

Ahead of the curve

Policymakers, educational institutions, and industry stakeholders need to come together and collaborate to strengthen the ecosystem supporting innovation in higher education

S. Vincent
Dinesh Kumar Vannam

In the ever-evolving landscape of global innovation, the annual World Intellectual Property Indicators (WIPI) report by the World Intellectual Property Organization (WIPO) serves as a crucial barometer. In 2022, despite a decline in trademark and design filings, patent applications surged globally for the third consecutive year, reaching 3.46 million. This reveals intriguing trends that have signifi-

cant implications for higher education, particularly in a country like India.

According to the WIPI report, while China, the United States, Japan, Republic of Korea, and Germany led in patent filings in 2022, applications from India grew at the rate of 31.6%. Clearly this surge is not isolated but is connected to the country's higher education landscape. The focus on nurturing a vibrant start-up ecosystem, coupled with knowledge capital generated by public and private research organisations, has been instrumental in providing the necessary infrastructure, and fostering a culture of research and development. Indian institutions are globally recognised for their academic performance. Several Indian universities feature in the top 300 of the QS World University Rankings 2022, with the



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Indian Institute of Technology (IIT) Bombay leading the way.

In India

A growing number of Indian-origin researchers and professionals are contributing to global innovation and the collaboration between the diaspora and Indian institutions has led to significant strides in research and technology. There has also been a rise in R&D funding for educational institutions. In the 2021-22 budget, the allocation for the Department of Science and Technology increased by 34.5% to 14,788 crores. The Innovation Index has facilitated increased collaboration between academia and industry. Partnerships between

academic institutions and tech giants like Infosys, TCS, and Google have resulted in joint research initiatives, exposing students to real-world challenges. India has witnessed a surge in entrepreneurial activities, especially in the technology sector. The NASSCOM Start-up Report 2021 notes the addition of over 1,600 start-ups in 2020, totalling nearly 12,000. This entrepreneurial boom is fuelled by a conducive ecosystem shaped by a high Innovation Index.

The Innovation Index has prompted a revamp of academic curricula to align with industry demands. Programmes emphasising interdisciplinary skills, emerging technologies, and

hands-on experience ensure that graduates are job-ready in a dynamic tech landscape. According to the WIPO report, the world's five largest science and technology clusters are situated in East Asia, including clusters in Bengaluru, Delhi, Chennai, and Mumbai. This underlines India's emergence as a key player in the global innovation ecosystem. Additionally, India's ascent in terms of publication output, ranking fourth in 2022, signifies the growing influence in disseminating knowledge and contributing to global research.

In the 2023 Global Innovation Index (GII) India was placed 40th with a score of 38.1, a rising trajectory from the 81st

place in 2015. The GI 2023, utilising 80 indicators to track global innovation trends, offers insights into India's strengths. Notably, India holds top rankings in key indicators such as Information and Communication Technology (ICT) services exports, venture capital received, graduates in science and engineering, and global corporate Research and Development (R&D) investors. These underscore the crucial role played by higher education institutions in producing skilled graduates and fostering an environment conducive to research and development.

Challenges

While India continues to

make strides in innovation, challenges such as the uncertain economic outlook and a decline in venture capital funding pose potential hurdles.

The report emphasises the importance of quality investments and urges stakeholders not to compromise on supporting transformative ideas that can positively impact the world. Other issues such as bureaucratic hurdles and regulatory bottlenecks persist. Streamlining processes, updating regulatory frameworks, and incentivising private sector participation in R&D are critical to sustain and accelerating innovation. India's remarkable performance in global patent filings and its consistent rise in the Global Innovation Index highlight the pivotal role of higher education. Thus, it becomes imperative for policymakers, educational institutions, and industry stakeholders to collaborate and further strengthen the ecosystem supporting innovation in higher education. The fusion of academia and industry, coupled with sustained investment in research and development, will be key to ensuring that India remains a prominent player in the global innovation landscape.

S. Vincent is Chairman, Environnex Innovation and Research Foundation, and Former Dean of Research, Loyola College, Chennai. Dinesh Kumar Vannam is Asst. Vice President, Ideation IP.

SCHOLARSHIPS

National Disaster Management Authority Internship

An opportunity offered by the National Disaster Management Authority, Government of India.

Eligibility: Open to students in a postgraduate programme in Disaster Management, Development Studies, Economics, Humanities, Sciences, Management, Engineering, Health Studies.

Rewards: ₹12,000 a month

Application: Online

Deadline: Round the year
www.b4s.in/edge/NDMS3

K.C. Mahindra Scholarships for Post-Graduate Studies Abroad

An opportunity offered by the K. C. Mahindra Education Trust.

Eligibility: Open to students who are Indian citizens and have a first-class degree or diploma of similar standard from recognised universities and have secured admission or have applied to reputed foreign universities for courses commencing in August 2024 but not later than February 2025.

Rewards: Interest-free loan of up to ₹10 lakhs

Deadline: March 31

Application: Online

www.b4s.in/edge/KCMP1

ICRO Amrit Internship

A joint initiative of the Indian Potash Limited (IPL) and the National Productivity Council (NPC) under the Ministry of Commerce and Industry, Government of India.

Eligibility: Open to Indian nationals who have an Aadhaar card and have either passed Class 12, or hold a degree or diploma. Students in the final year of graduation can also apply.

Rewards: ₹6,000 monthly and a certificate

Application: Online

Deadline: Round the year

www.b4s.in/edge/ICRO1

Courtesy: buddy4study.com

Build your skills

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



OFF THE EDGE
Nandini Raman

I have done my Bachelor's in Science but want to work in the corporate sector. I am preparing for the UPSC and, after two years, plan to pursue an MBA from India or abroad. Is this a good plan? Sambhav

Dear Sabhav,
Transitioning to the corporate sector is not impossible but should be based on your interests and skills. Your current education may not directly align with any corporate roles and openings, but gaining experience, networking, showcasing and highlighting transferable skills (communication, problem-solving, analytical thinking) can help you secure entry-level positions. The UPSC exams are challenging so you have to dedicate sufficient time and effort. An MBA can enhance your career prospects in the corporate world by providing a broader perspective, managerial skills, and networking opportunities. Whether you do it in India or abroad depends on your long-term plans, programme quality, cost, networking opportunities, career goals, and personal preferences. Having some relevant work experience before doing an MBA adds practical insights to academic learning and also enhances your profile. To pursue an MBA abroad, you will need to take the GMAT or GRE. Research different courses, specialisations, faculty, alumni networks, and career outcomes. Network with professionals and alumni from various schools to understand what opportunities they provide. Finally, assess the financial aspects and understand the criteria for scholarships and financial aid options.

I have a Ph.D. in Agriculture but am interested in forestry, wildlife, and conservation. I want to align

my professional life to my passion but don't know how to start. Can you guide me? Manu

Dear Manu,
Transitioning from a Ph.D. in Agriculture to a career in forestry, wildlife, or conservation is doable. Research the fields of forestry, wildlife, and conservation to understand their scope, job opportunities and gaps, required skills, and ongoing projects. See how your agricultural expertise can be relevant here. Can you use your Ph.D. skills in research, data analysis, project management, or scientific knowledge of ecosystems here? Educate yourself about forestry, wildlife conservation, or environmental studies. Consider additional courses on wildlife conservation, wildlife and forestry management, conservation biology, forest ecology or environmental science. Attend workshops, conferences, or seminars to network with experts. Follow relevant journals, websites and publications to be update with the latest. Look for jobs in forest departments, wildlife sanctuaries, national parks, conservation organisations, research institutions, or environmental consultancies.

I am in class IX. My ambition is to pursue Psychology but my relatives insist that I should be an engineer. My main interest is in careers related to Biology, and I don't feel confident doing Maths and Physics. What should I consider doing in the future? Vishnu

Dear Vishnu,
Remember that your career choice should align with your interests, strengths, and passions. Listen to all but think and decide for yourself. Engage and explore both Psychology and Biology. Read books, watch documentaries, or take online courses to gain a deeper understanding of these subjects. Speak with professionals to understand their work challenges and, career paths. A career profile from a career counsellor can help

identify your personality, strengths, and interests. Some of the top courses in Biology, apart from MBBS, are Bachelor's degrees in Veterinary Sciences, Pharmacy, Neuroscience, Molecular Biology, and Biochemistry and Cell Biology, B.Tech. Genetic Engineering, B.Tech./B.Sc. Food Technology, and B.Sc. Nutritional Biology. In Psychology, options are B.A/B.Sc. Psychology, B.A/B.Sc. Counselling Psychology, B.A/B.Sc. Applied Psychology, B.A/ B.Sc. Clinical Psychology and so on. A career in either doesn't require you to excel in Maths and Physics as much as engineering might.

I have done a B.Sc. (Hons) in Climate Change and Environmental Science and am interested in doing an M.Sc. related to Atmospheric Science or Oceanography. Which are the courses and institutes in India to consider? Athira

Dear Athira,
You can consider the following: M.Sc. in Atmospheric and Oceanic Sciences in Indian Institute of Science (IISc), Bengaluru; M.Sc. in Atmospheric Science and M.Sc. in Ocean Engineering and Naval Architecture (related to Oceanography) in IIT-Bombay; M.Sc. in Atmospheric-Oceanic Sciences and Technology in IIT-Delhi; M.Sc. in Oceanography and Coastal Area Studies in IIT-Kharagpur; and M.Sc. in Atmospheric and Ocean Sciences in IIT-Madras. The National Institute of Oceanography (NIO), Goa, offers internships, training programmes, and research opportunities in Oceanography. Before applying, check admission requirements and entrance exams, the specific course details, curriculum, faculty, research facilities, and opportunities, and internships. Consider the geographical locations, as some might offer better access to specific environments (such as coastal regions or areas with atmospheric research facilities) that could enhance your learning experience. Reach out to current students and alumni to gain insights into the programme's overall relevance and quality.

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

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

A collaboration between Duolingo English Test (DET) and the United Nations High Commissioner for Refugees (UNHCR) helped these youngsters fulfil their dreams of higher education

Madhuvanti S. Krishnan

It was just another day for Zabihullah Alimee, a Class 5 student in Afghanistan. He was on his way home from school when a sudden explosion near his home changed his life forever. The sight of dismembered bodies, blood flowing everywhere and the chaos that followed remain etched in his memory. Now 22 years old, he fled his country and has been a refugee in India for the past two years.

It was to help youngsters like Alimee who lost access to education due to strife and other issues that Duolingo English Test (DET) collaborated with the United Nations High Commissioner for Refugees (UNHCR) to support refugee students in applying to universities. The partnership not only helps students secure study visas and travel documents, as they transition to new host countries, but also enables them to gain access to quality education.

"To be called a refugee is a burden," says Alimee. "While in Afghanistan, my family and I had to constantly shift between provinces because of multiple conflicts. We moved seven or eight times in 12 school years. Finally, when I was in class



(Clockwise from top left) Fauziya, Zabihullah Alimee, Yalda Sadri, and Shaik Obaidullah. SPECIAL ARRANGEMENT

9, I moved to Kabul where I remained till I completed schooling." Not only did this take a toll on his education, he admits it was also difficult to make friends.

"Since Class 6, I have been interested in Computer Science. After we fled Afghanistan and came to India, without proper documentation, I couldn't continue my studies here. I got admission into Delhi University, but couldn't join due to financial constraints." However, he has now received an offer from Georgetown University, the U.S.

Another refugee from Afghanistan, 23-year-old Yalda Sadri has been in India since 2019. "Women were discriminated against and troubled by men who wouldn't let us pursue education or a career unless we belonged to a tribe they favoured," she says. Sadri aspires to work in healthcare. "Afghanistan lacks quality healthcare facilities and I want to become a

gynaecologist and help women so that they never have to go out of Afghanistan for treatment. I also want to create a cost-free system that enables individuals who, like me, are passionate about education, but lack the financial resources."

Fauziya, now 21, was six years old when her Rohingya family was forced to leave Myanmar when their agricultural lands were seized by the government. "We lived in refugee camps in Bangladesh until 2012, when we came to India to seek asylum. I completed my class 12 in Telangana but was unable to pursue higher education due to financial constraints. But now, due to the Scholar programme, I will be starting my course with a major in Biochemistry/Biology at Smith College, Northampton, Massachusetts, the U.S., in September."

Like Sadri, she too aspires to pursue a career in healthcare, but wants to

be a radiologist. This stems from her observations during her time in the refugee camps. "There was no diagnostic centre for someone with kidney stones or brain tumours, for instance," she recalls, "and they had to endure multiple problems to go to other provinces for diagnosis. I want to complete my education, open a diagnostic centre, and help such people." Fauziya tutors and mentors young Rohingya students and is an advocate for girls' and women's rights, encouraging families to educate their girls and to seek formal healthcare.

Another refugee from Myanmar is 22-year-old Shaik Obaidullah. He has been in India for the last nine years and initially lived in a camp in Haryana. "I had no access to education until I went to Hyderabad, where I studied till 2022 and completed my class 10 in the Telangana Scholar's School," he says.

An aspiring entrepreneur, Obaidullah is all set to pursue higher education at Northwestern University, the U.S., in September. "Business is a family tradition; we used to transport rice in Myanmar," he says, explaining his entrepreneurial dream. In Hyderabad, the family ran a grocery store, which eventually closed down. Obaidullah volunteers with Modern Architects for Rural India (MARI) and Save the Children, and is a leader of UDAAN, an advocacy programme that he founded in Hyderabad, in 2019, to motivate Rohingya families to send their children to school.

The common thread uniting these youngsters is that they have not given up on their dreams to not only better their own lives but also that of their communities', despite the problems they faced.



WIDE ANGLE
Albert P' Rayan

A week ago, a friend sent me a WhatsApp forward about a politician, which I quickly discerned as fake. So, I asked him, “How authentic is this report? Has it been published in any reputable newspaper?” My inquiry prompted him to fact-check the message, revealing its fraudulent nature. During my own fact-checking process, I found a message on the fact-checking website Boom, which confirmed it as fake news.

Fake news can be categorised as either disinformation – false information deliberately created to tarnish someone’s reputation or harm a specific group, organisation, or government – or misinformation or false information spread unintentionally. Those who spread disinformation do so with the intention of promoting toxic narratives and creating confusion and conflicts in society.

A month ago, the World Economic Forum (WEF) published a report, *Report on Global Risks 2024*, analysing 34 global risks including disinformation, extreme weather events, cybersecurity, armed conflict, inflation, and unemployment. According to the report, the risk that will cause the most harm in the short term (less than two years) is “spreading false information”. The report also identifies India as the top country for spreading misinformation.

Disinformation spreads faster than information. A study conducted by researchers from MIT has revealed that “falsehood diffuses significantly farther, faster, deeper, and more broadly than the truth, across all categories of information, often by an order of magnitude.”

Adverse effects

We currently live in a post-truth era, where objective facts wield diminishing influence in shaping public opinion compared to appeals to emotion and personal belief. Individuals, influenced by emotional appeals, frequently mistake misinformation and disinformation for genuine in-



formation. Post-truth politicians, journalists, and campaigners significantly contribute to this environment, ultimately moulding post-truth voters.

In this post-truth era, fake information can significantly impact individuals and society in va-

rious ways. False news has the potential to sway people’s decisions, alter their perceptions of politicians, celebrities, political parties, or organisations, and influence their behaviour, particularly during election periods.

Even electronic and

media professionals with hidden agenda spread disinformation and misinformation. Disinformation has the potential to polarise public opinion and be the cause for people to spew extremist views.

Today, certain individuals and organisations

utilise social media platforms as tools to disseminate fake information, often with the intention of sowing communal discord.

It is reported that political parties maintain dedicated IT wings to regularly spread disinformation.

According to a BBC report, hyper-nationalism exacerbates the proliferation of fake news in India.

Our nation has witnessed numerous violent incidents incited by disinformation and rumours. A decade ago, false news of attacks on migrants from the northeast in Bengaluru prompted thousands to flee the city. Similarly, in Muzzaffar Nagar, Uttar Pradesh, violence sparked by a fake video showing a Muslim mob brutally murdering a Hindu youth, resulted in the death of 60 people.

False health information can lead individuals to take harmful medicines or deter them from using life-saving drugs.

During the COVID-19 pandemic, false claims regarding the efficacy of certain medication in preventing the disease led to unfortunate consequences, with individuals falling victim to these claims.

Sensitising the youth

Educating students about fake news is crucial today, when youngsters are constantly surrounded by digital devices, making them easy targets for misinformation/disinformation. Even among those who understand the distinction, many inadver-

tently share false information with friends and acquaintances, lacking the awareness of fact-checking resources to verify suspicious claims.

In India, social media serves as the primary source of news for most people. Therefore, it is imperative to equip students with the skills to avoid falling prey to disinformation and empower them to take action when they encounter fake news.

Governments bear the responsibility of fostering informed citizenship among students, enabling them to critically evaluate information and differentiate between fake and real news.

To achieve this, governments should mandate educational institutions to conduct workshops on media literacy and critical thinking, raising awareness about fake news and promoting the use of fact-checking websites.

Aristotle said, “It is the mark of an educated mind to be able to entertain a thought without accepting it.” Our society needs such educated minds.

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Going beyond the CAT

What are the key factors that play a pivotal role in determining the most suitable business school?

Sathyanarayanan K.S.

Embarking on the journey of choosing the right business school is a crucial decision that requires a multifaceted approach and a thoughtful consideration of various factors to ensure alignment with individual goals, values, and learning preferences.

What are the key factors that play a pivotal role in determining the most suitable business school? Here are a few aspects to be considered:

Reputation and ranking

While rankings should not be the sole deciding factor, they can offer valuable insights into the institute’s overall standing. Consider both national and international rankings, focusing on aspects such as academic excellence, faculty reputation, and alumni success. However, it’s essential to delve deeper into specific criteria that hold the most relevance to your career goals.

Specialisations

Evaluate whether the programmes align with your career aspirations. Some institutes are renowned for their finance curriculum, while others excel in marketing or entrepreneurship. Choose one that not only provides a strong foundation in general management but also offers the specialised knowledge you seek.

Alumni network

A robust alumni network ensures valuable industry connections and ongoing

support throughout your career. An active and engaged alumni community can open doors to mentorship, job opportunities, and a strong professional support system.

Faculty

Look for experienced faculty engaged in both research and industry collaborations for a practical learning experience. Faculty expertise not only enriches your classroom experience but also ensures you are learning from professionals with real-world insights, enhancing the relevance of your education.

Industry connections

Examine the school’s ties with the industry. Strong connections often translate into better internship opportunities, industry exposure, and enhanced placement prospects. Investigate placement records, average salary packages, and the types of companies that actively recruit from the school. This information can provide a realistic expectation of your career prospects.

Campus culture

Consider where the school is located and the campus culture. The cultural and geographical context can influence your overall experience. Some candidates thrive in a bustling city environment, while others prefer a more serene setting. Additionally, the campus culture, diversity, and extracurricular activities contribute to a well-rounded education.

International exposure

In an increasingly global-

ised world, international exposure is a valuable asset. Business schools with international collaborations, exchange programmes, and a diverse student body provide a broader perspective and a network.

Consider whether the school offers opportunities to study abroad, engage in international projects, or participate in global conferences.

Finances

Compare tuition fees, living expenses, and financial aid opportunities, factoring in the overall return on investment. Assessing the financial aspects ensures that you make a well-informed decision, considering the cost of your education against potential career advancements and salary growth.

Testimonials

Gather insights from alumni testimonials, reviews on online forums, and networking events for a real understanding of the school’s environment. Alumni testimonials offer first-hand experiences and offer valuable information on the quality of education, faculty-student interactions, and the institution’s overall culture.

The process of choosing the right business school requires a meticulous and personalised evaluation. Apart from the above aspects, visit campuses, attend information sessions, and connect with students and alumni to make an informed decision.

The writer is Faculty and Product Head-CAT, T.I.M.E. Chennai.

Virvansh Rastogi

When we decided to participate in the RoboCup, an international event that tests skills in Robotics, Engineering and AI, we did not think we would win the gold, as we were competing against teams from 18 other countries. Our team, System Overhaul, had Ekansh Agrawal as the AI and algorithm specialist, Puroo Duggal as data manager, Shaurya Ajit Singh as electronics chief and myself as team lead and principal designer. We were participating in the rescue line category and our task was to develop a robot that would perform a simulated rescue mission autonomously in a disaster setting.

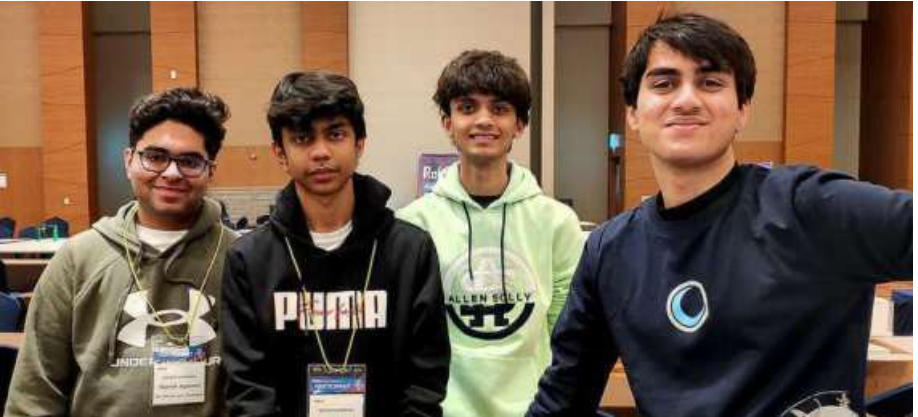
How it worked

We often stayed back in school and worked to design, programme and construct the robot. Even after going back home, we wound up working on the project, whether it was me 3D printing new prototype parts, Shaurya soldering damaged electronics, Puroo labeling gathered data for our AI model, or Ekansh training and testing the new AI model.

Our robot stood out from those our competitors because it used three micro-controllers, each performing a different set

Going for gold

Four students from Shiv Nadar School Noida, who came first at the RoboCup Asia-Pacific (RCAP), talk about their success



The winning team (from left) Ekansh Agrawal, Puroo Duggal, Shaurya Ajit Singh and Virvansh Rastogi. SPECIAL ARRANGEMENT

of tasks but working cohesively. Trying to run three systems in sync made our jobs very difficult but it paid off in the end. We devised several new systems for our robot, such as a hacked I2C bus allowing real-time two-way communication despite its original architecture being master-slave. Another innovation was the use of 3D printed parts explicitly designed to be compatible with the commercially available Lego Technic kits (which we used to construct the robot’s main structure) allowing us to have fully cus-

tom parts while also retaining its ability to be fully modular.

The competition was held over four days, with the first day dedicated to robot calibration and practice. The rest were competition days with one round per day. Teams were ranked on average percentage points scored over three rounds.

Each robot had to follow a complex path with obstacles, debris, and uneven terrain to reach an evacuation zone where the victims were located. Points were given for the path co-

vered, with additional points for clearing obstacles and debris. In the evacuation zone, there were two safe areas; with green for safely securing two live victims (denoted by silver spheres) and red for the deceased victim (denoted by a black sphere). A multiplier was awarded for every successful retrieval and placement of the live victim.

At the competition

In round 1, our robot followed the path perfectly, leading to the evacuation zone entry, and successful-

ly evacuated the living and deceased victims. However, it encountered difficulties trying to exit the evacuation zone to follow the rest of the path, so we skipped a part of the map. Despite this setback, we secured 56% points, giving us first place at the end of day 1.

Round 2 was more stressful. Our robot again navigated the path with high accuracy, but one of our sensors malfunctioned and it could not enter the evacuation zone. We ended up skipping the entire evacuation zone and a part of the path. Due to this, we could not secure the multiplier and only got 18% points. So we were placed second on day 2. After some testing and diagnosis, we fixed the sensor for day 3.

The final day was the most tense. We desperately needed a near-perfect run to win. When it was time for our round, our robot followed the path perfectly and successfully saving two living victims, exiting the evacuation zone, and finishing the rest of the course. The first and the final days’ run helped us come first. All our staying back at school, late-night discussions, and not being ready to give up helped us achieve our goal.

The writer is a Class 12 student of Shiv Nadar School, Noida

Gateway to employment

The placement cell of the college should work as an integral part of the institution



selected as catalysts and brand ambassadors of the placement process.

Enhancing visibility

The institution can use social media to effectively improve the cell’s visibility. The post-COVID period has opened up the avenue of webinars, which can be used to make students fa-

miliar with modern trends by bringing in industry experts. Alumni can also play a pivotal role in enhancing placements. An institute with at least three batches passed out can utilise alumni strength to accelerate placements.

Signing Memorandums of Understanding (MoUs) with the industry helps

colleges have live projects and industry-supported labs, which can help both students and faculty members. Colleges should conduct at least one event annually in which an industry expert participates. The true beneficiary here is the academic community, as this will help showcase the insti-

tute’s infrastructure and research potential.

Outreach activity

The placement cell should keep in touch with the Human Resources division in various companies and also maintain a database of potential recruiters and students who may be likely to attend. The institute needs to have a well-drafted placement policy so that it acts as an equal employment opportunity provider. The placement cell can also conduct outreach activities for the benefit of the community. Many companies assess a campus on two parameters: students and the placement cell.

The placement cell should focus on securing the right job for the right candidate. For example, a student who is not good at coding can be channelised for roles such as business analyst, software tester, UI/ UX, digital marketing and so on.

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