

Indian science must attract more international students – opportunities for our Academics

Globalization of economy has had an indirect impact on the mobility of students across the world. Today over 4 million students are studying outside their home countries and will soon join the global workforce. India, with its 200,000 students studying abroad contributes just about 5% to this potential global workforce which consists of Chinese, Southeast Asians, Africans and students from the Middle East. Indian students have a tough competition in the global employment market, unless we locally start producing graduates who have a direct or indirect exposure to the professional global employment needs. Increasingly, the required employability skills tend towards soft skills like, communication in a multicultural society, cultural adaptability, and interpersonal skills; the ‘domain expertise’ of a specialized degree accounts for only 28% of all the needed skills. The major employment market in the corporate sector is looking more for a well-rounded ‘global citizen’, than a topper in examinations with a gold medal! The Indian higher education system is not geared to producing ‘global citizens’, but is targeting the examination-oriented gold medalists. The local employment market is also indicating that less than 25% of our professional graduates are employable. If this is the scene with local employers, how can we expect our graduates to be easily employed in the global market? India is proud of its demographic dividend (65% of population being less than 35 years of age) and is therefore forecasting that we can supply skilled manpower to the rest of the world. This ‘demographic dividend’ could end up being a ‘demographic disaster’ of unemployable graduates. It is here that the Indian science community can play an important role in helping our undergraduate, postgraduate and even Ph D students becoming globally exposed, while still remaining at home. They can be exposed to cultural and academic global developments by actually interacting and working, at home, with their counterpart international students from the world. Indian science can attract international student talent, if we evolve a planned strategy. Let us first see the magnitude of the need for exposing our student community to students of the world.

Today, roughly 35 million Indian students are enrolled in all inclusive Indian higher education institutions. These institutions collectively host approximately only 45,000 international students from 161 countries – mainly from developing countries. Thus for every 800 Indian

students, there is only one international student with whom he or she is likely to interact and learn about the culture and life of that foreign country. Indian students are also not exposed to international faculty. Their academic calendar, their rigid examination-based system and financial status does not allow them to travel and get some international exposure. Less than 1% of our 35 million students can afford to go abroad for higher education. There are no, or very few, national open scholarships for students to go abroad for higher education. There is total isolation for an average Indian student (barring the elites) to be exposed to the global professional environment. By the time these students pass out of their institutions, they are considered ‘unemployable’ by the national and international employers. Our system is producing graduates who are not ‘global citizens’ that the world employment market is looking for. So what is the solution and what role can the Indian science play?

A preliminary analysis of the subject areas for which international students come to India has indicated that over 26,000 (more than 62%) come to study areas of Agriculture, Science, Technology and Engineering; Medicine, Dentistry, Pharmacy and specialized areas like Computer Science, Environment and Modern Biology. The subject areas are mainly pursued under a regular degree course. Students from developed countries are interested in short-term internships or research scholar assignments, which are not offered. If our institutions open up to providing such short-term research opportunities, many more international students, particularly from the developed world, would be interested in coming to India. Their faculty would encourage their students to take such international visits to enrich their global experience. Today, the number of students who come to India from the developed world is miniscule. Compare this with American universities, where the international students are welcome to join the research and education environment. Talented Indian students are attracted by offering scholarships and research assistantships. India makes no such efforts to attract talented students from abroad. Working with international students and occasionally their faculty members will not only give an international cultural exposure to our students, but also result in long-term international collaborations. As a case study one can mention about a successful, non-degree Study India Program that was introduced at the University of

Hyderabad, which regularly attracts students from developed countries who come to India to study the socio-economic and political aspects of India. Surely, course modules on areas like Environment, Rural Energy, Digital India and Make in India, if academically well developed, with credit hours assigned to them, can further attract students from developed countries. This is where the Indian science establishment, as a whole – national laboratories and universities – can play a major role. Some of the measures are discussed below.

First, our national scientific agencies – DAE, DBT, DST, ISRO, ICAR, ICMR and others having active research and educational institutes under them – should evolve special schemes for offering short-term research scholarships to talented international students. These students should work under Indian faculty having Indian research students with them. Recently, agencies like the DST have significantly strengthened cooperation with Australia, Canada, EU, France, Germany, Israel, Japan, Russia, UK and USA. Co-operation with African countries has also been strengthened through India–Africa S&T initiative. In all these collaborations, apart from exchange of scientists, student exchanges should also be emphasized, giving opportunities for Indian and international students to participate in short-term projects that will give them global exposure of working in an international environment. Unfortunately, our national laboratories are not playing a dynamic role in integrating education with research, and many Indian students (or even faculty) do not get an opportunity to see the active research programmes of our national laboratories. The importance of teaching in our national laboratories which have acquired the status of ‘deemed university’ has been emphasized recently (Lavakare, P. J., *Curr. Sci.*, 2017, **113**, 1653–1654). The bringing in of international students could be a joint exercise between the universities and the national laboratories. DST currently supports three bi-national S&T centres, which are independent entities established under inter-governmental bilateral agreements with France, USA and Germany. In each of these centres, international and Indian students should be incorporated as part of the various joint programmes undertaken by them. The international students may not be regular degree students, but their work should help them get the necessary credit hours in their own home institutions. Universities in the developed countries are very flexible about the education experience that their students get abroad and how it can be incorporated in their degree requirements. Some of the autonomous Indian universities (and the new ones that are to be specially designated as Institutes of Excellence) should not find it difficult to adopt a similar flexible approach for their students undergoing international research experience. A sincere inter-agency effort has to be made if Indian students have to be encouraged to get involved in international research with foreign students and widen their research interest to challenging global research problems. In this process, many more Indian students are likely to be ‘global citizens’, ready for the global employment market.

Indian university system can also attract international students to science-related areas like environment, climate change, rural technologies, non-renewable energy sources, water resources management, healthcare, etc. Universities with expertise in these areas must develop short, semester-based or certificate/diploma courses which will attract international students from developed countries. These courses will be attractive ‘study abroad’ opportunities for students from developed countries like USA, UK, Germany, France, Singapore and Japan. These countries have evolved policies for sending their students abroad for what is often called ‘a global immersion’ experience. Some of these countries have even set target for the number of students that they would like to send abroad. These countries are looking for appropriate educational institutions that are willing to offer such short-term, science-related studies. Unlike China, Indian universities have not grabbed this market, for lack of interest and vision in the area of international education. Indian universities should not only aggressively attract students from developing countries for our degrees, but also make special efforts to attract students from developed countries to come and interact with Indian students. Our universities must be made sensitive to this large market of international students who are awaiting arrival in India. The Government of India’s GIAN programme of welcoming foreign faculty to come and teach in Indian universities should be opened up also for international students who could accompany the GIAN awardees and expose them to Indian science.

In conclusion, the large science and education infrastructure that India has built over the years can and should be suitably geared up and made more international-student friendly. For this, innovative short-term, credit-based education and research programmes should be developed and marketed to attract many more international students – particularly from the science-rich developed countries. Today, Indian students lack the exposure to international and global environment. With the coming of larger number of international students to India, our students are likely to be more conscious of the global developments. Such initiatives will help making Indian students ‘global citizens’ ready to be absorbed in the national and global employment market. India must use its science base to leverage the demographic dividend. The science-rich national laboratories and university departments must aggressively reach out to this international student community. It may be worth our while to take some lessons from the Chinese efforts in this area, which has suddenly made China an interesting destination for a much larger number of international students studying in China. If the Indian science community from the national laboratories and universities join hands, it will be a great boon to Indian and international students.

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