HUMANISING TECHNOLOGY p. 72

A NEW INSTITUTE BEGINS IN STYLE p. 74

EDUCATION QUALITY CONTINUOUSLY IMPROVED p. 80

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Top 10 Government T-Schools 2020

Institute Name	Rank
Indian Institute of Technology, Kharagpur	1
International Institute of Information Technology, Hyderabad	2
Netaji Subhas University of Technology, Delhi	3
Maulana Abul Kalam Azad University of Technology, Haringhata	4
College of Engineering Pune, Pune	5
Indraprastha Institute of Information Technology, Delhi	6
National Institute of Technology, Surathkal, Mangalore	7
Dr. B R Ambedkar National Institute of Technology, Jalandhar	8
National Institute of Technology, Silchar	9
Thiagarajar College of Engineering, Madurai	10

Top 10 Private T-Schools 2020

Institute Name	Rank
Birla Institute of Technology and Science, Pilani	1
Bannari Amman Institute of Technology, Sathyamanagalam	2
Bharati Vidyapeeth College of Engineering Pune, Pune	3
B.S. Abdur Rahman Crescent Institute of Science & Technology, Chennai	4
Koneru Lakshmaiah Education Foundation, Vijayawada	5
G L Bajaj Institute of Technology and Management, Greater Noida	6
Army Institute of Technology, Pune	7
Maharaja Agrasen Institute of Technology, Delhi	8
Dr. NGP Institute of Technology, Coimbatore	9
Chhatrapati Shivaji Institute of Technology, Durg	10

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CONTENTS

TALKING POINT

12 | COVER STORY

15TH EDITION DQ-CMR SURVEY

TOP T-SCHOOLS 2020

RANKING OF INDIA'S TOP ENGINEERING COLLEGES

CONTENTS

FORM IV (See Rule)

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I, Pradeep Gupta, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Sd/-
Publisher

Academia-Industry **Collaborations Rising!**

Greetings Friends!

We are currently living in somewhat desperate times! With the Corona Virus in full flow, the Indian government has ordered a 21-day lockdown period.

Nevertheless, let's look at what's happening in the technology domain.

This Dataquest issue is focused on T-Schools or Technology Schools. It is well known that there are openings for disruptive or critical thinking, and innovative methods for problem solving. It is also said that there should be more focus on making the students in the T-Schools to think in an innovative manner, while solving problems. There is work going on to reduce the skill gap that students face, as and when they join the workforce of some company.

There should be regular curriculum revision as per the needs of the industry, mandatory internship, examination reforms, innovation, student activities in life skills, soft skills, industry relevant projects, mandatory accreditation, etc. Even the various teachers and heads of departments (HoDs) are said to be going through rigorous internship programs to coach the students in an industry-specific manner.

In this regard, Intel has come to the forefront. It has teamed up with the Central Board of Secondary Education (CBSE) to make the youth artificial intelligence (AI)-ready. The initiatives include the roll-out of an AI curriculum for classes VIII, IX and X, for 22,000 schools. The aim is to empower about 100,000 students within 2020 itself. Intel has also launched India's first AI skills lab in collaboration with Kendriya Vidyalaya Sangathan. Intel and CBSE are also slated to launch a National AI Olympiad to motivate young students.

Some other things have happened too! IIT Kharagpur (IIT-K) and Wipro are doing applied research in AI and 5G. OPPO has partnered with IIT-Hyderabad for joint R&D projects in 5G. Samsung India has set-up innovation centres in different IITs. It has also set-up a digital academy at IIT Guwahati for training in AI and IoT. IIT Roorkee has partnered with Microsoft, and conducting lectures for BTech and MTech students on quantum computing. ISRO is going to set up a space technology centre at IIT Delhi.

There is a need to constantly evolve the content for any specific course to be in line with the industry advancements. Colleges should be giving more weightage to the industry-specific learnings, to make the students job-ready from their very first day.

Pradeep Chakraborty

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- Mechanical
- Electronics
- Information Technology
- Civil
- Electrical
- Chemical

New Programmes from 2020-21
- Computer Engineering (Software Engineering)
- Robotics and Automation

Navi Mumbai (Off Campus):
- Computer Science and Business Systems-(Collaborative programme with TCS)
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- Computer Engineering (Software Engineering)
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The Technological Change: The T-School Imperative

In its fifteenth year now, the DQ Top T-School Survey is a highly respected and pioneering barometre on the state of technical education in India. The T-School rankings, based on DQ's PACE Framework, are much sought-after by the industry, for the deep insights it offers at a national level, as well as regional level, on the talent pool and where to hunt for the best talent

The world around us has been transforming at a very dramatic pace. The way we communicate, travel, play and work has changed irreversibly, and with the speed of change anticipated to be even swifter in the times ahead. The incredible speed of technological change, as evinced from the breakthroughs in Industry 4.0 (comprising of Internet of Things(IoT) and smart sensors, big data, automation, robotics, and additive manufacturing, and permeated by Artificial Intelligence across all these domains), among others, puts engineers and engineering expertise right in the centre of action, than ever before. As new technological

cycles emerge and bring forth new innovations in the coming decades of the 21st Century, the global circular economy will be forever transformed the way we know it. Making these scientific discoveries and technological transformations will be possible only by engineering skills, and driven by the students graduating from T-Schools in India.

In the years to come, today's students at Indian T-schools will be called upon to develop a creative mindset, adopt new problem-solving approaches and inculcate cross-cutting capabilities, that enable them to move from the existing conventional thinking on how to solve problems. Tomorrow's engineers will be increasingly called upon to adopt comprehensive approaches to problem solving, leading large teams to define and solve problems, and in the process, build a proactive innovation culture.

For us to prepare for this inevitable and exciting future, today's T-school education will have to foster a thriving culture that encourages 'out of box' thinking, emphasizes on creativity and innovation skills, and essentially a learning environment where divergent ideations are encouraged. As a foundation layer of fostering innovation, the T-School education must emphasize on engineering education alongside technical research. In the decades to come, the engineering challenges will be multi-dimensional and complex enough, and would require new skills and mindsets, going beyond the conventional pedagogy of today.

In essence, the engineers of tomorrow will have well-grounded capabilities in streams going beyond their technical core domain. They will possess, not just a deep knowledge of engineering sciences and systems thinking, but also have capabilities including creative agility, deep cross-cultural skills, and a mindset attuned to continuous learning. All these attributes exist in the T-school pedagogy of today, but their broad relevance and relative importance has clearly shifted, and will continue to shift in the time to come.

The engineering education of today is poised for a major shift to better prepare students for the world of

Research and Innovation @ GL Bajaj

The institute is contributing to the nation building through various innovation and research driven initiatives taken by its students and faculty which can strengthen techno-commercial and social backbone of the country. Matching with issues of the national and global priority,some of the strongly focused domains include energy and environment conservation, waste management, industrial and home automation, smart ICT based solutions for smart and healthy cities and special automation solutions for divyang people.

Research and Innovations in the field of eco-friendly fuel (Bio Diesel), composite materials using rice husk and fly ash are efforts towards pollution free transport and recycling of agro and industrial waste. The faculty and students of the institute havepublished more than 90 research papers in aforesaid research areas. Understanding the problem of getting fresh home cooked food for many working men, women and their family, the students of the institute have developed an automated cooking machine under the guidance of faculty.

For divyang people, solutions have been developed to help them live like any normal person. These include automatic wheel chair controlled by eye ball movement, walking stick with pothole detection, public transport information and alert system and many more. Other social initiatives include Know Your Booth mobile app for State Assembly Elections, E-Gaushala for crowd source funding to support stray cattle and several software applications for housing societies.

Research and innovation in E-vehicles is being taken as multi-disciplinary projects in the institute. It includes development of Solar based Battery management system for e-vehicles, autonomous vehicles, efficient and low cost charging system etc.
Other areas of research include Pneumatic automation, Mechatronics, Robotics and Industry 4.0 where roadmap of evolving the traditional manufacturing sector to smart factories.Some of the ongoing projects are automated food processing and 3D bin picking. The students have developed smart displays for ambience monitoring and multi-purpose voice and mobile phone controlled LED displays.

Research and Innovations by the faculty are not only limited to technical domain but also contributing to pedagogy to achieve higher learning outcomes. The practicalset ups created for this purpose includeautomated home appliances,face recognition based security systems, PLC based automation, wind tunnel for CFD, small Steam power plant, equipment for converting plastic waste into fuel, heat exchangers etc.

The students and faculty have represented the institute at various state, national and international level events, competitions, hackathons and brought laureates to the institute, university and the country.

> TODAY'S T-SCHOOLS ARE AT THE FOREFRONT OF ENABLING THE ENGINEERS OF TOMORROW. IT IS IN THIS CONTEXT THAT THE 15TH DQ T-SCHOOL SURVEY IS MAPPING HOW WELL TODAY'S T-SCHOOLS ARE PREPARING THE ENGINEERS FOR THE WORLD OF TOMORROW

tomorrow. The engineering students would be called upon not just to acquire the skills learnt by their predecessors, but would be called upon to be more versatile in their approaches towards understanding challenges, and communicating succinctly.

Today's T-Schools are at the forefront of enabling the engineers of tomorrow. It is in this context that the 15th DQ T-School Survey is mapping how well today's T-Schools are preparing the engineers for the world of tomorrow.

The DQ-CMR T-School Study mapped and, in particular, identified the key attributes and best practices of T-Schools that led the T-School leaderboard, and the key areas of concern for those that fared lower on the leaderboard. Some key themes that the T-School 2020 study looked at in detail, include the following:

- How prepared and successful T-Schools are in providing industry responsive education?
- When it comes to preparing market-ready talent, how best prepared are T-Schools?
- In terms of preparing a future-ready technology view, how well are industries and T-Schools are connected?

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RESEARCH METHODOLOGY AND KEY OUTCOMES

Prabhu Ram, Head-Industry Research Group at CMR, with inputs from Satya Mohanty, Head-Industry Consulting Group at CMR.

The survey had at least one T-school participating from each of the state of India. Private T-schools proactively participated in the exercise with over 86% representing this category. Government institutes need to engage more actively as their strengths could also get highlighted through this annual exercise Southern region based T-schools took lead in participating in the survey with over 46% of the respondent institutes coming from this region. This was followed by North, West and East in that order.

RESEARCH METHODOLOGY

The DQ-CMR T-School 2020 survey was conducted in two phases:

Phase 1 – Initial Desk Research and Groundwork Phase

In the initial preparatory groundwork phase of the T-School Survey, the Edutech Practice at CMR scanned its rich Edutech Knowledge Base, and updated it via an exhaustive desk research. The objective of the initial groundwork phase was to identify and list all the Tech Schools in India. Government-run higher educational institutions and private institutes of learning were listed separately. Those colleges were considered for the survey who were established before 2011, and offered a B.E, B. Tech or similar level graduate technical courses.

At the end of the desk research phase, an invitation was extended to all short-listed institutions on behalf of DQ and CMR to participate in the nationwide survey.

Phase 2 – Primary Research

The T-Schools short-listed in Phase 1 were approached by the EduTech Practice at CMR. Both online and face-to-face interviews were scheduled with the institutions. The information collected was covered under the DQ's proprietary PACE (Placement, Academics, Campus Infrastructure and Engagement) Framework. In the DQ PACE framework, Placement and Academics have been given a weightage of 40 and 30 respectively. Alongside, 15 points each have been accorded for Engagement and Campus (including Digital Infrastructure).

The T-School 2020 Survey witnessed participation from across the tiers of T-schools in the country. It had participation from some of the prestigious IITs, NITs and other Tier III private and government institutes.

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Electronics & Communication Engineering	240	-
Electrical & Electronics Engineering	240	-
Information Technology	180	-
Mechanical Engineering	300	-

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Branch	Intake
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Computer Science & Technology - CSE	36
Communication Systems - ECE	24
Power System & Automation - EEE	24
Information Technology - IT	36
CAD/CAM - Mechanical	18

Ph.D (Doctorate)

Branch
Civil Engineering
Computer Science & Engineering
Electronics & Communication Engineering
Electrical & Electronics Engineering
Information Technology
Mechanical Engineering
Mathematics

CAMPUS HIGHLIGHTS

INFRASTRUCTURE
- A/C Digital Library
- A/C Seminar Halls
- E-Class Rooms
- Indoor & Outdoor Sports
- Hostel facility for Boys & Girls

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- Centers of Excellence
- I-Hub
- Technology Center
- Startups
- Hobby Clubs

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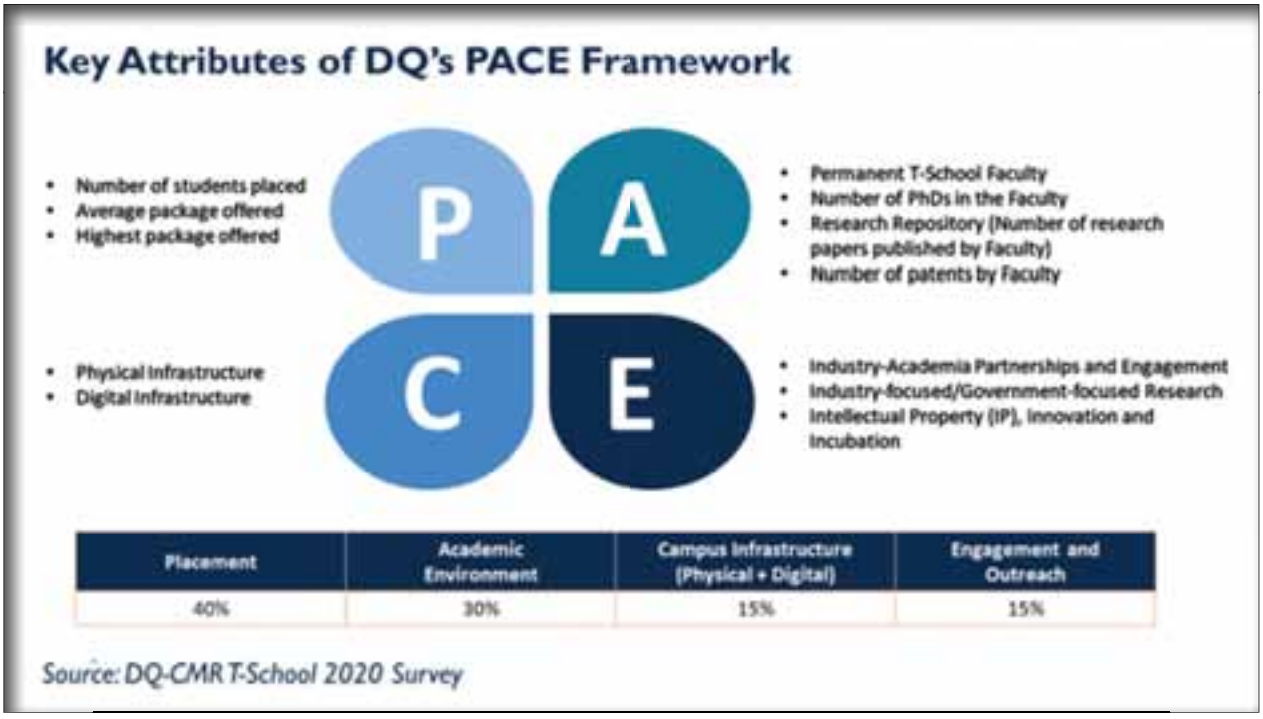
> THE NATURE AND STRATEGIC IMPORTANCE OF ACADEMIA-INDUSTRY PARTNERSHIPS HAVE INCREASED SIGNIFICANTLY OVER THE LAST DECADE



Within the aegis of the PACE Framework, there were over 30 key questions in a structured questionnaire format, that were shared with the T-Schools for their inputs. These questions enabled the DQ-CMR team to build a comprehensive and cohesive picture of the T-School. Adequate time was allocated for the T-Schools to share their filled-in nominations, either online or via physical modes. The submissions were scrutinized by the CMR EduTech Practice for completeness and veracity of information shared, and scrutinized through a random check process, with >30% of the submissions cross-checked, as per the market research code of ethics.CMR Analysts reached out to key stakeholders for further deliberations, enabling for a holistic snapshot of the T-School.

The quantitative inputs received and verified from various T-Schools were then analysed wherein the absolute data was normalised to relative data in order to compare the parameters across the participating institutions.

For each of the above parameter segments a final score was achieved which was then factored with the pre-defined weights to arrive at the overall score of each participating T-school. The institutes were then ranked with the highest score across all parameters ranking at the top. The rankings were also arrived by category and region for the T-schools.

As an industry acclaimed hallmark on technical education, the Dataquest T-School Survey with its focus on how the T-Schools contribute to key skills for the technology industry, provides cues for the industry and other stakeholders in the ecosystem.

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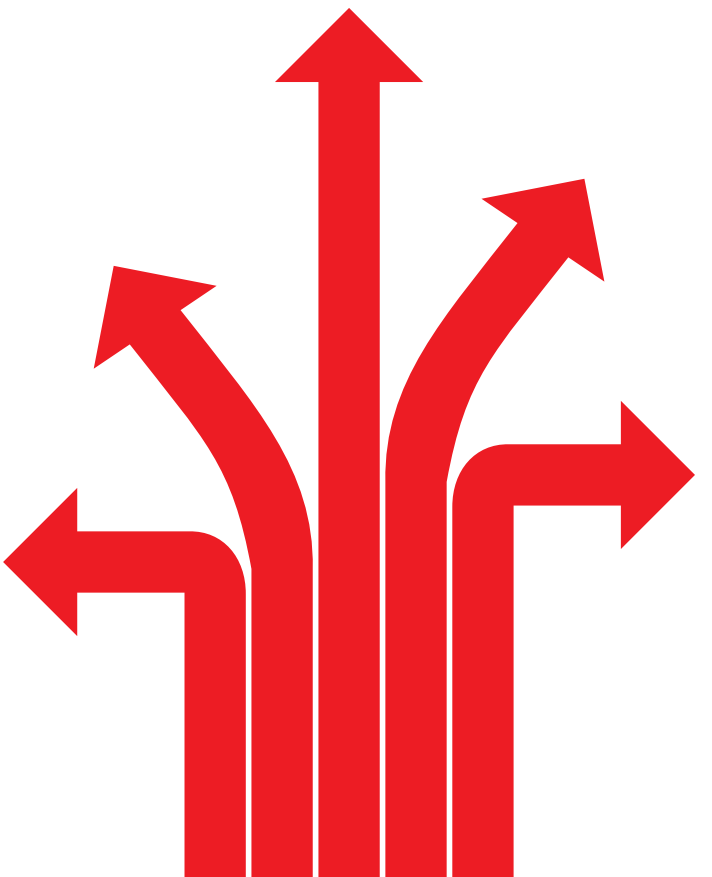

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ACADEMIA-INDUSTRY PARTNERSHIPS TO THE FORE

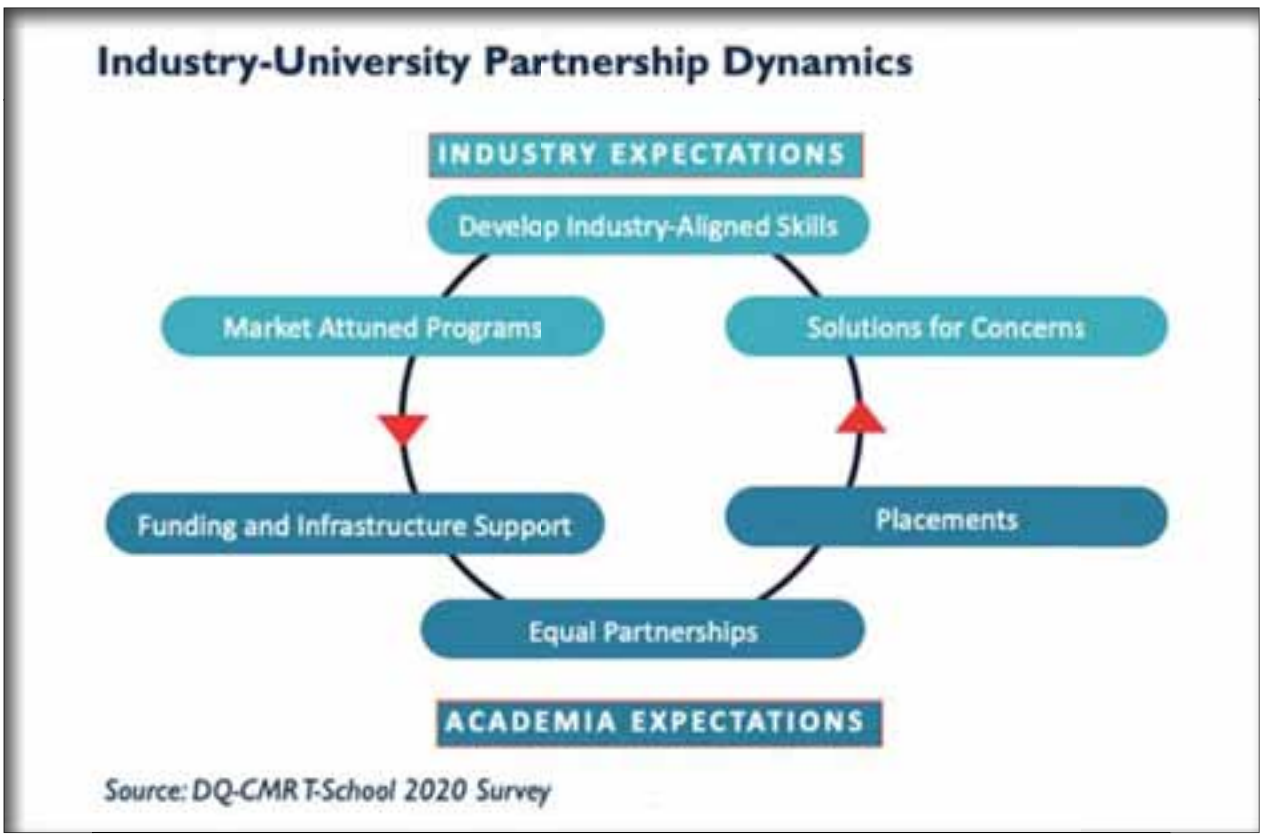
The nature and strategic importance of academia-Industry partnerships have increased significantly over the past decade. Given that academia and industry share an important symbiotic relationship, these partnerships have only evolved and increased as we enter an era marked by rapid, exciting technological developments and change.

The successful implementation of a university-industry partnership is critical and holds value for not just industry or academia, but government, policymakers and other ecosystem players at large. While the potential and advantages of such partnerships are known, it is important to address challenges and hindrances that could potentially lead to failure.

Among one of the most important factors guiding successful academia-industry partnerships pertains to that of what resources each partner brings into a partnership. This, in effect, will ultimately determine how viable, useful and successful such partnerships can be. In addition, the other key factor for success that pertains to simplifying the different frameworks and structures that bound academic institutions and enterprises alike. The willingness of enterprises and institutions alike to listen and being open to change is important. Most importantly, successful academia-industry partnerships are fostered on the basis of trust that partners vest in a partnership.

While such synergistic partnership models involving academic and industry have existed in the West, especially in US and UK, it is only now that India is realizing the importance of such engagements. The nature and scale of academia-industry partnerships in India is on the rise and driven by economic and the need to innovate swiftly.

In 2019, institutions of higher learning in India forged ahead with successful industry partnerships. For instance, IIT Kharagpur (IIT-K) collaborated with Wipro to carry out applied research in Artificial Intelligence (AI) and 5G. Similarly, OPPO, the global smartphone brand has partnered with IIT-Hyderabad to undertake joint R&D projects in 5G. In addition, this joint partnership will focus upon research in battery, camera and image processing,



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system performance and AI among others. With a intent to harness Indian research talent, Samsung India has set-up innovation centres at many different IITs. It also set-up a digital academy at IIT Guwahati for training in AI and IoT, among others. IIT Roorkee enhanced its pedagogy around quantum computing by partnering with Microsoft, and conducting lectures for BTech and MTech students on quantum computing for a full semester as a pool elective.

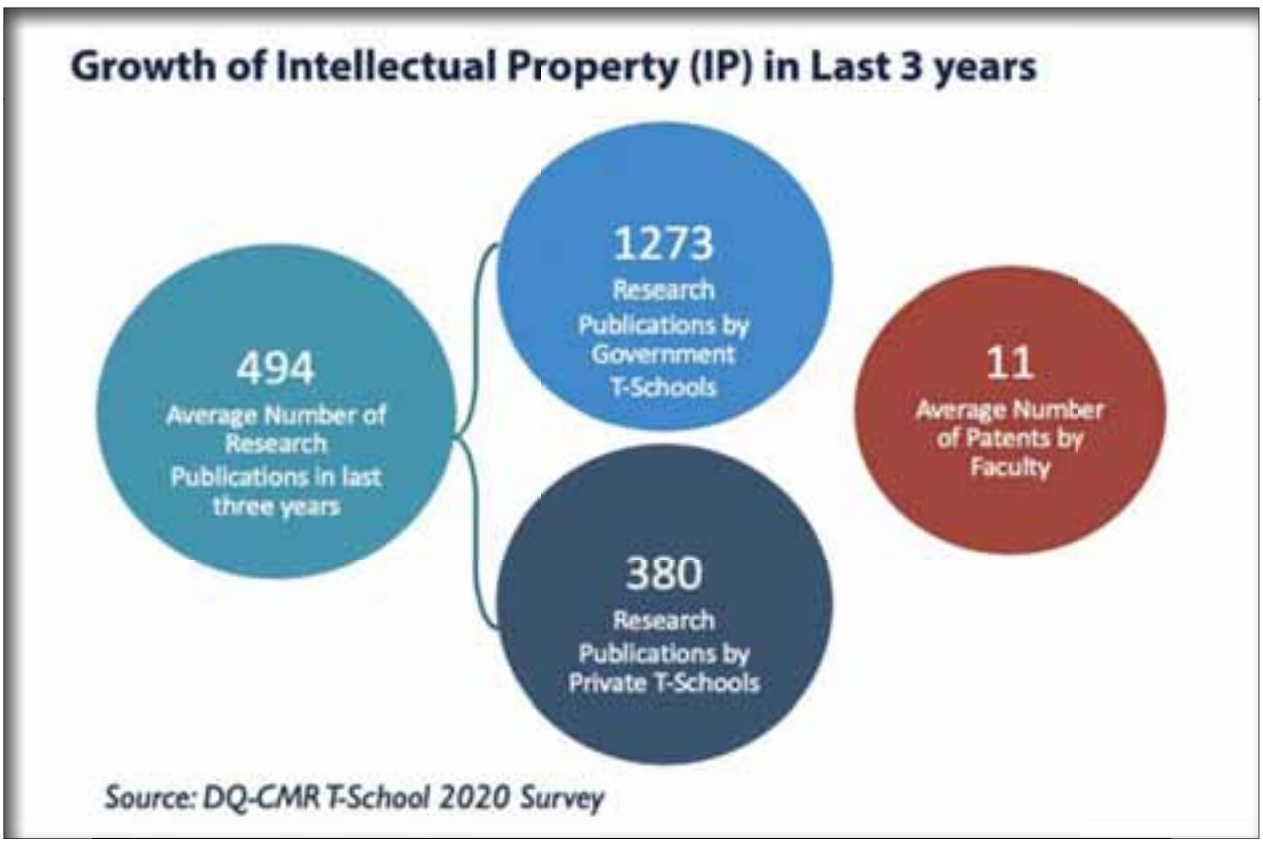
Government is also a key stakeholder in the industry-academia collaborations. ISRO, for instance, is going to set-up a space technology centre at IIT Delhi.

Going forward, the nature and scale of innovative engagement models involving academic institutions and enterprises is only expected to grow.

INTELLECTUAL PROPERTY (IP) AND RESEARCH PUBLICATIONS

Over the past 100 years, intellectual property has been the backbone that gave rise to innovations, across industry sectors, ranging from semiconductors to personal computers, from software to biotech engineering, from mobile to ecommerce. From being a narrow legal specialty, intellectual property has now transcended business and academic spheres, as a driver of corporate value and as an imperative for national competitiveness and driving national economic growth.

As the seed capital for creating new knowledge and giving rise to new innovations, today's T-schools are required to create an enabling academic environment that supports intellectual property generation, whether it be through patents or new research publications in national and international academic journals. The metrics for measuring research outputs at T-Schools include the number of research papers published in journals and books. In addition, the impact of academic research at T-Schools is measured by the number of article citations, the number of patents filed and granted, and lastly, any revenue realization accruing from technology licensing to industry.



Meerut Institute of Engineering & Technology: Holding Fort Amidst The Ruins

In the times when Engineering Colleges are shutting down exponentially, MIET has not only been able to fill its seats but has emerged as the premier choice for engineering aspirants. Brand Head & Author Vishwas Gautam, MIET in conversation with Vice Chairman Puneet Agarwal, MIET about the phenomenal performance of the institution…

Vishwas: As much as 200 engineering colleges have applied for closure and according to the latest data more than 800 colleges will be shut down by AICTE due to the substandard enrolment and quality, we did expect the course correction, but such an enormous number? Where did you think these colleges go wrong?
Puneet: It was long overdue, there was a time when engineering was the most wanted course among students that led to a lot of vibrancy among investors which resulted in mushrooming of engineering colleges, what the industry failed to foresee was that the number of seats available and the number of students applying had to have a balance, moreover every engineering college has to have a strong foundation, by a strong foundation I mean is it should have multiple things, it should have a good knowledge base, knowledgable faculty with command over pedagogy and students, the latest state of the art infrastructure that is not restricted to classrooms or laboratories but an environment which inculcates positive thinking, a thinking to learn. Finally, a pedagogy, aligned with the latest technologies and in tune with what the Industry and the student demands.

Vishwas: So will the decline continue?
Puneet: I would say yes and no, IITs, NITs and other premier institutions have remained relevant and will do so because they have adapted themselves with times. What one needs to look into is the technology and the demand of industry is changing rapidly, one needs to be dynamic, technology that used to change in 10 years today is changing in 4 years and which means when a student is getting into engineering and when he is graduating possibly there would be a wide difference between what he entered into and what he exited into. so he might have entered into a stream thinking this is the future but that stream may not be relevant four years down the line, technology, system, product requirement, market everything is changing very fast and accordingly, any student who enters into a stream has to revamp himself and has to ensure that he stays relevant by the time he exits from the institution. The institution that will stay abreast with the change will always stay relevant.

Vishwas: Engineering somewhere has lost its sheen, in 2016 -17 as per AICTE there were only 50% enrolments, why such a drastic slump
Puneet: One has to look into how students aspirations are changing earlier two-three generations ago, any new graduate used to look for a stable job with a stable company and they would like to perform for decades leading up to their exit points which was mostly retirement that philosophy has changed now the students want to earn fast, he wants to be on his own, he doesn't want to join a stable job, and he is looking for fast resources which should be made available to him so that he can be on his own whether it is a job or his own venture. he would like to transit himself into a higher position in the fastest possible time which obviously mean good earning and good knowledge, so he will opt for courses that catapults him, therefore, engineering has not lost its sheen if we cater to students aspiration, there are enough students today as well.

Vishwas: The figures speak for themselves, MIET has performed outstandingly because we have stayed ahead of the times but what according to you was the turning point and what next from here on?
Puneet: I would say the proactive and preemptive approach of ours, we not only did prepare students for the future but we also inculcated the flexibility and adaptive ways into our students. MIET story will not only be restricted to placement oriented but we will continue aggressively to be more into research and development that means more journals, research papers, patents, to sum up, we will strengthen our positioning as an Institution that works with the industry and the government to give solutions. MIET will be an academic institution that will give student resources and training that matches with the very best in the world.

Website: *www.miet.ac.in,* Mobile: 9927439439

For T-Schools, the role of publishing high-quality research and fostering new innovations is key for enhancing its future brand positioning and equity. This, in turn, will determine whether the research environment at the T-School is conducive to attract promising students as well as high-quality faculty.

This year's DQ-CMR T-School Survey illustrates the growth of academic IPR cells at T-Schools. These IPR cells are playing a pivotal role in guiding and mentoring students in facilitating new innovations, through formal IP protection. Across T-Schools, there is a healthy growth in the number of patent filings.

The research published by T-Schools, including academic research papers in reviewed research journals, articles and books, points to the overall research productivity of the T-Schools.

What the DQ-CMR T-School Survey results outline is a healthy growth in published research. At a regional level, while T-Schools in East India contributed 979 research papers, South India had a healthy share of 519 research papers in the last three years. While all this is good, a key metric that needs to be watched is the citation impact of the publications. This refers to the citations that research articles secure, with a higher number of citations signifying a positive impact.

When it comes to patent trends, T-Schools in North India had an average of 15 patents, while those in South India contributed to an average of 13 patents.

The impetus for T-School scholarship should be on translational research, focused on solving current industry and societal challenges. It is good to note that during 2019, the faculty at T-Schools carried out ~81 industry assignments. The faculty at T-Schools in Western India had a whopping 151 such assignments while those in East India contributed to 6 industry assignments. The DQ-CMR T-School Survey results further reaffirm that professors at private T-Schools had on an average, 87 such industry-oriented assignments, while those from government T-Schools had 55 such assignments in 2019.

GIVING WINGS TO START-UP ENTREPRENEURSHIP

A key role in enabling entrepreneurship is played by the dynamic value chains, that bind entrepreneurs, enterprises and engineering institutions together. The success of start-up entrepreneurship is dependent on a dynamic, collaborative and enabling ecosystem that is able to

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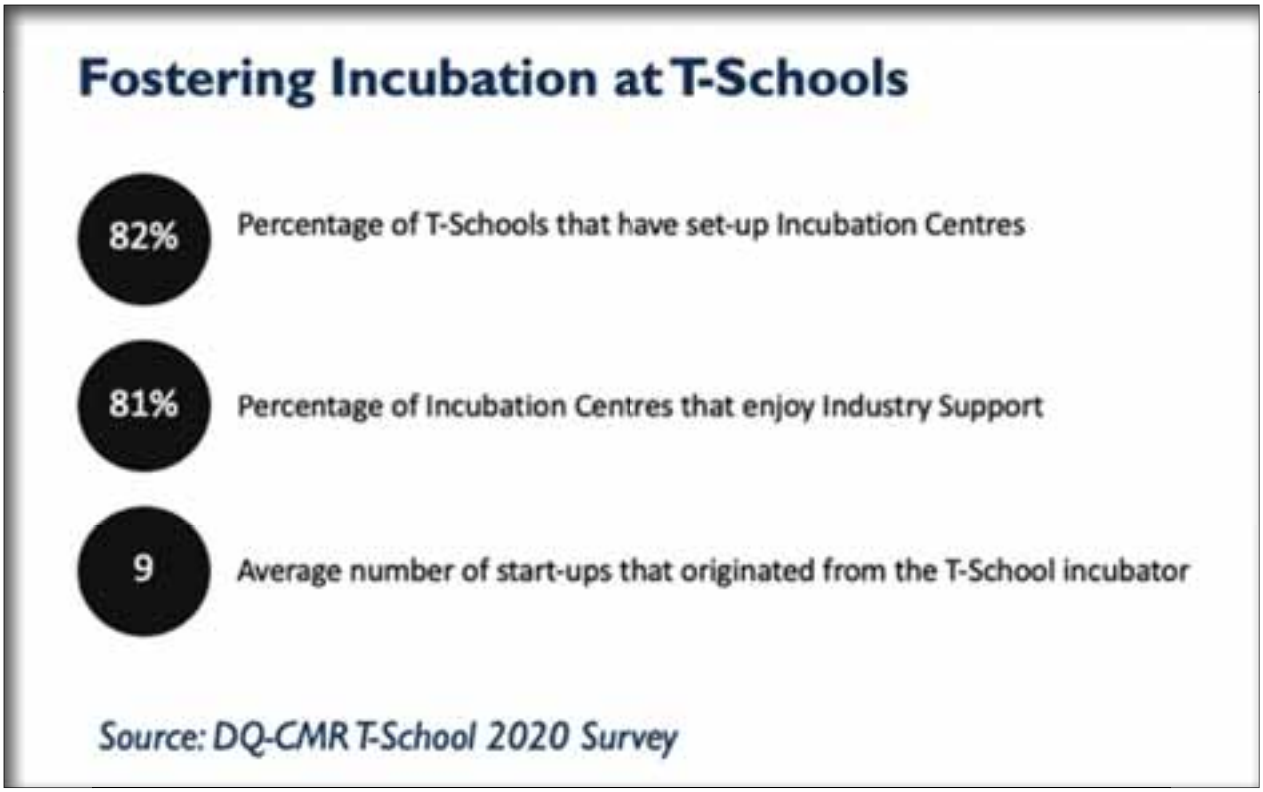
> FOR START-UPS, INCUBATORS PROVIDE NOT JUST TECHNICAL AND FINANCIAL ASSISTANCE, BUT ALSO ACCESS THROUGH ITS KNOWLEDGE NETWORKS, TO A POOL OF INDUSTRY EXPERTS, MENTORS, ALUMNI NETWORKS AND FUNDING ORGANISATIONS

cater to the needs and standards of entrepreneurs. Such environments support entrepreneurship.

While traditionally they have been regarded as powerhouses of knowledge and new innovations, today's T-Schools are also aiming to contribute to increased translational research, through promotion of start-up entrepreneurship. Through incubators, T-Schools aim to provide an enabling environment to encourage students to pursue new ideas, take new challenges and risks, and prepare the innovations that define tomorrow.

At a very early stage, incubators identify start-ups, and provide support to them through access to initial funding, infrastructure, including affordable resources, as well as access to know-how and training.

For start-ups, incubators provide not just technical and financial assistance, but also access through its knowledge networks, to a pool of industry experts, mentors, alumni networks and funding organizations. In addition, incubators also contribute to increased visibility and branding of start-ups, via association with such engineering schools.



The role and focus of incubators is defined by T-Schools based on a variety of factors, including access to knowledge networks, including enterprises as well as sources of funding, among others. By acting as a bridge between T-Schools and industry, the incubators are able to support students as well as faculty members with business inputs from commercial partners, charged with scaling-up and marketing the innovations.

According to the DQ-CMR T-School 2020 Study results, 82% of T-Schools surveyed had set-up an incubation centre to facilitate entrepreneurship. It is heartening to note 81% of these incubators enjoy industry support, and benefiting from partnerships with players in the local ecosystem.

On an average, there were 9 start-ups incubated at T-Schools. The survey results further allude to the fact that T-Schools in Western India potentially benefit from the greater concentration of industries in the region, and have a higher share of start-ups (12 on average). Interestingly enough, the survey results point to Government T-Schools having a greater share of start-ups, compared to Private T-Schools.

STRONG TAILWINDS FOR DIGITAL TRANSFORMATION

When it comes to the technology infrastructure at T-Schools, today's T-Schools are facing strong tailwinds that are enabling foundational shifts in terms of both pedagogy as well as campus infrastructure. With the proliferation of smartphones and tablets with leading specs at affordable price-points, there is a strong shift amongst students seeking to access and collaborate on learning content anytime, anywhere on campus and beyond. Alongside, there is a more stronger focus on bringing external subject matter experts into the classroom through videos.

By harnessing power of technology, T-Schools have the potential to transform existing pedagogical approaches, and impart more personalised learning through blended and virtual learning. In the case of blended learning, T-Schools can provide access to students to technology-enabled learning spaces, wherein they benefit from collaborative and informal learning approaches. On the other hand, virtual learning spaces focus on blending digital and physical environments for continuous learning.

While T-School leaders have adopted some of these pedagogical approaches, many T-Schools are yet to fully leverage the power of digital. Without having access to high-speed bandwidth and device infrastructure, the full potential of these pedagogical approaches is far from realized. In the absence of reliable network and speed, technology cannot be effectively leveraged in the classroom, and learning disruptions become common, potentially impacting future technology usage. For technology-based pedagogical approaches to be effective, adequate bandwidth alongwith suitable scalable infrastructure is essential.

KEY TRENDS IN THE DQ'S PACE FRAMEWORK

Based on the DQ-CMR T-School Survey findings, the broad characteristics of T-Schools were mapped on the DQ's PACE Framework. The PACE Framework highlighted the positioning and mapping of T-Schools that participated in the T-School this year, and especially, capturing some remarkable trends in each quadrant of the Framework.

Among the top-performing T-Schools, there are some common shared characteristics:

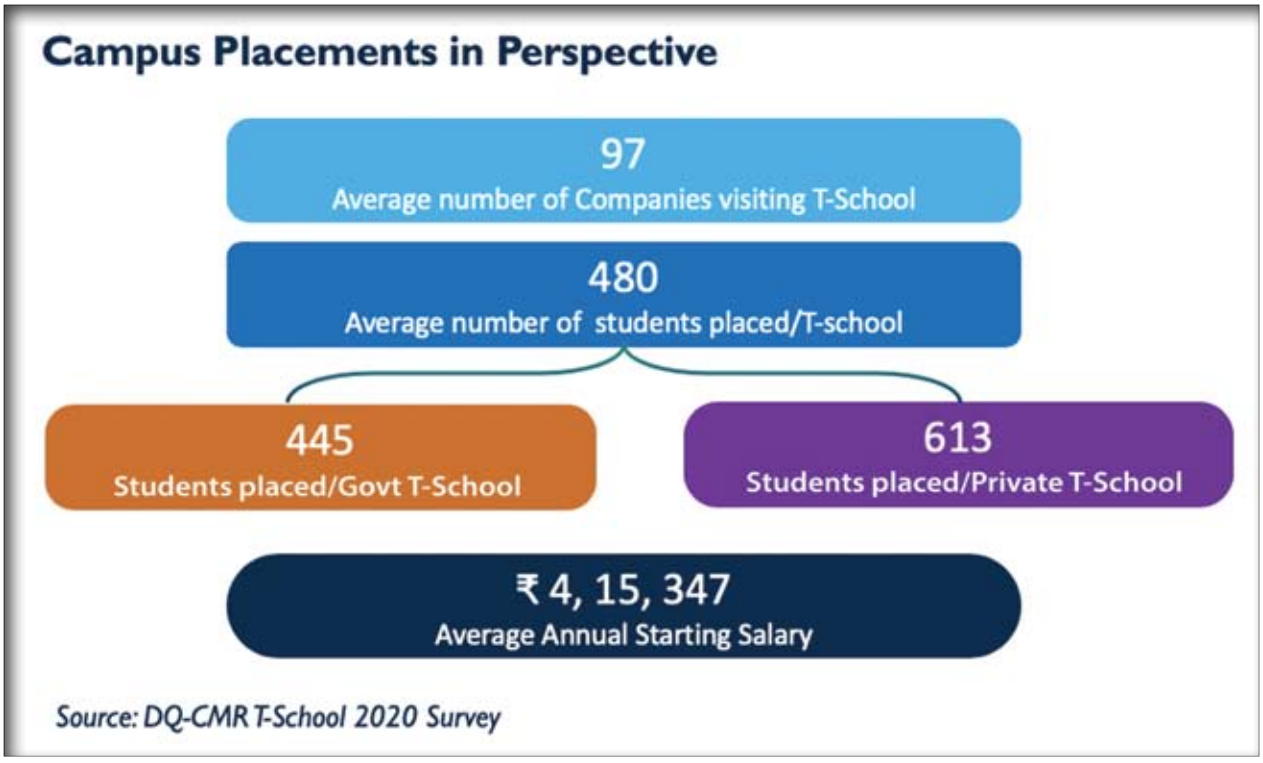
- These T-Schools have a strong industry exposure, and facilitate industry engagement with student. In addition, the student-industry engagement is intensified through invited expert lectures as well as workshops.
- They have strong knowledge collaborations with the industry, and actively seek their inputs and guidance in refining, and making their curriculum industry-relevant.
- There is a strong focus on fostering incubation and innovation at such T-Schools. This is made possible through entrepreneurship programs involving industry, as well as getting industry support for incubation units and in establishing innovation centres.

Placement: In 2019, an average of 480 students per T-School secured job placements, and made possible through an average of 97 industry partners visiting T-Schools for recruitment. At private T-Schools, an average of 495 students got placed, whereas at government T-Schools, 386 students secured placement. At the T-Schools, the average salary package in 2019 stood atINR 4.15Lacs/p.a. The maximum salary offered stood at INR 15.71 Lacs/p.a.

While T-School placement cells are the primary route for students getting placement, what the data does not account for is the fact that there is a small percentage of students who are turning entrepreneurial, and others, who seek to pursue PhD programs.

As highlighted earlier, T-Schools need to reorient

> TODAY'S T-SCHOOLS ARE FACING STRONG TAILWINDS THAT ARE ENABLING FOUNDATIONAL SHIFTS IN TERMS OF BOTH PEDAGOGY AS WELL AS CAMPUS INFRASTRUCTURE



themselves, and be more closely integrated with the industry ecosystem, and not just merely from a job placement perspective.

At the T-Schools campus placement season last year, an entire array of industries were represented on campus, ranging from sectors such as Engineering to IT, from Analytics to Consulting. Beyond the traditional industries, including domestic homegrown and multinational firms who lead in their respective industry domains, one other key trend during the placement season was the sheer presence and scale of tech start-ups on campus. These included major start-ups showcasing their open work environments and enticing students with the opportunities to be entrepreneurial risk-takers, with the opportunity to make and own tangible contributions, and with a wide-ranging array of perks, including owning equity.

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ACADEMIC ENVIRONMENT

The first wave of T-Schools in India were established post-independence with a focus on imparting high-quality training through a limited number of T-Schools. The second wave of T-Schools came in the 1970s through the establishment of private-aided T-Schools, that were subsidized by the Government. In the 1980s, the third wave of T-Schools came that were private and unaided. Thereon, the Government's focus became more oriented towards primary education, while the rapid demand for higher education was increasingly met by established Government T-Schools, Centres of Excellence, and a new wave ofPrivate T-Schools.

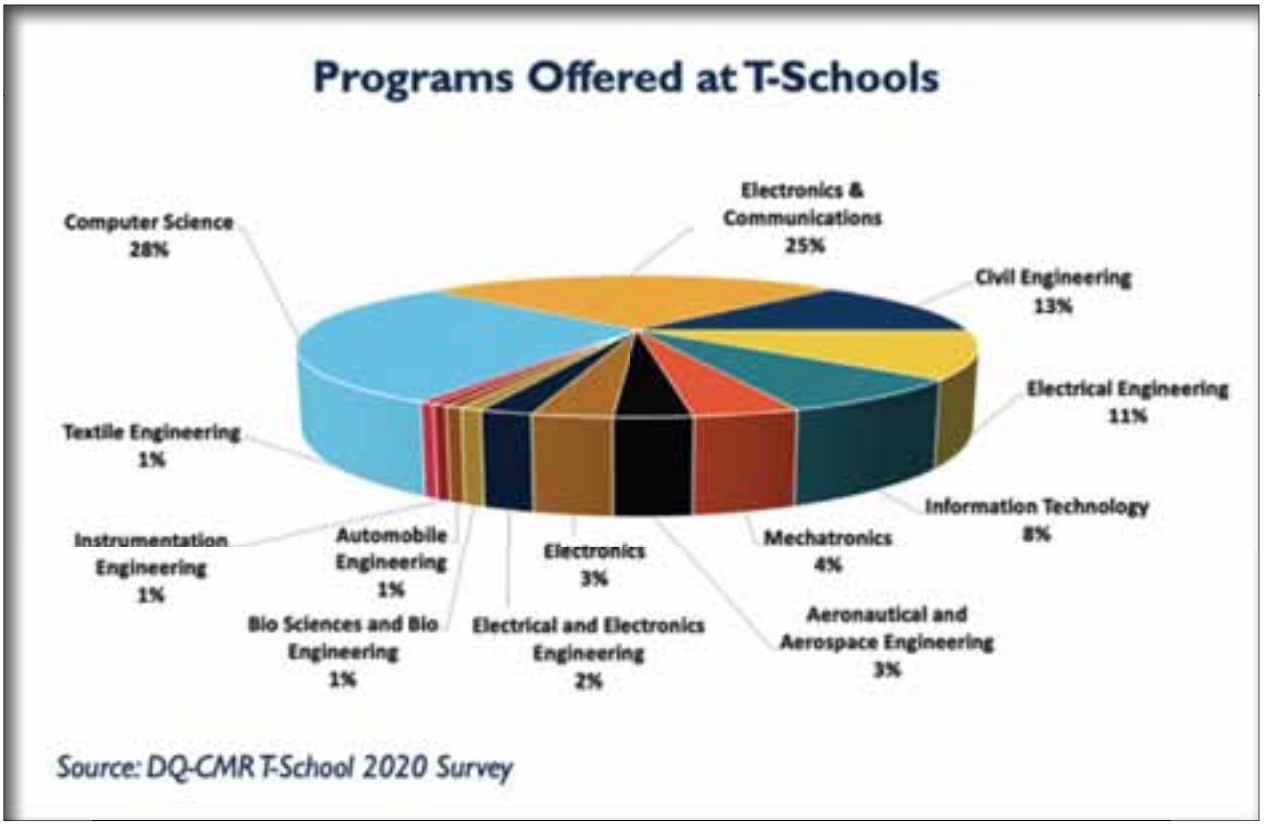
The DQ-CMR T-School Survey 2020 findings illustrate that T-Schools are offering an eclectic selection of streams for students, ranging from Computer Science to Electronics and Communications, from Mechatronics to Textile Engineering.

As per the DQ-CMR T-School Survey results, the top three streams offered at T-Schools include Computer Science, Electronics and Communications, and Civil Engineering.

An overwhelming 81% of the faculty at T-Schools have a doctoral degree. The DQ-CMR T-School Survey results further illustrate that while 93% of the faculty at T-Schools is permanent, 4% are visiting, and 3% are on contracts. There is also the challenge of faculty shortage that impacts T-Schools. As a consequence, some T-Schools hire ad-hoc, part-time faculties, who are not incentivized enough to stay and make a change. These moves are driven by the focus on maximizing profits, or partly by the lack of qualified professionals in teaching profession.

The gender diversity amongst faculty is skewed towards males, with female faculty finding a slightly better representation in North and South India. Amongst female faculty, the maximum representation is in North India at 41%, while it is the lowest in Eastern India at 27%.

Amongst students, the enrolment is very high at undergraduate level, and tapers off at post-graduate level. In terms of gender diversity, is it very much titled



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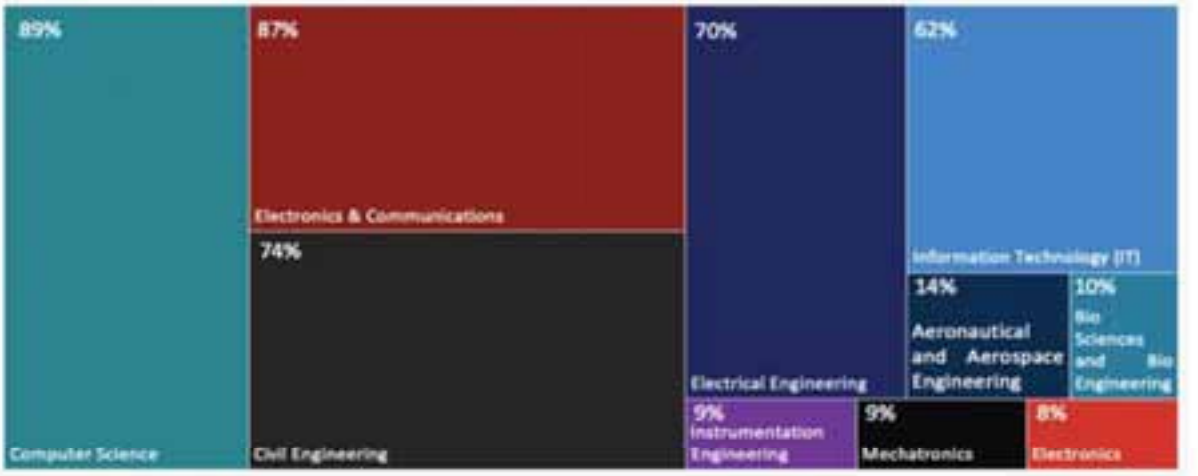
Top Ten UG Programs Offered at T-Schools



Source: DQ-CMR T-School 2020 Survey

Gender Diversity in the Faculty: National and Regional Levels

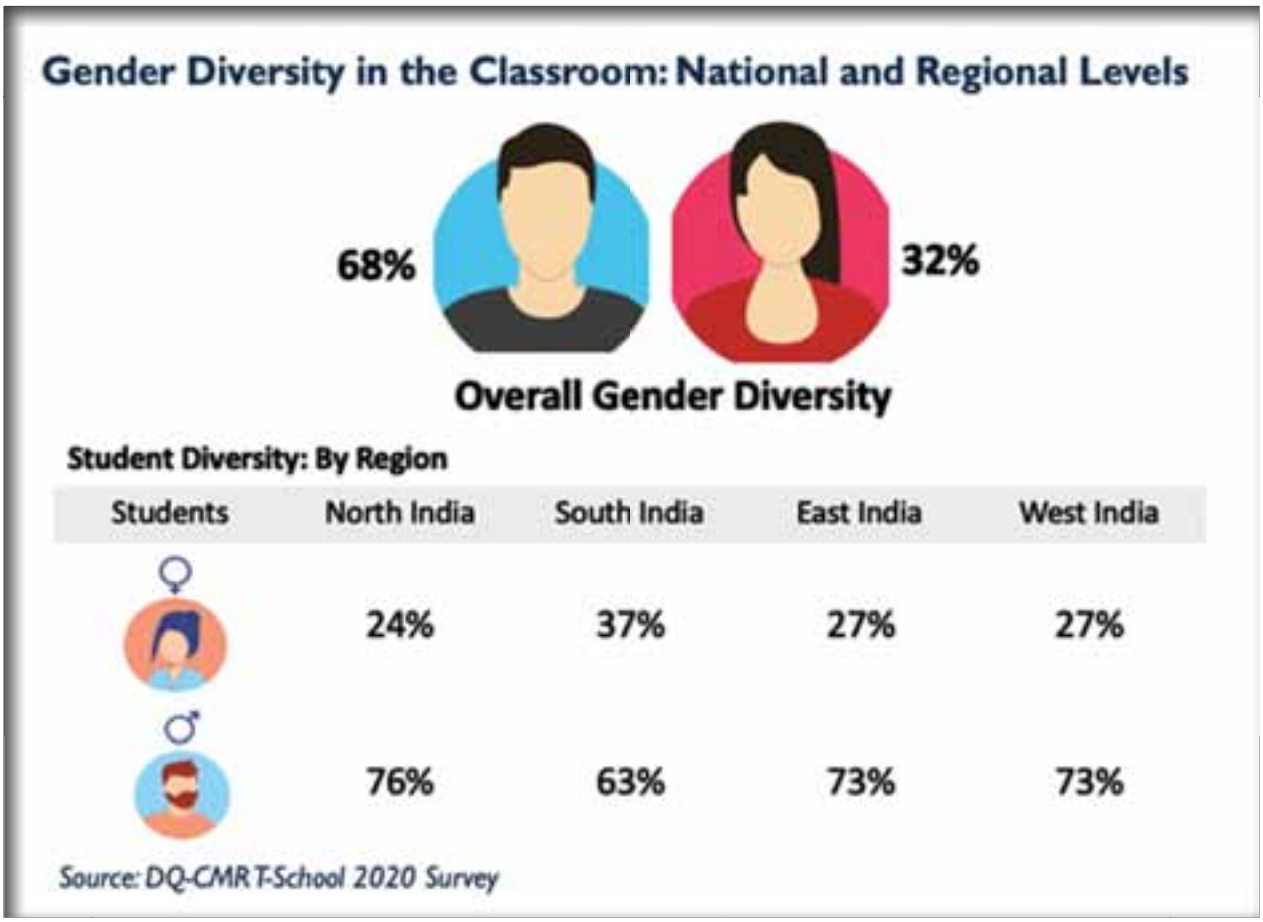
Overall Gender Diversity

Faculty Diversity: By Region

Faculty	North India	South India	East India	West India
♀	41%	38%	27%	37%
♂	59%	62%	73%	63%

Source: DQ-CMR T-School 2020 Survey

> T-SCHOOLS ARE OFFERING AN ECLECTIC SELECTION OF STREAMS FOR STUDENTS, RANGING FROM COMPUTER SCIENCE TO ELECTRONICS AND COMMUNICATIONS, FROM MECHATRONICS TO TEXTILE ENGINEERING



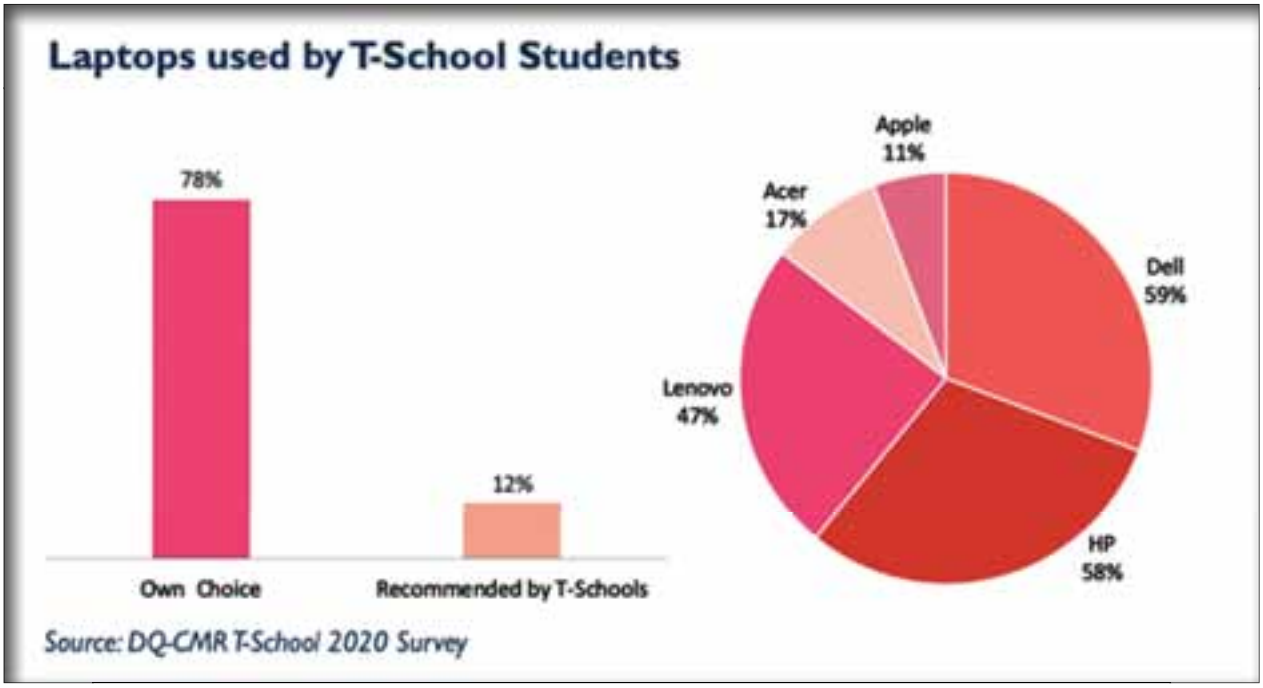
towards males at the undergraduate level, echoing the survey results for faculty members. Amongst female students, the maximum representation is in South India at 37%, while the female percentage hovers in the 20s in all other regions.

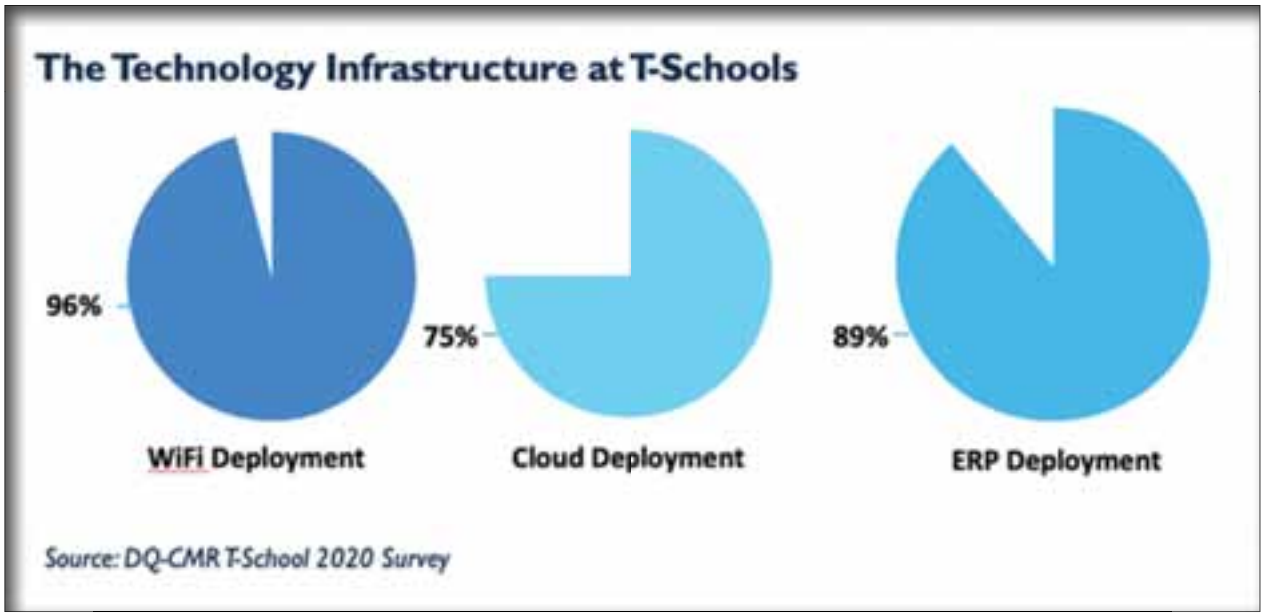
CAMPUS INFRASTRUCTURE

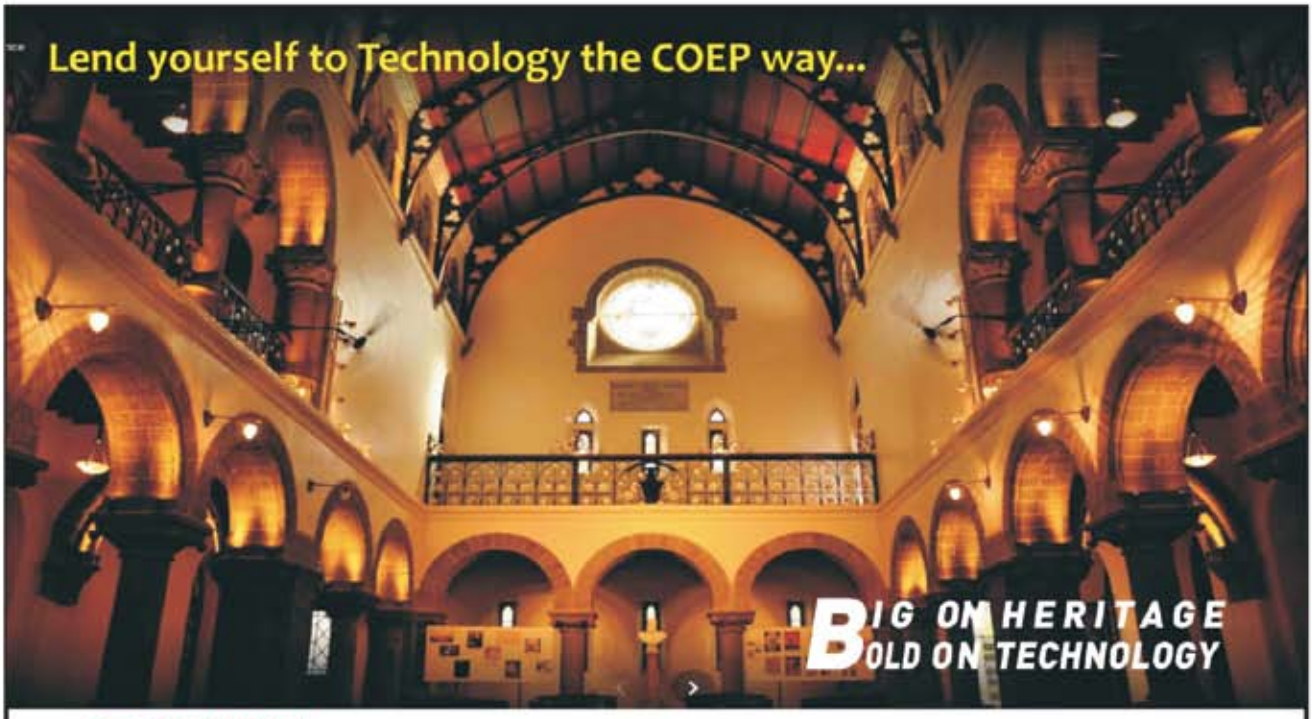
The campus infrastructure at T-Schools has grown and evolved to support learning and operations, while also ensuring security for students. According to the DQ-CMR T-School Survey results, it is interesting to note that some T-Schools are fairly well-advanced in their digital transformation journey. A majority of the T-Schools surveyed in the DQ-CMR T-School Survey have cloud and ERP deployed. On the other hand, most T-Schools have established foundational IT infrastructure, including

laptops and PCs for their students, with broadband connectivity provided through wired lAN network as well as the WiFi.

In terms of laptops, the BYOD culture amongst students is strong, with 78% opting for their own devices. Only 12% T-Schools recommended laptops to their students. Dell, HP and Lenovo are the top three most preferred laptops amongst students. Amongst digitally advanced T-schools, Apple MacBook features as a key choice.







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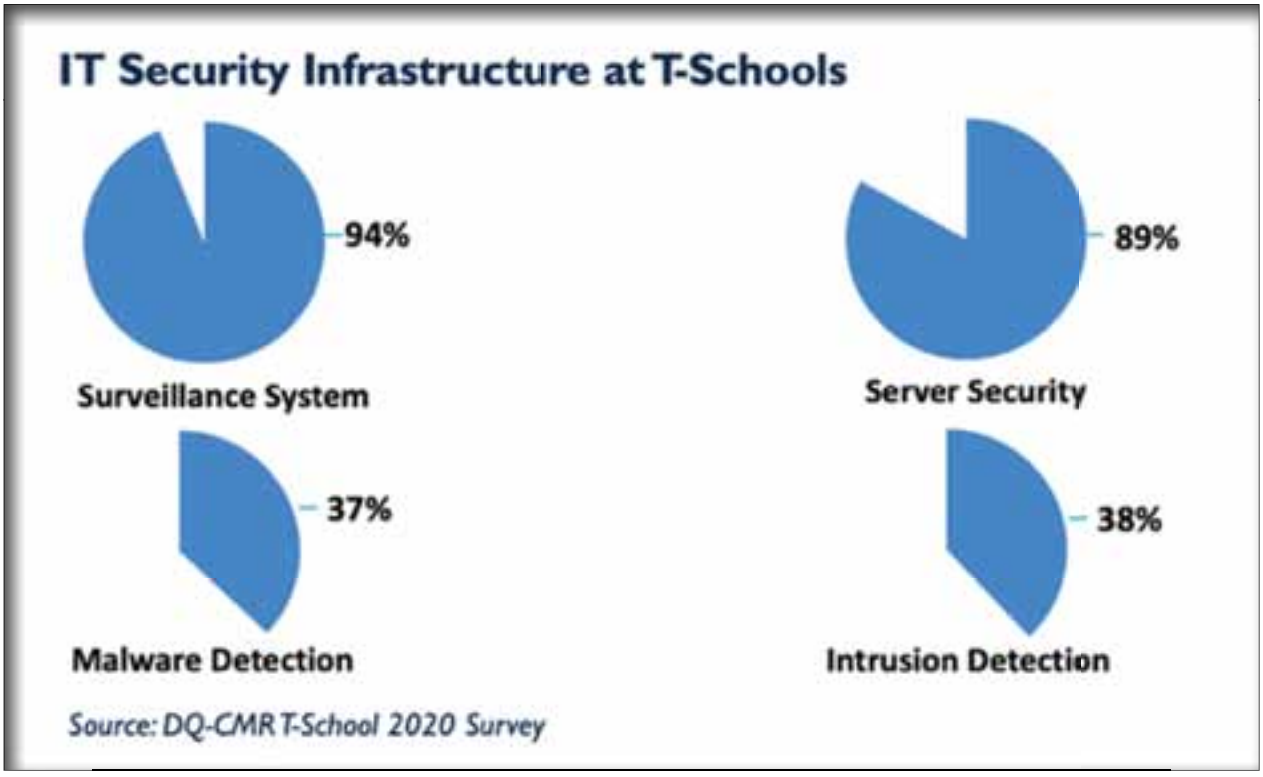
> SOME T-SCHOOLS ARE FAIRLY WELL-ADVANCED IN THEIR DIGITAL TRANSFORMATION JOURNEY. A MAJORITY OF THE T-SCHOOLS SURVEYED IN THE DQ-CMR T-SCHOOL SURVEY HAVE CLOUD AND ERP DEPLOYED



Another key component of campus infrastructure at T-Schools pertains to providing a secure and safe learning environment for students. As per the DQ-CMR T-School Survey 2020, some T-Schools are fairly advanced in their IT readiness. They are acquiring surveillance and access control systems for security. On the other hand, there are T-Schools that need to focus on scaling-up their digital infrastructure, for academics, administration as well as students.

ENGAGEMENT WITH INDUSTRY ECOSYSTEM

For T-Schools, the industry engagement is key for T-Schools from the perspective of attuning themselves to industry needs, enhancing existing pedagogy and most importantly, providing foundational training and exposure to students. Industry engagement provides students with opportunities to put their classroom learnings into a real world context, gaining perspectives and experience in their future career pathways.

A key component of industry interface is conducting industry guest seminars on campus by subject matter experts. On an average, 58% of the T-Schools reported conducting such seminars in 2019, while at the regional level, T-Schools in North and South India have reported >50% such seminars during the year. It goes without saying that such industry seminars are central to revitalising the research focus and enabling students therein to get real-world experience.

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65 - 80% - ₹ 38,000/- Per Sem.

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65 - 80% - ₹ 21,000/- Per Sem.

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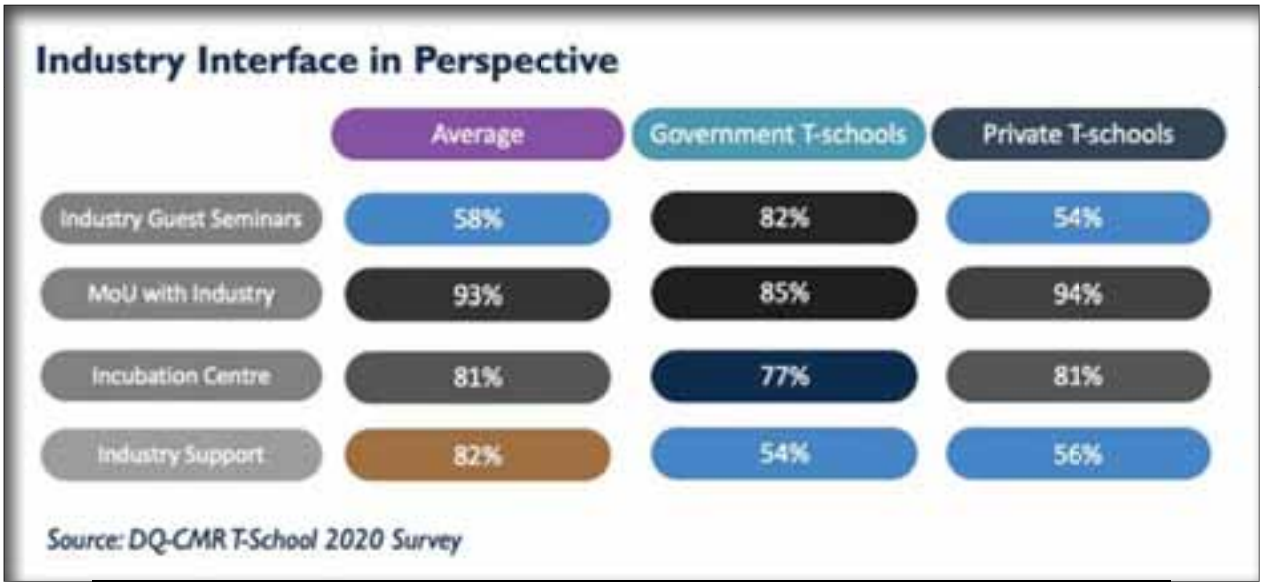

An overwhelming 93% of the T-Schools in the DQ-CMR T-School 2020 Survey reported having an MoU with an industry partner. Private T-Schools are more proactive, and dominate over Government T-Schools in having such MoUs.

From the perspective of industry, such partnerships with the T-Schools, including the faculty helps them get access to quality research, and resolving problem statements that they maybe facing. Some large enterprises, as part of their engagement, would also fund the research project. Apart of large enterprises, other entities including, mid-sized enterprises and start-ups look at tapping T-Schools for access to knowledge, facilities as well as graduate students.

Beyond seeking answers to their problems from T-Schools, industry also benefits from such engagements in gauging the problem understanding and research acumen capabilities of the students working on such projects. This, in turn, helps them assess the employability of the students passing out from the T-Schools.

On an average, in 2019, T-School faculty carried out 103 industry assignments. Private T-Schools have a higher share of industry assignments, while Government T-Schools lag. Last year, faculty at private T-Schools undertook 111 industry assignments, while their counterparts at government T-Schools did 55 consulting assignments for industry partners. At a regional level, faculty at T-Schools in Western India have a higher share of such assignments, benefiting from significant industry presence in the region, while those in Eastern India lag behind.

The overall takeaway from this study is that the symbiotic T-School and industry partnerships are moving in a clear direction. T-Schools gain from industry inputs on the pedagogy and are able to prepare the industry-ready skilled workforce. In addition, industry also supports with the technology, infrastructure and other resources needed for uplifting T-Schools. On the other hand, industry benefits from T-School know-how and expertise, and the manpower therein – both faculty and students.

The top 2 government and private technology institutes took the honours of No 1 and 2 respectively. IIT Kharagpur and BITS Pilani, were adjudged the top 2 t-schools as per the research findings. Apart from good academic track record and the adequate infrastructure, the T-School has scored high on the industry engagement as well as the placement. Among the top 10 T-Schools in the country, 7 are government owned while the remaining 3 positions were filled up by the private institutions. Many of them are as old as over 25 years, with a few established some 10 years ago. While, it is overwhelming to see that T-Schools from across the country have made it to the Top 10, North is represented only by Netaji Subhas Institute of Technology, Delhi.

A close to half, 46% of the best t-schools were from South, followed by North, West and East in that order.

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- TOP 6th – Rank in SOUTH INDIA – by SILICON INDIA
- 13th – by 4PS
- 14th – by TIMES OF INDIA
- INDIA'S – by SUNDAY INDIAN
- South India's 68th and India's 99th Rank – by THE WEEK
- 33rd – Colleges in INDIA – by ACADEMIC INSIGHTS
- 34th – Rank in INDIA – by HIGHER EDUCATION
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₹6.00	10	keka
₹6.00	4	MAQ Software
₹5.00	3	LTI
₹5.00	1	
₹5.00	1	
₹4.50	12	vivo
₹4.50	5	ggk tech
₹4.25	18	TAVANT
₹4.25	10	HDFC BANK
₹4.25	4	IBM
₹4.10	5	Multiplier
₹4.00	12	Cognizant
₹4.00	8	VIT
₹4.00	2	Aptroid
₹3.60	5	
₹3.60	5	divami
₹3.54	1	Mindtree
₹3.50	27	
₹3.50	28	LTI
₹3.50	5	
₹3.50	5	T-Systems
₹3.50	32	Infosys
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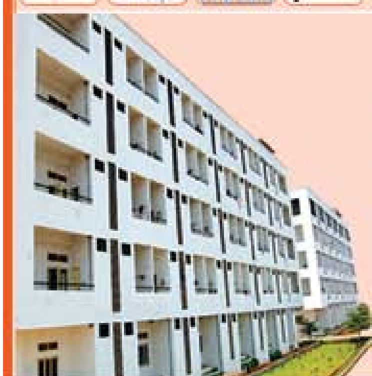

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Top T-Schools in **India 2020 Rankings**

Top 100 T-Schools (Overall) – Government and Private

INSTITUTE NAME	CITY	RANK
Indian Institute of Technology	Kharagpur	1
Birla Institute of Technology and Science	Pilani	2
International Institute of Information Technology	Hyderabad	3
Netaji Subhas University of Technology	New Delhi	4
Bannari Amman Institute of Technology	Sathyamanagalam	5
Maulana Abul Kalam Azad University of Technology	Haringhata	6
College of Engineering Pune	Pune	7
Indraprastha Institute of Information Technology	Delhi	8
National Institute of Technology, Surathkal	Mangalore	9
Bharati Vidyapeeth College of Engineering	Pune	10
B. S. Abdur Rahman Crescent Institute of Science & Technology	Chennai	11
Koneru Lakshmaiah Education Foundation	Vijayawada	12
G L Bajaj Institute of Technology and Management	Greater Noida	13
Army Institute of Technology	Pune	14
Dr. B R Ambedkar National Institute of Technology	Jalandhar	15
National Institute of Technology	Silchar	16
Maharaja Agrasen Institute of Technology	Delhi	17*
Thiagarajar College of Engineering	Madurai	17*
Dr. NGP Institute of Technology	Coimbatore	18
Chhatrapati Shivaji Institute of Technology	Durg	19
Sathyabama Institute of Science and Technology	Chennai	20
GMR Institute of Technology	Rajam	21
R.M.K. Engineering College	Gummidipoondi	22
The Northcap University	Gurugram	23
Amity School of Engineering & Technology	Jaipur	24
Amity School of Engineering & Technology	Lucknow	25
Chitkara University Institute of Engineering and Technology	Patiala	26
Chaitanya Bharathi Institute of Technolgy	Hyderabad	27
Maharaja Surajmal Institute of Technology	Delhi	28
Reva University	Bengaluru	29*
Rungta College of Engineering & Technology	Bhilai	29*
Velagapudi Ramakrishna Siddhartha Engineering College (Autonomous)	Vijayawada	30
BMS Institute of Technology and Management	Bengaluru	31
Yeshwantrao Chavan College of Engineering	Nagpur	32
K L S Gogte Institute of Technology	Belagavi	33
Panimalar Engineering College	Chennai	34

INSTITUTE NAME	CITY	RANK
Rajalakshmi Engineering College	Chennai	35
Shri Ram Institute of Technology	Jabalpur	36
N.M.A.M. Institute of Technology	Karkala	37
Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology	Chennai	38
Rajagiri School of Engineering & Technology	Ernakulam	39
Sai Vidya Institute of Technology	Bengaluru	40
Motilal Nehru National Institute of Technology	Prayagraj	41
Prasad V. Potluri Siddhartha Institute of Technology	Vijayawada	42
MLR Institute of Technology	Hyderabad	43
Institute of Aeronautical Engineering	Hyderabad	44
Sir M Visvesvaraya Institute of Technology	Bangalore	45
Amrutvahini College of Engineering	Sangamner	46
IES College of Technology	Bhopal	47
Sagi Rama Krishnam Raju Engineering College	Bhimavaram	48*
Velalar College of Engineering and Technology	Erode	48*
The Oxford College of Engineering	Bengaluru	49
CMR Institute of Technology	Hyderabad	50
Nandha Engineering College (Autonomous)	Erode	51
MVJ College of Engineering	Bengaluru	52*
Vel Tech Multi Tech Dr. Rangarajan Dr. Sakunthala Engineering College	Chennai	52*
PDPM - Indian Institute of Information Technology, Design and Manufacturing	Jabalpur	53
Vidyavardhaka College of Engineering	Mysore	54
S J C Institute of Technology	Chickballapur	55
M. Kumarasamy College of Engineering	Karur	56
Sri Manakula Vinayagar Engineering College	Puducherry	57
D.K.T.E. Society's Textile & Engineering Institute	Ichalkaranji	58
KKR And KSR Institute of Technology and Science	Guntur	59
Chandigarh Engineering College, Landran	Mohali	60*
Sri Sai Ram College of Engineering	Anekal	60*
CVR College of Engineering	Hyderabad	61
Gandhi Institute For Education and Technology	Khurda	62
Amity School of Engineering & Technology	Gurugram	63
Guru Nanak Institutions Technical Campus	Ibrahimpatnam	64
V.S.B. Engineering College	Karur	65
Madanapalle Institute of Technology & Science	Madanapalle	66*
National Institute of Science and Technology	Berhampur	66*
Annamacharya Institute of Technology & Sciences, Rajampet	Kadapa	67

INSTITUTE NAME	CITY	RANK
Govt. Model Engineering College	Kochi	68
Sethu Institute of Technology	Virudhunagar	69*
Erode Sengunthar Engineering College	Erode	69*
Meerut Institute of Engineering and Technology	Meerut	70
G H Patel College of Engineering and Technology	Vallabh Vidyanagar	71
SCMS School of Engineering and Technology	Ernakulam	72
RGM College of Engineering and Technology	Nandyal	73
Lakireddy Bali Reddy College of Engineering	Mylavaram	74*
Trident Academy of Technology	Bhubaneswar	74*
Gandhi Engineering College	Bhubaneswar	75
Pranveer Singh Institute of Technology	Kanpur	76
Babu Banarsi Das Institute of Technology	Ghaziabad	77
Kanpur Institute of Technology	Kanpur	78
Acropolis Institute of Technology and Research	Indore	79
Vignan Institute of Technology and Science	Hyderabad	80*
Shri Ram Murti Smarak College of Engineering & Technology	Bareilly	80*
Annamchrya Institute of Technology and Sciences	Tirupati	81
Aditya College of Engineering, Peddapuram	Peddapuram	82
Sagar Institute of Science Technology & Research	Bhopal	83
Sambhram Institute of Technology	Bengaluru	84
Model Institute of Engineering and Technology	Jammu	85
Rajshree Institute of Management & Technology	Bareilly	86
Aditya College of Engineering & Technology	Surampalem	87
Bract's, Vishwakarma Institute of Information Technology	Pune	88
Malla Reddy College of Engineering and Technology	Secunderabad	89
Aditya Engineering College	Surampalem	90
T. John Institute of Technology	Bengaluru	91
Sri Venkateswara College of Engineering	Tirupati	92
S V Engineering College for Women	Tirupati	93
PSIT College of Engineering	Kanpur	94
Sri Vasavi Lnstitute of Engineering & Technology	Machilipatnam	95
Government College of Engineering & Ceramic Technology	Kolkata	96
G. Pullaiah College of Engineering And Technology	Kurnool	97
BVRIT Hyderabad College of Engineering for Women	Hyderabad	98
Govt. College of Engineering	Karad	99
Girijananda Chowdhury Institute of Management and Technology	Guwahati	100

* These institutes share the same rank due to identical scores

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- IBM Top30 colleges in TGMC Project Competition
- Winner of Smart India Hackathon 2019 (Rs. 1 lakh)
- Best Student Innovator Award, India Innovation Initiative
- Dataquest Top 100 T-Schools in India (2019, 2018)
- School of Management MIET ranked 51st in the country by Business Today Magazine in ROI category
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Fake news detecting service for mobile message sharing Application

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Secure Messenger

Most Advanced Message sharing Application with advanced features

Finalist Unisys Cloud 20/20 and CSI Project Competition

GNOSIS Know,ledge Manager

The Knowledge Management Mashup Application

Finalist Unisys Cloud 20/20 and CSI Project Competition

Zone Wise **Top 10 T-Schools**

East

INSTITUTE	CITY	RANK
Indian Institute of Technology	Kharagpur	1
Maulana Abul Kalam Azad University of Technology	Haringhata	2
National Institute of Technology	Silchar	3
Chhatrapati Shivaji Institute of Technology	Durg	4
Rungta College of Engineering & Technology	Bhilai	5
Gandhi Institute For Education And Technology	Khurda	6
National Institute of Science And Technology	Berhampur	7
Trident Academy of Technology	Bhubaneswar	8
Gandhi Engineering College	Bhubaneswar	9
Government College of Engineering & Ceramic Technology	Kolkata	10

North

INSTITUTE	CITY	RANK
Birla Institute of Technology and Science	Pilani	1
Netaji Subhas University of Technology	New Delhi	2
Indraprastha Institute of Information Technology	Delhi	3
G L Bajaj Institute of Technology and Management	Greater Noida	4
Dr. B R Ambedkar National Institute of Technology	Jalandhar	5
Maharaja Agrasen Institute of Technology	Delhi	6
The Northcap University	Gurgaon	7
Amity School of Engineering & Technology	Jaipur	8
Amity School of Engineering & Technology	Lucknow	9
Chitkara University Institute of Engineering And Technology	Patila	10

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South

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International Institute of Information Technology	Hyderabad	1
Bannari Amman Institute of Technology	Sathyamanagalam	2
National Institute of Technology, Surathkal	Mangalore	3
B. S. Abdur Rahman Crescent Institute of Science & Technology	Chennai	4
Koneru Lakshmaiah Education Foundation	Vijaywada	5
Thiagarajar College of Engineering	Madurai	6
Dr. NGP Institute of Technology	Coimbatore	7
Sathyabama Institute of Science And Technology	Chennai	8
GMR Institute of Technology	Rajam	9
R.M.K. Engineering College	Gummidipoondi	10

West

INSTITUTE	CITY	RANK
College of Engineering Pune	Pune	1
Bharati Vidyapeeth College of Engineering	Pune	2
Army Institute of Technology	Pune	3
Yeshwantrao Chavan College of Engineering	Nagpur	4
Shri Ram Institute of Technology	Jabalpur	5
Amrutvahini College of Engineering	Sangamner	6
IES College of Technology	Bhopal	7
PDPM - Indian Institute of Information Technology, Design and Manufacturing	Jabalpur	8
DKTE Society's Textile & Engineering Institute	Ichalkaranji	9
G H Patel College of Engineering And Tehnology	Vallabh Vidyanagar	10

IES UNIVERSITY®
BHOPAL

21 Years of Excellence in Education
Since 1999

[University Established Under Section 22 of UGC Act 1956 &
Vide act No. 11 of 2019 (S. No. 36) of M.P. Govt.]
(Approved by AICTE, PCI, New Delhi, COA & MP Nurses Council)
University Colleges are NAAC Accredited

IES A PROVEN NAME FOR PURSUING SUCCESSFUL CAREER

Excellent Placements

SELECTED STUDENTS OF BATCH 2020

- 43 COMPANIES • 516 OFFERS
- 13 LPA MAX. PACKAGE
- 35+ STUDENTS GOT MULTIPLE OFFERS FROM 2 - 5 COMPANIES

Still Continuous...

Honour

Most Promising University of Central India Honoured by Shri Kamal Nath Ji, Chief Minister of MP

Award

Awarded as First Green Campus of the State - IGBC Hyderabad

HIGHLIGHTS OF 2020

2 days National HR Conclave on Industry 4.0 – Future Skills

2 days Faculty Development Program

Utkarsh - Annual Fest 2K20

Healthy & Instant Cooking Workshop & Competition

Inter University Basketball Tournament (Boys & Girls)

COURSES OFFERED

- Engineering • Architecture & Planning • IT • Management • Hotel Management
- Pharmacy • Paramedical • Nursing • Fashion Design • Agriculture Sciences
- Journalism & Mass Communication • Education • Commerce
- Basic Sciences • Fine Arts • UG* • PG* • Ph.D.*

Triangle

IES Campus, Ratibad Main Road, Bhopal. ✆ 9229251478/22, 9285009756
🌐www.iesuniversity.ac.in, ✉ contact@iesuniversity.ac.in

Top T-Schools **(Government)**

INSTITUTE	CITY	RANK 2020
Indian Institute of Technology	Kharagpur	1
International Institute of Information Technology	Hyderabad	2
Netaji Subhas University of Technology	New delhi	3
Maulana Abul Kalam Azad University of Technology	Haringhata	4
College of Engineering Pune	Pune	5
Indraprastha Institute of Information Technology	Delhi	6
National Institute of Technology, Surathkal	Mangalore	7
Dr. B R Ambedkar National Institute of Technology	Jalandhar	8
National Institute of Technology	Silchar	9
Thiagarajar College of Engineering	Madurai	10
Motilal Nehru National Institute of Technology	Prayagraj	11
PDPM Indian Institute of Information Technology, Design and Manufacturing	Jabalpur	12
Govt. Model Engineering College	Kochi	13
Government College of Engineering & Ceramic Technology	Kolkata	14
Govt. College of Engineering Karad	Karad	15

IES UNIVERSITY®

BHOPAL

Most Promising University for Overall Development of Students

Committed to Provide Best Education and Placement

IES University awarded as "Most Promising University of Central India" is a group of 9 Colleges & 5 Schools. It has been one of the premier institutes of Central India since last 21 years. IES University has been bestowed with many awards & honors by esteemed organizations and media houses on the basis of students campus placements, technical contest and world class infra structure. Recently IES University has been honored for **Excellence for over all Development of Students** & awarded as **"Best Clean University"** in Madhya Pradesh by State Ministry, M.P. University and College has been awarded for First Green Campus, Top Result & Outstanding Contribution in Education, Best Training & Placement Institute, "CMAI National Madhya Pradesh Education Award" "TCS ION Award" and many more. IES University Colleges are consistently ranked by prestigious magazines like India Today Rank #3 for Best Value of Money & Rank # 27, Data Quest rank 36, The Week rank 12, Digital learning AAAA+ Careers 360 AAA, Outlook 85 among top 100 Engineering colleges in the country.

The University offers quality specialized education in the disciplines of Engineering, Architecture & Planning, IT, Management, Hotel Management, Pharmacy, Paramedical, Nursing, Fashion Design, Agriculture Sciences, Journalism & Mass Comm., Education, Commerce, Basic Sciences, Fine Arts, UG*, PG*, Ph.D.* at UG, PG and Ph.D. level Approved by AICTE, PCI, New Delhi, COA & MP Nurses Council. It works for educational excellence for fulfilling the needs of highly demanding professions in India and the other countries, since 1999, in pursuit of serving the society through imparting education. Renowned academicians, philanthropists, engineers and technical professionals constituted IES Society and are now serving IES for attaining excellence. The main aim of University is to provide quality education to aspiring youth. IES campus is a verdant beautifully planned 50+ Acres with placid landscaping presenting conducive environment for sincere and perfect learning.

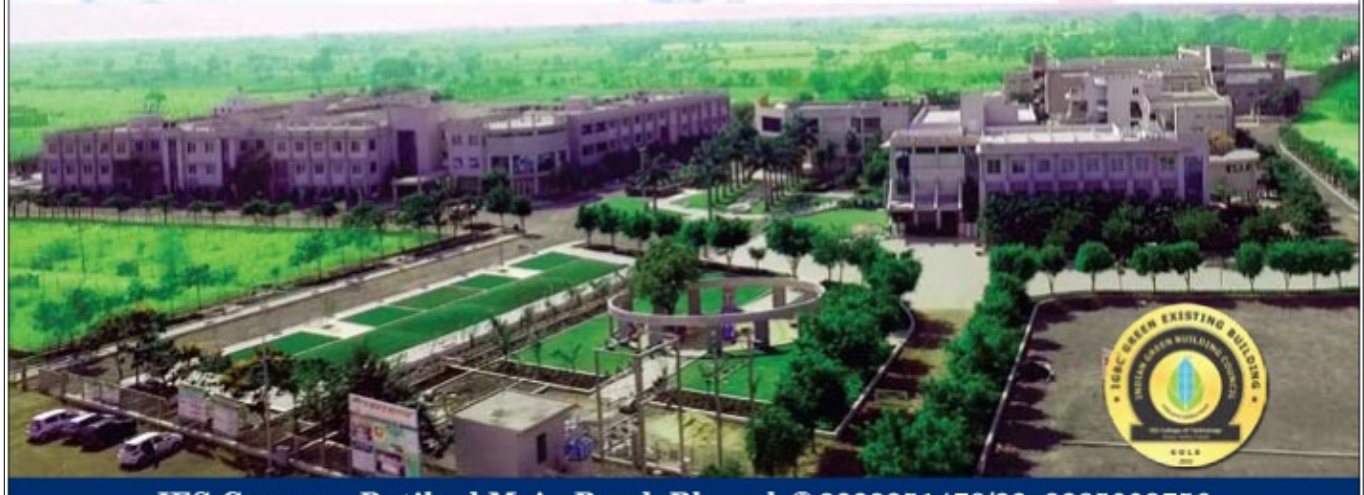
IES group ensures that students get right skills, attitude and domain knowledge so that they are easily accepted in industry. Growth of IES University is not just limited to an increase in the number of recruiting companies but also the value of packages offered, which then leads to high growth rates in Return on investment. At the university from our 2020 batch total 46 companies provided 516 job offers with highest package of 13 lac per annum visited (till Feb.). Beyond regular visits of various campus drives, 40+ students received multiple 2-5 offers from top MNCs. Companies like IBM, Persistent Systems, Zensar Technologies, Infosys, Mphasis, Indian Navy, CEAT Tyres Ltd. etc. are a few of our regular recruiters. IES is consistently Bhopal's 2nd largest placement provider from last 8 years.

The Institute has signed MOU with Metropolitan College, New York; NASSCOM; UK Education India & College of Engineering, Pune (COEP), to work together for student & faculty development, and presently College of Engineering, Pune is official mentor of IES College of Technology. IES University also has **Central India's first CII Education Excellence Forum** that develops customized programmes and delivery models to reach out to educational institutions across India through school education, clusters, training, counseling, institutional assessments, school education, conclaves and summits to bring in quality education. The University has got Corporate Tie Ups for Industrial training with various Companies. Our affiliations with Microsoft Innovation Center & IBM Center of Excellence help us to train our students and develop the skills required at the corporate level. Apart from training of students, professors & faculty members of IES have also been actively participating in various Workshops & Training Programs conducted by TCS, IBM and IIT Bombay.

Students of IES have got many accolades for their outstanding performance in the various national level competitions, they reached the Grand Finale of the biggest Technical Contest of the country '**Accenture Innovation Challenge**' and won **Most Popular Idea Award of the Season**. IES Team also won **First Position** at Accenture Innovation Jockey Season 4. The winning team was awarded with a trip to Silicon valley, San Francisco, USA, an Apple I Phone 6, an Apple I Pad, and an opportunity to work with Accenture. Recently IES University, engineering students won at Article Writing Competition organized by World Wildlife Fund.

The University has installed a **100 KWs Solar Power plant** in Campus, inaugurated by the Hon'ble Governor of M.P. Smt. Anandiben Patel. IES Group of Institutes have received the **"Gold rated Green Building Award"** from IGBC Hyderabad, Clean Campus Award by AICTE, New Delhi, and it also has got the privilege of having first **Tobacco Free Campus of M.P.** by M.P. Government.

We are therefore, constantly thriving to fulfill our commitment of emerging as a centre of excellence of National and Global repute for the students, academicians and society as a whole. !!



IES Campus, Ratibad Main Road, Bhopal. © 9229251478/22, 9285009756

www.iesuniversity.ac.in, ✉ contact@iesuniversity.ac.in

Top T-Schools **(Private)**

INSTITUTE NAME	CITY	RANK
Birla Institute of Technology and Science	Pilani	1
Bannari Amman Institute of Technology	Sathyamanagalam	2
Bharati Vidyapeeth College of Engineering Pune	Pune	3
B. S. Abdur Rahman Crescent Institute of Science & Technology	Chennai	4
Koneru Lakshmaiah Education Foundation	Vijayawada	5
G L Bajaj Institute of Technology and Management	Greater noida	6
Army Institute of Technology	Pune	7
Maharaja Agrasen Institute of Technology	Delhi	8
Dr. NGP Institute of Technology	Coimbatore	9
Chhatrapati Shivaji Institute of Technology	Durg	10
Sathyabama Institute of Science And Technology	Chennai	11
GMR Institute of Technology	Rajam	12
R.M.K. Engineering College	Gummidipoondi	13
The Northcap University	Gurugram	14
Amity School of Engineering & Technology	Jaipur	15
Amity School of Engineering & Technology	Lucknow	16
Chitkara University Institute of Engineering And Technology	Patila	17
Chaitanya Bharathi Institute of Technolgy	Hyderabad	18
Maharaja Surajmal Institute of Technology	Delhi	19
Reva University	Bangalore	20*
Rungta College of Engineering & Technology	Bhilai	20*
Velagapudramakrishna Siddhartha Engineering College, (Autonomous)	Vijayawada	21
BMS Institute of Technology And Management	Bangaluru	22
Yeshwantrao Chavan College of Engineering	Nagpur	23
K L S Gogte Institute of Technology	Belagavi	24
Panimalar Engineering College	Chennai	25
Rajalakshmi Engineering College	Chennai	26
Shri Ram Institute of Technology	Jabalpur	27
N.M.A.M. Institute of Technology	Karkala	28
Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science And Technology	Chennai	29
Rajagiri School of Engineering & Technology	Ernakulam	30

INSTITUTE NAME	CITY	RANK
Sai Vidya Institute of Technology	Bangalore	31
Prasad V. Potluri Siddhartha Institute of Technology	Vijayawada	32
MLR Institute of Technology	Hyderabad	33
Institute of Aeronautical Engineering	Hyderabad	34
Sir M Visvesvaraya Institute of Technology	Bangalore	35
Amrutvahini College of Engineering	Sangamner	36
IES College of Technology	Bhopal	37
Sagi Rama Krishnam Raju Engineering College	Bhimavaram	38*
Velalar College of Engineering And Technology	Erode	38*
The Oxford College of Engineering	Bangalore	39
CMR Institute of Technology	Hyderabad	40
Nandha Engineering College (Autonomous)	Erode	41
MVJ College of Engineering	Bengaluru	42*
Vel Tech Multi Tech Dr. Rangarajan Dr. Sakunthala Engineering College	Chennai	42*
Vidyavardhaka College of Engineering	Mysore	43
S J C Institute of Technology	Chickballapur	44
M. Kumarasamy College of Engineering	Karur	45
Sri Manakula Vinayagar Engineering College	Puducherry	46
D.K.T.E. Society's Textile & Engineering Institute	Ichalkaranji	47
KKR And KSR Institute of Technology and Science	Guntur	48
Chandigarh Engineering College, Landran	Mohali	49*
Sri Sai Ram College of Engineering	Anekal	49*
CVR College of Engineering	Hyderabad	50
Gandhi Institute For Education And Technology	Khurda	51
Amity School of Engineering & Technology	Gurugram	52
Guru Nanak Institutions Technical Campus	Ibrahimpatnam	53
V.S.B. Engineering College	Karur	54
Madanapalle Institute of Technology & Science	Madanapalle	55*
National Institute of Science And Technology	Berhampur	55*
Annamacharya Institute of Technology & Sciences, Rajampet	Kadapa	56
Sethu Institute of Technology	Virudhunagar	57*

INSTITUTE NAME	CITY	RANK
Erode Sengunthar Engineering College	Erode	57*
Meerut Institute of Engineering And Technology	Meerut	58
G H Patel College of Engineering And Tehnology	Vallabh vidyanagar	59
SCMS School of Engineering And Technology	Ernakutam	60
RGM College of Engineering and Technology	Nandyal	61
Lakireddy Bali Reddy College of Engineering	Mylavaram	62*
Trident Academy of Technology	Bhubaneswar	62*
Gandhi Engineering College	Bhubaneswar	63
Pranveer Singh Institute of Technology	Kanpur	64
Babu Banarsi Das Institute of Technology	Ghaziabad	65
Kanpur Institute of Technology	Kanpur	66
Acropolis Institute of Technology And Research	Indore	67
Vignan Institute of Technology and Science	Hyderabad	68*
Shri Ram Murti Smarak College of Engineering & Technology	Bareilly	68*
Annamchrya Institute of Technology And Sciences	Tirupati	69
Aditya College of Engineering	Peddapuram	70
Sagar Institute of Science Technology & Research	Bhopal	71
Sambhram Institute of Technology	Bangalore	72
Model Institute of Engineering And Technology	Jammu	73
Rajshree Institute of Management & Technology	Bareilly	74
Aditya College of Engineering & Technology	Surampalem	75
Bract's, Vishwakarma Institute of Information Technology	Pune	76
Malla Reddy College of Engineering And Technology	Secunderabad	77
Aditya Engineering College	Surampalem	78
T. John Institute of Technology	Bangalore	79
Sri Venkateswara College of Engineering	Tirupati	80
S V Engineeing College for Women	Tirupati	81
PSIT College of Engineering	Kanpur	82
Sri Vasavi Institute of Engineering & Technology	Machilipatnam	83
G. Pullaiah College of Engineering And Technology	Kurnool	84
BVRIT Hyderabad College of Engineering For Women	Hyderabad	85
Girijananda Chowdhury Institute of Management And Technology	Guwahati	86

* These institutes share the same rank due to identical scores

New Entrants: **T-School 2020**

INSTITUTE NAME	CITY	ZONE	CATEGORY
Thiagarajar College of Engineering	Madurai	South	Government
Chhatrapati Shivaji Institute of Technology	Durg	East	Private
Chaitanya Bharathi Institute of Technolgy	Hyderabad	South	Private
Koneru Lakshmaiah Education Foundation	Vijayawada	South	Private
Yeshwantrao Chavan College of Engineering	Nagpur	West	Private
Madanapalle Institute of Technology & Science	Madanapalle	South	Private
Velagapudi Ramakrishna Siddhartha Engineering College, (Autonomous)	Vijayawada	South	Private
Dr. NGP Institute of Technology	Coimbatore	South	Private
MVJ College of Engineering	Bengaluru	South	Private
Annamchrya Institute of Technology And Sciences	Tirupati	South	Private
Bract's, Vishwakarma Institute of Information Technology	Pune	West	Private
MLR Institute of Technology	Hyderabad	South	Private
Sri Manakula Vinayagar Engineering College	Puducherry	South	Private
Government College of Engineering & Ceramic Technology	Kolkata	East	Government
Lakireddy Bali Reddy College of Engineering	Mylavaram	South	Private
G. Pullaiah College of Engineering And Technology	Kurnool	South	Private
Annamacharya Institute of Technology & Sciences, Rajampet	Kadapa	South	Private
Guru Nanak Institutions Technical Campus	Ibrahimpatnam	South	Private
Girijananda Chowdhury Institute of Management And Technology	Guwahati	East	Private
Aditya Engineering College	Surampalem	South	Private
T. John Institute of Technology	Bangalore	South	Private
BVRIT Hyderabad College of Engineering For Women	Hyderabad	South	Private
Reva University	Bangalore	South	Private
Aditya College of Engineering & Technology	Surampalem	South	Private
Rajshree Institute of Management & Technology	Bareilly	North	Private
PSIT College of Engineering	Kanpur	North	Private
Sagar Institute of Science Technology & Research	Bhopal	West	Private

DATAQUEST

Issue Month: April 2020

HANDBOOK 2020

Business & Technology Disruptions in 2020

#ciohandbook2020

Today's enterprises are increasingly getting integrated and automated. Adoption of Emerging technologies such as cloud, Big Data, AI/ML, IoT, Industry 4.0, etc. is necessary & also challenges, such as controlling the cost and team management are of utmost importance.

Reach out to Chief Technology Officer (CTO), Chief information Officer (CIO), Chief Information & Security officer (CISO) with annual edition of CIO Handbook.

In the 2020 edition of the CIO Handbook, Dataquest will look at the main challenges facing them and what the CIOs are doing to foster innovation.

Focus Areas

- Connecting the decentralized hardware and software
- Technology Disruption
- Plans to adopt the emerging technologies, such as AI/ML, analytics, blockchain, IoT etc. in 2020
- Ways CIOs finding and retraining talent with modern skills?

MOVING FORWARD: FOUR RECOMMENDATIONS FOR REINVIGORATING T-SCHOOLS

The 2020 T-School survey from DQ and CMR have thrown some interesting insights, and a very positive progress across all the key consideration-sets of the DQ PACE Framework. While this is great, there is always the scope to build upon the success, and improve upon the performance of T-Schools.

Here are some thoughts on what needs to be done to reinvigorate technical education, and to T-Schools, to prepare them for the challenges of the present, including Industry 4.0, and the future. These are our four recommendations for preparing T-Schools for the future:

01 Building upon, and improving Pedagogy

The academic infrastructure at T-Schools should be enhanced by encouraging more research collaborations with global institutions. This, in turn, will enable the standards of research scholarship to rise, as students and faculty get more exposure, and gain insights into pedagogical approaches elsewhere. As a result of such international collaborations, the brand equity of the T-Schools would also significantly increase, and will result in attracting talented academics, industry experts, budding start-up entrepreneurs, as well as promising students to the T-School. Beyond existing programs, T-Schools should look at diversifying into new knowledge streams in emerging technology areas.

02 Attracting and Retaining Skilled Faculty

For T-Schools, a key challenge remains in attracting and retaining high quality academics on their faculty. The faculty at T-Schools are focused not just on imparting education, training and development to students, but also called-upon to carry out and publish high-quality research, while playing a key role in the administrative activities. A high quality research environment that supports and nurtures scholarship, and backed by a good compensation and attractive incentives, would enable T-Schools to attract, and more importantly, retain faculty.

03 Fostering Future-Ready Skills through Industry Linkages

There is a need to build upon T-School - industry linkages. There are strong ecosystem linkages that T-School leaders have, while others are seeking to ramp-up such linkages. Given that industry depends on T-Schools for skill supply, there is potential to have a greater dialogue on designing skills programs tuned to local industry demand. This could be through modes such as technical internships that enable students to gain more real-world experience in multi-disciplinary work environments in large companies as well as start-ups.

04 Build Ease of Business to benefit T-Schools and industry alike

There should be a greater 'ease of business' at T-Schools, facilitated by Government, to smoothen the industry interface, and enable industry to facilitate and actively participate in research. Such ease of business would help industry to support research and campus infrastructure with their corporate endowments, resulting in greater share of impactful industry-oriented research. Simultaneously, T-Schools should have greater ease of business to monetize their research through industry-oriented research and consultancy projects.

(The author is Head, Industry Research Group, CMR)

At a Glance

Top 10 Government T-Schools 2020

Indian Institute of Technology, Kharagpur

The IIT Kharagpur has been frequently ranking among the top 10 on the various international universities ranking lists. The institute offers a host of research areas such as: Agricultural, Biological and Medical Sciences, Chemical and Material Sciences, Electrical and Computational Sciences, Management, Mathematics, Architecture and Social Sciences, Mechanical and Structural, and Physical and Earth Sciences.

The Sponsored Research & Industrial Consultancy (SRIC) Cell of IIT Kharagpur looks after all the sponsored research activities of IIT Kharagpur starting from project submission, project management including accounting, recruitment of research personnel, interactions with the funding agency, protection of IPR and technology transfer. IIT Kharagpur has the Prime Minister's Research Fellowship (PMRF) scheme and the Vidya Lakshmi portal for students seeking Education Loan. The MN Faruqui Innovation Centre supports multiple domains of innovation, such as design innovations ideas, manufacturing innovations required for making into products with industry involvement, and business process innovations (products and services) for software and digital processes needed. Proposals from the industry are coming.

International Institute of Information Technology, Hyderabad

The International Institute of Information Technology, Hyderabad (IIITH) is an autonomous university, founded as a not-for-profit public private partnership (N-PPP) in 1998, and is the first IIIT in India under this model. It has evolved strong research programmes in various areas, with an emphasis on technology and applied research for industry and society. Several world-renowned centres of excellence are part of IIITH's research portfolio. It has established various joint collaboration and co-innovation models with an industry outreach spanning significant national and multinational companies. Its innovative curriculum allows students the flexibility of selecting their courses and projects. Apart from academics the institute provides students with a comprehensive environment that promotes art and culture, sports, societal contributions and self-governance. Even undergraduate students get to participate in ongoing research and technology development.

Dr. Syed Azeemuddin was selected as Vice-Chairman of IEEE Photonics Society, Hyderabad Chapter. An IIIT Hyderabad team, The Third I, won a hackathon on IoT for Smart City on 11 January, 2020 at Panaji, Goa.

Netaji Subhas University of Technology, Delhi

In 1983, the Netaji Subhas University of Technology (formerly, Netaji Subhash Institute of Technology) started with the academic program at UG level in the area of Electronics & Communication Engineering. New programs in Computer Engineering, Instrumentation & Control Engineering, and Manufacturing Processes & Automation Engineering were added subsequently. The Institute has been and is affiliated to the University of Delhi for all its UG, PG and Ph.D. programs.

The Institute was formally inaugurated in its own new campus in Dwarka, New Delhi, 23rd January, 1997 by Atal Bihari Vajpayee, the former Prime Minister of India. The Institute was renamed as "Netaji Subhas Institute of Technology" (NSIT) in the year 1997.

NSUT has the legacy of achieving excellence in education and research in theareas of engineering and technology. It hosts a spectrum of established companies for internship and placement drives. NSUT further strives to broaden its education areas by introducing various programs at UG and PG levels to impart knowledge in the Department of Management Studies. Currently, NSUT offers Bachelor of Engineering, Master of Technology and Ph.D.

Maulana Abul Kalam Azad University of Technology, Haringhata

The University started its academic programme, from July 16, 2001. The University has introduced new courses in emerging areas to develop, enhance and higher education. The University is steadfast in its twin objectives: a) To serve as a Centre of Excellence in teaching and research in technology and management area. b) To provide framework of industrialization based on knowledge economy.

To realise its mission of emerging as a Centre of Excellence the University has created three Schools of Studies viz. School of Engineering & Technology (SET), School of Biotechnology & Biological Sciences (SBTBS) and School of Management and Sciences (SOMS) comprising presently of five departments: Department of Computer Science & Engineering, Department of Industrial Engineering & Management, Department of Biotechnology, Department of Bioinformatics and Department of Management and Sciences. MAKAUT was ranked 165 among engineering colleges in India by the National Institutional Ranking Framework (NIRF) in 2019. MAKAUT is recognised by University Grants Commission (UGC). It has been awarded B++ with CGPA of 2.87 by the NAAC on the first visit.

College of Engineering, Pune

The College of Engineering, Pune's (COEP) precursor, The Poona Engineering Class and Mechanical School was opened in July 1854. Now, COEP offers nine UG and twenty-four PG programmes, and has more than 3,200 students enrolled in its various courses.

COEP has goals in 2020 such as:

1) To establish 5 collaborative Finishing Schools to impart high-end technical skills for enhancing employability and 2 industry-partnered Incubation Centers for encouraging entrepreneurship.
2) To be a multi-faculty campus, establishing 5 multidisciplinary research centers in diversified areas, and 5 interdisciplinary academic programs.
3) To be 100 % self-sustainable campus, wherein accommodation is provided for All students and at least 30% faculty.
4) To attract foreign faculty from reputed Universities/Industries to the tune of 5 % of total faculty strength.
5) To design and develop Digital Ecosystem, to collaborate, communicate and connect with stakeholders.
6) To mentor 10 aspiring institutes with potential to transformtowards an elite status.

Indraprastha Institute of Information Technology, Delhi

The Indraprastha Institute of Information Technology, Delhi (IIIT-D) is a state university located in Delhi, India. It is research-oriented with focus on computer science and allied areas. The institute began with its first batch of 60 BTech students in 2008. As of 2019, the batch size for B.Tech was 469.The institute is recognised as one of the most promising for education and research in India. Governed by the able leadership of a distinguished Board of Governors and equipped with highly qualified and accomplished faculty members, the institute has established a strong research culture, focused research groups, and innovative education programs. The institute is accredited 'A' grade by NAAC (National Assessment and Accreditation Council) and has been accorded 12-B status by the University Grants Commission (UGC). IIIT-Delhi has six departments (Computer Science, Electronics and Communication, Computational Biology, Human Centred Design, Social Science and Humanities, and Mathematics); five Research Centres (Infosys Centre for Artificial Intelligence, Centre for Computational Biology, Centre for Design and New Media sponsored by TCS, Centre for Technology and Policing, and Cybersecurity Education and Research Centre); 60+ regular and 20+visiting faculty members, all Ph.D. from world's best institutes.

National Institute of Technology, Surathkal

The National Institute of Technology Karnataka (NITK), formerly known as Karnataka Regional Engineering College (KREC), also known as NITK Surathkal, is a public engineering university at Surathkal, Mangalore. It was founded in 1960 as KREC. Today, it is one of the 32 national institutes of technology in India. It is recognised as an Institute of National Importance by the Government of India. It has a suburban campus, in close proximity to the Arabian Sea. National Highway 66 runs through the campus and serves as the major mode of access. On 26 June 2002, it was elevated to the status of a National Institute of Technology and has been called NIT Karnataka (NITK) ever since. It is now a Deemed University. NITK celebrated its 50th Institute Foundation day on 6 August 2009. NITK Surathkal offers undergraduate and graduate programs in Engineering, Science and Management. The institute has 14 departments and 11 support centres, with about 200 faculty members, 300 support staff, 5,500 students and 26,500 alumni worldwide.

Research is mainly sponsored by central and state government agencies with grants for the academic year reaching Rs. 10 crores (US$1.4 million). Faculty go on sabbaticals at foreign universities to encourage research and teaching interactions. Consulting activities are also conducted through the industry-institute partnership cell.

Dr. B.R. Ambedkar National Institute of Technology, Jalandhar

The Dr. B. R. Ambedkar National Institute of Technology Jalandhar (NIT Jalandhar or NITJ), formerly Regional Engineering College Jalandhar, is a public engineering institute located in Jalandhar, Punjab, India. It is one of the 31 National Institutes of Technology of India. It was founded as a joint venture between the governments of Punjab and India, originally under the name Punjab Regional Engineering College, Jalandhar (PREC). It has the following departments: Applied Chemistry, Applied Mathematics, Applied Physics, Bio-Technology, Chemical Engineering, Civil Engineering, Computer Science and Engineering, Electronics and Communication Engineering, Humanities and Management, Industrial and Production Engineering, Instrumentation and Control Engineering, Mechanical Engineering and Textile Technology.All offer courses at undergraduate and postgraduate levels, and are actively involved in research in their specific fields.

In the 2019 NIRF Rankings, the institute was ranked 113 among the engineering colleges in India. It has a quality policy that looks: 1) To develop technical human resource of excellence suitable for global requirements. 2) To ensure good quality academic and industrial research programmes in different areas of engineering and technology. 3) To generate industry-institute synergy for shaping technical education to meet the requirement of industry.

National Institute of Technology, Silchar

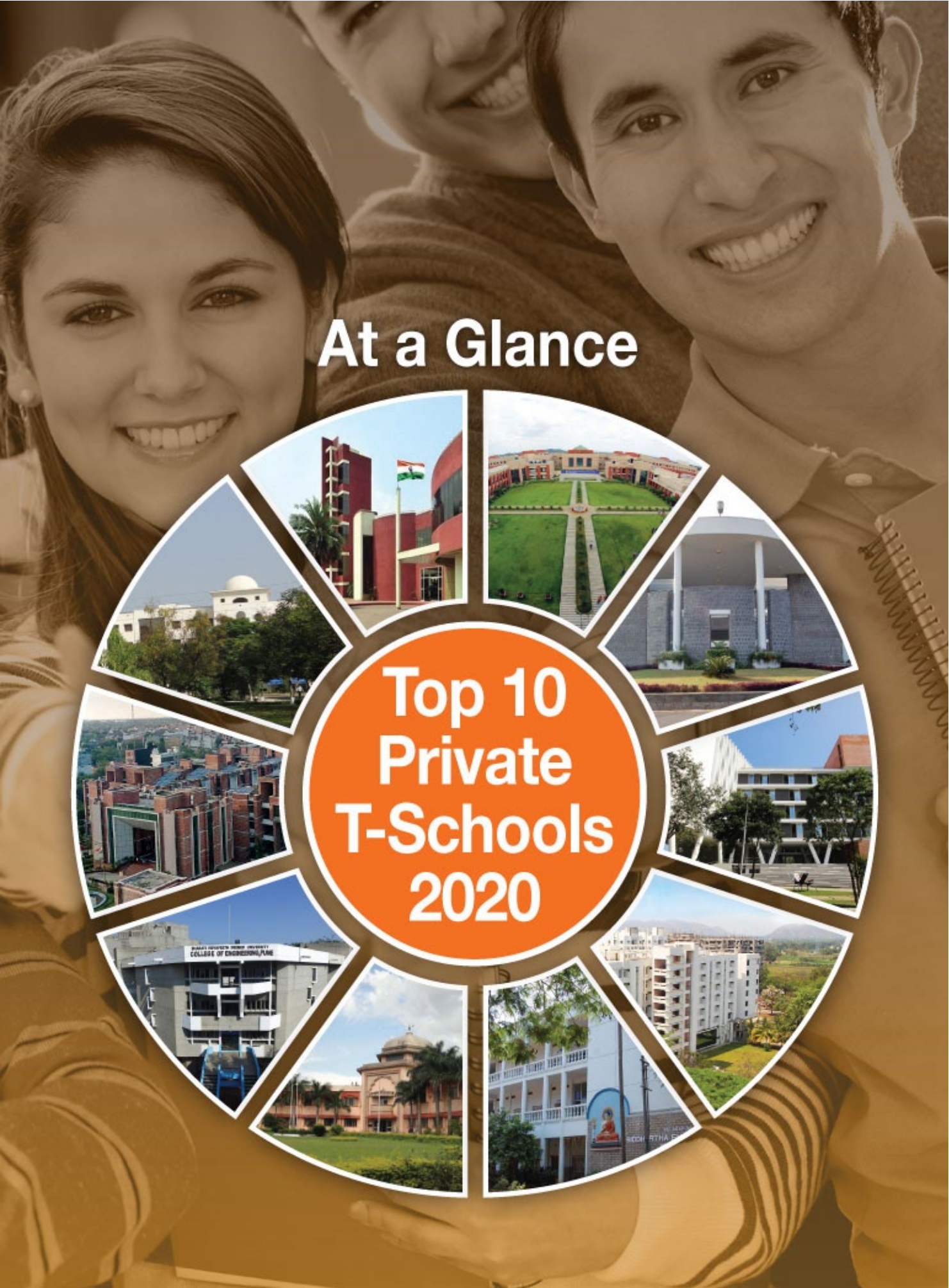
The National Institute of Technology, Silchar (NIT Silchar) has several departments: Civil Engineering, Computer Science and Engineering, Electrical Engineering, Electronics & Communication Engineering, Electronics & Instrumentation Engineering, Mechanical Engineering, Chemistry, Humanities and Social Sciences, Management Studies, Mathematics, and Physics. NIT Silchar was ranked 51 among all engineering colleges in India by the National Institutional Ranking Framework (NIRF) in 2019. NIT has received funding in a number of international and domestic research projects with academia and industry in the past few years. Faculty from the institute have received 4 international projects in 2019 under the SPARC program of MHRD with University of Saarland, Germany, Dalhousie University, Canada, Queen's University, Canada and Goldsmiths, University of London, United Kingdom. NIT has received projects with universities in France and Finland. There are ongoing research projects with SERB, DST, DIT, MNRE, CSIR, BRNS, BARC, UGC, AICTE, MeitY, and CPRI, under the Government of India.

Thiagarajar College of Engineering, Madurai

Established in 1957, the Thiagarajar College of Engineering (TCE) is a government-aided autonomous institution located in Madurai, Tamil Nadu, India. It is affiliated to Anna University, Chennai. It is one of several educational and philanthropic institutions founded by philanthropist and industrialist Karumuttu Thiagarajan Chettiar. The courses offered in TCE are approved by the All India Council for Technical Education, New Delhi. TCE was granted Autonomy in the year 1987.

TCE is striving consistently for academic excellence in science, engineering, and technology. TCE offers 8 undergraduate,16 postgraduate programs and research programs (MS and PhD) in all Engineering and Science streams. TCE was ranked 39 among engineering colleges in India by the National Institutional Ranking Framework (NIRF) in 2018, and 95 overall.

At a Glance



Birla Institute of Technology and Science, Pilani

In 2000, BITS opened a branch in Dubai making it the first Indian university with an overseas campus. Upon being invited by the Government of Andhra Pradesh, BITS added another feather to its cap by starting a campus in Hyderabad. The Hyderabad Campus started its operations in 2008. It also has a campus in Goa.

BITS offers integrated first degree in BE, B Pharm and MSc and higher degree in ME, M Pharm and MBA. It also offers a Ph D program governed by the Academic Regulations of the Institute.

Internationally, BITS Pilani was ranked 801 - 1000 in the QS World University Rankings for 2020. The same rankings ranked it 175 in Asia in 2020 and 96 among BRICS nations in 2019. It was ranked in 401-500 for Life Sciences and 1001+ overall in the world by the Times Higher Education World University Rankings for 2020, 251 - 300 in Asia and 301–350 among Emerging Economies in 2019.

Bannari Amman Institute of Technology, Sathyamanagalam

It is under the roof of Bannari Amman Group (BAG) which is one of the largest industrial conglomerates in South India with a range of manufacturing, trading and service activities. It was founded by the Bannari Amman Group in 1996 and is affiliated to Anna University.

The institute offers 19 undergraduate, 15 postgraduate programmes in Engineering, Technology and Management studies. All the departments of Engineering and Technology are recognized by Anna University, Chennai to offer Ph.D. programmes. The institution is ISO 9001:2000 certified for its quality education, and most of the eligible courses are accredited by National Board of Accreditation (NBA), New Delhi and NAAC with “A” Grade. The institute received the best Engineering College Award from Indian Society for Technical Education in the year 2009. The institute was also awarded the Silver Medal for Best Overall Industry-Linked Engineering College from AICTE-CII National Survey on Industry-Linked Engineering Institutes in 2012. BIT was ranked 98 among engineering colleges in India by the National Institutional Ranking Framework (NIRF) in 2019 and overall rank 151 - 200.

Bharati Vidyapeeth College of Engineering, Pune

Bharati Vidyapeeth (Deemed to be University) College of Engineering was established by Dr.Patangrao Kadam in 1983. BVUCOEP is constituent unit of Bharati Vidyapeeth (Deemed to be University). It has been Accredited to A+ grade in its third Cycle by 'NAAC' in 2017 (BVDU accredited to Grade 'A' in 2004 and 2011). The National Board of Accreditation (NBA) has accredited programmes of BVUCOEP in 2018, 2012 and 2005. BVUCOEP ranked among top 100 Engineering Institutes of India continuously for three years by NIRF, MHRD, Government of India. It was ranked 83rd at the National Level by NIRF 2018.

Bharati Vidyapeeth College of Engineering (BVCoE) is a private engineering college in Kharghar, Navi Mumbai, India, established in 1990. The college is permanently affiliated to University of Mumbai and approved by the All India Council for Technical Education (AICTE), New Delhi. It is NDA accredited. The undergraduate departments include Mechanical Engineering, Instrumentation Engineering, Computer Engineering, Information Technology, Chemical Engineering and Electronics & Telecommunications Engineering. Post-graduate courses confer Master of Engineering in Mechanical Engineering and Computer Engineering.

B.S. Abdur Rahman Crescent Institute of Science & Technology, Chennai

B.S. Abdur Rahman Crescent Institute of Science and Technology, "A Research Intensive Institution" focuses on academics and research in its endeavour to become a premier institute contributing to the scientific and technological development of India. The Institute has a well-established administrative structure to ensure quality research with various committees, namely, Research Advisory Committee (RAC), Research Board, R&D council and Research Team, comprising eminent researchers in the fields of science, engineering and technology, which gives directions to the overall research activities of the Institution.

B.S. Abdur Rahman Crescent Institute of Science and Technology was ranked 131 among engineering colleges in India by the National Institutional Ranking Framework (NIRF) in 2019 and in the 151–200 band among all universities.

Koneru Lakshmaiah Education Foundation, Vijaywada

KL Deemed to be university was established in 1980-81, as KL College of Engineering. Established in 1980 as a college of engineering, it consists of eight schools. It was upgraded to KL College of Engineering Autonomous in 2006 by UGC, and was declared as a Deemed to be University in 2009 by UGC, MHRD Government of India. In 2012, as a Deemed to be University, the institution was accredited by NAAC with A Grade and later in 2018, was re-accredited by NAAC with A++ grade. In 2019 UGC, MHRD declared this intuition as Category I Institution.

The National Institutional Ranking Framework (NIRF) ranked Koneru Lakshmaiah Education Foundation 74 overall in India in 2019, 50 among the universities, 58 in the management ranking and 52 in the engineering ranking.

GL Bajaj Institute of Technology and Management

GL Bajaj Institute of Technology and Management is the 6th institute under the banner of Rajiv memorial academic welfare society (Registered under societies registration act 1860). It is located in Greater Noida/Delhi NCR region.

The institute is approved by All India council of Technical Education (AICTE), Ministry of Human Resource and Development, Government of India and is affiliated to Dr. APJ Abdul Kalam Technical University, Lucknow.

It has the mission to equip students with the latest technologies to be globally competitive professionals, inculcate qualities of leadership, professionalism, corporate understanding and executive competence, and to imbibe and enhance human values, ethics and morals in the students.

Army Institute of Technology, Pune

The Army Institute of Technology is an engineering college located in Pune, Maharashtra, India. It is affiliated to the University of Pune. Only wards of army personnel are allowed admission. The AIT is operated by the Army Welfare Education Society (AWES). It has the Chief of Army Staff of the Indian Army (COAS), as the president of its board of governors. Army Institute of Technology was ranked 88 among engineering colleges by the National Institutional Ranking Framework (NIRF) in 2018.

It has the mission to provide the right environment, to the wards of Defence personnel, for development of physical, intellectual, emotional and spiritual quotients, with a view to produce total quality engineers. It strives to create an ecosystem that can foster the culture of research, innovation, creative thinking and higher studies. AIT aims to develop an education system that creates entrepreneurs and technology leaders who are committed towards sustainable development of society and nation building.

Maharaja Agrasen Institute of Technology, Delhi

Maharaja Agrasen Institute of Technology (MAIT) is a private engineering college, located in Rohini, Delhi, India. Established in 1999 by Maharaja Agrasen Technical Education Society, the institute is approved by AICTE and affiliated to Guru Gobind Singh Indraprastha University. Presently, MAIT offers Bachelor's Degree in five disciplines of engineering - Computer Science and Engineering (240 students intake), Electronics and Communication Engineering, Electrical and Electronics Engineering, Information Technology, Mechanical and Automation Engineering (180 students intake, each) and Mechanical Engineering (60 students intake) and Postgraduate degree in Master of Business Administration (180 students intake).

MAIT invites industries to join hands in fulfilling the social responsibility of imparting industry relevant technical education and training. Its alumni have also distinguished themselves through their achievements in and has been contributing significantly to industry, academics, research, business, government and social domains. The institute continues to work closely with the alumni to enhance its activities through interactions in academic and research programmes.

Dr NGP Institute of Technology, Coimbatore

Dr Nalla G. Palaniswami, a name taken with great reverence by the medical fraternity, initiated the establishment of the Dr NGP Institute of Technology, Coimbatore in 2007. The college has been approved by the AICTE, New Delhi and affiliated to the Anna University, Chennai.

The college has a five-fold vision — producing graduates with sound technical knowledge and skills in diverse disciplines, adopting innovative teaching and experiential learning practices by competent faculty, enhancing knowledge and skills in cutting-edge technologies through alliances with industry and research organizations, creating conducive learning environment with state-of-the-art infrastructure and labs, and inculcating ethical standards among students.

Chhatrapati Shivaji Institute of Technology, Durg

CSIT, an AICTE recognised ISO 9001 – 2015 Certified, NAAC & NBA Accredited institute and affiliated to Chhattisgarh Swami Vivekanand Technical University, Bhilai. It is a premier Centre for Excellence and has laid its foundation in the Year 1999. The institute has undergraduate, postgraduate, doctoral and other research programmes.

CSIT has established four Centres of Excellence in association with the reputed multinational companies-namely BOSCH, Parker-Hannifin, Onward Technologies and E-Splendid. CSIT is the on various modules and only private Engineering College in Chhattisgarh to open Centre of Excellence. The COEs have been established with intentions to connect the students with latest industrial technologies, and to bridge the academic gaps in the syllabus. CSIT has signed MOU to establish Centre Of Excellence with Onward technologies limited, Pune. Onward Technologies is a leading global player in Mechanical Engineering design. It helps global organisations address their engineering needs and challenges through a wide range of engineering design solutions and services. In this centre of excellence students get training of basic and industrial modules of ANSYS design software.

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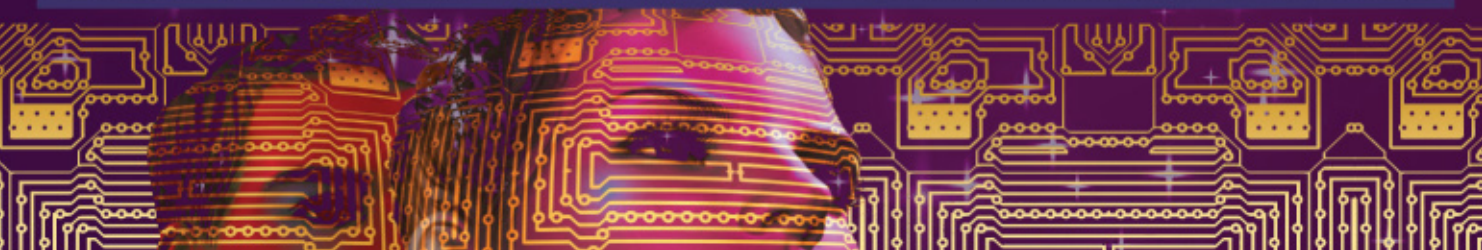

Vadiraj Muthya, Chandra Narra
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Humanising **Technology**

Architecting for longevity and adaptability requires a deep understanding of both today's realities and tomorrow's possibilities. Businesses with a broader view of incubating and adopting these emerging trends will succeed in the new era and will stay relevant in the decade to come

It is no secret that the current trend of emerging technologies is expected to provide an additional shot in the arm for India's growth story. They have the full potential to create the second-half-of-the-chessboard effect on enterprises in India. Emergence and eventual adoption of technologies around digital experience, analytics, cloud, digital reality, cognitive, blockchain and core modernisation globally can't be overstated. They are laying a foundation for the next stage of digital's evolution with the promise of emotionally intelligent and hyper-intuitive cognitive capabilities, which are likely to transform business in unpredictable ways. Architecting for longevity and adaptability requires a deep understanding of both today's realities and tomorrow's possibilities. Businesses with a broader view of incubating and adopting these emerging trends will succeed in the new era and will stay relevant in the decade to come.

Categorising Trends

Emerging technology trends are in three broad categories –

- **Enablers like Digital Experience, Analytics and Cloud -** facilitating organisations' digitisation and transformational change. They have the potential to redefine how enterprises interact with customers and create newer business models through vertical and horizontal expansion.
- **Disruptors such as Cognitive, Digital Reality and Blockchain –** These are change agents that help business expand into unexplored territories be it customer segments, regions, revenue sources etc.
- **Foundational, including Core Modernisation, Risk and the business of IT -** Making it possible for organisations to harness innovation while maintaining operational integrity. While these might seem boring, these are undeniably the heart of the


Vadiraj Muthya


Chandra Narra

DIGITAL EXPERIENCE IS BEING REIMAGINED TO BE MORE HUMAN CENTRIC, HYPER CUSTOMISED AND EMOTIONALLY INTELLIGENT BASED ON INDIVIDUALS' BEHAVIOURS, PREFERENCES, AND EMOTIONS

business and need considerable advancements in a well-established business.

Digital experience is being reimagined to be more human centric, hyper customised and emotionally intelligent based on individuals' behaviours, preferences, and emotions. Humans, by the theory of evolution are not designed for "typing" for interaction. Our natural traits are to touch, speak, sense and see. Emerging advances in the digital technologies and integrated array of AI capabilities are reshaping these interactions between human-machine.

Humanising Technology

Historically, technology systems are apathetic, unable to correlate events with human emotions or emotional factors. But that is changing, as innovators add EQ to technology, using data and human-centred design (HCD) techniques along with neurological research. Human experience platforms are supported through technologies like Vision Systems - leveraging cameras, thermal signatures, eye tracking and facial coding; Natural Language Processing and Generation - understanding & generating human-like speech and text; Sentiment & Voice Recognition - translating human speech to text or another language and analysing to detect sentiment, intent and stress. This ensemble of technologies recognises user's emotional state and the context behind it; and then responds appropriately. The opportunities are just starting to see the light of reality, in economies like India that are diversified through languages, regions and urban-rural divide. They allow enterprises to tap into uninterrupted channels of interaction and expand to segments that otherwise were untapped.

Engaging Tech with Finance

Adoption of emerging technologies, ability to drive meaningful ROI and becoming a competitive differentiator is massively dependent on the engagement and synergies between the IT and finance functions of an enterprise. Technologies, innovations and regulatory landscapes in India are evolving at a significant pace and dynamically changing over time. To achieve improved outcomes, IT and finance leaders are required to work together, developing flexible approaches for innovating and operating at the speed of agile. IT operations and development processes are becoming nimbler and product-focused while the finance function generally continues to budget, fund, and report the same way it has for decades. The result: tension between IT's needs and finance's procedures. If left unaddressed, this issue could impair the CIO's innovation agenda and undermine an organisation's strategic goals. The work of transitioning to new finance, budgeting and accounting processes that support innovation will not happen overnight, but there are strong incentives for both CIOs and CFOs to find ways to effectively fund innovation. The time for CIO-CFO collaboration on this issue is now.

In addition to the enterprises in India, investments in this journey and competencies will further accelerate the maturity of India based Global In-House Centres (GICs), emerging them into innovation centres for their global businesses. Choosing right partnerships, acquiring right-skilled workforce, long-term commitment and focus for incremental progress are expected to significantly increase the probability of success and could prove to be a key differentiator in the enterprises' competitive landscape. The opportunity unveils further with the beyond-the-horizon macro technology forces including ambient experience, exponential intelligence, and quantum.

(Vadiraj Muthya is Director, Deloitte Touche Tohmatsu India LLP; Chandra Narra is MD, Consulting, Deloitte in India)

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A New Institute **Begins in Style**

A story about how International Institute of Information Technology, Naya Raipur in Chhattisgarh was formed and how it has come such a long way in such a short duration of time

The journey so far

When Chhattisgarh was established in 2000, they didn't have much of their own education and started looking to constitute premier academic institutions.In 2007-08they focused on creating an IIIT. For funding, they approached corporate sectors. As a public private partnership, NTPC agreed to become a partner and granted Rs 200 crore. The operations of the institute were vested with the government. IIIT Naya Raipur is established in a 50-acre campus, half of which is ready and in operation and the rest is expanding. It has a state of the art 5G labs. Apart from the regular facilities, it has an auditorium,sporting facilities and shopping complex too.

In 2015 IIIT Naya Raipur made a very humble beginning with two branches of engineering: Computer Science and Electronics & Communication engineering having a student intake of 40 each.Admission was through JEE Mains.Thereafter they added a very futuristic branch: Data Science and Artificial Intelligence, one of the first BTechs in that domain. In progression, the student intake has escalated to 60 each in all disciplines. They have launched MTech and PhD programme also to promote higher education and quality research.

The Teaching Methodology

Personalised attention to all the students is the key to success for students in IIIT Naya Raipur. For example, when the 180 students come in the first year, vice chancellor personally interacts with each of them for about half an hour and notes down everything about them. That givesan edge to the institute to nurture the best talents in the students and students get a good feel and motivation to do their best in studies and building

IIT NAYA RAIPUR PROVIDES A WORLD CLASS EXPOSURE TO THE STUDENTS FOR GAINING PRACTICAL WORLD CLASS KNOWLEDGE

—Ajai Chowdhry
Chairperson, IIIT Naya Raipur

up their career. IIIT Naya Raipur is a residential institute where all the students are required to stay in the hostel inside the campus. As faculties get chance to interact with students in non-class hours, that help in bringing holistic development of the students. The class trains the students for the technical knowhow and activities, but things like teamwork is learnt outside it. This is how theyget them ready for corporate world after they complete their BTech. That's how their students are doing far better.

IIIT Naya Raipur believes that even a cat can become a lion, what matters most is how you see yourself'. In the 2nd semester they have a program called 'Darpan' in which each student is asked to do a SWOT analysis of them and present it to the larger group. This process helps students in choosing their career path. The mentoring goes on throughout the year. Experts also visit who give their expertise and guidance. Classes by guest professors from abroad and adjunct faculty from IITs are a frequent phenomenon here to give a world class exposure to the students for gaining practical world class knowledge.

THE PREMIER INSTITUTE HAS A VISION OF DOING FEW THINGS BUT TAKING IT TO WORLD CLASS

—Dr Pradeep K. Sinha
VC & Director, IIIT Naya Raipur

Placing the Students

To solve the problem of campus placements for a new institute, they have created an industry academia relationship. Students present their projects to the industry which judge and evaluate them and award prizes. This has led to the first batch accomplishing 100% placement.Average package was Rs 8.6 Lakhs/annum, 43 Lakhs being the highest package. 30%students prefer higher studies over jobs. NTPC has created a corpus fundof Rs 18 crore, interest of which is used to send students abroad. In addition to that, in the final semester,20 meritorious students can go abroad for a six-months project. They can go to different countries like the US, France and Israel. This can be a substitute for the project that they are expected to do in the institute or any other company. Some of the students who do a company project may get placed there also. During internship period also they get huge amount. One student got 45 Lac during his internship period which is likely to increase to 1 Cr in next six months.

Entrepreneurship

Apart from studies IIIT also encourages its students to venture into start-ups by using their creative idea. Students have developed Apps for food delivery in hostel, design printing in T-shirts. One of its students secured 3rd position among 14000 thousand students across India participating in the Technical Fair in Hyderabad by designing an App on converting doctor's prescription in simple language, It is a proud moment for the institute when it was declared as a business incubator by Ministry of Micro, Small and Medium Enterprises.

Future Focus

One of the things IIIT Naya Raipur aspires to be recognised as an operational R&D lab with latest artefacts for Agriculture and Rural Development. They areentering into AgriTech and RuralTech. Many of the communication technologies and IoTsare working on the advancement of agriculture and rural living.They are also interested in setting up Centres of Excellence in technology. The premier institute has a vision of doing few things but taking it to world class.

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Bridge the **Gap**

Changes in the society have pushed the industry to undergo several changes from a having static, structured, process-oriented business model to the digital era characterised by flexible working, remote teams and agility. Education institutes cannot stay far from following the wave of change

We have all heard of famous brands of the past like Ambassador car, Bajaj scooter, Dynora television, HMT watches and so on. While they were some of the most trusted brands at one time, they did not survive eventually. The reason lies in the famous saying, 'Change is the only thing that is constant'. Those who can cope with changing times are the ones who have emerged successful. Changes in the society have pushed the industry to undergo several changes from a having static, structured, process-oriented business model to the digital era characterised by flexible working, remote teams and agility. Education institutes cannot stay far from following the wave of change as education forms the basis of everything we do.

Be Ready for Change

The skills needed by the industry have evolved from having an academic degree alone to behavioural skills,

> IF ACADEMIC INSTITUTES FOCUS ON MAKING STUDENTS READY FOR CHANGE, INCULCATE THE ART OF THINKING INNOVATIVELY TO SOLVE PROBLEMS AND IMBIBE BEHAVIOURAL SKILLS WITH A FOCUS ON VALUES, THEY COULD REDUCE THE SKILL GAP THAT STUDENTS FACE WHEN THEY JOIN THE WORKFORCE OF A COMPANY

communication skills and the propensity to learn apart from the academic degree. Today, most leaders agree that coming up with disruptive ideas, critical thinking and innovative methods of problem solving are key to keeping businesses alive and thriving.

In a constantly changing world it is quite impossible to determine which specific technology skills will steer the career of a student many years from now. Inculcating a practice of experiential learning is key to learning and adopting new technologies. IBM has invested in giving access to IBM cloud, several software, associated courseware with provision of obtaining digital badges, free of cost for students and faculty through the IBM Academic Initiative platform. Course offerings from IBM Skills Academy are helping students learn job role-based deep hands-on skills in new technologies and earn badges. Developers can use several Cloud Paks from IBM that help ease out building of applications without having in-depth knowledge of each part of the technology stack being used. To promote experiential learning we have also mentored academic institutes on projects in the domains of healthcare, agriculture, resilience and new innovation such as projects on usage of weather data for predicting sun cover for a solar car, elder care by the NAO Robot, mimicking of a fore-arm for physiotherapy and so on.

Hosting Challenges

Hosting innovation challenges is one of the oldest methods of fostering innovation. You'll be surprised that simplest to very complex innovations have come through some of these challenges. The cello tape was invented through a challenge at a paint company based on the difficulties that the company was facing during dual tone painting. A simple mixture of glue and water ensured that the first paint could be covered by a newspaper (stuck using the solution) while the adjacent area was being painted with another colour. This led to the invention of the cello tape. Another example was the invention of the air conditioner. Who could have imagined that the very first idea of the air conditioner came from an innovation challenge at a printing press. IBM hosts coding challenges such as the IBM Hack Challenge and Call for Code that foster innovation and help students learn to use technology to solve real problems.

Last but not the least, the greatest of inventors needs to imbibe values such as honesty, truthfulness, humility, courage, ability to take risks, kindness and accepting failure. I am reminded of the story of Thomas Alva Edison, the great inventor. Edison had attempted making the bulb with almost 1000 attempts before he finally made one and when he was asked as to how it felt to fail a 1000 times, he just said that these were a 1000 steps to make a bulb and not his failures! It is important to be able to take risks and accept failures as steps towards success.

Industry can facilitate sessions for students to share industrial ethics and practices that have led to successful businesses to help students imbibe these traits.

A strong bonding between the academic institutes and the industry can be key to bridging the gap today. The collaboration should not be limited to projects and industry visits but to joint curricula development, joint research activities, problem solving through innovation challenges, entrepreneurship development programs and sharing ethical aspects of industry workplace amongst others. This is a win-win for the industry and academic institutes and importantly it gets students to be ready for the future.

I would like to conclude by quoting a famous saying by Malcolm X, 'The future belongs to those who prepare for it today.'

(The author is Head – University Relations, IBM India)

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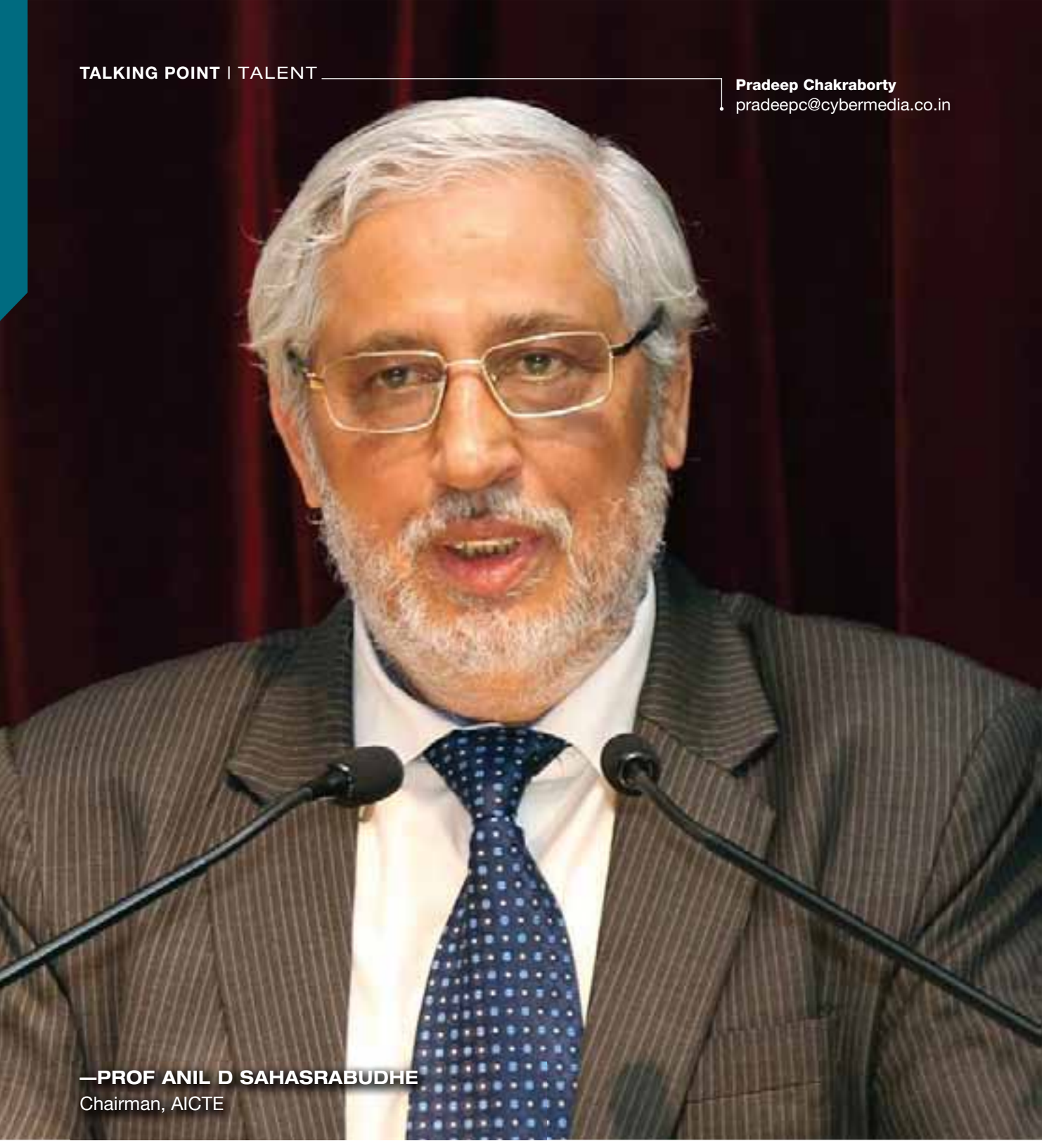

—PROF ANIL D SAHASRABUDHE
Chairman, AICTE

EDUCATION QUALITY CONTINUOUSLY IMPROVED

Prof Anil D Sahasrabudhe, Chairman, AICTE, talks about the challenges facing technical education in India

How is the Indian industry collaborating for infrastructure and education?

The All India Council for Technical Education (AICTE) was set up in November 1945 as a national-level apex advisory body to conduct a survey on the facilities available for technical education and to promote development in the country in a coordinated and integrated manner. To ensure this, as stipulated in the National Policy of Education (1986), AICTE was vested with:

- Statutory authority for planning, formulation, and maintenance of norms & standards
- Quality assurance through accreditation
- Funding in priority areas, monitoring, and evaluation
- Maintaining parity of certification & awards
- The management of technical education in the country.

Right now, the Indian industry is collaborating very little, as far as the infrastructure is concerned. However, the Indian industry has certainly started an engagement with the educational institutes in terms of the association in the curriculum development through the Board of Studies/Senate/Academic Councils, providing internships to students, and in few cases, setting up of centres of excellence.

What will be the power of online, social and emerging technologies for enhancing the reach, quality, affordability, and speed?

Online and distance education is a powerful tool, which is picking up. This is certainly useful and permitted in all such courses where practical or hands on content is non-existent. Hence, Management, Computer Applications, and Travel and Tourism programmes are permitted to be run in online, or in open and distance modes, but not engineering, hotel management, applied arts, crafts, design, etc., where there is a need for laboratory, workshop, hands-on practice content. Thus, ODL and online education are useful in providing affordable, quality education to reach the unreached and at a good speed, thus increasing the GER in higher education.

How is the academia, the industry and the employers transforming the education quality?

The education quality is being continuously improved through a series of measures implemented jointly by academic institutes and the industry. Some of these include regular curriculum revision as per the needs of the industry, mandatory internship, examination reforms, innovation, student activities in life skills, soft skills, industry relevant projects, mandatory accreditation, etc.

Is what being taught in the technical colleges enough?

That was not enough. Hence, a large number of reforms are suggested as above, and many institutes and universities have started adopting these changes.

Are they in line with the ongoing processes across the various industry verticals?

Yes, gradually and steadily. Still, many institutes have to catch up to survive in the highly competitive market.

How are the various happenings across the world finding their way into the national curriculum for colleges in India?

Yes, AICTE has prepared a model curriculum, including courses such as AI, IoT, machine learning, data analytics, cloud computing,3D printing, robotics, cyber security, augmented reality, virtual reality, blockchain etc.

Not resting with the mere introduction of these courses, AICTE has started a large number of faculty development programmes in these futuristic emerging technologies under the AICTE's Training and learning (ATAL) academies.

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—PROFESSOR SIR DAVID EASTWOOD
Vice Chancellor, University of Birmingham

GAINING TECH EXPERTISE

University of Birmingham has a programme to collaborate with Indian T-Schools and other institutions of higher learning and provide science and technological training in research. Indian researchers can visit Birmingham as part of this venture for 6 months and learn cutting edge technological knowhow there. An interaction with Professor Sir David Eastwood, Vice Chancellor, University of Birmingham

Can you briefly give an overview of how the University of Birmingham visualises its collaboration with the Indian institutions, especially in the field of Science and Technology?

Our relationship with India goes back to 1907 when Indian students came to study at Birmingham. We have collaborations with Indian universities and several industrial houses in India. We are using science and technologies to address the social and economic problems in India, such as cleaning water, air etc.

We are using cutting edge science to treat drinking water. We are training Indian graduates to use the technology of today that we have developed in Birmingham and develop it in the Indian context. Our team is here to field study in Rajasthan in the coming days and we'll have a workshop in March.

Especially in Science and Technology, the IT sector is now growing. But we still don't have many women in the IT industry. Do you have any programme to help the women grow in the field of IT sector?

Yes we do. We have a programme through which the women researchers from the Indian institutes can come and study and do research at Birmingham for 6 months in the field of IT. Especially in recent times we have had 4 or 5 women academics coming to Birmingham and do their research there. Our programme is open to everyone, but we're particularly focusing on women. We are also trying to collaborate with departments of Science and Technology and see if more opportunities for women can be created. Actually 80% of the fellowships last year went to the Indian women scientists.

How has the response been from the Indian institutions to collaborate with you?

We are collaborating with a large number of institutions. We have a project with IIT Delhi. We are also studying the women in Punjab and comparing them to the Punjabi women in UK to understand the development of Cancer among them. A good number of these projects have gained external funding. But we also supplement these funds with our own internal resources and fellowships.

We are also working with the various government departments to provide technological assistance in the various government projects of developments.

Do you have any centres in the Indian institutions?

We work more in the research partnerships and invite Indian researchers to Birmingham. Currently we don't have any Indian centres. What we have found works better is to bring researchers to the UK for a short term on a fellowship. We help the Indian institutions with research and technological expertise so that they can deliver the research projects by using our technological knowhow and the Indian researchers can establish themselves by using this training.

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—ASHISH MUNJAL
CEO and Co-founder, Sunstone Eduversity

BRINGING A PARADIGM SHIFT

Founded in 2015, Sunstone Eduversity has a vision of creating industry-ready professionals with its unique pedagogy and technology-enabled education delivery. It partners with existing colleges who have a well-equipped infrastructure to run and manage our management program by leveraging the use of modern-day technology and thus ensuring that the students are provided with the highest level of education quality across all our campuses. All the students are imparted with the desired skills that are in sync with the corporate environment and are given practical training on various corporate domains that exist in an organization. The goal is to bring about a shift in the present higher education

system by equipping the students with various skill sets so that they are readily absorbed by the recruiters. Till date, Sunstone Eduversity has a 100% placement record with over 200 different recruitment companies empanelled with us. It only works on a Pay after Placement model. Here, Ashish Munjal, CEO and co-founder at Sunstone Eduversity, tells us more

Give us an overview of Sunstone

Sunstone Eduversity (owned by Sunstone Education Tech) is an edtech startup and is offering industry-ready MBA programmes with Pay after Placement in Delhi-NCR, Bangalore, Indore, Jaipur and Chandigarh. Sunstone's unique Pay after Placement model is offered in partnership with several colleges and private universities. Sunstone works closely with corporates to develop industry ready specializations such as BFSI, Logistics, Sales Management, Digital Marketing and others.

The MBA programmes at Sunstone are designed to equip the students with the required expertise to tackle everyday business problems and build competencies across industry verticals. On completion of the course and only after getting a job, the student is required to pay the course fee which is ten times the monthly salary.

Owing to this unique model, Sunstone has already received an overwhelming response from the students; this year Sunstone has selected 300 students from a total of 4,200 applications.

Why does India need a shift in the present higher education system and how is Sunstone addressing the problem?

With the growing number of new-age businesses and dynamic job profiles, the requirement of graduates with a high-level domain knowledge and core competencies is the need of the hour. In India, there's no mainstream education product solving for employability, which is the biggest pain point for a student. We realized that if a product is offering industry-oriented quality education with a focus on employability, it could change the way mainstream education is currently offered in this country.

We want to bring a paradigm shift in Indian Higher Education, where the onus of a student's career lies with the college and not the student. Our vision is to be the de facto choice for students wanting quality job ready education and recruiters looking for industry ready graduates.

What is the market size for such institutions?

In management alone, there are 4,000 MBA colleges in India. Barring the top 100 colleges, most colleges have poor placements, both in quantity and quality. Every year, 3 lakh students enrol for an MBA. At an average ticket size of 6 lakh, this is an 18,000 crore market that we are addressing.

How has been Sunstone's growth in the last one year?

Sunstone has grown from a one city, one campus model with 60 students to 3 cities, 5 campuses and 300 students in one year (2019). The stark improvement in the number of students and campuses coming on-board are Sunstone's proof of concept.

What are the key features and business model of Sunstone?

The most differentiating feature of Sunstone is the "Pay After Placement" model. This not only ingrains trust in the minds of the students about their placement, it also ensures Maximum Return on Investment, since this fee is a proportion of the CTC received by the student in the job.

Sunstone also stands out from other B schools in its teaching pedagogy and the curriculum offered. With a special emphasis on making students Industry-Ready, Sunstone updates the curriculum every 6 months with inputs from corporates, catering to the ever-changing job market.

What are your future plans and expansion?

Currently, Sunstone has five partner institutions in three cities with 300 students enrolled and is planning to partner with 10 more colleges. Sunstone is planning to achieve a 7x growth in student enrollments and add more than 2000 students across nine cities in 2020.

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—RUNITA VERMA
Director, HR, Schneider Electric India

Schneider believes that access to energy and digital is a basic human right. It empowers all to make the most of their energy and resources, ensuring Life Is On everywhere, for everyone, at every moment. It combines world-leading energy technologies, real-time automation, software and services into integrated solutions for Homes, Buildings, Data Centres, Infrastructure and Industries. Here, Runita Verma, Director, HR, Schneider Electric India, talks about the challenges and opportunities facing T-Schools

ROLE-BASED APPROACH

What are you looking out for this year?
The campus remains an indispensable platform for us to hire fresh talent. We look forward to bringing onboard the students we offered last year. We are yet again, in search of the new talent spanning across horizons. While hiring, we look for potential and learning ability, amongst other things we will focus on inclusion and diversity as well, something that has been crucial to our success over the last few years. Young talent is a crucial element in our talent strategy.

Do you think T-Schools are doing enough in education? What more should they do?
T-Schools have come a long way– from the conventional methods of academic articulation to matching the latest Industry standards. There are a lot of colleges that now emphasize on E-Learnings, Guest Lectures and Mentorship Sessions. In fact, even the teachers/HoDs are now going through rigorous internship programs to coach the students in an industry-specific manner.

There are student exchange programs, which expose the students to an entirely different environment, culture and a distinct of technologies which is pivotal in making them think from a different angle to everything they do. Colleges, with the help of companies, conduct Codathons (coding marathons) every now and then.

You have Tech-Booths set up during college fests, which ensures companies more recall at campuses. There are Global Virtual Forums/Communities, which help the students access a wealth of information around their areas of expertise and interests. Global experts are available not only on important disciplines but also on research at the click of a button. Some colleges have even set up labs to showcase the work of organizations and latest findings around similar technologies. There is a lot more focus to holistic development now-a-days, apart from just the regular classes which used to happen a few decades ago.

How do you choose talent, especially from T-Schools?
I think it's a determinant of a lot of factors. We generally identify the comprehensive skill-set that the organisation needs the students to possess, Y-O-Y. Once we've figured that out, we chose the colleges categorically keeping in mind the location, expected salaries, talent pool availability, interests and educational background. Post that, we have gamified online assessments – which not only challenge your technical abilities, but also assesses if your thought process is aligned to our core values.

This is further followed by comprehensive rounds of interview to finally choose a candidate who is technically sound and is aligned to the culture that we passionately follow at Schneider Electric. The whole idea is to follow a role-based approach, so that we ensure the arising demand meets the right skill. We also evaluate the past track record of our partner T-Schools.

Are you looking at online colleges as well?
Well, not for now. However, with the industry going virtual in almost every space – it certainly seems we're heading that way. Moreover, organisations today are focusing on competency-based hiring, so the question of physical or virtual becomes irrelevant, to be honest. At global level, we can certainly see a shift towards the gig economy. Not only recruitments, but, our everyday life is moving towards digitization. Hence, there is an inadvertent need to go virtual for hiring practises too. Students, who fit the bill, will certainly be considered.

How are the various happenings across the world finding their way into the national curriculum for colleges in India?
Apart from the conventional method of selecting the curriculum, there is a lot of emphasis on technology and e-learning. The Student Exchange Program is one such way to align learnings beyond boundaries. Professors can now access courses of established universities from the comfort of their living room through platforms like Udemy, UpGrad, Coursera. Students, on the other hand, are so well connected through Online Platforms enabling them to share a wealth of information on their own. This has resulted in a transformation of making the entire educational system much more pragmatic than the former conventional model.

What more needs to be done, with new technologies coming in all the time?
The right approach should be to constantly evolve the content of the course in order to be in-line with the industry advancements. More weight should be given by the colleges to industry-specific learnings in order to make the students job-fit from Day One. Tenure of internships or interactions with senior leaders from the industry can certainly be accelerated to stay abreast with all technological advancements.

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—BHUVAN NIJHAWAN
Director, Education, SAS Asia Pacific

PREPARING JOB-READY CANDIDATES

Data analytics is becoming an important field for skilling of young graduates. Here, Bhuvan Nijhawan, Director, Education, SAS Asia Pacific, tells us more about their experiences regarding T-Schools

How is the Indian industry collaborating for infrastructure and education?

The Indian industry has been playing an important part in shaping academia, collaborating with them on several fronts including:

- Financing private/ public/ government institutes & universities for setting up centres of excellence, laboratories and entrepreneurship cells
- Helping in curriculum design relevant to today's job demands
- Imparting technical know-how& Industry expertise as part of the courses
- Providing online/offline infrastructure to conduct the courses
- Providing for globally recognised certification and
- Student and faculty mentoring.

What will be the power of online, social and emerging technologies for enhancing the reach, quality, affordability, and speed?

Online, social media and emerging technologies makes today's world faster, efficient and connected. Online learning provides an opportunity for educating people who live in remote places or to industry professionals looking to upskill themselves. The Internet has made connectivity easy, now anyone can access courses (virtually) which were traditionally available (offline) in top tier universities and institutes. Learning has shifted from classroom to virtual learning; exams and assessments are being conducted online as well.

Students can now access or download videos and study material which are developed and shared by experts. The power of the social and online platforms has enabled local universities to partner with global universities and offer better quality & globally relevant programs. The scale and reach has exponentially increased as compared to traditional classroom based education. Real-time feedback sharing through these platforms is another advantage and gives institutes an opportunity to improve their pedagogy and make learning more effective.

Ongoing innovation in technology provides better connectivity/ user experience, but, at the same time, faces fierce competition. This not only gives the user ample choice but also increases the user experience in terms of quality, affordability and speed. For instance, introduction of 4G technology helped us to greatly mitigate bandwidth and speed related issues. Now, 5G claims it will revolutionize mobile communications and accelerate the advent of the IoT.

How is the academia, the industry and the employers transforming the education quality?

The industry partnerships open avenues to the various types of jobs. Corporates are open to share success stories and data sets with colleges, providing them a more experiential and real-time industry experience. With the industry experts now getting affiliated with the institutions as guest faculty, it gives students the opportunity to infuse and apply practical and academic knowledge. The industries collaborate with universities to bridge the talent gap by developing programs to meet the growing need.

At SAS, we have initiated a Faculty Development Program (FDP) that brings the right know-how and awareness around the latest technologies prevalent in the industry to shape the future. More and more institutions are collaborating with technology partners to make students job ready. For instance, renowned institutes

AN INTERNSHIP OR A PROJECT IN CORPORATE PROVIDES THE STUDENT WITH MUCH NEEDED HANDS ON EXPERIENCE. COLLEGES HAVE NOW REALIZED SIGNIFICANCE OF RESEARCH HENCE THERE IS A SHIFT IN LEARNING PATTERN WHERE COLLEGES ARE ALSO UNDERTAKING RESEARCH FOR COMPANIES

like NMIMS, IIM-Lucknow, Goa Institute of Management, VESIM, DA-IICT, amongst others have collaborated with SAS for a full-time course in analytics.

Corporates are also collaborating with institutes to provide a start-up environment & internship opportunity. An internship or a project in corporate provides the student with much needed hands on experience. Colleges have now realized significance of research hence there is a shift in learning pattern where colleges are also undertaking research for companies.

Is what being taught in the technical colleges enough?

While there has been a significant change in the curriculum over the past years, but not enough is done. We are already in the fourth phase of industrial revolution in form of digitization and artificial intelligence (AI). Apart from the top tier colleges and institutions, it is still a challenge for other colleges to prepare job-ready candidates. Industry and universities are now increasingly taking joint initiatives to incorporate new curriculum (cloud, machine learning, cyber security, artificial intelligence, data science) in the syllabus.

Are they in line with the ongoing processes across the various industry verticals?

India is a hub for higher education. However, there is still a skill gap between what is imparted and what is expected from them at an industry level. Although lakhs of graduates are passing out each year, there are hardly 10% of them who are employable. This is largely because of the disparity in college curriculum and the skillset required at work. The immediate need is to revise curriculum as per industry's requirements.

As of today, only top tier colleges and institutions are in-line with the industry standards. We can expect the ongoing processes in all technical institutes to be in- line with the industry verticals only when they are constantly in touch with the industry itself to review and revise their curriculum depending on the skill requirements.

How are the various happenings across the world finding their way into the national curriculum for colleges in India?

While educators recognize that teaching and learning are complex activities evolving from social and cultural contexts, pressure is mounting to be internationally competitive. The rise of Internet and data connectivity has shifted the industry to online mediums. Colleges are collaborating with Universities outside India to give students the best of both worlds.

Internships are now a crucial part of every curriculum (especially Master's) to get an on-field experience. While this was globally compulsory, Indian education system is accepting it now. Introducing concepts likes gamification/ hackathons etc make the curriculum interesting and simplified. Conducting tech-competitions and events gives student exposure to other colleges, students, faculties and industry. This helps them gain substantial experience, showcase skills, analyze and evaluate outcomes and also encourage them to adopt innovative techniques and develop their ideas and skills.

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2017
Bhavish Aggarwal

2016
Vijay Shekhar Sharma

2015
Rahul Sharma

Lifetime Achievement of the Year

2018
Arjun Malhotra

2017
Ashok Soota

2016
Vineet Nayar

2015
Nandan Nilekani

Pathbreaker of the Year

2016
Sahil Barua

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VOICE&DATA 25 YEARS

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—DR KESHAB PANDA
CEO & MD of L&T Technology Services

SOME WAY TO GO

L&T Technology Services has 472 patents filed for 51 of the Global Top 100 ER&D spenders. Here, Dr Keshab Panda, CEO & MD of L&T Technology Services, tells us what T-Schools in India should be doing

How is the Indian industry collaborating for infrastructure and education?

The Indian technology industry cannot work in isolation. There is a need for leaders in research to collaborate with leaders in education and academia for a common cause - the advancement in science and technology and upskilling the next generation. Fortunately, India already has the crème de la crème in terms of talent pool. The need of the hour is for us to come together and tap this young talent pool.

The Indian ecosystem players particularly relevant to the STEM domain, are proactively exploring value chain partnerships to engage with stakeholders including students and academia. Campus connect initiatives have been redefined to now attain a more strategic nature. For instance, at LTTS, we have successfully activated an academia-industry connect program that allows students to work on real-life business challenges and thus be better geared up for future career related pursuits. The other avenues include joint co-operation on areas of research & development as well as engineering hackathons.

One underlying observation is that the engagement has become much more enriched and mutually beneficial. With the technology boom, the way a company functions have changed drastically. This has also significantly changed the workforce qualification requirements. The new-age digital technologies have trigged a level of inclusiveness that was never witnessed before. Thus, there are now a larger number of people benefiting from technology as compared to before. This is expected to rise even more as the unconnected communities come within the purview of digital disruption.

In a country like India, technology can be successful only when it reaches the masses, the majority of whom reside in Tier II and Tier III cities and villages. For any technology to succeed in India, low-latency and high-performance Internet is essential to process a very high volume of data and scale faster. Also imperative is the need for any technology to be cost-effective. The upcoming technologies like machine learning, 5G and nanorobotics are still in its early stages, but with huge potential and essential for the benefit of the people. It is up to the Government, the private sector players and the academia to make sure the power of such technologies is tapped for the greater good.

In these disruptive times, people are embracing newer models of learning such as remote learning and online certification programs as the universities and colleges globally now ensure that such learning programs have equal credential as campus-based programs. Anyone, from any part of the world can access these programs – that is the true power of technology.

How are the academia, the industry and the employers transforming the education quality?

The rapid pace of change around the globe has forced Academia-Industry collaboration towork together to tackle some of the major challenges facing the technological landscape. Some steps in this direction have been taken, namely, NASSCOM's ER&D Council, which holds roundtables on University curriculum and upgrading technical education. Other industry bodies like the Confederation of Indian Industry (CII) and FICCI also play important roles in transforming higher education. To sum it up, there is a lot of effort being made by various prominent industry bodies.

The question is, have employers done everything possible to improve education quality? I would say, no. We still have some way to go. It will take time, effort and more collaborative work. We will get there soon. While the new-age engagement models were elaborated earlier, the ecosystem players are indeed playing an increased role in the transformation journey.

> ARE OUR YOUNGER GENERATION ENGINEERS SKILLED IN SUCH TECHNOLOGIES? WE CONDUCT TRAINING PROGRAMMES ACROSS THESE DISCIPLINES AND ENCOURAGE YOUNG ENGINEERS TO SPEND TIME IN OUR R&D LABS TO FACILITATE FASTER LEARNING AND DEVELOPMENT

Is what being taught in the technical colleges enough?

India has its share of outstanding engineering colleges, which are doing tremendous work in scientific progress and related curriculum for students. The problem is, there are still not too many colleges or Universities which can prepare Gen-Next in the latest, updated technologies and help in upskilling them.

So, the need of the hour is to mould the present education system with futuristic skills. This can only be achieved by first, updating curriculum, in close association with industry bodies. Secondly by raising more tech-based colleges and empowering the existing colleges to expand further in their research. This is the one important area where the Government and the academia can collaborate. The primary focus is on niche engineering knowledge amongst the fresher. There must be a healthy mix of theoretical learning as well as practical application implementation opportunities. Such an approach will ensure and lead to India's position as a global hub for tech talent.

Are they in line with the ongoing processes across the various industry verticals?

They are in-line with contemporary requirements. However, the problem is with the ever-increasing and evolving demands across industry verticals every year. So, the emphasis is on the industry and the academia to unite and discuss these problems to keep up with the times. AT LTTS, we see technologies like AI, ML, engineering analytics and 5G becoming common horizontals for a range of industries.

Are our younger generation engineers skilled in such technologies? We conduct training programmes across these disciplines and encourage young engineers to spend time in our R&D labs to facilitate faster learning and development.

How are the various happenings across the world finding their way into the national curriculum for colleges in India?

Several initiatives under the leadership of The Ministry of Human Resource Development, Government of India, are underway to promote research in the fields of science and engineering. These are: Prime Minister Research Fellowship, Junior Research Fellow (JRF)/Senior Research Fellow (SRF), Research Associate, National Initiative for Technology Transfer (Establishment of Research Parks) andImpacting Research, Innovation and Technology (IMPRINT).

To empower educational institutions and to help them in becoming world-class teaching and research centers, the Government has also declared 20 institutions (10 public and 10 private) as 'Institutions of Eminence'. These institutes will pursue multi-disciplinary initiatives, world-class research, global best practices and international collaboration – with financial assistance up to Rs. 1000 crore, provided to government institutions over the next 5 years.

The goal of all these programs is to increase access to high-quality education, foster equality, and enhance educational efficiency. As technological shifts transform the nature of work, freshers will have to be skilled and made employable to meet the needs of the industry, globally. India's Government-Academia-Private Sector need to align together to drive more such unique initiatives to convert its demographic potential to fuel this unprecedented growth.

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—ANKUSH SINGLA
Co-founder, Coding Ninjas

TRANSFORMING THE SKILL-TRAINING

Coding Ninjas has a mission to continuously innovate the best ways to train the next generation of developers and to transform the way tech education is delivered. It is evolving the ways to train developers. It approaches the educational philosophy as a never-ending journey of self-improvement. Here, Ankush Singla, Co-founder, Coding Ninjas, tells us more

How is the Indian industry collaborating for infrastructure and education?

Being an Edtech platform, we have observed that there is a dire need to infuse AI-based education modules in schools and colleges. The module is still in its niche phase and not properly installed in every school across India. Despite technology taking an upper hand in skill development, we have not been able to mainstream tech-based education system in K12 learning.

Theoretical learning has been largely encouraged. However, the supply-demand in the industry is towards dynamic skills with relevant practical exposure. By 2030, India will have the world's largest working-age population that equally reflects a much-devoted demand of digital infrastructure, digital courses and practical exposure for students in k12 and college level to meet the growing needs of the society. Education is a key tool that can transform the lives of many people and this growing demand for quality education has given birth to digital education platforms like us. To continue to grow with the industry, our focus should be more towards installing digital learning infrastructure in schools and colleges that can turn manifolds in the times to come.

What will be the power of online, social and emerging technologies for enhancing the reach, quality, affordability, and speed?

The emerging technology is not limited to our mobile and laptops, but is rapidly spreading across our day-to-day lives. The biggest myth in technology today is that robots are coming to take away people's jobs. Simply put, this is not true! The implementation of automation processes and technologies like AI and RPA are not designed to reduce the workforce.

They're being deployed for people to work more efficiently support programs, fulfil more requests and better help the people agencies serve. Recent emerging technology statistics are providing insight into the adoption rates and effectiveness of trending channels like AI, IoT, blockchain, Autonomous Things (AuT), Decentralised Cloud Storage System and chatbots.

How is the academia, the industry and the employers transforming the education quality?

The source of driving academia has become dynamic in the past decade because of the E-learning methods introduced by various colleges and leading players like us (Coding Ninjas). There is a chain of supply and demand, the education system is slowly infusing new methods of learning for students that can advance their skills from a nascent age. Evolution is significant in the education sector and a huge surge of skills from the employer's side is making a pathway to achieve success in skill development at both educational and professional level.

According to a research conducted by KPMG, along with insights from Google search, the online education market itself is expected to witness a huge surge, growing 8x since 2016 to reach the $1.96 billion mark by 2021. The employability skills of graduates who come out of the education system also need urgent attention.

A report suggests – 90% of Indian engineers lack the key skills companies are looking for. This would be an opportune moment for Indian colleges to reorient their degree offerings online to be inclusive, while also addressing key skill gaps in India. Colleges should prioritise scaling in-demand skills in cutting-edge tech domains like AI and analytics, to align with the government's vision for skill development.

THIS IS CRITICAL IN LIGHT OF THE RAPID ADVANCEMENT OF TECHNOLOGY – THE INTERNET OFFERS VIRTUALLY UNLIMITED ACCESS TO THE SUM OF HUMAN KNOWLEDGE, AND ARTIFICIAL INTELLIGENCE (AI) AND MACHINE LEARNING (ML) SYSTEMS. THE IMPLEMENTATION OF THE ABOVE THREE METHODS WILL HELP THE INDIAN EDUCATION SYSTEM TO BE MORE ADVANCED

Is the course offering of the technical colleges enough?

As the gatekeepers of knowledge and stewards of human capital, universities have to play a major role in preparing a skilled global workforce. Doing so will require an ecosystem-oriented mindset, using online offerings to extend reach and establish partnerships with other universities and content providers. Much like industries, universities will need digital solutions to solve for the big problems in higher education. The mission for higher education institutions is changing in tandem with the workplace, with reach, impact, and relevance being as important as ever.

Universities are being called on to serve more diverse learners on a massive scale. They have to create credentials that catch the attention of employers that are increasingly focused on skills over traditional degrees. They have to create shorter pathways to new skills. And alongside foundational knowledge, they have to offer the flexibility for learners to upskill throughout their careers since lifelong learning is the only way forward. Technology will be the link through this change, revolutionizing what we know as higher education.

Are they in line with the ongoing processes across the various industry verticals?

Our education system is not in active sync with the latest technological advancements and to do so, there are three different stages that we will have to walk-through. The first requires the introduction of new learning tools and products into the ecosystem. Key among these is the incorporation of learning management systems (LMS), the integration of gamification as a learning tool and the increasing applicability of augmented reality (AR) and virtual reality (VR) systems.

The second would be the introduction of the curriculum for both students and teachers and enable them to become more proactive in teaching and learning through the tools. The third stage, and that which will prove most difficult to implement, is to change the teaching methods behind these new curriculums and tools. This is critical in light of the rapid advancement of technology – the internet offers virtually unlimited access to the sum of human knowledge, and artificial intelligence (AI) and machine learning (ML) systems. The implementation of the above three methods will help the Indian education system to be more advanced.

How are the various happenings across the world finding their way into the national curriculum for colleges in India?

Despite exponential changes in technology around the world, the curriculum and practices in traditional engineering education in India have not evolved at the same pace as that of the industries. There is a big gap between what the industries need and what Indian education equips its future employees with. Hence, to upgrade and update the engineering college curriculum, industries must be involved to decide the curriculum and also to emphasise what aspects should be added to the curriculum to make it more relevant to the industry.

India witnessed a rapid engineering revolution in the 20th century. However, the global technological advancements are still missing out from the curriculums. Wherein, E-learning platforms are designed to complement the traditional institutions in India. Students have rapidly switched to E-learning platforms to up-skill their knowledge. The Edtech space has seen a paradigm shift because of various reasons like time, speed, money and quality of education a student gets.

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—SRINIVAS RAO K
Director-Human Resources, SAS India

LONG-TERM INDUSTRY-INTERNSHIP ESSENTIAL

Through innovative software and services, SAS empowers and inspires customers around the world to transform data into intelligence. Srinivas Rao K, Director-Human Resources, SAS India, tells us more about how they approach T-Schools

What are you looking out for this year?
SAS conducts global training programs each year where only handpicked students displaying required academic records along with knowledge of industry segment processes are trained through a 6-month long intensive program on SAS' technologies and solutions specifically addressing the latest technologies.

Since the program is niche, we would be hiring fresh college graduates from top tier T-Schools for our academy program.

Do you think T-Schools are doing enough in education? What more should they do?
Theoretical education is good, but what really matters is providing the industry experience in the form of long-term meaningful internship to enhance the students' practical experience and make them ready for industry placements.

How do you choose talent, especially from T-Schools?
Relevant technical competencies and strong communication abilities are a clear must have. What is essentially required is also strong analytical, technical and problem-solving skills.

In an era of technology explosion, the candidate should also possess the ability to understand customer pain points and recommend products/solutions that address those areas. Significant project and/or internship experience demonstrating the individual and teamwork abilities along with cultural fitment also ranks high on importance while selecting talent from T-schools.

What more needs to be done, with new technologies coming in all the time?
The Indian institutes are now warming up to the idea of infusing technology at all levels of education system-schools, colleges and universities. With technology being infused into the curriculum, some of the top institutes are already gearing up their students to be industry ready by tying up industry for insight, internships and in certain cases industry sessions.

Technology is ever evolving resulting in ever increasing requirement changes in industry and hence it is important for institutes to continuously upgrade themselves with newer technology and to collaborate with the industry to integrate relevant courses into their curriculum.

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—AGENDRA KUMAR
President, ESRI India

MAKING THE CURRICULUM HANDS-ON

ESRI or the Environmental Systems Research Institute, is an international supplier of geographic information system software, web GIS and geodatabase management applications. It is headquartered in Redlands, California. Agendra Kumar, President, ESRI India, talks about his expectations from the T-Schools

What are you looking out for this year?
We are looking at making GIS (Geographic Information System), either as a specialisation or as a mandatory skill in T-Schools across disciplines. Employability is a big challenge faced by T-Schools, students and employers. There is need to bring higher focus on the applications of technologies and imparting practical experiences to the students before they complete their degrees. Recent studies indicate that only 20% of the engineers are employable in India.

Hiring companies look for productivity from day one, unlike in the past, when companies used to invest in several months of training for fresh graduates. Corporates are willing to pay higher salaries, but demand better productivity. GIS is a technology, which is relevant in almost all fields. We recommend colleges to introduce at least one GIS course for every engineering student, whether they are pursuing Civil, Mechanical, Electrical, Electronics engineering or Computer Science. GIS deals with 'Location', which is all pervasive. Knowledge of GIS will come handy for students whether they join public sector or private sector.

We have GIS users in construction, real estate, electric utilities, gas and water distribution, banking and financial services, retail, logistics, forestry, natural resources and many other government departments. With everyone using mapping in daily life, GIS has become an indispensable skill which academicians need to imbibe in students to prepare them for their work life.

At ESRI India, one of our missions is to partner and empower academic community with necessary tools and technologies needed for future-ready students. We are supporting various institutions with the latest in geospatial technology, helping them create course content and providing trainings to augment their efforts in imparting geospatial education to make their students more employable.

Do you think T-Schools are doing enough in education? What more should they do?
The technology landscape is changing fast. We are seeing the convergence of new and existing technologies getting into mainstream applications. Some of the new technologies like artificial intelligence, machine learning, big data, location analytics and IoT are becoming main stream.

The T-Schools should bring-in applications of these technologies in real-life situations into the curriculum. Technology leaders like ESRI India will be keen to collaborate with T-Schools to support learning and entrepreneurship.

How do you choose talent, especially from T-Schools?
The evaluation criteria is based on the knowledge and aptitude. We also look at the relevance of technologies being taught in line with our business requirement.

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—M LAKSHMANAN
Chief Human Resource Officer,
L&T Technology Services

NEED FOR COLLABORATION

In this exclusive interaction, M Lakshmanan, Chief Human Resource Officer, L&T Technology Services, has some advice for T-Schools

What are you looking out for this year?

While qualification and degrees are important in our hiring process, at LTTS, we also place considerable importance on intangible attributes like innovation, inquisitiveness, passion to deliver and efficiency in the workplace. Engineering and innovation are embedded in our DNA. Being at the forefront of technology- based innovations, our focus at LTTS is to tap promising talent who are passionate to bring about breakthrough disruptions. We are always looking out for innovators and skilled engineers who solve specific industry problems in the areas of healthcare, manufacturing and telecommunications.

The total volume of graduates hired by the company has increased over the past year and will continue further, with engineering students being the key focus. As is the trend within the industry, freshers will form a key component of our overall considerations.

Do you think T-Schools are doing enough in education? What more should they do?

India is a global leader in engineering services and IT, with companies pursuing the best and brightest college graduates.

T-schools are making valiant efforts to stay ahead of the times. The education sector is focused on recognising the needs of the industry leading to the introduction of specialised technology skills in the graduates. There is also scope for the industry to contribute towards the interests of the academia community. Partnerships and co-operation in areas of strategic importance are the need of the hour. To ensure India's position as a leading hub for talent, upskilling on digital engineering will also be a welcome step.

So, it is not just about what they should do, it is also about what we can do. For example, we have recently partnered with IIT-Kanpur to collaborate and brainstorm on industrial cybersecurity. Unless there is collaboration, it will be difficult to build the skilled workforce required to meet the demand for strong, sustainable and balanced growth of the sector.

How do you choose talent, especially from T-Schools?

At LTTS, we look for a mix of various factors. First is performance and merit – both have no substitute. Second are attributes like innovation, spirit of curiosity, passion, and commitment– these are very important in today's ever-evolving industry. As a recruiter, I or anyone in my team also look for specific industry background or a degree of expertise that only candidates from the required field can possess. We are also very keen on promoting our female engineers and making the work environment more inclusive. Finally, we look for motivation in talent.

Our unique academia-industry initiative, TECHgium is an important platform for the bright engineering graduates to showcase their talent and solve real-world engineering problems. The finalists of TECHgium are eligible for employment in LTTS based on the strength of their concepts and solutions. TECHgium has been playing a role for the past few years in tapping India's engineering talent pool.

Apart from these, we regularly partner in campus placement programs of leading engineering institutes of the country.

Are you looking at online colleges as well?

The rise in demand for talented workforce has also paved the way for online learning, which has led to a change in perception. Online colleges and degrees are now nearly as valuable as their traditional counterparts.

The authenticity of online degrees has been a question. However, more and more renowned schools and universities such as Stanford and MIT provide online courses, which are excellent secondary qualifications. Companies are now factoring such secondary qualifications, while making a final selection of candidates. So, yes, we are open to hiring eligible candidates with specialised qualification acquired from online courses from reputed Universities.

How are the happenings across the world finding their way into the national curriculum for colleges in India?

The Indian business ecosystem has seen enormous development in the technology sector with the start-up boom, emerging as one of the fastest-growing hubs for STEM-related careers. Employers who are open-minded and willing to invest in the knowledge and skillset of an applicant have seen successful outcomes. The task before us is to help future generations learn skills that will allow them to succeed at the global workplace.

Over the years, LTTS has been in close contact with prominent colleges, universities and academia members in India to gather the best of technology and resources. Thanks to the academia, interdisciplinary courses are being introduced in the curriculum, which are well-designed for the talent pool to help corporates in their requirements.

What more needs to be done, with new technologies coming in all the time?

Advancement in digital technologies, along with advances in healthcare and genomics, has been helpful in boosting business productivity, redefining how services are delivered, and contribute to better living standards for millions. Demand for professionals skilled in AI, ML, natural language processing, robotics and blockchain has increased substantially in just the past 5 years.

Preparation for a skilled Gen-Next should be encouraged and facilitated. Access should be available for research in advanced technology and its implementations. Stronger collaboration between industry and academia through initiatives such as internships, faculty training programs will also be very useful.

For India to emerge as a technological superpower, the existing silos and boundaries need to be removed. An ecosystem of excellence must be created where all technology companies, industry bodies and academia need to come together and help the engineer with the change.

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—SANJAY KAUSHIK
MD, Netrika Consulting India

SECURING THE WORLD

Netrika is an Indian security development consultancy, which has managed to expand beyond Indian borders and made its presence felt in many countries across the world. An interaction with Sanjay Kaushik, MD, Netrika Consulting India throws light on the security concerns in today's world

Why is the security need rising in India and how much is the Indian market ready for it?

India is amongst those countries with the highest incidence rates of cyber-attacks across the globe. According to our Cyber Security Survey 2018, Indian corporates at-large are not well-equipped to deal with cyber security risks, with 62% of them revealing that they had suffered IT breaches in various forms. The primary reasons for this is a lack of investment in, and emphasis on training and creating awareness amongst the various stakeholders who are utilizing the network.

As per our survey report, there are only a handful of companies with dedicated resources. It found that only 18% of organisations have dedicated IT staff where more than 25 persons are employed while 21% of organisations cited that they do not have dedicated IT staff. As new and emerging technologies continue to enter the business landscape, cybercrime is also becoming more sophisticated at the same time. Therefore, education and awareness are the need of the hour. In turn, converting this awareness into adoption is what will help companies stay protected with robust cyber security infrastructures and policies, both at an organizational and individual level.

What are the major trends observed in the Industry?

The rapid digitisation of the global business landscape has changed the very nature of enterprise security networks. Some of the major trends observed are those pertaining to insider threats. These include security breaches, social media breaches, cloud computing security, botnets, malware, spear-phishing, identity thefts, MIM attacks, information theft via smart grids & meters, amongst others. Therefore, today, there is a need for security to be embedded into every application and/or connected component. Enterprises must go the extra mile and create a strong defence as a default setting, as opposed to relying on users opting for it. This is the key to a more proactive approach to cyber security.

Any upcoming projects that Netrika is planning

Our team is currently working on a number of large projects. Given that we are CERT-IN empanelled, we also deal with many cases for the Central and State Governments and PSUs. However, we cannot share the details of these projects due to confidentiality clauses.

THERE ARE ONLY A HANDFUL OF COMPANIES WITH DEDICATED RESOURCES. ONLY 18% OF ORGANISATIONS HAVE DEDICATED IT STAFF WHERE MORE THAN 25 PERSONS ARE EMPLOYED WHILE 21% OF ORGANISATIONS CITED THAT THEY DO NOT HAVE DEDICATED IT STAFF

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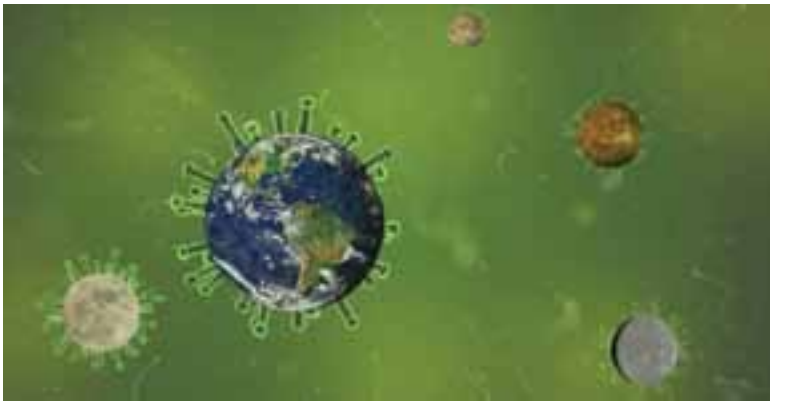
Microsoft, Adaptive Biotechnologies to Study COVID-19 Immune Response; **Data to be made Freely Available to All**



Adaptive Biotechnologies and Microsoft announced that they will leverage their existing partnership mapping population-wide adaptive immune responses to diseases at scale to study COVID-19. Finding the relevant immune response signature may advance solutions to diagnose, treat and prevent the disease, augmenting existing research efforts that primarily focus on the biology of the virus. These data will be made freely available to any researcher, public health official or organization around the world via an open data access portal.

"We can improve our collective understanding of COVID-19 by decoding the immune system's response to the virus and the disease patterns that can be inferred from studying these data at the population level," said Chad Robins, CEO and co-founder of Adaptive Biotechnologies. "Immune response data may enable detection of the virus in infected people not showing symptoms and improve triaging of newly diagnosed patients, potentially solving two of the challenges we are facing in the current diagnostic paradigm."

To generate immune response data, Adaptive will open enrollment in April to collect de-identified blood samples, using a LabCorp-enabled mobile phlebotomy service, from individuals diagnosed with or recovered from COVID-19 in a virtual clinical trial managed by Covance. Immune cell receptors from these blood samples will be sequenced using Illumina platform technology and mapped to SARS-CoV-2-specific antigens that will have been confirmed by Adaptive's proprietary immune medicine platform to induce an immune response.

The immune response signature found from the initial discovery work and the initial set of samples will be uploaded to the open data access portal. Leveraging Microsoft's hyperscale machine learning capabilities and the Azure cloud platform, the accuracy of the immune response signature will be continuously improved and updated online in real time as more trial samples are sequenced from the study.

To expedite the development and relevance of the immune response signature across the global population, the companies are seeking additional participation from institutions and research groups around the world to contribute blood samples to this open data initiative. Providence, a large health system with 51 hospitals, including the one near Seattle that treated the first US COVID-19 patient, is an initial clinical collaborator.

"The solution to COVID-19 is not likely going to come from one person, one company or one country. This is a global issue, and it will be a global effort to solve it," said Peter Lee, corporate vice president, AI and Research, Microsoft. "Making critical information about the immune response accessible to the broader research community will help advance ongoing and new efforts to solve this global public health crisis, and we can accomplish this goal through our proven TCR-Antigen mapping partnership with Adaptive."

Timing and enrollment details about the upcoming study and the open data access portal will be coming soon. Institutions or collaborators interested in contributing blood samples can direct inquiries to COVID19ImmuneResponse@adaptivebiotech.com.

Gradeup Provides Free Live Classes to School **Students During Coronavirus Lockdown**

Gradeup announced the launch of its campaign #PadhaiNahiRukegi amidst the Coronavirus lockdown in India. The campaign will specifically cater to the education needs of students from class 8th to 12th as well as to those preparing for JEE and NEET exams. All classes will be free of cost and will commence from March 25 on the Goprep app, powered by Gradeup.

Since schools remain shut due to the COVID-19 outbreak at the time when their new session is about to start, the focus will be on topics covered during the first two months in schools. Shobhit Bhatnagar, Co-founder and CEO, Gradeup says: "We want to ensure that students' education should continue and their learning should go on uninterrupted. Most schools open for new sessions around this time, but due to the current crisis, it will be delayed by a few weeks. By offering these courses for free, we want to make sure that no student's time is wasted".

As the entire nation goes on a lockdown, the biggest benefit that the EdTech industry offers right now to students is a safe, convenient, study-from-home option.

"Students preparing for exams such as JEE and NEET are confined within the four walls of their home due to this pandemic. If they need any help or guidance, they can't go to their coaching/ tuition centres, the services they've already paid for. We at Gradeup are committed to providing free live classes and guidance to our students through our expert faculty, which include IIT graduates and doctors who have mentored lakhs of students," he adds.

In the midst of the COVID-19 crisis, most organisations have embraced work from home policy to restrict the spread of this disease. EdTech is functioning unhindered and its true potential is coming to the fore. A realisation is finally sinking in that online education model is the way forward, says a release from the company.

Coronavirus Lockdown in India: **TCS iON Offers Free Access to its Interactive Virtual Classrooms**

As the much needed Coronavirus lockdown in India has now come into effect, school and college going students will undoubtedly be one of the most effected due to closure of schools and universities. In a bid to help such students TCS iON, a strategic unit of Tata Consultancy Services (TCS), announced that in the wake of nation-wide lockdowns of schools and colleges, it is offering access to the TCS iON Digital Glass Room, a virtual learning platform, free of cost to educational institutes across the country, says a release from the company.

"These are unprecedented times. With schools and colleges shut down across the country, we want to empower these institutions and help them switch to a virtual mode, so students' learning journeys can continue uninterrupted on our platform. I do hope large numbers of public and private institutions will take this opportunity to use technology to overcome the disruption," said Venguswamy Ramaswamy, Global Head, TCS iON. "Our longer term objective is to encourage self-learning and to enable the Indian education system to transition to a digital era where teaching and learning know no physical boundaries. We believe this is the best way to democratize access to education and skill development, and build the human capital needed for India to become a five trillion dollar economy."

Using the TCS iON platform, educators and students can connect in a safe, secure virtual environment, moving lessons from classrooms to interactive digital glass rooms. The TCS iON Digital Glass Room is a mobile and web education platform for schools and colleges, that empowers educators to engage with students in real time by sharing lessons, videos, worksheets, assignments and assessments, using interactive methods like polls, debates, quiz, surveys and many more tools. As an add-on, the platform also provides an embedded live classroom, which simulates live classroom teaching.

TCS iON Digital Glass Room is available to educational institutes of all types, irrespective of the medium of instruction, Board/University affiliation, or size.

Platforms for Upskilling During **Coronavirus Lockdown**

Due to the spread of Coronavirus, a lot of universities are closed and workplaces have announced work from home. So if you're starting to get bored without contact with the outside world and looking to challenge your mind with something other than games and films there are tons of upskilling the platform that can help you to upskill yourself and get add some extra certificates/degrees while you're confined to your own four walls.

To cater to this need, here is a list of top 5 platforms that can help you to upskill yourself while sitting at home:

- **UpGrad:** UpGrad is an online platform that offers educational services. UpGrad's range of programs consists of digital marketing, product management, entrepreneurship, data analytics, data-driven management, and digital technology management. It offers industry insights and student support services. Whether you're an amateur or a professional, Data Science courses with upGrad will equip you with the practical and theoretical knowledge required in order to become a successful Data Scientist. Professionals can get a chance to study about open source tools and libraries, Python, databases, SQL, data visualization, data analysis and machine learning.

- **Udacity:** Udacity is a global lifelong learning platform connecting education to jobs and providing students with skills to advance careers. Udacity Nanodegree programs provide credentials earned through a series of online courses and projects in an array of subjects from self-driving cars and AI to data science and digital marketing. Udacity collaborates with more than 200 global employer-partners including AT&T, Google, Facebook, Mercedes-Benz and NVIDIA to close talent gaps. Headquartered in Mountain View, California, the privately-funded company has operations in India, China, Egypt, Germany, and the United Arab Emirates. Its investors include Bertelsmann, Andreessen Horowitz, Charles River Ventures and Drive Capital.

- **Shine Learning:** Shine Learning is India's largest professional courses and career skills portal. Launched by Shine.com, Shine Learning has a vision to up-skill the Indian talent pool to adapt to the changing job market. Shine Learning uses an algorithm that not only predicts emerging skill sets but also recommends courses to its users after analyzing their resume and application history. Shine learning to provide a series of online courses and certification in a variety of subjects like Sales & Marketing, IT Software, Digital Marketing, Big data, Data Science and others. These certifications come with flexible study options; giving an edge to professionals who can work and learn at the same time.

- **Coursera:** Coursera is an online learning platform that offers massive open online courses (MOOC), specializations, and degrees. Coursera works with universities and other organizations to offer online courses, specializations, and degrees in a variety of subjects, such as engineering, data science, machine learning, mathematics, business, computer science, digital marketing, humanities, medicine, biology, social sciences, and others.

- **Simplilearn:** Simplilearn is the world's leading certification training providers. This platform provides online training in disciplines such as Cyber Security, Cloud Computing, Project Management, Digital Marketing, and Data Science among others, where technologies and best practices are changing rapidly and demand for qualified candidates significantly exceeds supply.

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