

Problems with basic science education: Policy and practice

Basic science education is a very important component of human resource development programmes of any country. Only those students can excel in science whose understanding of the fundamental concepts is very clear. It has been observed that students with very high academic records fail to cope with actual problems in science, whenever subjected to think independently. This is because our system over-emphasizes the cramming abilities of a student. Memorizing some important concepts and expressions is inevitable and its importance cannot be ruled out. The fault lies with our evaluation and training of a student. This becomes more palpable when we look at the results of the research aptitude tests at the post-graduate level. Even these high-level tests follow the same pattern and students with poor understanding but better memory get through these tests. There is a need for more efficient aptitude tests. These tests should aim solely on checking the critical understanding of the subject/concept(s) concerned.

In the methods employed for teaching of science, the problem lies in the manner science is being taught right from the primary level itself. A good and qualified teacher is the first criterion for good teaching. There is an acute shortage of such teachers who enjoy teaching. Given the whims and fancies of the political masters of the country, the government policies too, look at teaching as an avenue for employment. This is evident from the sorts of quotas and reservations applied in the appointment of teachers. This is a way of providing social justice at the cost of the society itself. There are not any clear-cut guidelines for the appointment of teachers, lecturers or professors at different levels. The University Grants Commission (UGC) along with the Council for Scientific and Industrial Research (CSIR) had issued a certain set of guidelines, but they have been diluted

by the recommendations of the Rastogi Committee. Furthermore, a majority of states under political/regional considerations have devised their own SET/SLET (State Level Eligibility Test) exams. When UGC recognized such tests, it de facto, relinquished its status as a central body in such matters. This way, it has very little control over the procedure for appointment in the universities and colleges. All other criteria, except those which should be of prime importance, play their role. To have really motivated and qualified teachers there is a need to revamp the recruitment procedure. In our system of teaching the participation of the students is minimal. Very few teachers encourage the students to ask questions in the classroom. Innovative questioning from the students evolves the teaching procedure in a positive way. The teaching procedure should involve active participation from the students.

Another fact to be looked into is the current tendency of viewing teaching and research as two separate streams. Most of our best scientists in research institutions do not get an opportunity to teach. This deprives the students of the services of very potential teachers. On the other hand, many good teachers from the universities remain away from research. The universities in India are not rich enough to finance research projects and expend a petty fraction of the total budget in research. There is a need to pursue research and teaching in proper coordination. Whatever is achieved in the highly sophisticated laboratories must be percolated down to the students, who are the second line of the scientific endeavour of any country.

Most of our universities are highly politicized. Their political activities plus other factors, hardly let the universities work even for 100 days in a year. The science faculties too, get affected to some extent. This can be verified from the truncation of syllabi and

reduced number of practicals and assignments. The situation worsens further when some influential teachers are found to prefer politics to teaching. They do not take their classes/practicals seriously due to their preoccupation with politics and other matters. In this context, I would like to make a suggestion. All the employees have their unions and so do the teachers. The importance of leaders and unions cannot be overlooked in a democratic set-up. In such cases, teaching should be made optional. Let the system pay towards its democratic obligations in the form of their political activities. This will benefit the students. The science faculties need to be insulated from strikes, elections, rallies, etc.

Whenever such discussions start, people put forth a suggestion to increase the tuition fees in the education system in total, and higher education in particular. The arguments provided are most of the times very unrealistic and show a privileged class bias. I suggest that there is a need to think over the issue of funding of the education system keeping an eye on the basic guarantees provided in our constitution. Making education costlier will not help improve the situation. In a liberalized and globalized world, only sufficient research and development programmes can keep our pride and prestige intact. There is a need to make the private and public sector enterprises alike; spend at least a certain minimum percentage of their earnings on research and development. This way the cost of higher education can be realized easily.

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