

Internationalization of Indian higher-education

I have been following the editorial by Lavakare¹ and the follow-up commentary by Altbach² on the internationalization of Indian higher education in the recent issues of *Current Science*.

As one who was involved in teaching in an Indian university college for a little more than two decades before migrating to Australia, I think I am qualified to share my thoughts. I am fully convinced that India has the potential to offer higher education and training to learners from neighbouring countries (e.g. SAARC nations) and those a little far (e.g. Indonesia, the Middle East and Africa). Many of these nations recognize, respect and regard the academic titles from India well. A few from wealthy nations may not prefer to come to India for higher learning. But then, internationalization as proposed by Lavakare¹ need not mean learners from wealthy nations only coming to India for academic titles.

Nevertheless, Altbach's² comments are true in that Indian education administrators and academics involved in the process need to consciously and conscientiously tighten up the loosened quality on the teaching–learning process. I am aware that an edifice called National Assessment and Accreditation Council (NAAC) exists today, but I am afraid that the opinions I hear of the manner in which the Council functions are not pleasant. Anyway, I do not want to go into the functioning of NAAC here.

I will offer a few of my thoughts following those of Lavakare¹ and Altbach². Higher education, similar to medical facilities, whether be in India or elsewhere, has become a commercial enterprise. We 'sell' information through colleges and universities. They are business enterprises today throughout the world. None can deny this. But within that shell of commercialization (e.g. 'XXXX University', Inc. emphasis on 'Inc.'), teaching–learning practice needs to grow and perform better in India.

I do not want to talk about Indian institutions 'better known' in the world. The woeful and realistic tragedy is, if the US knows, then the assumption is that the world knows. That is myth.

Colleges and the mushrooming universities need to change their teaching–learning practice. They need to exercise better quality control measures. For instance, teachers need to teach effectively, teach relevant materials and at the same time excite learners to learn and build capability in themselves and by themselves, so as to be able to practice in unknown future contexts with confidence. In one word, teachers need to be inspiring³. By and large, effective teachers at university and college levels are the biggest deficiency in India. Customarily, most of the Indian academics today think that perpetuating rote memory-based learning is the best teaching practice and Indian education administrators encour-

age the same. A person who manages to get grants for a couple of projects (how he/she manages them is another debatable point) is seen as the embodiment of knowledge in Indian universities and colleges. That is 100% false. An effective teacher need not be a grant-getter.

In short, India indeed has the potential to attract international learners from far and near. In the last few decades, our practices in teaching–learning have degraded. We are consciously and systematically choosing to ignore the elephant in the room.

1. Lavakare, P. J., *Curr. Sci.*, 2017, **113**, 2225–2226.
2. Altbach, P. G., *Curr. Sci.*, 2017, **114**, 425.
3. Raman, A., *Curr. Sci.*, 2015, **108**, 1197.

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Transforming science and technology in India

For the first time, the Economic Survey of India has introduced a chapter on science and technology¹. It emphasizes the point that as India emerges as one of the world's largest economies, it needs to gradually move from being a net consumer of knowledge to becoming a net producer.

Of particular interest to the present author is the underlying message of table 3 of the 2017–2018 report on investments in R&D. Table 1 summarizes data from table 3 of the report. The two key

inputs are trained scientific manpower and gross expenditure on research and development (GERD). When countries or economies have to be compared, it is meaningful to express these as dimensionless numbers. The Economic Survey of India does this – we have the ratio of researchers per million population and the ratio of GERD as a percentage of GDP displayed in table 3 of the report. One can compute a leverage term as the ratio of ratios: $l = (\text{GERD}/\text{GDP})/(\text{researchers}/\text{population})$. This is shown in

the last column in Table 1, while Figure 1 is a plot of the dimensionless parameters.

We see from Figure 1 that India needs a leverage term that is nearly an order of magnitude larger than that of Israel or the United States. These trends have been previously reported². Note that the dimensionless leverage term $(\text{GERD}/\text{GDP})/(\text{researchers}/\text{population})$ can also be expressed as $(\text{GERD}/\text{researchers})/(\text{GDP}/\text{population})$. In other words, the leverage term l is a measure of the multiple