

Challenges in Indian higher education

India's higher education system is the third largest in the world. Before 1900, there were only a few modern universities, located in Bombay, Calcutta, Madras and Allahabad. Later, during 1900–1950, several other universities flourished, such as Banaras Hindu University, University of Mysore, Osmania University, Aligarh Muslim University, University of Delhi, etc. Most of them became well known nationally and internationally. In addition, we had institutions/research laboratories like IACS, IISc, ISI and the CSIR labs. During the next 50 years, a large number of institutions and universities, including six IITs were established. For any country, the key to achieving social and economic development is to strengthen its higher education system, which is dependent on various verticals, including primary education. There is much to discuss on improving India's primary education system, and in many ways, it is far more challenging than improving the higher education system.

The 21st century is witnessing an academic revolution as a large number of universities and institutions (new IITs, NITs, IITs, IIMs, SPAs, AIIMS, etc.) are being established. Our flagship institutions, viz. IITs have increased from 6 to 23. IISERs are a new initiative to strengthen science education in the country, which overall has been a successful one. It is critical that a country of India's size should maintain a large base of quality higher education system with a sufficient number of universities/institutions in order to serve the needs of the second largest population of the world. For this, capacity building is paramount, but poor infrastructure often becomes the stumbling block to increase the capacity. For the academic systems to host and support a large number of young undergraduate and doctoral students, the infrastructure of institutions must be robust. Given rapid developments all over the country, some luxuries of the 20th century must now be sacrificed. Vast expansive campuses may not be viable any longer. While expanding the academic system, we should be sensitive to resource optimization. Footprints of new buildings should be minimized in order to save land for agriculture and other infrastructure requirements. At the same time, an emphasis on keeping campuses green, with ample number of trees and playgrounds is essential. Knowledge can flourish in green campuses with physical spaces dedicated to research, teaching, study, residences and social activities.

Despite the academic revolution in the 21st century, a significant number of universities and institutions are struggling to create an impact on the world map of academia. It appears that these academic systems have largely suffered from poor management and governance. Although centrally aided academic systems have fared better, lack of passionate academic leadership, coupled with suboptimal funding, has slowly crippled the academic edge of several institutions. Decades-old archaic ordinances and rules set forth by the regulatory agencies, not only rein the spirit of academic freedom and excellence, but also limit the flexibility of running a large university system. A solution to this is to implement the newly approved National Education Policy (NEP-2020) true to its spirit and in a critical fashion. Although funds crunch is quite often mentioned and is justifiable to some extent, money alone cannot be the solution. Also, at some places spending was a challenge than funding. A major reform in governance structure and managerial aspects is required so that good practices can be implemented. A top-down approach, by choosing good leaders and enabling them with robust policies, can have immediate impact in any system. For long-lasting impact, we must recommit ourselves to the building-blocks of the institutions – the faculty, staff and students.

There is often a talk on availability and shortage of quality faculty. However, we should be bold enough to ask ourselves why a quality faculty should choose to join our academic system. Once we answer this question and course-correct, we will be able to attract good people for faculty positions. We must make faculty positions attractive for young talent to be eager to join our academic institutions. Although salaries may not be negotiable, we should be able to offer quality labs, computing clusters, opportunities for collaboration, and research autonomy to candidates aspiring to teach and conduct research in academic institutions. What has helped in hiring more talented faculty is the rolling advertisements that several premier institutions have implemented. This dynamic process of hiring faculty should be implemented in all the universities. Heads of the academic system, Deans and Heads of various departments should be proactive in hiring faculty members through head-hunting. They should not wait to get an application, but approach promising candidates either directly or through the universities.

Once good facilities for teaching and research are provided to faculty members, institutions/universities should set high expectations. There should be an intense evaluation process to assess the quality of research output, motivating each and every faculty to push the boundaries of scientific research and strive for excellence. In addition to periodic review of faculty members and the staff, our academic leaders (VC, Director, DD, Deans and Heads) should encourage internal reviews to find opportunities for improvement and shed light on administrative blind-spots.

While we hear of a shortage of quality faculty, we do not talk enough about the shortage of well-trained non-teaching officers/staff members. The latter are equally important and crucial in managing day-to-day work. Academic and administrative staff are the backbone of the governance and management in the academic system. In the absence of competent non-teaching officers/staff, most premier institutions turn to top-heavy management by appointing many Deans/Associate Deans to help the system. Instead of this, we must invest in training and hiring quality administrative/technical staff and equip them adequately. This will not only increase jobs in academia, but also allow experienced researchers to focus on their area of expertise.

India produces annually more than 10,000 doctoral students in science and around 8000 students in engineering subjects. Given the low numbers relative to the size of the country, one would expect outstanding quality of doctoral research. However, this is not the case across India. Variation in the quality of Ph.Ds remains a prime concern and reflects clearly in the overall shortage of competent faculty in all the academic systems. What remains severely lacking is genuine academic discourse, research interactions and training in the philosophy of research. For India to be at the forefront of science and technology, we need to urgently look at the Ph.D. granting higher education system and provide fresh governance paradigms to make a difference. This absolutely requires capable academicians to provide necessary leadership as Heads of the institutions, research laboratories, and universities, in order to nurture young talent and establish superior research ambience. Premier academic systems like the IITs, IISc, IISERs and a handful of universities are a shining example of reasonably good academic governance and have produced quality undergraduate, postgraduate and Ph.D. students who contribute to India's academic and research prowess.

Centrally funded research laboratories, set up with a mission to start industrially relevant science research in the country, possess some elements of governance structure similar to premier institutions. However, it is imperative that we introspect and review these laboratories, with a clear focus on the future. It is often debated that many of these research laboratories will serve a better purpose if they could be integrated with nearby institutions/universities. Such an arrangement will create a symbiotic

relationship between laboratories and universities. This will not only strengthen applied research in the universities, but also allow research laboratories to utilize experienced and trained personnel and their infrastructure to promote interdisciplinary research. These approaches will be successful only through effective coordination between Heads of the institutions to realize the goal of globally competitive, flexible university systems.

An answer to many of the problems and concerns raised here, is to build a system that grooms effective leaders. For any sustained development, it is imperative that a stream of able and proactive leaders be available for the ever-increasing number of institutions. The presence of an effective academic leader can bring minimal bureaucracy hurdles and allow for quick implementation of the desired goals, targets and long-term vision. This means that authorities must recruit the right kind of individuals to head organizations. Also, this should be done before the term of the current incumbent is over, with a smooth transition of power set in place. The current procedure, where applications are sought for the top position, should be re-examined. In fact, the search and selection committees may find able candidates to head academic systems. A thorough search process for selecting an academician with an excellent teaching, research and administration track record minimizes the possibility of catastrophic failure. In fact, a study by A. H. Goodall, (*Research Policy*, 2009, **28**, 1079–1092) reports that a university performs better with a scholar-leader. The success of several academic systems is proof of this study.

Finally, it is high time that our Government embarks on the advancement of education and research as an important national mission. There must be serious discussions about replacing the current University Acts/statutes by new ones – similar to IITs/IISERs. Fellowships and funds should be available for doing research in areas directly relevant to issues of water, energy, food, security, etc., which should be critically assessed by national and international experts. A renewed emphasis must also be given to arts and humanities; science on its own can only bring technological change. However, for everlasting impactful change, we must equally invest in the arts and humanities. It is important that we develop a new governance and accountability model for all public-funded institutions/universities, and create a vibrant ecosystem where quality higher education and cutting-edge research can flourish simultaneously with critically acclaimed academicians at the helm of affairs overlooking growth, development and good governance at every stage.

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