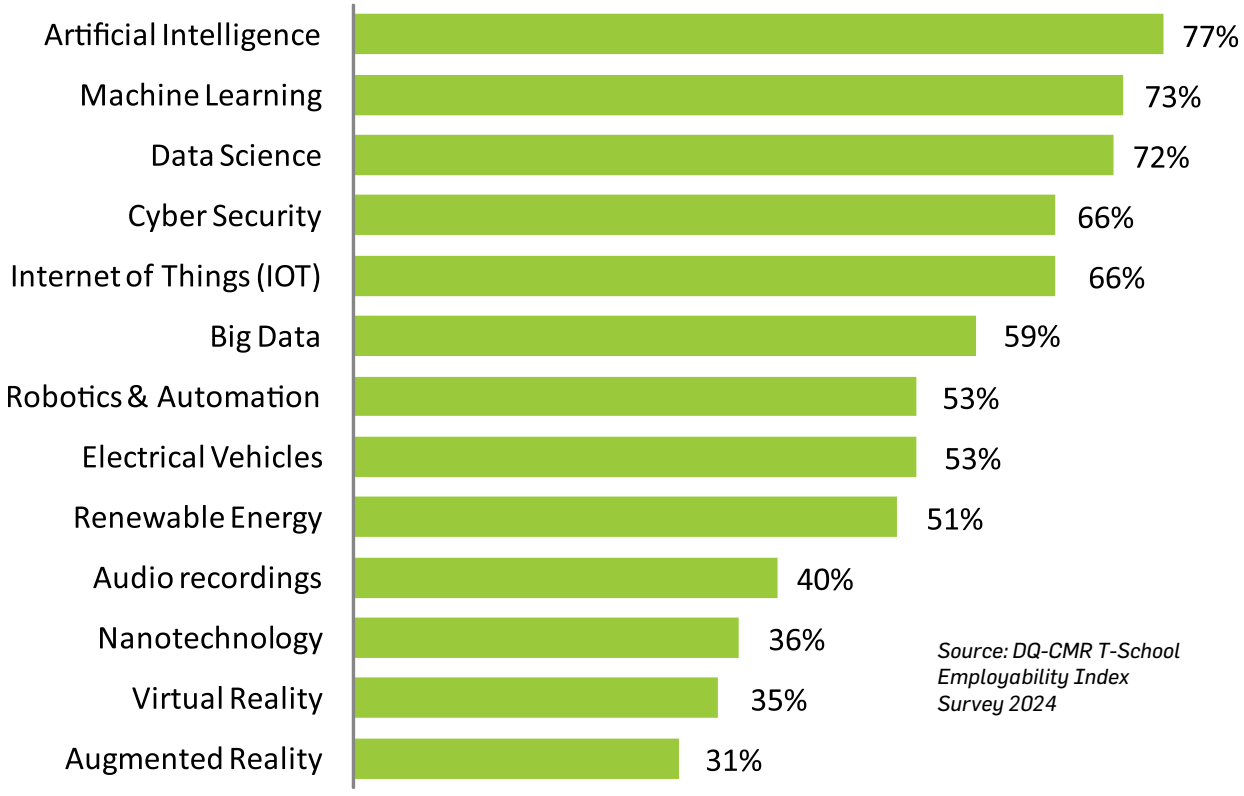
Engineering colleges are making significant strides in integrating advanced technologies into their curricula, reflecting a commitment to preparing students for the demands of the modern workplace. Our survey reveals that software tools such as MATLAB (81%), R/Python (80%), Machine Learning (76%), and Generative AI Tools (75%) are widely used to enhance students' learning experiences. These tools are essential for developing the technical skills that are increasingly in demand across industries.

SOFTWARE USED FOR ENHANCEMENT OF STUDENT'S LEARNING

1. MATLAB (81%)
2. R/Python (80%)
3. Machine Learning (76%)
4. Generative AI Tools (75%)
5. Graphics Software (73%)

6. Data Visualization Software (70%)
7. Textual or Image Analysis Program (59%)
8. GIS applications (56%)
9. SAS / SPSS (54%)
10. AR / VR (52%)

COLLEGES PLANNING TO INTRODUCE NEW STREAMS / COURSES



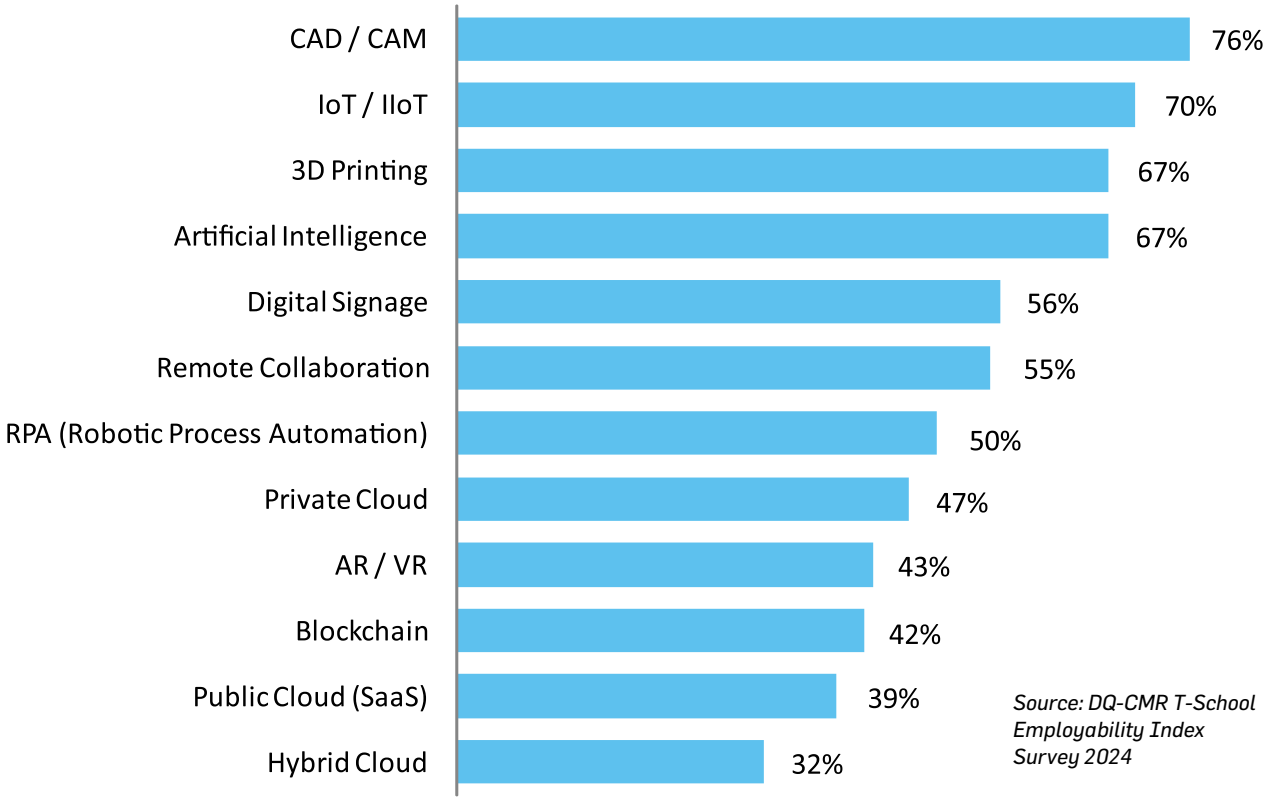
Source: DQ-CMR T-School Employability Index Survey 2024

Furthermore, new streams and courses such as AI (77%), Machine Learning (73%), Data Science (72%), and Cybersecurity (66%) have been introduced, ensuring that graduates are equipped with cutting-edge knowledge in these rapidly evolving fields. This focus on emerging technologies is crucial for maintaining the relevance of engineering education and ensuring that graduates are well-prepared to meet the challenges of the Fourth Industrial Revolution.

IMPLEMENTATION OF CAMPUS TECHNOLOGIES

In addition to curriculum enhancements, engineering colleges are deploying various technologies to improve campus infrastructure and provide students with hands-on experience using industry-relevant tools. According to our survey, CAD/CAM has been implemented in 76% of institutions, IoT/IIoT in 70%, and 3D printing/AI in 67%. These technologies are not only enhancing

STATUS OF IMPLEMENTATION OF TECHNOLOGIES IN CAMPUS



Source: DQ-CMR T-School Employability Index Survey 2024

the learning environment but also providing students with the skills they need to succeed in the job market.

The deployment of these advanced technologies is a testament to the institutions' commitment to providing a modern, application-based education that goes beyond traditional classroom learning. By giving students access to the tools and technologies they will encounter in their professional careers, colleges are ensuring that their graduates are job-ready and capable of making an immediate impact in the workplace.

RECOMMENDATIONS AND WAY FORWARD

To address the challenges identified in this study and to further enhance employability outcomes, engineering colleges should consider the following recommendations:

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1. **Enhanced Industry Collaboration:** Strengthen partnerships with industry to create more internship opportunities and real-world project experiences for students. These partnerships should also focus on co-developing curricula that are aligned with industry needs, ensuring that graduates are well-prepared to meet the demands of the job market.
2. **Focus on Skill Development:** Continue to invest in skill development programs, particularly in emerging areas such as AI, Machine Learning, Data Science, and Cybersecurity. These programs should be designed to provide students with both the technical skills and the practical experience they need to succeed in the job market.
3. **Expand Digital Engagement:** Leverage social media and other digital platforms not just for marketing but for creating communities of practice where students, alumni, and industry professionals can interact, share knowledge, and collaborate on projects.
4. **Adopt a Data-Driven Approach:** Use data analytics to monitor student progress, identify areas where additional support is needed, and make informed decisions about curriculum and placement strategies. This approach can help institutions stay agile and responsive to changes in the job market.
5. **Increase Focus on Entrepreneurship:** Encourage students to explore entrepreneurial opportunities by providing access to incubation centres, mentorship, and funding. Supporting student-led startups can not only enhance employability but also contribute to the broader economic development of the region.
6. **Maintain Flexibility in Curriculum:** Continuously update curricula to reflect the latest industry trends and technologies. This flexibility will ensure that students are always learning the most relevant and up-to-date skills, making them more competitive in the job market.

Himanshi Pant, Research Analyst, CMR.

Top 100 T-Schools (Factual Ranking) Employability Index

INSTITUTE NAME	CITY	RANK
International Institute Of Information Technology	Hyderabad	1
Netaji Subhas University Of Technology	New Delhi	2
Indraprastha Institute Of Information Technology	New Delhi	3
Maulana Abdul kalam Azad University Of Technology	Haringhata	4
International Institute Of Information Technology	Bengaluru	5
National Institute Of Technology	Delhi	6
Amity School Of Engineering & Technology	Lucknow	7
Maharaja Agrasen Institute Of Technology	Delhi	8
PCET-NMVPM's Nutan College Of Engineering And Research	Pune	9
Chitkara University Institute Of Engineering And Technology	Patiala	10
COEP Technological University, (Formerly College of Engineering)	Pune	11
Pimpri Chinchwad College Of Engineering	Pune	12
Chandigarh Engineering College (CGC)	Landran Mohali	13
Amity School Of Engineering & Technology (Aset)	Gurugram	14
Amity School Of Engineering And Technology	Raipur	15
KCG College Of Technology (An Autonomous Institution)	Chennai	16
Amity School Of Engineering And Technology	Mumbai	17
School Of Engineering	Ujjain	18
Nutan Maharashtra Institute Of Engineering & Technology	Pune	19
Faculty Of Science & Technology (ICFAI Tech)	Hyderabad	20
Bharati Vidyapeeth (Deemed To Be University) College Of Engineering	Pune	21*
Rungta College Of Engineering & Technology	Bhilai	21*
KPR Institute Of Engineering And Technology	Coimbatore	22
Amity School Of Engineering & Technology	Ranchi	23
B.S. Abdur Rahman Crescent Institute Of Science And Technology	Chennai	24
Rajalakshmi Engineering College	Chennai	25
Gandhi Institute For Education And Technology	Khordha	26
Koneru Lakshmaiah Education Foundation	Guntur	27
Maharaja Surajmal Institute Of Technology	New Delhi	28
Amity School Of Engineering And Technology	Patna	29
Panimalar Engineering College	Chennai	30
Amity School Of Engineering And Technology	Kolkata	31
Amity School Of Engineering And Technology	Gwalior	32
Sai Sairam College Of Engineering	Anekal	33

INSTITUTE NAME	CITY	RANK
Vidya Jyothi Institute Of Technology	Hyderabad	34
BVRIT Hyderabad College Of Engineering For Women	Hyderabad	35
M.Kumarasamy College Of Engineering	Karur	36
Amity School Of Engineering & Technology	Jaipur	37*
BNM Institute Of Technology	Bangalore	37*
R.M.K. Engineering College	Thiruvallur	38
S C M S School Of Engineering And Technology	Ernakulam	39
BMS Institute Of Technology & Management	Bengaluru	40
Chhatrapati Shivaji Institute Of Technology	Durg	41
K. Ramakrishnan College Of Engineering	Tiruchirappalli	42
Knowledge Institute Of Technology	Salem	43
SASI Institute Of Technology & Engineering	Kakinada	44
Velagapudi Ramakrishna Siddhartha Engineering College (Autonomous)	Vijayawada	45
Shri Ram Institute Of Technology	Jabalpur	46
Pimpri Chinchwad College Of Engineering & Research	Pune	47
Rajshree Institute Of Management & Technology	Bareilly	48
G. Pullaiah College Of Engineering And Technology	Kurnool	49*
GMR Institute Of Technology	Razam	49*
Guru Nanak Institutions Technical Campus	Hyderabad	50
Rajagiri School Of Engineering & Technology (Autonomous)	Kakkand	51
Thiagarajar College Of Engineering	Madurai	52
Gita Autonomous College	Bhubaneswar	53
Sagi Rama Krishnam Raju Engineering College	Bhimavaram	54
Hindusthan Insitute Of Technology	Coimbatore	55
SJC Institute Of Technology	Chickballapur	56
Inderprastha Engineering College	Ghaziabad	57
Erode Sengunthar Engineering College	Erode	58
The Oxford College Of Engineering	Bengaluru	59
Kamaraj College Of Engineering And Technology	Virudhuanagar	60
Birsa Institute Of Technology Sindri	Dhanbad	61
PVP Siddhartha Institute Of Technology	Vijayawada	62
Sri Manakula Vinayagar Engineering College	Puducherry	63
Annamacharya Institute Of Technology And Sciences (Autonomous)	Kadapa	64
Lakireddy Bali Reddy College Of Engineering	Mylavaram	65
Model Institute Of Engineering & Technology	Jammu	66
RNS Institute Of Technology	Bangalore	67
Sanjivani College Of Engineering	Kopargaon	68

INSTITUTE NAME	CITY	RANK
Institute Of Aeronautical Engineering	Hyderabad	69
Government Model Engineering College	Kochi	70*
K K R & K S R Institute Of Technology And Sciences	Guntur	70*
Malla Reddy College Of Engineering And Technology	Secunderabad	71
Dr Mahalingam College Of Engineering And Technology	Pollachi	72
Sri Indu College Of Engineering & Technology	Hyderabad	73
Vel Tech Rangarajan Dr. Sagunthala R&D Institute Of Science And Technology	Chennai	74
Teegala Krishna Reddy Engineering College	Hyderabad	75
Kanpur Institute Of Technology	Kanpur	76
Hindusthan College Of Engineering And Technology	Coimbatore	77
Budge Budge Institute Of Technology	Kolkata	78
CMR Institute Of Technology	Hyderabad	79
Madhav Institute Of Technology & Science (MITS), Deemed To Be University	Gwalior	80
Ramachandra College Of Engineering	Eluru	81
Annamacharya Institute Of Technology And Sciences (Autonomous)	Rajampet	82
Aditya College Of Engineering & Technology	Surampalem	83*
Vidyavardhaka College Of Engineering	Mysuru	83*
Matrusri Engineering College	Hyderabad	84
Narasaraopeta Engineering College	Narasaraopet	85
Velalar Collge Of Engineering And Technology	Erode	86
Muthayammal Engineering College	Rasipuram	87
K. D. K. College Of Engineering	Nagpur	88
Sri Indu Institute Of Engineering And Technology	Hyderabad	89
Aditya University (Formerly Known as Aditya Engineering College)	Kakinada	90
Sai Vidya Institute Of Technology	Bangalore	91
Annamacharya Institute Of Technology & Sciences	Tirupati	92*
S.B. Jain Institute Of Technology, Management And Research	Nagpur	92*
Sri Venkateswara College Of Engineering	Tirupati	93
T.John Institute Of Technology	Bengaluru	94
Shri Ram Murti Smarak College Of Engineering And Technology	Bareilly	95
Shri Sant Gajanan Maharaj College Of Engineering	Shegaon	96
MVJ College Of Engineering	Bangalore	97
Ravindra College Of Engineering For Women	Kurnool	98
Sethu Institute Of Technology	Virudhunagar	99
Ajay Kumar Garg Engineering College	Ghaziabad	100

* These institutes share the same rank due to identical scores
Source: DQ-CMR T-School Employability Index Survey 2024

Top Government Institutes (Factual Ranking)

INSTITUTE NAME	CITY	RANK
International Institute Of Information Technology	Hyderabad	1
Netaji Subhas University Of Technology	New Delhi	2
Indraprastha Institute Of Information Technology	New Delhi	3
Maulana Abdul kalam Azad University Of Technology	Haringhata	4
International Institute Of Information Technology	Bengaluru	5
National Institute Of Technology	Delhi	6
GMR Institute Of Technology	Razam	7
Thiagarajar College Of Engineering	Madurai	8
The Oxford College Of Engineering	Bengaluru	9
Birsa Institute Of Technology Sindri	Dhanbad	10
Government Model Engineering College	Kochi	11
Madhav Institute Of Technology & Science (MITS), Deemed To Be University	Gwalior	12

Source: DQ-CMR T-School Employability Index Survey 2024

International Institute Of Information Technology, Hyderabad

Top Private T-Schools (Factual Ranking)

INSTITUTE NAME	CITY	RANK
Amity School Of Engineering & Technology	Lucknow	1
Maharaja Agrasen Institute Of Technology	Delhi	2
PCET-NMVPM's Nutan College Of Engineering And Research	Pune	3
Chitkara University Institute Of Engineering And Technology	Patiala	4
COEP Technological University, (Formerly College of Engineering)	Pune	5
Pimpri Chinchwad College Of Engineering	Pune	6
Chandigarh Engineering College (CGC)	Landran Mohali	7
Amity School Of Engineering & Technology (Aset)	Gurugram	8
Amity School Of Engineering And Technology	Raipur	9
KCG College Of Technology (An Autonomous Institution)	Chennai	10
Amity School Of Engineering And Technology	Mumbai	11
School Of Engineering	Ujjain	12
Nutan Maharashtra Institute Of Engineering & Technology	Pune	13
Faculty Of Science & Technology (ICFAI Tech)	Hyderabad	14
Bharati Vidyapeeth (Deemed To Be University) College Of Engineering	Pune	15*
Rungta College Of Engineering & Technology	Bhilai	15*
KPR Institute Of Engineering And Technology	Coimbatore	16
Amity School Of Engineering & Technology	Ranchi	17
B.S. Abdur Rahman Crescent Institute Of Science And Technology	Chennai	18
Rajalakshmi Engineering College	Chennai	19
Gandhi Institute For Education And Technology	Khordha	20
Koneru Lakshmaiah Education Foundation	Guntur	21
Maharaja Surajmal Institute Of Technology	New Delhi	22
Amity School Of Engineering And Technology	Patna	23
Panimalar Engineering College	Chennai	24
Amity School Of Engineering And Technology	Kolkata	25
Amity School Of Engineering And Technology	Gwalior	26
Sai Sairam College Of Engineering	Anekal	27
Vidya Jyothi Institute Of Technology	Hyderabad	28
BVRIT Hyderabad College Of Engineering For Women	Hyderabad	29
M.Kumarasamy College Of Engineering	Karur	30

INSTITUTE NAME	CITY	RANK
Amity School Of Engineering & Technology	Jaipur	31*
BNM Institute Of Technology	Bangalore	31*
R.M.K. Engineering College	Thiruvallur	32
S C M S School Of Engineering And Technology	Ernakulam	33
BMS Institute Of Technology & Management	Bengaluru	34
Chhatrapati Shivaji Institute Of Technology	Durg	35
K. Ramakrishnan College Of Engineering	Tiruchirappalli	36
Knowledge Institute Of Technology	Salem	37
SASI Institute Of Technology & Engineering	Kakinada	38
Velagapudi Ramakrishna Siddhartha Engineering College, (Autonomous)	Vijayawada	39
Shri Ram Institute Of Technology	Jabalpur	40
Pimpri Chinchwad College Of Engineering & Research	Pune	41
Rajshree Institute Of Management & Technology	Bareilly	42
G. Pullaiah College Of Engineering And Technology	Kurnool	43
Guru Nanak Institutions Technical Campus	Hyderabad	44
Rajagiri School Of Engineering & Technology-Autonomous	Kakkand	45
Gita Autonomous College	Bhubaneswar	46
Sagi Rama Krishnam Raju Engineering College	Bhimavaram	47
Hindusthan Insitute Of Technology	Coimbatore	48
SJC Institute Of Technology	Chickballapur	49
Inderprastha Engineering College	Ghaziabad	50
Erode Sengunthar Engineering College	Erode	51
Kamaraj College Of Engineering And Technology	Virudhuanagar	52
PVP Siddhartha Institute Of Technology	Vijayawada	53
Sri Manakula Vinayagar Engineering College	Puducherry	54
Annamacharya Institute Of Technology And Sciences (Autonomous)	Kadapa	55
Lakireddy Bali Reddy College Of Engineering	Mylavaram	56
Model Institute Of Engineering & Technology	Jammu	57
RNS Institute Of Technology	Bangalore	58
Sanjivani College Of Engineering	Kopargaon	59
Institute Of Aeronautical Engineering	Hyderabad	60
K K R & K S R Institute Of Technology And Sciences	Guntur	61

INSTITUTE NAME	CITY	RANK
Malla Reddy College Of Engineering And Technology	Secunderabad	62
Dr Mahalingam College Of Engineering And Technology	Pollachi	63
Sri Indu College Of Engineering & Technology	Hyderabad	64
Vel Tech Rangarajan Dr. Sagunthala R&D Institute Of Science And Technology	Chennai	65
Teegala Krishna Reddy Engineering College	Hyderabad	66
Kanpur Institute Of Technology	Kanpur	67
Hindusthan College Of Engineering And Technology	Coimbatore	68
Budge Budge Institute Of Technology	Kolkata	69
CMR Institute Of Technology	Hyderabad	70
Ramachandra College Of Engineering	Eluru	71
Annamacharya Institute Of Technology And Sciences (Autonomous)	Rajampet	72
Aditya College Of Engineering & Technology	Surampalem	73*
Vidyavardhaka College Of Engineering	Mysuru	73*
Matrusri Engineering College	Hyderabad	74
Narasaraopeta Engineering College	Narasaraopet	75
Velalar Collge Of Engineering And Technology	Erode	76
Muthayammal Engineering College	Rasipuram	77
K. D. K. College Of Engineering	Nagpur	78
Sri Indu Institute Of Engineering And Technology	Hyderabad	79
Aditya University,Formerly Known as Aditya Engineering College	Kakinada	80
Sai Vidya Institute Of Technology	Bangalore	81
Annamacharya Institute Of Technology & Sciences	Tirupati	82*
S.B. Jain Institute Of Technology, Management And Research	Nagpur	82*
Sri Venkateswara College Of Engineering	Tirupati	83
T.John Institute Of Technology	Bengaluru	84
Shri Ram Murti Smarak College Of Engineering And Technology	Bareilly	85
Shri Sant Gajanan Maharaj College Of Engineering	Shegaon	86
MVJ College Of Engineering	Bangalore	87
Ravindra College Of Engineering For Women	Kurnool	88
Sethu Institute Of Technology	Virudhunagar	89
Ajay Kumar Garg Engineering College	Ghaziabad	90

**These institutes share the same rank due to identical scores
Source: DQ-CMR T-School Employability Index Survey 2024

Top 10 Zone Wise Institutes (Factual Ranking)

	INSTITUTE	CITY	RANK
East	Maulana Abdulkalam Azad University Of Technology	Haringhata	1
	Amity School Of Engineering And Technology	Raipur	2
	Rungta College Of Engineering & Technology	Bhilai	3
	Amity School Of Engineering & Technology	Ranchi	4
	Gandhi Institute For Education And Technology	Khordha	5
	Amity School Of Engineering And Technology	Patna	6
	Amity School Of Engineering And Technology	Kolkata	7
	Chhatrapati Shivaji Institute Of Technology	Durg	8
	Gita Autonomous College	Bhubaneswar	9
	Birsa Institute Of Technology Sindri	Dhanbad	10

	INSTITUTE	CITY	RANK
West	PCET-NMVPM's Nutan College Of Engineering And Research	Pune	1
	COEP Technological University, (Formerly College of Engineering)	Pune	2
	Pimpri Chinchwad College Of Engineering	Pune	3
	Amity School Of Engineering And Technology	Mumbai	4
	School Of Engineering	Ujjain	5
	Nutan Maharashtra Institute Of Engineering & Technology	Pune	6
	Bharati Vidyapeeth (Deemed To Be University) College Of Engineering	Pune	7
	Amity School Of Engineering And Technology	Gwalior	8
	Shri Ram Institute Of Technology	Jabalpur	9
	Pimpri Chinchwad College Of Engineering & Research	Pune	10

	INSTITUTE	CITY	RANK
North	Netaji Subhas University Of Technology	New Delhi	1
	Indraprastha Institute Of Information Technology	New Delhi	2
	National Institute Of Technology	Delhi	3
	Amity School Of Engineering & Technology	Lucknow	4
	Maharaja Agrasen Institute Of Technology	Delhi	5
	Chitkara University Institute Of Engineering And Technology	Patiala	6
	Chandigarh Engineering College (CGC)	Landran Mohali	7
	Amity School Of Engineering & Technology (Aset)	Gurugram	8
	Maharaja Surajmal Institute Of Technology	New Delhi	9
	Amity School Of Engineering & Technology	Jaipur	10

	INSTITUTE	CITY	RANK
South	International Institute Of Information Technology	Hyderabad	1
	International Institute Of Information Technology	Bengaluru	2
	KCG College Of Technology (An Autonomous Institution)	Chennai	3
	Faculty Of Science & Technology (ICFAI Tech)	Hyderabad	4
	KPR Institute Of Engineering And Technology	Coimbatore	5
	B.S. Abdur Rahman Crescent Institute Of Science And Technology	Chennai	6
	Rajalakshmi Engineering College	Chennai	7
	Koneru Lakshmaiah Education Foundation	Guntur	8
	Panimalar Engineering College	Chennai	9
	Sai Sairam College Of Engineering	Anekal	10

Source: DQ-CMR T-School Employability Index Survey 2024

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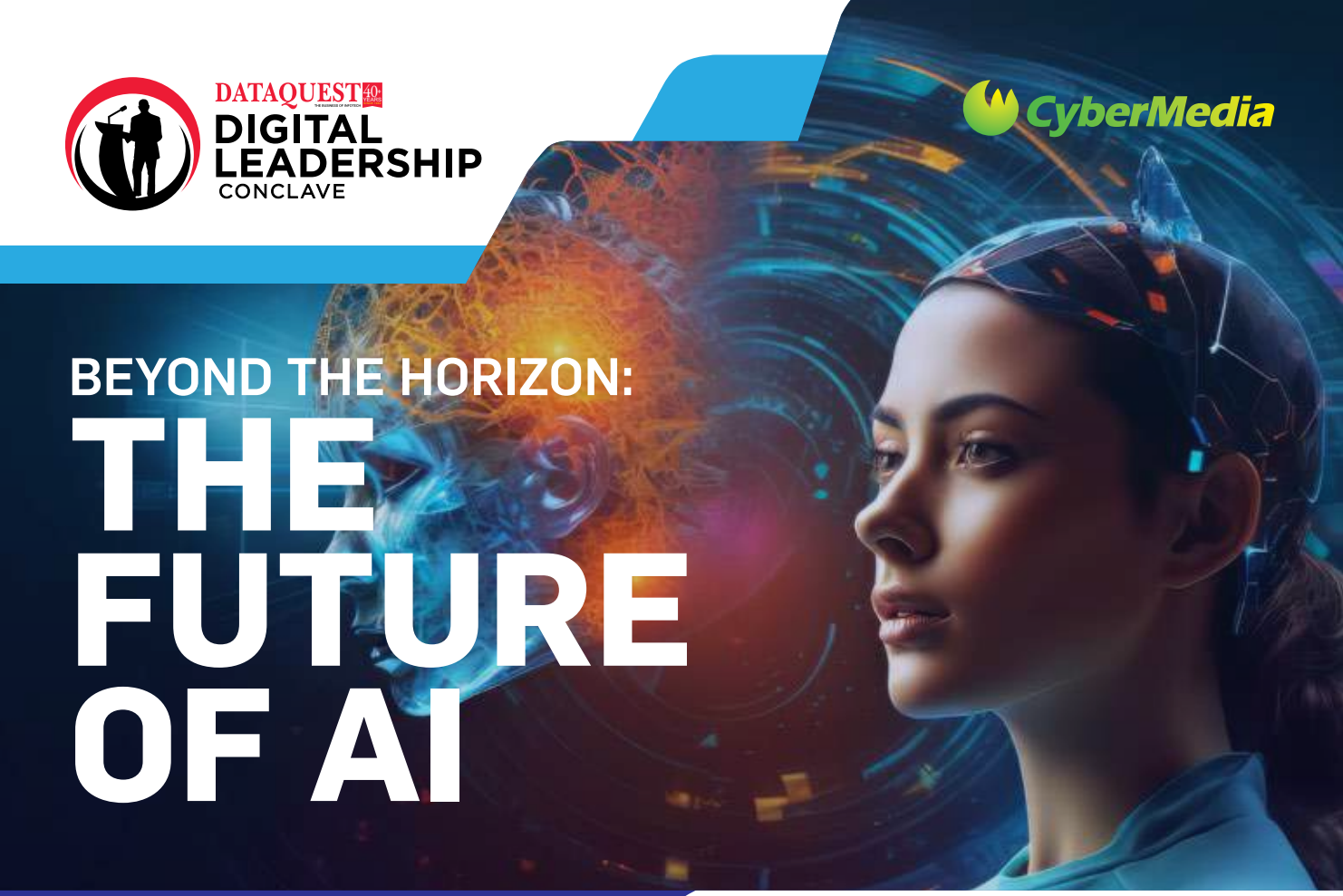

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Top 100 T-Schools (Perceptual Ranking) Employability Index

INSTITUTE NAME	CITY	RANK
Indian Institute Of Technology	Chennai	1
Indian Institute Of Technology	Mumbai	2
Indian Institute Of Technology	New Delhi	3
Indian Institute Of Technology	Kanpur	4
Indian Institute Of Technology	Kharagpur	5
Indian Institute Of Technology	Roorkee	6
Indian Institute Of Technology	Guwahati	7
National Institute Of Technology	Tiruchirappalli	8
Indian Institute Of Technology	Hyderabad	9
Birla Institute Of Technology & Science	Pilani	10
Vellore institute of Technology	Vellore	11
National Institute Of Technology	Rourkela	12
Vellore Institute of Technology	Nagpur	12
Indian Institute Of Technology (Banaras Hindu University)	Varanasi	13
National Institute Of Technology	Surathkal	14
Anna University	Chennai	15
Jadavpur University	Kolkata	16
Amrita Vishwa Vidyapeetham	Coimbatore	17
National Institute Of Technology	Warangal	18
Indian Institute Of Technology	Indore	19
Indian Institute Of Technology	Dhanbad	20
Indian Institute Of Technology	Ropar	21*
Amrita Vishwa Vidyapeetham	Amaravati	21*
Jamia Millia Islamia	New Delhi	22
National Institute Of Technology	Calicut	23
Indian Institutes of Information Technology	Hyderabad	24
Indian Institute of Science (IISc)	Bengaluru	25
B.M.S.College Of Engineering	Bengaluru	26
PSG College of Technology	Coimbatore	27
Delhi Technological University	New Delhi	28
Indian Institute Of Technology	Jodhpur	29
Indian Institute Of Technology	Mandi	30
Indian Institute Of Technology	Patna	31
Amity School Of Engineering And Technology	Noida	32
Chandigarh University	Chandigarh	33

INSTITUTE NAME	CITY	RANK
Aligarh Muslim University	Aligarh	34
Indian Institutes of Information Technology	Allahabad	35
Koneru Lakshmaiah Education Foundation	Guntur	36
Indian Institutes of Information Technology	Bengaluru	37
Kalinga Institute Of Industrial Technology	Bhubaneswar	38
Indian Institute Of Technology	Gandhinagar	39
Institute Of Chemical Technology	Mumbai	40
SRM Institute of Science and Technology	Chennai	41
National Institute Of Technology	Silchar	42
Sri Sivasubramaniya Nadar (SSN) College of Engineering	Chennai	43*
Visvesvaraya National Institute of Technology	Nagpur	43*
National Institute Of Technology	Delhi	44
National Institute Of Technology	Durgapur	45
International Institute Of Information Technology	Hyderabad	46
Malaviya National Institute of Technology	Jaipur	47
Lovely Professional University (LPU)	Jalandhar	49
Indian Institute of Engineering Science and Technology (IIEST)	Shibpur	50
Birla Institute Of Technology	Ranchi	51
Indian Institute of Space Science and Technology	Thiruvananthapuram	52*
Indian Institute Of Technology	Bhubaneswar	52*
B.S Abdur Rahman Crescent Institute Of Science And Technology	Chennai	53
Manipal Institute of Technology (MIT)	Manipal	54
National Institute Of Technology	Patna	55
Dr. B R Ambedkar National Institute Of Technology	Jalandhar	56
Netaji Subhas University Of Technology	New Delhi	57
Motilal Nehru National Institute Of Technology	Prayagraj	58
Sardar Vallabhbhai National Institute of Technology	Surat	59
Institute Of Aeronautical Engineering	Hyderabad	60
Maulana Abul Kalam Azad University Of Technology	Haringhata	61
Pimpri Chinchwad College Of Engineering	Pune	62
Defence Institute of Advanced Technology	Pune	63
PSG Institute of Technology and Applied Research	Coimbatore	64
Sathyabama Institute Of Science And Technology	Chennai	65
Vardhaman College Of Engineering	Hyderabad	66
National Institute Of Technology	Raipur	67
Visvesvaraya Technological University	Belagavi	68

INSTITUTE NAME	CITY	RANK
University of Hyderabad	Hyderabad	69
Maulana Azad National Institute of Technology	Bhopal	70
Gokaraju Rangaraju Institute of Engineering and Technology	Hyderabad	71*
Indian Institute Of Technology	Tiruchirappalli	71*
National Institute Of Technology	Surat	72
Dr. D Y Patil's Ramrao Adik Institute Of Technology	Mumbai	73
COEP Technological University, (Formerly College of Engineering)	Pune	74
M. S. Ramaiah Institute Of Technology	Bengaluru	75
International Institute of Information Technology	Bengaluru	76
National Institute Of Technology	Srinagar	77
National Institute Of Technology	Kurukshetra	78
Shanmugha Arts Science Technology & Research Academy	Thanjavur	79
National Institute Of Technology	Agartala	80
Indraprastha Institute Of Information Technology	New Delhi	81
University College Of Engineering	Hyderabad	82*
Vishwakarma Institute Of Technology	Pune	82*
Vel Tech Rangarajan Dr. Sagunthala R&D Institute Of Science And Technology	Chennai	83
AU College of Engineering (A)	Visakhapatnam	84
Jawaharlal Nehru Technological University	Kakinada	85
Vignan's Foundation for Science, Technology and Research	Guntur	86
Indian Institute Of Technology	Dharwad	87
ABV Indian Institute Of Information Technology And Management	Gwalior	88
Chitkara University Institute Of Engineering And Technology	Patiala	89
Chandigarh Engineering College (CGC)	Landran Mohali	90
Christ University	Bengaluru	91
Thiagarajar College Of Engineering	Madurai	92
Amity School Of Engineering & Technology	Jaipur	93
Amity School Of Engineering And Technology	Mumbai	94
Thapar institute of Engineering & Technology	Patiala	95
R.V. College Of Engineering	Bengaluru	96
Siddaganga Institute Of Technology	Tumkur	97
National Institute Of Technology	Bhopal	98
Thapar University	Patiala	99
Anurag University	Hyderabad	100

* These institutes share the same rank due to identical scores
Source: DQ-CMR T-School Employability Index Survey 2024

Regional Top 50 Ranking (East - Perceptual Ranking)

REGION	INSTITUTE NAME	CITY	RANK
East	Indian Institute Of Technology	Kharagpur	1
East	Indian Institute Of Technology	Guwahati	2
East	National Institute Of Technology	Rourkela	3
East	Jadavpur University	Kolkata	4
East	Indian Institute Of Technology	Dhanbad	5
East	National Institute Of Technology	Calicut	6
East	Indian Institute Of Technology	Patna	7
East	Kalinga Institute Of Industrial Technology	Bhubaneswar	8
East	National Institute Of Technology	Silchar	9
East	National Institute Of Technology	Durgapur	10
East	Indian Institute of Engineering Science and Technology (IIEST)	Shibpur	11
East	Indian Institute Of Technology	Bhubaneswar	12
East	National Institute Of Technology	Patna	13
East	National Institute Of Technology	Raipur	14
East	Maulana Abul Kalam Azad University Of Technology	Haringhata	15
East	National Institute Of Technology	Agartala	16
East	Birla Institute Of Technology	Mesra Ranchi	17
East	Sister Nivedita University	Kolkata	18
East	Indian Institutes of Information Technology	Bhubaneswar	19
East	National Institute Of Technology	Jamshedpur	20
East	Techno India University	Kolkata	21
East	Amity School Of Engineering And Technology	Ranchi	22
East	North Eastern Regional Institute of Science and Technology	Itanagar	23
East	Bankura Unnayani Institute Of Engineering	Bankura	24
East	Indian Institute Of Technology	Calicut	25
East	Siksha O Anusandhan	Bhubaneswar	26
East	Sikkim Manipal University	Gangtok	27
East	St. Xavier's University	Kolkata	28
East	Dr. C. V. Raman University	Bilaspur	29
East	Indian Institute Of Technology	Bhilai	30
East	Tezpur University	Tezpur	31
East	Gita Autonomous College	Bhubaneswar	32
East	National Institute Of Technology	Imphal	33
East	Trident Academy Of Technology	Bhubaneswar	34
East	Indian Institutes of Information Technology	Guwahati	35
East	KIIT University	Bhubaneswar	36
East	Siksha 'O' Anusandhan	Bhubaneswar	37
East	Silicon Institute of Technology	Bhubaneswar	38
East	Gandhi Engineering College	Bhubaneswar	39
East	Girijananda Chowdhury Institute Of Management And Technology	Guwahati	40
East	Mizoram University, School Of Engineering And Technology	Aizawl	41
East	Al-Karim University	Bihar	42
East	ARKA Jain University	Jamshedpur	43
East	Assam Don Bosco University	Sonapur	44
East	Assam Down Town University	Guwahati	45
East	Assam Professional Academy	Guwahati	46
East	Birla Institute Of Technology	Patna	47
East	CV Raman Global University	Bhubaneswar	48
East	Indian Institutes of Information Technology	Kalyani	49
East	Indian Statistical Institute (ISI)	Kolkata	50

Source: DQ-CMR T-School Employability Index Survey 2024

Regional Top 50 Ranking (West - Perceptual Ranking)

REGION	INSTITUTE NAME	CITY	RANK
West	Indian Institute Of Technology	Mumbai	1
West	Birla Institute Of Technology & Science	Pilani	2
West	Vellore Institute of Technology	Nagpur	3
West	Indian Institute Of Technology	Indore	4
West	Indian Institute Of Technology	Jodhpur	5
West	Indian Institute Of Technology	Gandhinagar	6
West	Institute Of Chemical Technology	Mumbai	7
West	Malaviya National Institute of Technology	Jaipur	8
West	Sardar Vallabhbhai National Institute of Technology	Surat	9
West	Pimpri Chinchwad College Of Engineering	Pune	10
West	Defence Institute of Advanced Technology	Pune	11
West	Maulana Azad National Institute of Technology	Bhopal	12
West	National Institute Of Technology	Surat	13
West	Dr. D Y Patil's Ramrao Adik Institute Of Technology	Mumbai	14
West	COEP Technological University, (Formerly College of Engineering)	Pune	15
West	Vishwakarma Institute Of Technology	Pune	16
West	Abv Indian Institute Of Information Technology And Management	Gwalior	17
West	Amity School Of Engineering & Technology	Jaipur	18
West	Amity School Of Engineering And Technology	Mumbai	19
West	National Institute Of Technology	Bhopal	20
West	Visvesvaraya National Institute of Technology	Nagpur	21
West	Manipal University	Jaipur	22
West	Banasthali Vidyapith	Banasthali	23
West	National Institute of Technology	Karaikal	24
West	MKSSS's Cummins College of Engineering for Women	Pune	25
West	Pune Institute Of Computer Technology	Pune	26
West	Army Institute Of Technology	Pune	27
West	P D P M Indian Institute Of Information Technology, Design And Manufacturing	Jabalpur	28
West	Pimpri Chinchwad College Of Engineering And Research	Pune	29
West	MIT World Peace University	Pune	30
West	National Institute Of Technology	Nagpur	31
West	National Institute Of Technology	Cuncolim	32
West	Indian Institutes of Information Technology	Chittor	33
West	Dwarkadas J Sanghvi College of Engineering	Mumbai	34
West	Finolex Academy of Management and Technology	Ratnagiri	35
West	Government College of Engineering	Pune	36
West	Indian Institutes of Information Technology	Kota	37
West	TCET Thakur College Of Engineering and Technology	Mumbai	38
West	The LMM Institute of Information Technology	Jaipur	39
West	D J Sanghvi College Of Engineering	Mumbai	40
West	Institute Of Management, Nirma University	Ahmedabad	41
West	Veermata Jijabai Technological Institute (VJTI)	Mumbai	42
West	Atal Bihari Vajpayee Indian Institute of Information Technology and Management	Gwalior	43
West	Dr. Viswanath Karad MIT World Peace University	Pune	44
West	Narsee Monjee Institute of Management Studies (NMIMS)	Mumbai	45
West	Maharaja Sayajirao University of Baroda	Vadodara	46
West	K. J. Somaiya College of Engineering	Mumbai	47
West	Sinhgad College of Engineering	Pune	48
West	Sardar Patel College of Engineering	Mumbai	49
West	Rajasthan Technical University	Kota	50

Source: DQ-CMR T-School Employability Index Survey 2024

Regional Top 50 Ranking (North - Perceptual Ranking)

REGION	INSTITUTE NAME	CITY	RANK
North	Indian Institute Of Technology	New Delhi	1
North	Indian Institute Of Technology	Kanpur	2
North	Indian Institute Of Technology	Roorkee	3
North	Indian Institute Of Technology (Banaras Hindu University)	Varanasi	4
North	Indian Institute Of Technology	Ropar	5
North	Thapar institute of Engineering & Technology	Patiala	6
North	Jamia Millia Islamia	New Delhi	7
North	Delhi Technological University	New Delhi	8
North	Indian Institute Of Technology	Mandi	9
North	Amity School Of Engineering And Technology	Noida	10
North	Chandigarh University	Chandigarh	11
North	Aligarh Muslim University	Aligarh	12
North	Indian Institutes of Information Technology	Allahabad	13
North	National Institute Of Technology	Delhi	14
North	Lovely Professional University (LPU)	Jalandhar	15
North	Chandigarh Engineering College (CGC)	Landran Mohali	16
North	Dr. B R Ambedkar National Institute Of Technology	Jalandhar	17
North	Netaji Subhas University Of Technology	New Delhi	18
North	Motilal Nehru National Institute Of Technology	Prayagraj	19
North	National Institute Of Technology	Srinagar	20
North	National Institute Of Technology	Kurukshetra	21
North	Thapar University	Patiala	22
North	Indraprastha Institute Of Information Technology	New Delhi	23
North	Chitkara University Institute Of Engineering And Technology	Patiala	24
North	Punjab Engineering College	Chandigarh	25
North	Maharaja Surajmal Institute Of Technology	New Delhi	26
North	Indian Institute Of Technology	Jammu	27
North	National Institute Of Technology	Jalandhar	28
North	Amity School Of Engineering And Technology	Lucknow	29
North	Maharaja Agrasen Institute Of Technology	Delhi	30
North	University Institute Of Engineering And Technology Kurukshetra University	Kurukshetra	31
North	Delhi University	New Delhi	32
North	Faculty of Engineering and Technology Manav Rachna International University	Faridabad	33
North	Jaypee Institute of Information Technology	Noida	34
North	Jawaharlal Nehru University	Delhi	35
North	National Institute Of Technology	Srinagar	36
North	Central University	Jammu	37
North	Delhi College of Engineering	New Delhi	38
North	Inderprastha Engineering College	Ghaziabad	39
North	Indian Institutes of Information Technology	New Delhi	40
North	SRM University	Kanpur	41
North	Indian Institute Of Technology	Rohtak	42
North	Delhi Technological University	New Delhi	43
North	University of Petroleum & Energy Studies	Dehradun	44
North	Lovely Professional University	Phagwara	45
North	Sant Longowal Institute of Engineering and Technology	Longowal	46
North	Rajiv Gandhi Institute of Petroleum Technology	Amethi	47
North	Madan Mohan Malaviya University of Technology	Gorakhpur	48
North	Guru Gobind Singh Indraprastha University	New Delhi	49
North	Shoolini University of Biotechnology and Management Sciences	Solan	50

Source: DQ-CMR T-School Employability Index Survey 2024

Regional Top 50 Ranking (South - Perceptual Ranking)

REGION	INSTITUTE NAME	CITY	RANK
South	Indian Institute Of Technology	Chennai	1
South	National Institute Of Technology	Tiruchirappalli	2
South	Indian Institute Of Technology	Hyderabad	3
South	Vellore institute of Technology	Vellore	4
South	National Institute Of Technology	Surathkal	5
South	Anna University	Chennai	6
South	Amrita Vishwa Vidyapeetham	Coimbatore	7
South	National Institute Of Technology	Warangal	8
South	Amrita Vishwa Vidyapeetham	Amaravati	9
South	Indian Institutes of Information Technology	Hyderabad	10
South	Indian Institute of Science (IISc)	Bengaluru	11
South	B.M.S.College Of Engineering	Bengaluru	12
South	PSG College of Technology	Coimbatore	13
South	Koneru Lakshmaiah Education Foundation	Guntur	14
South	Indian Institutes of Information Technology	Bengaluru	15
South	SRM Institute of Science and Technology	Chennai	16
South	Sri Sivasubramaniya Nadar (SSN) College of Engineering	Chennai	17
South	International Institute Of Information Technology	Hyderabad	18
South	Thiagarajar College Of Engineering	Madurai	19
South	Indian Institute of Space Science and Technology	Thiruvananthapuram	20
South	B.S Abdur Rahman Crescent Institute Of Science And Technology	Chennai	21
South	Manipal Institute of Technology (MIT)	Manipal	22
South	Institute Of Aeronautical Engineering	Hyderabad	23
South	PSG Institute of Technology and Applied Research	Coimbatore	24
South	Sathyabama Institute Of Science And Technology	Chennai	25
South	Vardhaman College Of Engineering	Hyderabad	26
South	Visvesvaraya Technological University	Belagavi	27
South	University of Hyderabad	Hyderabad	28
South	Gokaraju Rangaraju Institute of Engineering and Technology	Hyderabad	29
South	Indian Institute Of Technology	Tiruchirappalli	30
South	M. S. Ramaiah Institute Of Technology	Bengaluru	31
South	International Institute of Information Technology	Bengaluru	32
South	Shanmugha Arts Science Technology & Research Academy	Thanjavur	33
South	Jain University	Bengaluru	34
South	University College Of Engineering	Hyderabad	35
South	Vel Tech Rangarajan Dr. Sagunthala R&D Institute Of Science And Technology	Chennai	36
South	AU College of Engineering	Visakhapatnam	37
South	Jawaharlal Nehru Technological University	Kakinada	38
South	Vignan's Foundation for Science, Technology and Research	Guntur	39
South	Indian Institute Of Technology	Dharwad	40
South	Christ University	Bengaluru	41
South	R.V. College Of Engineering	Bengaluru	42
South	Siddaganga Institute Of Technology	Tumkur	43
South	Anurag University	Hyderabad	44
South	Indian Institute Of Technology	Palakkad	45
South	Indian Institute Of Technology	Tirupati	46
South	VNR Vignana Jyothi Instiute Of Engineering And Technology	Hyderabad	47
South	Birla Institute of Technology & Science Pilani	Hyderabad	48
South	GITAM University	Visakhapatnam	49
South	PES University	Bengaluru	50

Source: DQ-CMR T-School Employability Index Survey 2024

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From Funnel Vision to Gun-Barrel Vision

Eyeing the Future of Tech Skills and shooting for the bull's eye—it's time engineering talent was sharpened with a close eye on what orbits are black and which ones are white in the future dartboard of opportunities and industry requirements. Maybe that's already happening.

By Pratima H

What a sight! One hand in the pocket. A debonair air. A gearless posture when everyone else is strapped with fancy tools, glasses and protective gear. And yet, this strapping and taking-it-cool shooter won the Silver - holding a rock-steady pistol when everyone around was either super-serious or nervous. Turkish Shooter Yusuf Dikec became a sensation at the Paris Olympics 2024 for a reason. He knows something that others either have in their blind spot or zoom too much on.

Wondering what he would say if we could accost him towards the ringside for a few minutes, and request him to look at the shooter board of the future of tech talent. Where do the 9s and 10s lie?

BED OF NAILS OR BUCKET OF NAILS?

India has long been the fertile farmland of tech talent of every season, stripe and scent. We were there when the world was high on outsourcing. We caught up well when it was time for captive centres and product-

> AI offers high earning potential for both the AI Tech Developers with the right skills and the Business Problem Solvers who can solve real-world problems with this powerful technology.
>
> **- Ankush Sabharwal,** Founder BharatGPT

potter wheels. We are also chasing the Cloud and AI waves well- surfing smoothly enough to no fall-offs, at least. But is that enough for the next ten years? Enough to take us beyond the 'Bronze' age?

Let's comb a bit through some NASSCOM reports. The Strategic Review Report 2024 augurs well on what's coming up next. In the 'Rewiring Growth in the Changing Tech Landscape' report, it is unravelled that the domestic technology sector could cross $54 billion in FY2024. The industry continues to be a net hirer adding 60k employees, taking the total employee base to 5.4 million. And a BCG-NASSCOM 2024 report zooms in on AI to point out that India is set to mirror global growth rates, touching $17 to $22 billion AI market by 2027. Interestingly, when NASSCOM and BCG jointly conducted research on the biggest bets in technologies that can potentially disrupt markets in the next 3-5 years, the buyer's perspective showed that the share of emerging technologies in IT budgets will grow 3X in the medium- to long-term. Large tech firms are focusing on both nascent technologies as well as well-defined use-cases. But it's also a good time to consider the NASSCOM report on 'Digital Talent Demand and Supply' 2023 where it has been noted that the digital talent gap for the tech industry can widen from 25 percent to 28-29 percent by 2028 (demand for digital talent could rise to cross 6 million). This is when India had one of the world's largest supplies of STEM graduates at 2.5 million and the lowest tech talent supply demand gap at 25-27 percent amongst global biggies like the USA (34-36 percent), the UK (30-32 percent) etc.

What we have done so far is terrific! But what lies ahead is terrifyingly bright! Because it's very new and very huge. And a lot of what we have been doing could be part of the 'Stone' age.

KILLER-JOBS LIE HERE

As per the WEF (World Economic Forum) Future of Jobs Report 2023, the fastest growing roles are technology-related roles. AI and Machine Learning Specialists are topping the list of fast-growing jobs, followed by Sustainability Specialists, Business Intelligence Analysts and Information Security Analysts. Renewable Energy Engineers, and Solar Energy Installation and System Engineers also appear in the league of relatively fast-growing roles.

As to what's going down- well, 'admin' in any form. The majority of fastest declining roles tend to be those related to clerical or secretarial roles, with Bank Tellers and Related Clerks, Postal Service Clerks, Cashiers and Ticket Clerks, and Data Entry Clerks. Surveyed organisations predicted 26 million fewer jobs by 2027 – these were in Record-Keeping and Administrative roles, including Cashiers and Ticket Clerks; Data Entry, Accounting, Bookkeeping and Payroll Clerks; and Administrative and Executive Secretaries, driven mainly by digitalisation and automation.

In the WEF report, employers estimate that 44 percent of workers' skills will be disrupted in the next five years. There is an expanding room for cognitive skills followed by creative thinking, analytical thinking and technology literacy. Systems thinking, AI and big data, talent management, and service

> In the near future, skills like digital literacy, adaptability, and innovation are likely to be in high demand in India, as the country continues to align its education system with global trends and future workforce needs.
>
> **- Neeti Sharma,** CEO, TeamLease Digital

orientation and customer service feature in the top 10 growing skills. Businesses are also placing emphasis on curiosity, lifelong learning; resilience, flexibility, agility; motivation, self-awareness.

According to a report by EY and iMocha, 'Tech Skills Transformation: Navigating the Future of Work by 2025 and Beyond,' it is vital to understand how tech skills, including AI and ML, blockchain, and green technologies, will evolve, observes Sandeep Kohli, Global Talent Leader, EY Global Delivery Services. "This includes their applications and ethical considerations, which even non-technical courses in Indian schools should incorporate. Soft skills coupled with technical expertise, can help students navigate through challenging situations and solve complex problems."

Observe what Rohit Agarwal, Chief Delivery Officer, TalentSprint also underlines here. "Being future-ready isn't just about mastering technical skills. Sure, technical know-how is important, but so are communication, critical thinking, and problem-solving. These soft skills are just as crucial as any technical knowledge, and they deserve equal attention in our educational programs."

THE SNIPER HAND FOR NOT-JUST-ANY AI

The future is about making sense of new game-changers – specially AI – and using them as surf-boards to swim against tough currents. It's not enough to be ready. It's smart to pick the right longboard too.

Incidentally, or not, as per Indeed's Workforce Insights Report, almost three-quarters of workers are actively looking for a new role or willing to switch jobs if the right role comes along. An Indeed report 'Tomorrow's World: The Workforce and Workplace of the Future' also found that those over age 65 actually feel the most confident about tech-based changes in their roles. There are 91 percent who feel assured about their ability to adapt. There are only seven percent saying they're not confident.

As per the India Skills Report 2024 (Wheebox) the growth potential of the Indian AI industry is going to be as big as $28.8 billion by 2025. India is perched well among the top five nations showcasing a good rise in AI talent, alongside Singapore, Finland, Ireland, and Canada. There was an installed talent base of 416K professionals (as of August 2023) and the projected demand for AI professionals in India could touch about 1 million by 2026.

AI is the next big 'pivot' we need. But it should be happening on the 'core' and not on the 'peripheral' side of AI being developed elsewhere.

Think about it. The active pool of senior AI engineers who are actually building core AI products

HOW SUB-DOMAINS STACK UP

- The IT domain dominates with 68.44%
- Computer Science follows closely with a notable 66%
- Electronics and Communication Engineering got to 58.91%
- Electrical Engineering commanded 57.69%

Source: The Wheebox National Employability Test (WNET) 2024

> The Institute has updated the Academic System to offer unprecedented flexibility, increased Interdisciplinary learning, hands-on projects and Entrepreneurship Opportunities as early as in Second Year of the BTech Program.
>
> **- Prof. Prathap Haridoss,** Dean (Academic Courses), IIT Madras

and services in India is less than 2,000, if we look at data from Xpheno, a staffing player. The total active accessible Indian talent with the minimum required skills, experience and exposure to core AI hovers below 21,000. The Nasscom and BCG report also indicated that while demand for AI talent will grow 15 percent year on year; there is already a demand-supply gap of about 51 percent when it comes to niche skills that will help build core AI.

As Neeti Sharma, CEO, TeamLease Digital echoes, there is a notable talent shortage in these areas, with an estimated deficit of 200,000 AI professionals. "Quantum computing, with only around 100 active researchers in India, is an emerging field with significant potential but a shortage of qualified experts. Cybersecurity is increasingly critical, with a global shortage of 3 million cybersecurity professionals, including a gap of around 50,000 in India. Blockchain expertise is also in high demand, with India's blockchain market valued at approximately $2.4 billion in 2023 and a shortage of skilled professionals in this area."

The disruptive field of AI is creating lucrative and high-paying employment opportunities- augurs Ankush Sabharwal, Founder BharatGPT.ai and CEO of CoRover. He explains how this new path is catering to two distinct categories of roles – AI Tech Developers and Business Problem Solvers. "As to AI Tech Developers, these folks are the tech wizards behind AI. They're masters of Machine Learning & Deep Learning, Coding Languages and Generative Models. They unlock the power of AI to learn and adapt. They're the coding experts, bringing AI ideas to life.

He then shines the torch on the next category- Business Problem Solvers: "These folks don't need to be coding experts. They use easy-to-use platforms (no-code/low-code platforms like CoRover.ai) to put AI to work for their specific business problems. They excel in Problem-Solving & Business Acumen where they're like detectives for their business, sniffing out problems and figuring out if AI can solve them. They are also good at understanding Industry Needs: They know their industry inside and out, pinpointing the pain points AI can fix. As to the data-savvy roles, they understand how data power AI, making the most of user-friendly platforms/products."

Shefali Sharma Garg, Vice President - People Strategy, Publicis Sapient tells about an initiative for training all of its engineers—and indeed, its entire workforce—in prompt engineering. "With large language models (LLMs) like GPT becoming central to our operations, this skill is a natural next step in AI and machine learning. The results have been remarkable, reinforcing the importance of focusing on emerging skills. But it's not just about prompt engineering. Looking ahead, key areas such as AI, machine learning, data science, platform engineering, and sustainable engineering will shape the future of industries across India. Platform engineering, for example, is becoming essential for engineers to build scalable, reusable systems that boost efficiency and allow businesses to adapt quickly to change."

> Many institutions now offer courses in data science, artificial intelligence, machine learning, and cybersecurity, which are anticipated to be critical skills in the coming years.
>
> **- Dinesh Kumar Poobalan,** CEO & CTO, Greatify

ROBIN-HOODING WITH QUANTUM, BLOCKCHAIN

There are also areas like quantum computing, blockchain, and sustainable engineering which belong to the next big turn the future is taking. "These are on the radar of Institute of Technology, Nirma University because they are considered ground-breaking technologies with significant implications for future smart applications in diversified domains." Tells Dr. Sudeep Tanwar, Professor – CSE Department, Institute of Technology, Nirma University.

"Quantum computing and sustainable engineering are also critical areas we're investing in. Recognizing the growing importance of sustainability, we've partnered with IISc to offer a cutting-edge program in Sustainability Engineering and Smart Cities, offering a real-world curriculum aligned with UN Sustainable Development Goals." shares Rohit Agarwal, Chief Delivery Officer, TalentSprint.

Aravind Ratnam, Chief Strategy Officer at Q-CTRL cites how industry-academia handshakes are solidifying quantum computing talent ahead. "Through Q-CTRL's first-of-its-kind partnership with the Tamil Nadu Skill Development Corporation, our vision is to educate all of India in this emerging field, elevate the region's global leadership, and prepare it for large-scale rollout of quantum technology once quantum advantage is reached. Q-CTRL seeks to replicate our success in Tamil Nadu with other states in India and is in parallel pursuing other initiatives that create jobs in the region."

LOOK BEFORE YOU SHOOT

- Over 75% of companies are looking to adopt AI, Cloud and Big Data in the next five years.
- Employers are anticipating a structural labour market churn of 23% of jobs in the next five years
- Anticipated structural job growth is of 69 million jobs and a dip of 83 million jobs.
- 42% of business tasks will be automated by 2027
- That means- 35% of reasoning and decision-making and 65% of information and data processing tasks
- AI could be adopted by nearly 75% of surveyed companies
- AI can lead to high churn - 50% of organizations expect it to create job growth and 25% to create job losses.
- The highest priority for skills training from 2023-2027 is analytical thinking

Source: WEF (World Economic Forum) Future of Jobs Survey 2023

Kohli adds that quantum computing and blockchain are integral to the EY ecosystem, helping us tackle our clients' most pressing challenges. "Our commitment to these technologies is driven by their potential to revolutionize industries and create sustainable value. I believe our educational institutions will benefit from familiarizing students with the core principles of these cutting-edge technologies."

With orbits like AI, Blockchain and Quantum getting so sharp ahead, it's a good thing, we are not completely caught ill-armed.

> New courses and academic programmes are developed, content and pedagogy for the existing courses are updated.
>
> **- Dr. Nityesh Bhatt**
> Professor – Information Management, Nirma University

THE CHAMPAGNE SHOT

Engineering and technology institutes are getting increasingly-aware and proactive about the next thing on the horizon of future jobs. A lot of changes and new courses along with new approaches to education and technology-learning are now gaining pace.

Prof. Devendra Jalihal, Director, IIT Guwahati shares how the institute has established specialized Centers of Excellence (CoEs) such as the CoE in Research and Development of Nanoelectronics and Theranostic Devices, the Centre for Technological Excellence in Water Purification, the CoE on Sustainable Polymers, the DBT-TERI CoE Project on Advanced Biofuels and Bio-commodities, the NRL-COE on Sustainable Materials, and several others. "These centers provide students with opportunities to tackle real-world challenges. Our curriculum is constantly updated to reflect the latest technological advancements, and we actively encourage students to engage in interdisciplinary research, internships, and industry collaborations."

The job roles are changing, and the skill sets in demand are being defined by emerging technologies, stresses Prof Prakash Gopalan, President, NIIT University. "Institutions, therefore, need to integrate skills like data science, AI, and cybersecurity into their programmes to address the demand for tech-savvy professionals. By blending technical expertise with practical and ethical insights students can be prepared for an AI dominated future. NIIT University's BTech programme in Artificial Intelligence (AI) & Data Science, and BTech in Cyber Security aim to do that."

IIT Madras has reinvented BTech curriculum for India to help its students meet the demands of modern and technological developments, shares Prof. Prathap Haridoss, Dean (Academic Courses), IIT Madras. "The newly revamped programs also allow for early exits from the programs, for those that desire the freedom. The Institute has also included entrepreneurship course in its curriculum. These changes have been implemented following the rigorous recommendations by an Institute Curriculum Task Force, orienting it towards employment, research, innovation and entrepreneurship."

Dr. Nityesh Bhatt, Professor – Information Management, Institute of Management, Nirma University also shines the light on how leading academic institutes continuously scan the environment for industry trends and associated competencies requirements."

The emphasis on technology in India's New Education Policy (NEP) 2020 further underscores the importance of integrating cutting-edge tools into the education system, reasons Chaitali Moitra - Regional Director - South Asia, Turnitin. "This policy aims to modernize education through the strategic use of technology, ensuring that Indian students are well-prepared for the challenges of the 21st century."

Indian institutes are increasingly focusing on a future-ready curriculum to prepare students for jobs that don't yet exist, seconds Sharma from TeamLease Digital. "The National Education Policy

> It's this kind of mindset that ensures both students and professionals will be prepared for roles that we can't yet foresee but are sure to come.
>
> **- Shefali Sharma Garg**
> Vice President - People Strategy, Publicis Sapient

(NEP) 2020 has been a key driver in this direction, mandating institutions to integrate skills and apprenticeship-linked learning into their curricula. For example, the NEP emphasizes multidisciplinary education, which allows students to explore diverse fields and develop a wide range of competencies, from AI and machine learning to critical thinking and emotional intelligence. Additionally, institutes like IITs and IIMs are introducing courses in emerging areas such as data science, fintech, and cybersecurity, recognizing the growing demand for these skills."

Dinesh Kumar Poobalan, CEO & CTO, Greatify echoes that pattern. "From Greatify's perspective, Indian institutes are increasingly focusing on future-ready curricula to ensure students are prepared for jobs that may emerge in the future. They are integrating advanced technologies and interdisciplinary approaches into their programs to stay ahead of the curve."

IIT Madras also offers M.Tech. alongwith B.Tech. in 5 years besides Interdisciplinary Degrees in cutting-edge domains like Nanotechnology, Data Science and Electric Vehicles, among other fields that are in demand by the Industry, lets on Prof. Haridoss. "These degrees can be pursued seamlessly along with their B.Tech. programs. Students can choose about 40 percent of their courses, which enables customisation and personalisation. IIT Madras has 18 academic departments and numerous advanced research centers, which allows students to explore diverse interests and build a unique academic profile."

Academia has been joined well with initiatives, applause and expectations from the industry side here.

"At EY, we offer a certificate in Blockchain Technology that equips our team with a deep understanding of blockchain concepts. In 2023, EY Global Services Limited joined the IBM Quantum Network, empowering our teams to collaborate with IBM on innovative solutions that address some of the most intricate business challenges of our time." Kohli illustrates.

TalentSprint's Agarwal looks back and picks out efforts that are really shining with outcomes. "Launched in 2019, the WE program was designed to tackle the gender disparity in tech by empowering deserving women engineering students to become world-class software engineers. The program has been a game-changer. With over 100,000 applications from across India, we've seen 1,100 women graduate from the program over six cohorts. What's remarkable is the 100 percent employment success rate for the first two completed cohorts, with graduates earning 150 percent higher compensation than the industry median for entry-level engineering roles."

AVOID THE AVOCADO HAND

Looking at the targets here should not come at the cost of injuries and miscalculations on wind-speed. There are many adjacent aspects that will be as crucial to prepare for as the big-shot technologies we are aiming for. Specially soft skills, the ability to unlearn and make sense of the 'next' in a real-world 'context'.

"AIML, Analytics, Gamification, Blockchain, Product Management, Cyber Security, Sustainability specific technologies are going to remain relevant in coming years too. As we are living in a VUCA (volatile, uncertain, complex and ambiguous) world, institutes need to instil adaptability and agility among the students across disciplines." Dr. Bhatt explains.

Prof. Gopalan cites an example. "Our BTech in ECE (Electronics and Communication Engineering) is a departure from traditional engineering education models, exploring emerging industry trends. It combines theoretical and experiential learning along with of group interactions."

Indian tech institutes have been able to pivot quickly where emerging technology is concerned, almost all top institutes provide courses that cover new-age technology, commends Aditi Nair, Group Chief People Officer, Practus. "Programs are available in different formats – long term courses/ short terms courses as well as in virtual formats." But a lot can be filled in. Nair suggests that it is important for a technology professional to understand what technology can do and how you can apply it. "We are looking for- The ability of an individual to understand the problem statement becomes imperative. Also, an analytical mind coupled with the mindset to learn and adopt new things is something that will be expected."

Garg also reckons that as technology evolves at an unprecedented pace, the skills of tomorrow remain unpredictable." In this dynamic landscape, Indian institutes have a unique opportunity to prepare students for jobs that don't yet exist by developing future-ready curricula. It's no longer just about teaching existing skills—it's about promoting adaptability and a mindset of continuous learning."

Agarwal contends that the way we teach—the pedagogy—has to keep pace with the future. "Today's technical skills might not fully apply to tomorrow's jobs, so we need to cultivate a mindset of continuous learning. Encouraging students to embrace self-learning and lifelong learning will be key to their success in a constantly evolving job market."

Garg minces no words in highlighting some other issues that correspond strongly to future skills. "At the same time, there's a growing recognition that technology must be harnessed responsibly. The ethical implications of AI and other advanced technologies cannot be overlooked, and integrating sustainability into engineering practices is rapidly moving from a 'nice-to-have' to a necessity."

Interest in math and science must be nurtured early in the schooling system before college, reminds Dr. Ramesh K. Sitaraman, Distinguished University Professor and Associate Dean

Manning College of Information and Computer Sciences, University of Massachusetts Amherst. "The focus of the education should be shifted more towards scientific curiosity, exploration, and discovery and away from just exams and grades."

Turns out that the future is not going to be just AI or just Blockchain but a lot of other circles around them too.

Agarwal emphatically points at the growing need for professionals who can blend domain expertise with technological savvy. "Take, for example, a banker who also understands machine learning—this combination of skills will be far more valuable than expertise in just one area. The ability to merge domain-specific knowledge with cutting-edge technology is going to be a major advantage in the years ahead."

Now that we know what lies ahead, let's get out of the nap, put down our spectacles and get to action- just like the Pommel Horse guy in Paris Olympics – Stephen Nedoroscik. We might have to do a neat 180 degree spin. Or even, a 360 degree one.

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Preparing Engineers for the Modern Workplace

In recent years, the landscape of engineering education has undergone a significant transformation. However, the rapid pace of technological advancements and shifting industry demands have exposed critical gaps in the skills and knowledge of recent engineering graduates. As these young professionals step into the workforce, they are often confronted with challenges that their academic training has not adequately prepared them for. To address these issues, industry experts and educators are calling for a comprehensive overhaul of engineering curricula, emphasizing the importance of real-world problem-solving, project-based learning, and the integration of emerging technologies.

By Aanchal Ghatak

THE CRITICAL SKILLS GAP

"Engineering graduates often lack the soft skills such as communication, teamwork, and problem-solving abilities," notes Dr. Gaurav Sethi, Professor and Additional Dean at the School of Electronics and Electrical Engineering.

This observation is echoed by Dr. L. Koteswararao, Principal at KLH Bachupally Campus, who highlights the "significant knowledge and ability gaps" in areas such as project management, communication, and practical problem-solving. Despite their technical expertise, many graduates struggle to translate academic knowledge into real-world applications, often due to limited hands-on experience and a lack of exposure to industry practices and standards.

> Too much theory, and you produce engineers who are disconnected from reality; too much practice, and you end up with technicians rather than thinkers.
>
> **- Aishwarya Rai**
> EdTech expert and Product Manager from India

Aishwarya Rai, an EdTech expert and Product Manager from India, adds that graduates are often great at passing exams but struggle when it comes to applying knowledge in real-world situations. "They need to learn how to think independently, make decisions with incomplete information, and adapt quickly to unexpected challenges," she asserts. This skill gap is further exacerbated by a lack of experience with industrial tools and software, which are critical in today's technology-driven job market.

INTEGRATING REAL-WORLD PROBLEM-SOLVING

One of the most effective ways to address these gaps is through the integration of real-world problem-solving and project-based learning into engineering programs. "By incorporating industry partnerships, internships, and capstone projects, engineering programs can enhance real-world problem-solving," says Dr. Sethi. He cites the example of Lovely Professional University (LPU), which collaborates with numerous IT companies, providing students with hands-on experience through various projects. This approach not only exposes students to practical challenges but also prepares them to tackle the complexities of the modern workplace.

Dr. Koteswararao concurs, emphasizing the importance of business collaborations and cooperative projects in developing students' problem-solving abilities. He advocates for project-based learning that "exposes students to the complexities, trade-offs, and ambiguities that characterize real-world engineering." This approach fosters creativity, critical thinking, and adaptability—key traits that employers look for in engineering graduates.

BALANCING THEORY AND PRACTICE

The debate over the balance between theoretical knowledge and practical application in engineering curricula is ongoing. Dr. Sethi believes that programs should strike a balance by combining theoretical coursework with hands-on experience. "Practical labs, workshops, and internships bridge the gap between theory and application, ensuring graduates are industry-ready," he explains. LPU, for instance, encourages students to undertake projects throughout their program, allowing them to apply theoretical knowledge in practical settings.

Aishwarya Rai takes this idea further, arguing that the balance is not just between theory and practice but also about understanding when to rely on one over the other. "Too much theory, and you produce engineers who are disconnected from reality; too much practice, and you end up with technicians rather than thinkers," she warns. The key, she suggests, is teaching students the heuristics to navigate between the two, understanding that both are essential but context-dependent.

SPECIFIC EXAMPLES OF SUCCESSFUL ENGINEERING PROGRAMS

Here are a few examples of engineering programs that have implemented innovative approaches to address the challenges outlined in the article:

Carnegie Mellon University's Integrated Product Development (IPD) Program: This program

> Stress management workshops, resilience training, and regular check-ins by faculty members can help students cope with the pressures of academia and the job market.
>
> **- Dr. L. Koteswararao,** Principal at KLH Bachupally Campus

emphasizes hands-on experience and teamwork, with students working on real-world projects from concept to commercialization.

Stanford University's Design Thinking Bootcamp: This program teaches students how to use human-centered design methods to solve complex problems, fostering creativity and innovation.

Massachusetts Institute of Technology's (MIT) Hacking the Planet: This initiative encourages students to develop solutions to global challenges using technology, promoting interdisciplinary collaboration and real-world impact.

THE IMPORTANCE OF DIVERSITY AND INCLUSION IN ENGINEERING EDUCATION

Diversity and inclusion in engineering education are crucial for several reasons:

Innovation: A diverse student body brings a variety of perspectives and experiences, leading to more innovative and creative solutions.

Equity: Ensuring that all students have equal opportunities in engineering education is essential for social justice and economic equality.

Workforce Representation: A diverse engineering workforce better reflects the diversity of the population and can lead to more inclusive and effective products and services.

ADAPTING ENGINEERING EDUCATION TO EMERGING TECHNOLOGIES

As technology continues to evolve rapidly, engineering education must adapt to prepare students for careers in emerging fields like AI, data science, and biotechnology. Here are some ways to do this:

Interdisciplinary Curricula: Integrate courses from different disciplines to provide students with a broad understanding of the technologies and applications they will encounter.

Hands-On Experience: Offer opportunities for students to work on projects that involve emerging technologies, such as AI-powered systems or biotech research.

Industry Partnerships: Collaborate with companies in emerging fields to provide students with internships and mentorship opportunities.

Lifelong Learning: Encourage students to develop a mindset of lifelong learning so that they can stay up-to-date with the latest technological advancements.

SUPPORTING MENTAL HEALTH AND WELL-BEING

The academic pressure and job market anxiety faced by engineering students can have a profound impact on their mental health and well-being. "Engineering programs can provide mental health resources, counselling services, stress management workshops, and promote a healthy work-life balance," advises Dr. Sethi. LPU, for example, has established a mental health center on campus, offering counselling services, workshops on stress management, and peer support groups.

Dr. Koteswararao also emphasizes the importance of directly incorporating mental health resources into the curriculum. He suggests that stress management

> Practical labs, workshops, and internships bridge the gap between theory and application, ensuring graduates are industry-ready.
>
> **- Dr. Gaurav Sethi,** Professor and Additional Dean, School of Electronics and Electrical Engineering.

workshops, resilience training, and regular check-ins by faculty members can help students cope with the pressures of academia and the job market. Additionally, promoting an academic environment characterized by a balanced workload and flexible deadlines can reduce academic pressure and foster a healthier learning atmosphere.

PREPARING GRADUATES FOR THE JOB MARKET

To better prepare graduates for the job market, engineering programs must offer career development services, networking opportunities, and mentorship programs. "Universities can set up career and placement services departments to guide students on market responses and requirements," recommends Dr. Sethi. These services can help students connect with potential employers, prepare for interviews, and navigate the job market more effectively.

Tracking the career success of graduates is equally important. Dr. Koteswararao suggests building a robust alumni network and conducting regular reviews to collect data on career development and job placements. This feedback can be used to adapt curricula to meet the evolving needs of the industry, ultimately increasing the employability of graduates.

THE WAKE-UP CALL: RECENT LAYOFFS AND SKILL MISMATCH

Recent layoffs across various industries have highlighted the dissonance between the skills taught in engineering programs and the skills demanded by employers. "Companies are looking for skills that go beyond technical knowledge, such as digital literacy, problem-solving, and communication," notes Dr. Sethi. These layoffs have underscored the need for continuous learning and upskilling, as well as the importance of adaptable skills that can withstand economic downturns and industry shifts.

Aishwarya Rai adds that engineering programs need to evolve to include more project-based learning and real-world applications. "Instead of just teaching students the theory behind operating systems, have them build a simple one from scratch," she suggests. By doing so, students will develop the practical skills that are increasingly valued in today's job market, reducing the risk of future layoffs.

CONCLUSION

The evolving demands of the engineering industry necessitate a comprehensive overhaul of engineering education. By integrating real-world problem-solving, balancing theory with practical application, supporting mental health, and better preparing graduates for the job market, engineering programs can bridge the critical skills gap. As Dr. Sethi aptly summarizes, "Engineering education must adapt to meet the challenges of the modern workplace, ensuring that graduates are not only technically proficient but also equipped with the soft skills and practical experience needed to thrive in their careers."

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The Ripple Effect of Recent Layoffs

The recent wave of layoffs across various industries has sent shockwaves through the global workforce. From tech giants to traditional corporations, companies have been forced to downsize in response to economic challenges, market shifts, and technological advancements. This article delves into the far-reaching implications of these layoffs, examining their impact on individuals, communities, and the broader economy, with a particular focus on how these trends are reshaping engineering education.

By Aanchal Ghatak

THE HUMAN TOLL

The most immediate and devastating consequence of layoffs is the personal impact on individuals and their families. Losing a job can lead to:

Financial Hardship: Job loss often results in a sudden loss of income, making it difficult to meet basic needs like housing, food, and healthcare.

Emotional Distress: Layoffs can trigger feelings of anxiety, depression, anger, and loss of self-esteem.

Social Isolation: Unemployment can lead to social isolation and a sense of disconnection from the community.

As Harikrishna Khandavilli, Head of Engineering at Continental Automotive India, emphasizes, "Uncertainty can increase the pressure on a student, can definitely diminish motivation. Self-care, focusing on a healthy lifestyle prioritizing one's health is more important than anything else."

COMMUNITY AND ECONOMIC IMPACTS

Layoffs also have significant implications for communities and the broader economy:

Reduced Consumer Spending: When people lose their jobs, they tend to reduce their spending. This can have a ripple effect on local businesses, leading to decreased sales and potential closures.

Increased Homelessness: Unemployment can contribute to increased homelessness as individuals struggle to afford housing.

Strain on Social Services: Local governments may experience increased demand for social services like food banks and unemployment assistance.

Economic Downturn: Mass layoffs can contribute to a broader economic downturn, as reduced consumer spending and business activity can slow growth.

Khandavilli underscores the broader impact, noting, "Markets are cyclical, and no downturn is permanent. It is important to keep a positive mindset about the future."

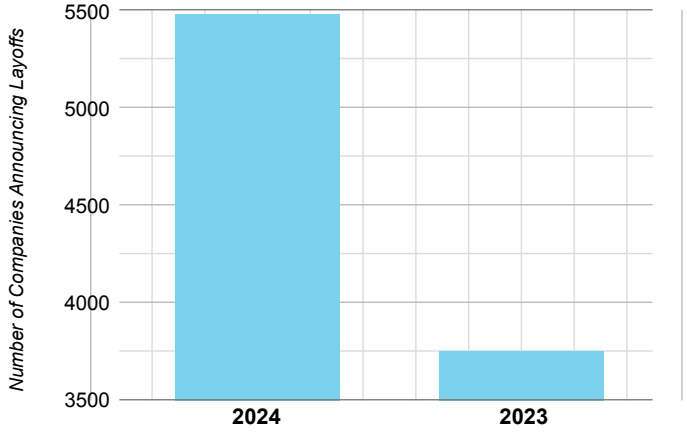
ANALYZING THE LAYOFF TRENDS

Key Observations

Based on a report (or reports) by Intellizence.com.

- **Significant Decrease in Layoffs:** The most striking observation is the dramatic decline in the number of companies announcing layoffs in 2024 compared to 2023. This suggests a significant improvement in the overall economic health and stability of businesses.
- **2023 as a Peak:** The year 2023 appears to have been a peak for layoffs, with a considerably higher number of companies announcing job cuts. This might be attributed to factors such as economic uncertainties, pandemic-related challenges, or industry-specific downturns.
- **Positive Trend for 2024:** The substantial decrease in layoffs in 2024 indicates a positive trend, suggesting that companies are recovering from previous difficulties and are less likely to resort to mass layoffs.

Companies Announcing Layoffs in 2023 vs. 2024 (as of August 13, 2024)



POTENTIAL IMPLICATIONS

- **Economic Recovery:** The reduction in layoffs might be a sign of a recovering economy, with businesses experiencing increased demand for their products and services.
- **Improved Business Confidence:** A decrease in layoffs could reflect improved business confidence and a more optimistic outlook for the future.
- **Job Market Stability:** Fewer layoffs could contribute to a more stable job market, reducing unemployment rates and providing greater security for workers.

A report by Longhouse Consulting shows that the number of layoffs in Indian startups during the first half of 2023 was exactly the same as the number of layoffs in the first half of 2024. Both halves accounted for 50% of the total layoffs.

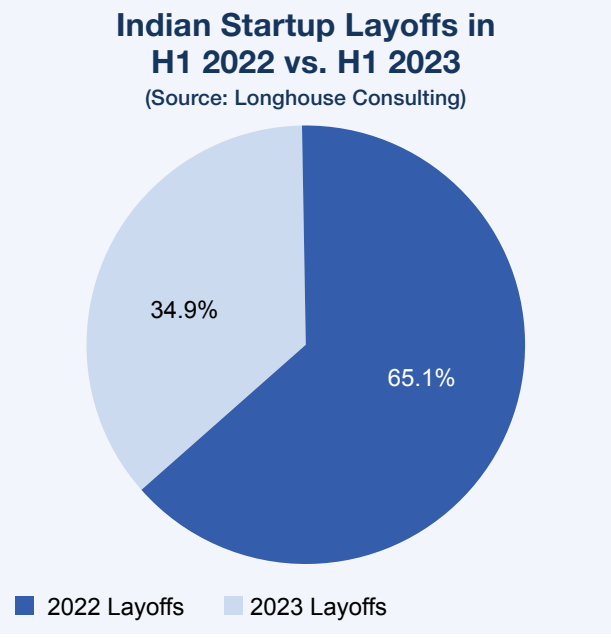
The equal distribution of layoffs might suggest a degree of stability in the Indian startup ecosystem. Despite economic fluctuations, the overall trend in layoffs remained consistent.

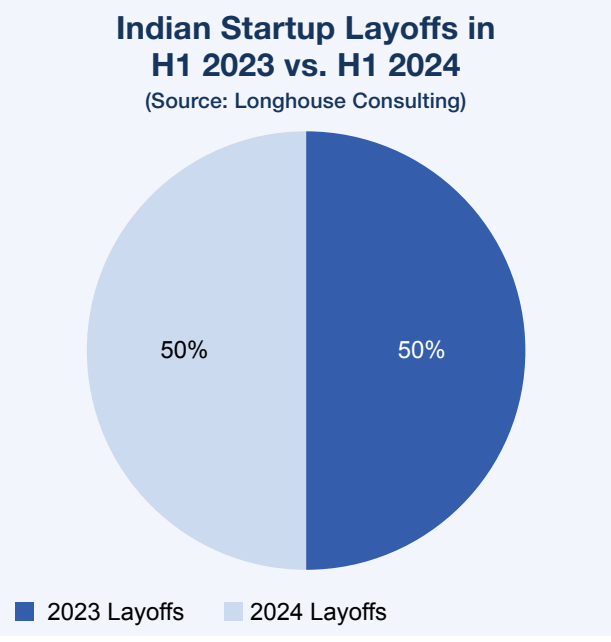
However, it's important to note that the overall number of layoffs might still be significant, indicating that startups continue to face challenges in terms of growth, profitability, or funding. While the overall trend might be stable, there could be variations across different sectors or regions within the Indian startup landscape. Some sectors might have experienced more layoffs than others.

THE ROLE OF TECHNOLOGY AND AUTOMATION

One of the major factors driving recent layoffs is the rapid advancement of technology and automation. As machines become increasingly capable of performing tasks traditionally done by humans, many jobs are becoming obsolete. This trend has accelerated the pace of job displacement and made it more difficult for workers to find new employment.

Rajesh Vasudevan, Senior Vice President of Talent Engineering at Maveric Systems Limited, points out





> Automation has significantly reduced the demand for generalized skills, leading to intense competition for specialized roles.

- Rajesh Vasudevan, Senior Vice President of Talent Engineering, Maveric Systems Limited

> Markets are cyclical, and no downturn is permanent. It is important to keep a positive mindset about the future.

- Harikrishna Khandavilli,
Head of Engineering, Continental Automotive India

that "automation has significantly reduced the demand for generalized skills," leading to intense competition for specialized roles. He adds, "Professionals with specialized skills are more likely to stand out, but they must continuously update their knowledge of the latest tools and technologies to remain relevant."

THE CHALLENGES: SKILLING AND EDUCATION

The recent layoffs have exposed significant gaps between the skills taught in engineering programs and those demanded by the industry. To bridge this gap and prepare graduates for the workforce, it's crucial to focus on the following strategies:

Job Training and Retraining Programs: Providing workers with the skills they need to transition to new careers. As Vasudevan notes, "Students should cultivate a mindset of clear thinking and staying ahead to achieve their future goals."

Integration of Real-World Problem Solving: Engineering programs must integrate real-world problem-solving as it is crucial for students to meet the demands of the industry. Khandavilli suggests, "By establishing partnerships with industry bodies to create collaborative projects, students can work on actual problems faced by organizations."

Balanced Theoretical and Practical Learning: A balance between theoretical knowledge and practical application is essential. Khandavilli emphasizes that "theoretical knowledge provides the foundation, while practical application provides the experience."

Mental Health Support: Supporting the mental well-being of students amidst academic pressure and job market anxiety is critical. Khandavilli advises that "integration of mental health resources into the curriculum is the best way to support the mental well-being of students."

Promoting Continuous Learning: Encouraging students to engage in continuous learning and upskilling is essential. Vasudevan highlights the importance of a "shift left" approach, where "students are equipped with both theoretical knowledge and practical skills, making them more competitive and adaptable in the workforce."

CONCLUSION

The recent wave of layoffs has had a profound impact on individuals, communities, and the broader economy. The engineering education sector, in particular, has felt the ripple effects, with industry demands highlighting gaps in current curricula. While the challenges are significant, proactive steps such as integrating real-world problem-solving into curricula, balancing theoretical and practical learning, and supporting mental health can help build a more resilient and prepared workforce. As both Khandavilli and Vasudevan emphasize, continuous learning, adaptability, and a positive mindset are key to navigating these challenging times and building a better future for all.

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Campus-Corns – The new Summa Cum Laude?

It's strange when an OEM starts to build its own brand of cars. They are just supposed to supply the crucial parts. So why this last-mile and long-tail jump? But then, don't they have the best grip in understanding the car? So why not?

By Pratima H

One young girl from Jaipur looks at road accidents in India and turns to AI for some help. A young boy watches his grandfather struggle with syringes and when diagnosed with Diabetes, decides he would take matters in his own hands, literally.

In a different corridor on a different campus, an engineering student runs into the previous mayor of Chicago Rahm Emanuel – making him think creatively about an engineering senior design project to bring internet access to remote areas.

There is also someone who started thinking about prosthetics when he was seven years old; and - when he huddled a small group of University of Illinois engineers - turned this dream into a tactile company.

Another young student in the USA wonders why we are putting the PFAS back into landfills or burning it to churn out toxic aerosols into the air; and creates a technology-backed answer. Another student on a global university campus comes up with an affordable test to better determine antibiotic susceptibility for blood-borne pathogens.

Not far away is a Professor who started on a new path after being worried about specially-abled people in cars and explored retrofit seatbelts as a solution.

Can you guess what connects these globally-scattered brains? Yes, they are all about helping

> Most students want to be difference-makers. We need to make sure we remove their roadblocks.
>
> **- Dr. Sundar Krishnamurty,**
> University of Massachusetts Amherst

humanity. But also, they all started these ventures in a university atmosphere.

They are far apart, in different time zones, in different fields – and, yet, parked in the same Venn diagram intersection. They are bitten by the proverbial 'entrepreneur' bug. The bug that makes some people get up, fix things, turn change-makers and start something 'up'.

Student-turned Entrepreneurs! That's a story that is still as ripe and as relevant as the Facebook born out of a dorm room.

SLEEPLESS IN START-UPS

The hunger to find answers to questions that most people ignore to accommodate- that can be a new definition of entrepreneurship. People who start a venture are bitten not by the business bug after a degree but because of the itch to help the world right from their study desks.

It explains why we have someone like Vanisha Kheterpal, a 16-year-old school student who is already the founder of a company 'Suraksha AI'. While her peers may be busy discussing K-Dramas, she is busy building something that taps AI and sensors for creating pre-emptive signals, especially on blindspots to solve many road safety issues on Indian roads. Besides a Blindspot Warning and Collision Prevention system at various traffic signals that helps with alerts on risky curves and unpredictable turns; her venture is also working on using GenAI for crowdwork data on real-time accident information. The POCs are underway and Vanisha is hopeful that her dream will move into faster gear soon.

Something that echoes with the story of Connor MacFarlane. As an active boy in high school athletics, he refused to change his routine after being diagnosed with diabetes. That's where he came up with a wearable insulin delivery device to deliver insulin in a faster, more comfortable, and less resource-dependent way than existing options. As a chemical engineering major at UMass, he attended a boot camp at the Berthiaume Center for Entrepreneurship. And since then, has been injected with a new force.

Just like how Danny Gardner at the University of Illinois Urbana-Champaign converted his engineering project into a full-blown company (Mesh++) to bridge the digital divide with solar-powered routers. It raised $4.9 million in seed funding in 2021.

The world's first touch-sensing bionic hand also came out of a campus. PSYONIC founder and CEO, Dr. Aadeel Akhtar and the team also went for a patent for a system and method for an artificial tendon-driven prosthesis.

Such examples keep going on and on.

Julie Bliss Mullen, Aclarity's CEO also invented Aclarity's primary technology as a PhD Candidate when she was studying innovative water treatment technologies. Mullen, who was anointed in the Forbes "30 under 30 in Science" list for 2019, has completed four business courses at Isenberg School of Management focusing on entrepreneurship.

Like Latde Diagnostics, which has its origins at UMass Amherst and won a Lever Innovation Grant funding after competing in Lever's Western Mass Health Tech Challenge. Its founders questioned why

> A holistic environment and support-ecosystem can matter a lot for budding entrepreneurs.
>
> **- Jed Taylor,** Technology Entrepreneur Center (TEC), University of Illinois Urbana-Champaign

rapid antibiotic susceptibility testing solutions are prohibitively costly and began working on diagnostic tools that can save patients across socioeconomic strata.

Faculty start-ups are also entering the entrepreneur elevators – and beyond initial ideation. Consider Reconstruct (visualization for the construction industry) by Derek Hoiem (CS professor) and Mani Golparvar Fard (CS, Civil Engineering, TEC professor) from the University of Illinois at Urbana-Champaign. Or AI-powered robots through EarthSense by Girish Chowdhary (ABE and Aerospace). Or light-based medical care through PhotoniCare co-founded by Stephen Boppart at University of Illinois at Urbana-Champaign.

There is also ClimeCast (a venture for financial diligence on real estate decarbonisation) co-founded by CEE student Krishna Ramaswamy at University of Illinois Urbana- Champaign. Recently we saw how an IIT Madras-incubated Smart EV Charger Start-up Plugzmart, an EV Charger Manufacturing Company, bagged certification for its EV Charger from Automotive Research association of India (ARAI).

These umpteen examples quite etch this pattern of students and professors at campuses thinking like entrepreneurs. Not just for fun. But for serious business ventures.

"Many students have been engaged in research work that serves as a form of incubation for entrepreneurial ideas under my guidance." Shares Dr. Sudeep Tanwar, Professor – CSE Department, Institute of Technology, Nirma University. "One of the research works entitled "Blockchain-based electronic healthcare record system for healthcare 4.0 applications" has been praised by winning Dr. KW Wong's Annual Best Paper Prize for 2021, sponsored by Elsevier (publishers of JISA) and also a prize of $750. Additionally, one project has been completed, and one patent has been granted, further demonstrating the potential of these research initiatives to drive innovation."

So why these ventures? And what makes them drive for miles instead of sputtering away at the first flat tyre?

LOOKING FOR THE SPARK PLUG

One right person to ask why these very young entrepreneurs matter is Dr. Sundar Krishnamurty,

Ronnie & Eugene M. Isenberg Distinguished Professor in Engineering and Department Head, Mechanical & Industrial Engineering. He also dons the hat of the PI for the NSF's Innovation Corps (I-Corps), and has been recognized as a Senior Member of the National Academy of Inventors based on his experience in this area.

The first thing that Dr. Krishnamurthy rightfully does is wipe away the notion that entrepreneurs on campuses are exceptions. "Most students want to be creative. They do not want to be stuck in studying Calculus but in finding how Calculus can help them help something in real life. It is my passion to work on innovation on the campus."

We help the spirit of entrepreneurship in many ways, explains Dr. Krishnamurthy. "Like- Mentoring through our EIRs, nurturing through our faculty

> Shifts in curriculum-approaches not only prepares students for the issues they'll face in the workforce but also makes their learning future-proof.
>
> **- Rohit Agarwal,** Chief Delivery Officer, TalentSprint

– guide on the side, training through our I-Corps workshop (Customer discover process, Value proposition), training through Summer Collegiate Venture Program and support through our Berthiaume Center for Entrepreneurship, Institute of Applied Life Sciences, and Tech Transfer Office." Our mission is to excel at delivering knowledge transfer and knowledge translation for the common good, which has helped us to establish a vibrant I&E ecosystem to integrate education, research, and innovation of our faculty and students, he illustrates.

Prof. Prathap Haridoss, Dean (Academic Courses), IIT Madras also cites how the Institute has updated the Academic System to offer unprecedented flexibility, increased Interdisciplinary learning, hands-on projects and Entrepreneurship Opportunities as early as in the Second Year of the BTech Program. "The newly revamped programs also allow for early exits from the programs, for those that desire the freedom. The Institute has also included entrepreneurship courses in its curriculum. These changes have been implemented following the rigorous recommendations by an Institute Curriculum Task Force, orienting it towards employment, research, innovation and entrepreneurship."

Prof. Devendra Jalihal, Director, IIT Guwahati tells how through the IIT Guwahati Research Park and an Incubation Center, the institute is offering extensive support to budding entrepreneurs, providing them with mentoring, seed funding, and networking opportunities with industry leaders. "Several successful startups have emerged from our campus, led by both students and faculty. These ventures are not only a testament to the innovative spirit of our community but also contribute to addressing critical challenges across various sectors."

Nirma University has a dedicated incubation cell, co-funded by Govt. of Gujarat, cites Dr. Nityesh Bhatt, Professor – Information Management, Institute of Management, Nirma University. "With funding, mentorship and infrastructure support, more than 25 students from across the disciplines are pursuing their start-up goals in different stages."

As to whether faculties should follow the same path of innovation, Dr. Krishnamurthy tells that they have a different direction and appetite. "They have chosen a different career path but they do want to explore the impact of their research in a tangible and real-world context. Our university has given facilities for many ideas to cross the licensing stage too- helping them solidify and leverage IP the right way- with documentation, revenue paths etc."

FROM GARAGE TO THE GOLF COURSE

The distance between an idea getting out of the box and travelling to its solid presence on a market shelf is not always short or easy or even completed. Most entrepreneurs struggle here.

"Some ideas become successful in being 'products of interest' to companies. Some are working on this and a business firm has a natural edge in the commercial aspects here." Dr. Krishnamurthy shares.

That's where support inside, and beyond, campuses becomes crucial and catalytic. Dr. Krishnamurthy cites how I-Corps is a strong example of supporting student-led start-ups. "It is much more than bootstrapping and works on many fronts- the right tie-ups, mentors, coaching, incubators etc."

What helped Vanisha a lot – especially in not giving up in the initial stages or dismissing this dream as a silly idea- was the presence of tech mentors at home. She has watched her parents solve interesting problems and build tech ventures themselves.

This push helped Connor go beyond initial design and prototyping. It helped him to connect to design manufacturing firms in FORGE's network of over 450 startup-friendly suppliers and to improve the design for his prototype. It also brought in UMass Amherst ADDFab Lab for his 3D printing needs.

Jed Taylor, Assistant Dean for Innovation & Entrepreneurship at The Grainger College of Engineering, University of Illinois Urbana-Champaign and Executive Director of the Technology Entrepreneur Center (TEC) avows how a holistic environment and support-ecosystem can matter a lot for budding entrepreneurs. "The University of Illinois has a strong focus on innovation and entrepreneurship, supported by extensive resources like the Technology Entrepreneur Center, Research Park and Enterprise Works incubator, Office of Technology Management, Illinois Ventures, Siebel Center for Design, student organizations, world-class translational research institutions, and more. The thriving entrepreneurship ecosystem on campus provides diverse academic programming, hands-on experiences, funding, mentoring, and a strong alumni network making it a prime environment for entrepreneurial success."

So all is smooth? Not really, especially when the distance from the drawing-board to the balance-sheet is not a straight path but a maze.

WHERE THE TANKS GO EMPTY

In a recent study, Indian Institute of Management Lucknow researchers studied the success strategies of unicorn startups, and underlined the impact of ambidextrous orientation on the journey of startup teams. Turns out that startups led by founders adept in both exploration (innovation and opportunity discovery) and exploitation (efficiency and scaling up) reach unicorn status significantly faster. The research also points out the aspect of resource constraints.

There is a possible gap in providing comprehensive support for students to be GTM-ready, Dinesh Kumar Poobalan, CEO & CTO, Greatify argues. "While technical education is strong, there might be a need for more focus on entrepreneurial skills, market understanding, and practical business acumen."

Also, Indian engineering schools often focus too much on hyper-specialization, which can limit students' ability to solve real-world problems, argues Rohit Agarwal, Chief Delivery Officer, TalentSprint. "True engineering is about using logic and computing skills to tackle complex challenges. We believe curricula should be more centered on practical, industry-relevant problems, integrating theory with hands-on application. This not only prepares students for the issues they'll face in the workforce but also makes their learning future-proof."

Above all, collaboration and support are not good-to-have frills but backbones in the case of start-ups in academia.

As Dr. Krishnamurthy reckons, success with start-ups is a lot about connecting the dots. "We try to facilitate a lot of pan-campus fluidity in connecting various disciplines like engineering students with economics, management and science domains so that they can share their respective skills and strengths."

Patents and IP are critical as- and have long been undervalued in the landscape of academic start-ups, weighs in Dr. Krishnamurthy. "We have been trying a lot recently to see how to recognize IP at the same

> With the hands-on projects and real-world problem-solving experiences they receive in these labs, students gain valuable experience that enhances their job preparedness.
> **- Prof Prakash Gopalan,** President, NIIT University

level as academic publications. Academic fraternity has a different culture and community-recognition when it comes to publications. We are trying to give facilities, tech-transfer support and documentation support for many IPs. Looking at research from an IP point-of-view needs a cultural shift in campuses. But this is changing."

REBELS IN PROGRESS

For the naysayers or old-school minds, focusing on entrepreneurship when a student should be in the classroom can come across as a wasteful distraction.

Dr. Krishnamurthy takes that punch on his chin, and answers sportingly, but strongly. "I was that person 20 years back. Learning Calculus or figuring out Newton's work was far more important that wondering about new apples. But with experience and my own exploration (like a project on Retrofit seatbelts) I built a new mindset of looking at solutions. Not what to think, but also how to think. It's the tree vs. the forest view again. We ask and encourage our students not to learn by rote but about the impact they make with what they learn. It's important to look at students as impact-makers and lifelong learners. And I do not think any faculty, no matter how old-school, will mind that."

Prof Prakash Gopalan, President, NIIT University highlights how entrepreneurship ties in to traditional goals too. "The Innovation Labs and startup incubators at our university have garnered positive feedback from the industry partners. Companies praise our graduates for their practical skills and adaptability, noting their strong employment readiness. With the hands-on projects and real-world problem-solving experiences they receive in these labs, students gain valuable experience that enhances their job preparedness."

BEYOND THE TEST-DRIVE

Agarwal applauds that India is emerging as a hub for tech-based startups, and the fusion of technology with entrepreneurship is crucial for innovation. However, many programs don't emphasise this enough, he warns. "By encouraging students to think about how their technical skills can drive business solutions, we can better prepare them to succeed in the market. The key is to blend tech skills with entrepreneurial thinking, enabling students to innovate and effectively bring their ideas to market."

Such mindsets are taking roots and growing fruits. Vanisha is busy looking for investors and mentors who will back her idea with resources and acceleration. Connor's focus has been on wearability, durability tests, packaging, and sterilization before commercialisation.

It's a good thing that these start-ups are now on different lanes, running and steady. 'Started' and 'up'. Not just start-ups. Hopefully, the road of entrepreneurship in academic campuses will pave the way for more platooning. More adventure. More lane-shifting.

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Aditi Jain Reveals the Blueprint for Future-Ready Engineers

Aditi Jain, HR Leader | Talent Management & Development at Visionet, discusses the importance of emerging technologies and industry-academia collaborations in preparing engineering graduates for the future.

By Aanchal Ghatak

What emerging technologies or fields do you believe engineering programs should prioritize?
Technology is evolving faster than ever, making it crucial for engineering programs to prioritize emerging fields to stay future-ready.

For example, Artificial Intelligence (AI) and Machine Learning (ML) are transforming various engineering disciplines by enabling predictive maintenance, optimizing design processes, and enhancing decision-making through advanced data analysis.

Digital Twins, which create virtual replicas of physical assets or scenarios, offer real-time monitoring, simulation, and optimization.

This technology is especially valuable in sectors like construction, manufacturing, tourism, smart city planning, and even corporate learning and education.

Nanotechnology also holds the potential to revolutionize industries such as electronics, medicine, and sustainable energy.

Additionally, the Internet of Things (IoT), Biotechnology, Biomedical Engineering, Quantum Computing, Immersive learning methods (AR, MR, VR) and 3D Printing are just a few more areas poised to drive significant advancements. This is only the beginning of a much longer list of transformative technologies.

ADITI JAIN
HR Leader, Talent Management & Development, Visionet

What role do you see internships and industry collaborations playing in preparing students for future jobs?
In today's fast-paced job market, collaboration between academia and the corporate world is essential for preparing students for future careers. These partnerships provide students with real-

world experience, skill development, and valuable industry insights, giving them a competitive edge and enhancing their resumes.

They also offer critical networking opportunities and mentorship, bridging the gap between academic learning and professional work.

Even at Visionet, we recognize the importance of internships as a vital step in aligning industry expectations with student aspirations, and in preparing them for the demands of the future job market.

This belief led to the launch of our flagship initiative, "VisionTechFest"—an annual event dedicated to addressing challenges related to internships and corporate-academia collaboration. VisionTechFest is designed to inspire innovation and foster collaboration among students, startups, academia, industry experts, and Visionet itself, creating a vibrant platform for the exchange of ideas and cutting-edge solutions.

A key component of this initiative is TechThon, a competition specifically tailored for undergrad students across engineering colleges. This platform challenges students to develop innovative solutions for real business problems in the fields of health, retail, finance, insurance, and social sectors.

The success of this model was evident in 2023 when we witnessed the participation of 2,000 students from 29 colleges, forming 678 teams, each tackling real-world tech challenges. The competition was intense, culminating in the recognition of three outstanding teams whose creativity and ingenuity stood out.

As we kickstart VisionTechFest 2024, we are expanding this successful model to colleges nationwide, encouraging innovative thinking and empowering institutions to fulfill this mission. Winning students are not only offered internships but also guaranteed pre-placement offers (PPOs), along with mentorship and access to industry experts throughout the three-month process.

Visionet is proud to be at the forefront of bridging the gap between academic knowledge and industry demands, ensuring that students are well-equipped to thrive in the evolving job market

What are the most critical skills and knowledge gaps you see in recent engineering graduates?

One of the most significant gaps in today's education system is the lack of practical, experiential learning through corporate collaboration. It's not enough for graduates to simply understand concepts—they need hands-on experience to apply their knowledge to real-world challenges.

Teaching and learning must evolve beyond the traditional rote learning and examination models. More emphasis should be placed on internships and practical projects. It might be time to explore a "credit" system, like those used in Western countries, that rewards students for actively seeking opportunities to apply classroom learning in real-world scenarios.

Another critical gap lies in the development of cognitive and behavioral skills. While many graduates possess strong technical knowledge, they often struggle to interact effectively with clients, customers, and internal or external stakeholders. The curriculum must prioritize the development of essential skills like communication, collaboration, proactiveness, personal effectiveness, and the ability to present, articulate, and persuade.

Lastly, in today's diverse, multi-generational workplace, adaptability, flexibility, and the ability to thrive in an ever-changing environment are highly sought-after traits. Cultivating these skills is crucial for preparing graduates to succeed in the dynamic world they will enter.

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Harnessing AI for Gaming Innovation, Games24x7

As the global online gaming industry continues its rapid expansion, the AI in gaming market, valued at approximately $2.6 billion in 2022, is expected to grow at a CAGR of around 29.5% from 2023 to 2030 Artificial Intelligence is playing a pivotal role in shaping the future of this dynamic sector.

By Minu Sirsalewala

The global online gaming market, valued at approximately $159 billion in 2020, is projected to reach $292 billion by 2028, growing at a CAGR of 8.8% (Source: Allied Market Research). Within this sector, mobile gaming is anticipated to expand from $100 billion in 2021 to over $160 billion by 2025, fuelled by increasing smartphone penetration and innovative gaming experiences (Source: Newzoo).

Dr. Tridib Mukherjee, the Chief Data Science & AI Officer at Games24x7, joins **Minu Sirsalewala,** Executive Editor, Dataquest to explore how AI is revolutionizing the industry. With AI-driven personalization boosting user engagement by up to 30% and responsible gaming measures reducing problem gambling rates by 20%, Dr. Mukherjee provides insights into how Games24x7 leverages these technologies to enhance player experiences and ensure a safe gaming environment. In this exclusive interview, he discusses the company's cutting-edge AI innovations, the challenges and opportunities of leading AI initiatives, and the future of AI in shaping the online gaming landscape.

DR. TRIDIB MUKHERJEE
Chief Data Science & AI Officer, Games24x7

How is Games24x7 leveraging AI to enhance its product offerings and personalize user experiences? Can you

> OUR RESPONSIBLE GAMEPLAY (RGP) FRAMEWORK UNDERSCORES OUR COMMITMENT TO PLAYER SAFETY. IT USES PREDICTIVE TOOLS TO FLAG USERS WITH ANOMALOUS BEHAVIOUR, ENSURING USER PROTECTION AND CREATING A SAFE AND SECURE GAMING ENVIRONMENT.

share specific examples of AI-driven innovations that have significantly impacted user engagement?

At Games24x7, our scientific and data-led approach towards business is our biggest differentiator. At heart, we are a technology company fuelled by a passion for gaming. It is this blend of passion and our scientific approach of running a business – which has constantly inspired us to innovate, bringing the timeless appeal of the most loved classic games to technology-enabled digital formats. And while we have grown over the years, our operating ethos – 'Science of Gaming', has stayed constant.

Hyper-personalization is key for us to understand player propensities so we can give them the best gaming journeys. Our AI and data science team analyses terabytes of player data to gain valuable insights, leveraging rigorous data analysis and AI algorithms to enhance gameplay experiences.

Our AI components enhance player engagement by predicting game actions, assessing player skills, and optimizing game strategies, while also streamlining business functions like marketing, customer service, and fraud detection. Additionally, AI-driven insights enable us to personalize player journeys with customized recommendations, ensuring that each player enjoys a uniquely tailored experience. These in-house developed tools provide distinctive gameplay, engaging players uniquely and setting our platform apart in a crowded market.

Additionally, our Responsible Gameplay (RGP) Framework underscores our commitment to player safety. It uses predictive tools to flag users with anomalous behaviour, ensuring user protection and creating a safe and secure gaming environment.

From your perspective, what is the role of AI in transforming digital consumer-facing industries, particularly online gaming? How do you see this evolving in the next few years?

As technology permeates every facet of our lives, the demand for personalized experiences has surged. Hyper-personalization, powered by AI-driven predictive tools, is the key to satiating this appetite. For example, by leveraging unique customer data such as demographics, playing patterns, and preferences, we can create a personalized playing environment, segment entry fees based on individual preferences, or offer unique deals tailored to a player's specific interests.

This level of customization enhances user engagement and satisfaction by ensuring that each player feels that the experience is uniquely crafted for them. However, the power of data and AI is not limited to this. It is widely used across various business operations: in marketing, for targeted campaigns and customer insights; in HR, for talent acquisition and employee engagement; and in finance, for risk management and financial forecasting. By embedding AI into the core of business processes, companies can make more informed decisions, optimize resources, and stay ahead in a competitive landscape, ensuring sustained growth and adaptability in an ever-evolving market.

> OUR AI AND DATA SCIENCE COMPONENTS, COMBINED WITH VARIOUS FUNCTIONS ENABLE US TO BRING VARIOUS SOLUTIONS TO OUR PRODUCTS TO ENSURE RESPONSIBLE GAMEPLAY.

At the same time, it's important to acknowledge that we're still in the early stages of understanding the full potential of AI. The possibilities that technological advancements offer is vast, it will take time for us to fully grasp its capabilities and implications. As we continue to explore and understand AI's potential, we will unlock even more innovative ways to transform the online gaming industry, setting new standards for personalization and engagement that will shape the future of the industry.

As the Chief Data Science and AI Officer, what are the key challenges and opportunities you encounter in leading AI initiatives at Games24x7? How does dedicated AI leadership contribute to the company's success?

The online gaming industry stands as a robust and distinct digital native sector, setting it apart from other industries in the market. This distinctiveness is especially evident due to its random scalability needs, particularly during major sporting events. The unique demand necessitates the use of appropriate technological tools to ensure smooth operations and deliver a seamless user experience.

At Games24x7, we have developed cutting-edge in-house AI tools that provide us with a 360-degree view of our users, specifically designed to understand their journeys and tailor our offerings accordingly. From a user's first impression to platform onboarding, early engagement, and loyal commitment, AI powers every step of their journey.

Our in-house AI algorithms and models play a pivotal role in personalizing user experiences by predicting and responding to user behaviour in real time. They leverage advanced machine learning techniques to analyse extensive data points, allowing us to anticipate user preferences, optimize engagement strategies, and identify potential areas of improvement. This enables us to not only enhance user satisfaction but also drive long-term loyalty and retention.

At Games24x7, with our foundation rooted in science, we have been focused on data science & AI and ML right from our inception. A dedicated leadership is essential in this process, as it forms the genesis of our team, guiding them through the complexities of developing and deploying these advanced tools. The role involves not just assembling a technically proficient team, but also ensuring alignment with the company's vision, setting strategic priorities, and fostering a culture of innovation. Such leadership is crucial in balancing rapid innovation with scalability and reliability, allowing us to proactively address user needs and drive business growth, ultimately contributing to the company's success.

What measures is Games24x7 taking to ensure a healthy and responsible online gaming environment using AI and other technologies? How do you balance user engagement with responsible gaming practices?

With the increased adoption of online gaming as an entertainment avenue, it is important to

> WE EMPLOY TOP-NOTCH DATA PROTECTION TOOLS, ENSURING A SECURE AND TRANSPARENT PLAYING FIELD, FREE FROM BOTS AND UNVERIFIED PROFILES.

recognize and promote responsible gaming practices to ensure a healthy and sustainable industry. At Games24x7, our deep learning model, 'Scarce GAN' – an industry-first, AI-powered, Responsible Game Play (RGP) framework cum tool – ensures that our players can enjoy our gaming platforms in a safe and controlled manner.

Using a range of predictive tools, this framework assesses each player's behavior through their interactions on the platform and flags users at risk. Once we identify a player at risk, we take proactive measures to prevent overconsumption. Our AI and data science components, combined with various functions enable us to bring various solutions to our products to ensure responsible gameplay. These measures include offering self-exclusion and self-limiting options, providing counselling sessions led by experts, or suspending the player's account to allow them to take a break from gaming.

We want users to be able to come and enjoy our platform responsibly and for its intended purpose as a form of entertainment that is accessible to them. We continue to invest in this direction and our recent algorithm, Actionable Forecasting Network (AFN), helps us further identify risky users much earlier in their journey.

How does Games24x7 address regulatory and ethical considerations in its use of AI? What steps are taken to ensure data privacy and security while delivering personalized gaming experiences?

Games24x7 adheres to the E-Gaming Federation's Code of Conduct, setting the standard for fair play and ethical gaming practices. We apply the principle of least privilege for our processes and computing systems to ensure data privacy while delivering personalized experiences. We employ top-notch data protection tools, ensuring a secure and transparent playing field, free from bots and unverified profiles. Advanced digital security and anti-fraud tools provide users with secure payment options and safeguard their data and transactions.

What emerging AI technologies do you see as game-changers for the online gaming industry? How is Games24x7 preparing to adopt and integrate these technologies to stay ahead of the curve?

At Games24x7, we are committed to delivering the best user experience, driving us to continuously evolve and innovate. Our highly skilled AI and Data Science team is at the heart of this mission, ensuring we remain at the forefront of the rapidly advancing technological landscape. Generative AI stands out as a transformative technology with the potential to revolutionize the sector.

From both topline and bottomline perspectives, Generative AI can significantly enhance productivity by automating complex tasks, such as content creation, intelligent marketing, customer service automation, and many more internal workflow automation that can lead to tremendous innovation at scale across the entire value chain.

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Breaking Barriers: Gender Inclusivity and AI Bias

Shreya Krishnan, Managing Director of AnitaB.org India, shares insights on the progress and challenges of gender inclusivity in the Indian tech industry and the pervasive impact of bias in AI systems.

By Minu Sirsalewala

In a candid conversation with **Minu Sirsalewala,** Executive Editor of Dataquest, **Shreya Krishnan,** Managing Director, AnitaB.org India, discusses the current landscape of gender inclusivity in India's tech sector, highlighting both advancements and ongoing challenges. She delves into the persistent issue of gender bias in AI and machine learning, emphasizing the importance of diverse development teams and ethical AI practices. Krishnan also outlines the proactive steps AnitaB.org India is taking to promote diversity and equity, from mentorship programs to initiatives that address systemic barriers in the industry.

SHREYA KRISHNAN
Managing Director, AnitaB.org India

How do you perceive the current state of gender inclusivity in the Indian tech industry? Are there any significant changes or improvements you have observed over the past few years?

The Indian tech industry has made notable progress in gender inclusivity, but challenges persist. Over the past few years, there's been a significant increase in companies committed to diversity, with more organizations adopting gender-neutral policies, enhancing the representation of women in leadership roles, and creating inclusive work environments. Organizations are a lot more intentional about who they are hiring. There is a more organised focus on

> CULTURAL BIASES AND SOCIETAL NORMS CONTINUE TO BE SIGNIFICANT BARRIERS, HIGHLIGHTING THE NEED FOR SUSTAINED AND FOCUSED EFFORTS TO ENSURE THAT GENDER INCLUSIVITY IS MORE THAN JUST A POLICY.

ensuring that there is diversity in the hiring process. Initiatives such as mentorship programs and women-focused networks have played a crucial role in empowering women and nonbinary individuals.

Despite these advancements, the gender gap remains, particularly in senior and technical roles. Most organisations fail when it comes to implementing inclusion as a cultural advantage. Cultural biases and societal norms continue to be significant barriers, highlighting the need for sustained and focused efforts to ensure that gender inclusivity is more than just a policy—it's a fundamental practice embedded within the industry.

In my vision, a sustainable, equitable, and safe world is one where empathy, kindness, and respect eliminate the conflicts we face today, whether they relate to climate change, discrimination, or other societal issues. A world where everyone has equal opportunities and is judged fairly within a system that prioritizes social justice. AnitaB.org aligns with these values, working towards creating a more inclusive and just tech industry and society.

Can you share some successful initiatives or programs that AnitaB.org India has implemented to promote gender inclusivity in workplaces?

AnitaB.org India is dedicated to promoting inclusivity and diversity within the tech industry, particularly for women and nonbinary individuals. Through a range of programs, events, and initiatives, AnitaB.org India empowers these individuals to thrive in technology. Our efforts include building a community that supports women and nonbinary technologists across India through workshops, mentorship programs, and networking sessions. Our Hopper Events, including the Hopper Roadshow, foster learning, networking, and community engagement to promote diversity and inclusion in tech.

Additionally, our Return to Work (RTW) and Apprenticeship Pathway Program (APP) bridge the gender gap by empowering women and nonbinary individuals in tech. The Advancing Inclusion Scholarship Program further supports students, faculty, and technologists by providing access to career and academic resources, networking opportunities, and the Grace Hopper Celebration India 2024. We also organise multi-city roundtables and sessions to discuss gender inclusivity and the importance of language aimed to explore how language shapes our understanding and treatment of gender.

In what ways do you think gender bias manifests in AI and machine learning algorithms? How can companies ensure their AI systems are fair and inclusive?

Gender bias in AI and machine learning often arises from biased data and a lack of diverse perspectives in development teams. One aspect could be the technology picking up the biases from the available training modules. But another completely manageable aspect is personal biases reflected in the technology while being developed. This can result in algorithms that reinforce stereotypes or marginalize certain groups.

Organizations that are more open to dialogue and communication and have more heterogeneous

teams, will naturally have higher resilience to bias due to the diversity within their teams. In contrast, organizations with more homogeneous teams will have lower representation, leading to more biased products and services, as the lack of diversity and representation in the team affects the perspectives and considerations during development.

To ensure AI systems are fair and inclusive, companies must prioritize diverse representation in their AI development teams and rigorously audit their datasets for bias. Implementing transparent and explainable AI practices is also crucial, as it allows for the identification and correction of biases. Continuous monitoring and updating of AI systems, along with ethical guidelines, can further ensure that these technologies serve all genders equitably.

For example, a financial services company can regularly audit its AI systems, particularly those used for loan approval processes, to ensure they are not biased against certain genders or other factors.

What role does AnitaB.org India play in addressing and mitigating gender bias in AI and technology development?

The work that we do aims to represent women and non-binary communities in workplaces, ensuring that the technology and AI being developed are more inclusive. This inclusivity leads to reduced bias, resulting in fewer cycles of testing and pilots, and ultimately creating more robust products and services. AnitaB.org's focus is to build and support partner organizations in creating a fair process from talent management to thriving workplaces, ensuring that these workplaces function as we envision.

What strategies or best practices do you recommend for companies looking to bridge the gender gap in their hiring and promotion processes?

To bridge the gender gap in hiring and promotion, companies should implement unbiased recruitment processes, such as blind resume reviews and structured interviews. Setting clear, measurable diversity goals and holding leadership accountable is crucial. Mentorship and sponsorship programs can support career advancement for women and nonbinary individuals. Regularly auditing pay equity and providing equal opportunities for leadership training are also essential. Creating a supportive and inclusive workplace culture, where diverse voices are valued, will help retain talent. Finally, promoting flexible work arrangements can help balance professional and personal responsibilities, making the workplace more accessible for all genders.

How can organizations create a more supportive and inclusive environment for women and nonbinary individuals in tech?

Organizations can create a more supportive and inclusive environment for women and nonbinary individuals in tech by fostering a culture of respect and belonging. This begins with leadership commitment to diversity and inclusion, reflected in policies that promote equal opportunities. Providing mentorship and sponsorship programs helps in career growth, while flexible work arrangements accommodate diverse needs. Offering regular training on unconscious bias and ensuring safe channels for reporting discrimination are essential. Additionally, celebrating diversity through events and networks reinforces inclusion. Organizations must also prioritize transparency in promotions and pay to build trust and equity for all employees.

What are the biggest challenges women and nonbinary individuals face in the tech industry today, and how can these be addressed effectively?

Women and nonbinary individuals in tech face challenges like gender bias, underrepresentation, and limited access to leadership roles, discrimination and harassment being primary. There's a significant issue

> GENDER BIAS IN AI AND MACHINE LEARNING OFTEN ARISES FROM BIASED DATA AND A LACK OF DIVERSE PERSPECTIVES IN DEVELOPMENT TEAMS.

regarding how women pay a much heavier price in leadership roles. According to a recent survey by Aon of more than 24000 working women from over 560 companies, 40% faced bias or potential bias, and a similar percentage experienced insensitive behaviour. About 6% reported sexual harassment, with less than half formally reporting it.

This indicates that even organizations assumed to be safe are not, as they reflect the same societal biases. These biases are carried into the workplace, and unless systemic changes are applied across the board—including public policy advocacy, government actions, and education—intervention must be all-pervasive. Only then will we see a marked change; otherwise, these issues will continue to perpetuate.

Cultural stereotypes and a lack of mentorship further hinder their progress. To address these issues, organizations must actively work to eliminate biases in hiring, evaluation, and promotion processes. Implementing mentorship and sponsorship programs can provide the guidance and support needed for career advancement. Companies should also invest in leadership development programs tailored for women and nonbinary individuals, ensuring they have equal opportunities to succeed and lead in the tech industry.

Can you provide examples of companies or sectors within tech that have excelled in gender inclusivity, and what can we learn from their approach?

In India, organizations investing in DEI can be categorized into three different sizes, scales, and stages in their journey.

The first category includes those that recognize the connection between ESG and DEI and leverage this connection to implement better practices in hiring and production processes.

The second category comprises organizations that acknowledge the need for DEI but are still on the journey toward understanding and implementing these needs. They are working on translating their needs into action, creating process tools, and investing in a more inclusive culture.

The third category consists of organizations just beginning to understand the value of DEI. They are trying to leverage the connection between DEI and profitability but are still grappling with what this truly means. These organizations do not have DEI on a standing charter, and their efforts may be more about ticking a box than challenging the status quo.

Some of the large tech brands in the country seem to value DEI and have practices aligned with creating safe and equitable spaces. These organizations already invest in parity and gender representation. However, others are still figuring out their stance on DEI. In the current global political scenario, the backlash against DEI is significant. This negative attention could potentially set back the progress made since movements like #MeToo and other incidents that have brought these issues to the forefront.

What are your vision and goals for AnitaB.org India in the next five years concerning gender diversity and inclusion?

AnitaB.Org India is back together after a hiatus and the goal this year is to rebuild our partner relations and refocus on our organisational goals to foster inclusion and gender equity not just at the top level but from a grass root level. We want to be able to make a marked impact on the number of women that are

> ACCORDING TO A RECENT SURVEY BY AON OF MORE THAN 24000 WORKING WOMEN FROM OVER 560 COMPANIES, 40% FACED BIAS OR POTENTIAL BIAS, AND A SIMILAR PERCENTAGE EXPERIENCED INSENSITIVE BEHAVIOUR.

being hired into mid-level and senior roles, women representations on the board level and advisory board level positions investing deeply in STEM learning. Along with this, we will focus on education for younger girl children for higher representation, building access to safer workplaces and pay equity as a measure to ensure equality, building awareness and action on various problems that surround the current landscape of DEI, ensuring that we invest our efforts in building safety.

In the next five years, our idea is to ensure that we increase the numbers of women in STEM roles, women in mid-career in STEM roles and women in STEM roles in senior leadership, and to actively build a pipeline for younger talent to get access to STEM education, for nonbinary communities to have safer more equitable access to workplaces and building conscious awareness on bias and how that interplay functions.

While we currently have a global community of 106000 members, in India, we have 6000 members and we plan to increase that number by the end of five years to be enough to create a Movement that will help forge a path for future generations to come. We also plan to introduce an advisory committee in India in future that helps build this path through impactful guidance and successfully applied frameworks.

How do you see the role of events like the Grace Hopper Celebration India evolving to further support and empower women in technology?

Just to create and build and sustain a platform like the Grace Hopper Celebration is in itself an investment of time, energy, resources and effort. Platforms like these help with agency advocacy, access and opportunities to not just learn and network, but also truly be represented.

The Grace Hopper Celebration (GHC) was first established in 1994 by Dr. Anita Borg and Dr. Telle Whitney. Building on the success of GHC, the Grace Hopper Celebration India (GHCI) was launched in 2010 by AnitaB.org India to provide similar opportunities for women and nonbinary technologists in India.

GHCI is more than an event; it's a movement empowering women and nonbinary in tech. Making its return after a 5-year long hiatus, GHCI promises to be a spectacular event with opportunities to network, learn and be inspired by the stories of individuals who have defied expectations and paved the way for a more inclusive future. GHCI 2024 aims to bring together changemakers and thought leaders to shape the future of tech

This year GHCI is held from November 20-22, 2024, at BIEC, Bangalore, India. The theme for GHCI 24 is "me+we", which celebrates the collective power of women and nonbinary technologists, highlighting individual contributions and ambitions. GHCI 24 is a force driving change in tech, ensuring those who create technology reflect the diversity of society. We exist as extensions of our communities, collectively as a voice, it's a lot more stronger when a community picks up, versus lone voices trying to find platforms to speak their truth.

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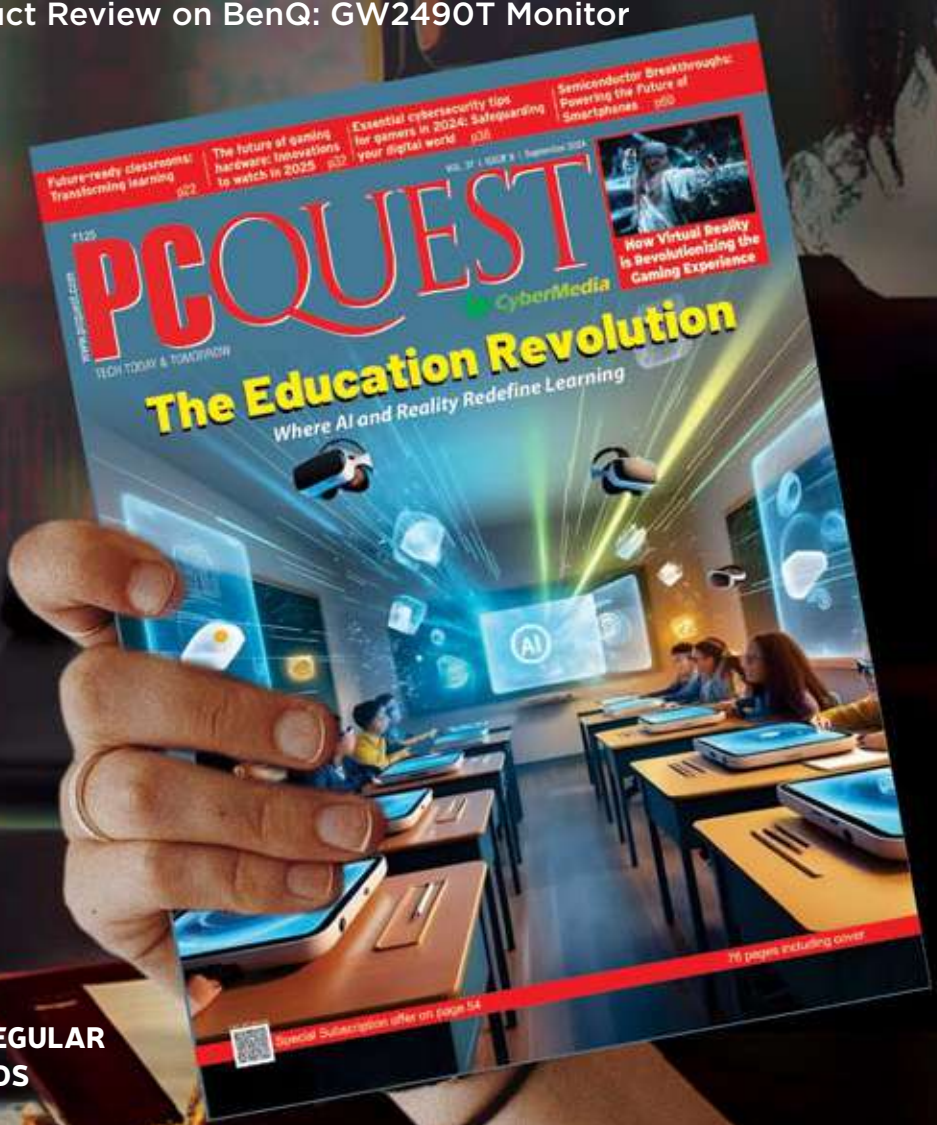

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How Cloud Technology is Empowering Indian SMEs: Key Insights from Tata Teleservices and CyberMedia Research

India's booming economy and the robust digital infrastructure are fuelling a wave of innovation, with businesses of all sizes – from established enterprises to agile small and medium enterprises (SMEs) – embracing powerful new technologies. Underpinning this growth charge is Cloud - a critical foundation for India's ongoing digital transformation journey.

By Minu Sirsalewala

Indian small and medium enterprises (SMEs) are increasingly leveraging Cloud technology to drive growth, enhance customer experiences, and improve operational efficiency. According to the TTBS SME Digital Pulse Report by CyberMedia Research, over 50% of Indian SMEs are using Cloud services for business expansion in FY2024, highlighting the critical role of Cloud technology in their digital transformation journey.

To explore these trends further, Minu Sirsalewala, Executive Editor, Dataquest spoke with Vishal Rally, Senior Vice-President of Product and Marketing at Tata Teleservices, and Prabhu Ram, VP - Industry Research Group (IRG), CyberMedia Research (CMR). They provided valuable insights into how Cloud technology is revolutionizing the SME sector in India, the strategies driving Cloud adoption, and the support systems in place to ensure security and

VISHAL RALLY
Senior Vice-President of Product and Marketing at Tata Teleservices

PRABHU RAM
VP - Industry Research Group (IRG), CyberMedia Research (CMR)

cost-effectiveness. Their perspectives reveal how SMEs can leverage Cloud solutions to compete with larger enterprises and achieve sustained growth in a dynamic business environment.

The study highlights that 50% of SMEs are leveraging Cloud for business expansion in FY2024. Can you elaborate on the specific ways in which Cloud technology is driving this expansion for SMEs?

Prabhu Ram: The rapid adoption of Cloud technology among SMEs is a significant trend that we observed in our TTBS SME Digital Pulse Report. SMEs across various sectors, including retail, manufacturing, healthcare, and education, are leveraging Cloud technology to scale their operations efficiently. Cloud adoption facilitates business growth by providing effortless scalability, allowing SMEs to add resources on demand and expand into new markets without substantial investments. This agility enables SMEs to capitalize on opportunities faster, deploying new applications and services accessible from anywhere on any device. Additionally, Cloud services empower SMEs to utilize advanced technologies like AI and Big Data analytics to optimize operations, enhance customer experience, and make data-driven decisions.

Vishal Rally: At Tata Teleservices, we see this surge in Cloud adoption firsthand, as highlighted by the SME Digital Insights study. SMEs prefer Cloud solutions because they are asset and capex-light, easy to install, and manage. Cloud technology drives expansion by enabling SMEs to scale resources as needed, providing enhanced agility in a dynamic business environment. This agility allows SMEs to seize the first-mover advantage and capitalize on market opportunities quickly. Moreover, Cloud services offer innovative capabilities that empower SMEs to use advanced technologies like AI and Big Data to optimize operations and enhance customer experience. Enhanced security measures provided by Cloud providers also ensure data protection and regulatory compliance, building trust with customers.

Over half of the SMEs surveyed prioritise Cloud for customer support. What are some of the key Cloud features or solutions offered by Tata Tele Business Services that are specifically designed to enhance customer support for SMEs?

Vishal Rally: At TTBS, we understand the critical role of customer support in SME success. We offer a range of Cloud-based solutions to enhance customer experiences, such as our advanced Cloud suite Smartflo, a multi-tenanted PBX in the Cloud that enables all communication features a customer may need. Smartflo offers Cloud-based contact centers for efficient multi-channel management, CRM integration for personalized interactions, and helpdesk software for streamlined support. We have integrated Smartflo with platforms like Zoom, WhatsApp for Business, and Microsoft PSTN, bundling all these services under the Smartflo proposition as Communication as a Service (CaaS) and Unified Communications as a Service (UCaaS). This comprehensive approach focuses on providing businesses with real-time customer insights and sentiments, enabling a personalized approach and fostering strong customer relationships.

Nearly 40% of SMEs cite enhanced security as the top driver for Cloud adoption. How does Tata Tele Business Services ensure that its Cloud offerings meet the high-security standards required by SMEs?

Vishal Rally: Security is paramount for SMEs, especially in today's threat landscape where cyberattacks are becoming more frequent and sophisticated. At TTBS, we ensure the highest level of security in our Cloud-based solutions by incorporating multi-layered security protocols, including firewalls, intrusion detection systems, and data encryption, to safeguard sensitive information. Our Smart Internet connectivity solution bundles

Cloud security with the data layer, allowing users to control and optimize network usage and site permissions through a DIY interface. We also conduct regular security audits to identify and address potential vulnerabilities, ensuring adherence to data privacy and security standards. Clear documentation of security measures further ensures a comprehensive understanding of data protection.

Prabhu Ram: Our research indicates that security is indeed a crucial factor for SMEs when adopting Cloud technology. By prioritizing a security-first approach, SMEs can enhance customer trust, mitigate risks, adhere to compliance requirements, and improve business continuity. Robust security measures contribute to building a strong foundation for long-term success, enabling SMEs to unlock the full potential of Cloud computing while mitigating risks.

The study mentions that 58% of SMEs believe they have a high level of digital maturity. What role does Tata Tele Business Services play in supporting SMEs to achieve and maintain this level of digital maturity?

Prabhu Ram: The high level of digital maturity among SMEs in India is a positive sign of the ongoing digital transformation. SMEs are increasingly recognizing the benefits of Cloud and collaboration solutions, which contribute to this digital maturity. However, many SMEs may hesitate to adopt these technologies due to a lack of knowledge on where to begin. Support from service providers is crucial in helping these SMEs achieve and maintain digital maturity.

Vishal Rally: Tata Tele Business Services plays a pivotal role in supporting SMEs on their journey to digital maturity. We act as subject matter experts, offering comprehensive support including Cloud adoption consulting, digital transformation roadmaps, and Cloud skills training. Our domain experts and solution architects assess the existing IT infrastructure of SMEs and recommend the most suitable Cloud solutions to meet their business goals. We also conduct regular training programs to equip SMEs with the skills to manage and optimize their Cloud environments. Additionally, our partnerships with leading technology companies like Microsoft, Google, Meta, and Zoom allow us to create unique bundled services and solutions tailored for Indian SMEs, democratizing technology and enabling them to compete with larger enterprises.

The study mentions that 37% of SMEs are focused on attaining Cloud cost-effectiveness. Can you discuss the strategies or solutions Tata Tele Business Services offers to help SMEs manage and optimize their Cloud expenses?

Vishal Rally: TTBS simplifies Cloud adoption, making it a cost-effective and secure option for SMEs. We offer flexible pricing models such as pay-as-you-go and subscription-based plans, eliminating the need for significant upfront investments. Our scalable solutions allow businesses to adjust resources according to demand, ensuring cost efficiency. We also provide bundled services at affordable rates, comprehensive managed services, and robust security measures, reducing the need for in-house IT staff and infrastructure. Additionally, we offer cost monitoring tools and training to help SMEs optimize their Cloud usage and avoid unnecessary expenses. By providing access to advanced Cloud technologies and platforms, SMEs can innovate and grow effectively.

Prabhu Ram: Our research supports the importance of cost-effectiveness in Cloud adoption for SMEs. The flexibility and scalability of Cloud services enable SMEs to manage costs efficiently, allowing them to pay only for the resources they use. By adopting cost-effective strategies and leveraging Cloud solutions, SMEs can enhance their operational efficiency and achieve sustained growth.

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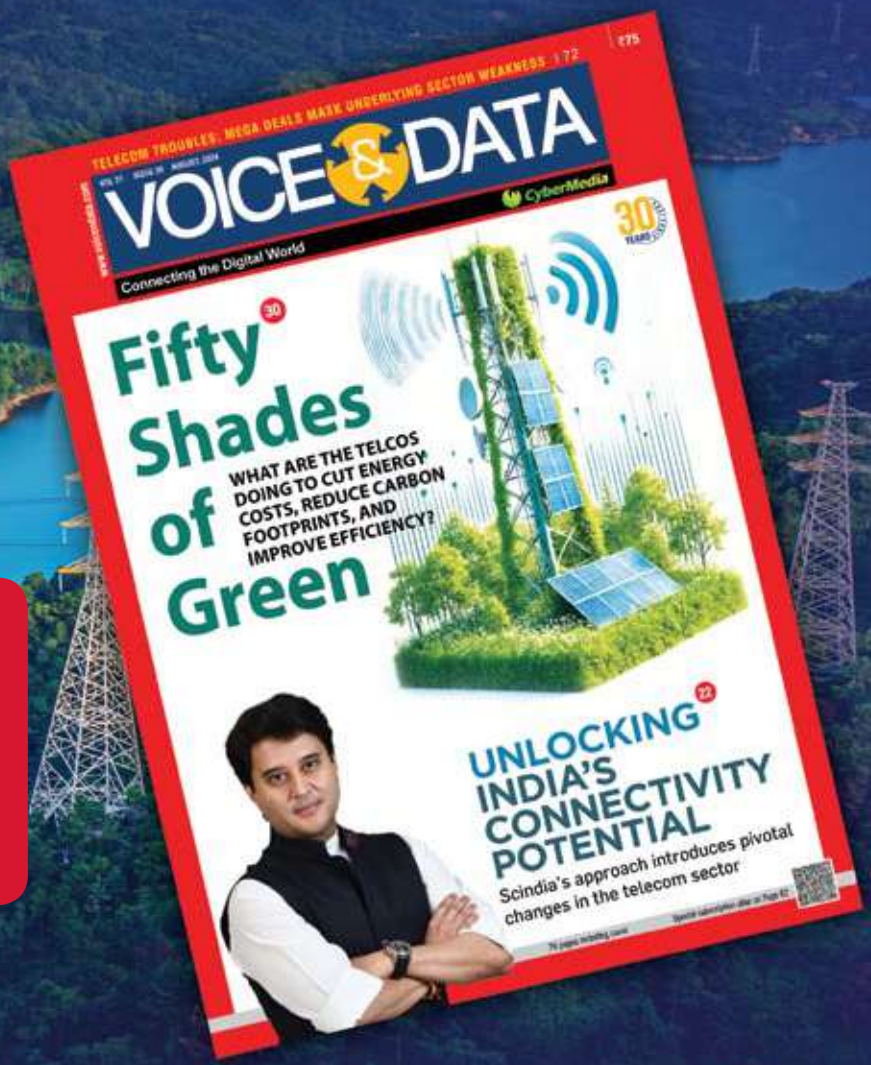

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Bridging the Teacher Training Gap for Effective NEP Implementation

Bridging the teacher training gap is essential for effective NEP 2020 implementation, ensuring educators are equipped to foster the next generation's holistic development.

By Praveen Singh

As India embarks on a new era in education with the introduction of NEP 2020, the nation's educational landscape is set to undergo a significant transformation. This policy heralds a new era with its ambitious goals of fostering creativity, critical thinking, and holistic skill development among students. At the heart of this monumental endeavor lies a crucial yet often underestimated factor: the training and development of our educators. Teachers not only impart knowledge but also play a

> NEP 2020 EMPHASIZES THE NEED FOR CONTINUOUS PROFESSIONAL DEVELOPMENT (CPD) TO EQUIP THEM WITH NEW PEDAGOGICAL APPROACHES, DIGITAL LITERACY SKILLS, AND A DEEPER UNDERSTANDING OF CHILD PSYCHOLOGY AND INCLUSIVE EDUCATION PRACTICES.

pivotal role in shaping the future of generations to come. However, realizing the full potential of the NEP 2020 hinges greatly on bridging the teacher training gap. Empowering educators with the right tools, techniques, and support systems isn't just beneficial—it's imperative for translating policy objectives into meaningful classroom practices that prepare our youth for a rapidly evolving world. This journey towards educational reform is not merely about adopting new policies; it's about empowering those wh]o ignite the light of learning in every child, ensuring they are equipped to lead India into a future of limitless possibilities.

EMPOWERING EDUCATORS AS AGENTS OF CHANGE

Teachers are the backbone of any education system. They are not only imparting knowledge but also shaping the minds and future of our nation. The NEP 2020 recognizes the pivotal role of educators in achieving its objectives and emphasizes the need for Continuous Professional Development (CPD) to equip them with new pedagogical approaches, digital literacy skills, and a deeper understanding of child psychology and inclusive education practices.

To bridge the teacher training gap effectively, it is essential to adopt a holistic approach that addresses various facets of professional development. Here's how to support teacher development and training:

1. **Customized Training Programs:** One size does not fit all when it comes to teacher training. Recognizing the diverse needs of educators across different regions, subjects, and levels of experience is crucial. Training programs should be tailored to cater to these specific needs, providing educators with practical strategies and resources that they can implement in their classrooms.
2. **Technology Integration and Digital Literacy:** The digital revolution has transformed education, making it imperative for teachers to be proficient in using technology as a tool for teaching and learning. Training programs should focus on enhancing teachers' digital literacy skills, integrating educational technologies effectively, and leveraging online resources to enrich the learning experience.
3. **Pedagogical Innovations and Inclusive Practices:** The NEP 2020 emphasizes a shift towards experiential learning, critical thinking, and multidisciplinary approaches. Training should empower teachers to adopt innovative pedagogical methods that foster creativity, collaboration, and problem-solving skills among students. Furthermore, educators need to be equipped with strategies to create inclusive learning environments that cater to the diverse needs of all learners.
4. **Continuous Support and Mentorship:** Effective CPD goes beyond workshops and seminars; it requires ongoing support and mentorship. Establishing mentorship programs where experienced educators guide and support their peers can facilitate continuous learning and professional growth. This collaborative

> KEY LIMITATIONS INCLUDE LIMITED IN-DEPTH KNOWLEDGE ABOUT THE RECENTLY RELEASED NEW NATIONAL CURRICULUM FRAMEWORK (NCF), INADEQUATE INFRASTRUCTURE IN TRAINING INSTITUTIONS, INSUFFICIENT GOVERNMENT FUNDING, AND A SHORTAGE OF QUALIFIED TRAINERS WHO THEMSELVES REQUIRE FURTHER TRAINING.

approach fosters a culture of sharing best practices and nurturing a community of learning among educators.

5. **Assessment and Feedback Mechanisms:** To ensure the efficacy of training programs, there should be robust assessment and feedback mechanisms in place. Regular evaluations, surveys, and feedback from educators can provide valuable insights into the impact of training initiatives and areas for improvement. Adjustments can then be made to tailor future programs more effectively.

CHALLENGES AND OPPORTUNITIES

Teacher training is crucial, yet India faces several significant challenges in this area. A major issue is the lack of qualified and trained teachers, with an insufficient number of skilled trainers leading to subpar training quality. Additionally, the absence of standardized training programs result in inconsistent content and quality nationwide. Some programs fail to address the specific needs and challenges teachers face locally. Key limitations include limited in-depth knowledge about the recently released new National Curriculum Framework (NCF), inadequate infrastructure in training institutions, insufficient government funding, and a shortage of qualified trainers who themselves require further training.

To address these limitations, several measures can be implemented.Utilizing digital platforms can enhance the quality of teacher training through online courses and webinars, providing widespread access. Public-private partnerships can improve training quality by combining private sector infrastructure and expertise with government funding and support. Incorporating experiential learning methods can make training more effective, equipping teachers with practical skills. Finally, making teacher training a continuous process with regular workshops and refresher courses can help educators stay updated with the latest teaching methods and technologies.

CONCLUSION

Empowering teachers through comprehensive training and professional development is not just a necessity but a moral imperative for realizing the transformative goals of the NEP 2020. By investing in educators' skills, knowledge, and support systems, a foundation is laid for a future-ready education system that nurtures creativity, critical thinking, and lifelong learning among students. It is essential to prioritize bridging the teacher training gap with strategic initiatives, customized programs, and ongoing support mechanisms. Together, educators can be empowered as agents of change, shaping the future of the nation through the quality education and inclusive practices envisioned by NEP 2020.

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