

Undergraduate summer research – A positive step forward in attracting youngsters to science research as a career

S. K. Bhattacharjee's correspondence (*Curr. Sci.*, 2002, **82**, 613) addresses a very important question. To provide timely motivation to young people so that they think of scientific research as a viable career, is the job of the hour. In my view, the undergraduate years in college are the formative period. Provided the opportunity and the direction, the country can benefit by attracting bright minds to scientific research.

Summer research programmes are most helpful in this regard. There are a few such programmes, namely those conducted by the JNCASR, NCBS, TIFR, IAS, SINP, etc. In addition to these, a number of institutes have formal or informal tie-ups with other local institutes for students (mostly at the M Sc level) to carry out work for their dissertations, e.g. ACBR with CBT, Delhi.

All this put together caters to a very small number of interested students. I have a few suggestions in this regard.

All registered universities with faculties of science, medicine, agriculture or engineering should, on consultation with research investigators, create a list of researchers and their fields of interest, falling in the aegis of the university. In this regard, the method taken up by IAS is worth imitating on a local scale.

The list so prepared should be widely circulated to bring it to the notice of students of affiliated institutions. Such an arrangement is very much in vogue in the US universities. It does not require much money, but pure initiative.

Along the lines of the programmes conducted by the JNCASR, NCBS, TIFR, etc. all CSIR institutes and the many other such institutes of research may conduct their individual programmes. CSIR, being an umbrella to many laboratories, can hold a central selection process. The idea is access to information. So, the news of such an initiative should not be limited to shabby bilingual circulars. Newspaper advertisements once in a while, will do the needful. The recent advertisements like the KVPY fellowship, would be welcome. Also, with most such institutes having websites now, the information should be posted on the websites with clear terms of eligibility and procedure of selection. The JNCASR SRFP or the TIFR VSRP is pretty comprehensive in this matter. NCBS even provides a list of such students along with their lab of work and duration of stay.

Undergraduate medical students should receive special mention. That there might be research output from

them, that even they might be interested in careers of research, given the direction, should not remain a concept as alien as it seems now. In fact, one cannot help congratulating JNCASR, NCBS and TIFR on their specific mention of MBBS students being eligible for their summer programmes. The SINP programme has no mention whatsoever regarding MBBS students. Though the IAS programme holds MBBS students eligible and they have also been selected, the application form provided by IAS on the net has columns to fill up for only three undergraduate years and examinations. The IAS form should explicitly mention the non three-year degree pursuers as also being eligible, e.g. from the BE, MBBS, BVSc courses.

These, along with well-formulated plans to build up the culture of spending summers at research labs, will only do good to serve our present purpose.

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We owe accountability as teachers

Teaching in higher education is one profession which enjoys perhaps the greatest freedom for experiment and provides an opportunity to make intellectual progress. However for sometime now, the profession has lost its respectability and credibility owing to the misuse and misappropriation of the time the teachers have in this profession. More and more teachers are taking to tuitions in a big way to earn more money. They do no justice to teaching in the institution for which they are paid. The teachers seem to ignore the following facts:

- (a) The concept of limiting teaching assignments in an institution is an in-built mechanism for scholarly pursuits for a teacher.
- (b) The teacher commands respect by virtue of his knowledge, for being wide-open to academic interactions with the students, and for the manner in which he conducts himself amongst the student community, without any sense of superiority.
- (c) Even today, knowledge is wealth for a teacher. Nowadays, teachers lead a fairly comfortable life, with no rea-

son to bother for more money thanks to good pay-scales.

- (d) The state or UGC has never imposed a code of conduct for teachers. However, it was always expected of them and their associations to evolve a code of conduct for themselves, which was never done.

Time has come now to make teachers accountable to the society and to the state in some way and to some extent. A beginning can be made with the junior teachers with experience of less than

five years. It may be useful for such teachers to get a feedback from the students whom they teach, through an objective proforma to be filled by the students after the teaching session. This would enable the teachers to improve their performance. On this basis they could submit a yearly report of plans for the next academic year to the Head of the department for appraisal of a con-

sultative committee. The department/university/college should subsidize the buying of books by the teachers to a limited extent it can afford, to encourage them. The practice of getting feedback from the students was started three decades ago in some of the departments of a university, but was given up because of certain difficulties. It is unfortunate that some teachers do not want to know

about their weaknesses and shortcomings, which is so necessary for improvement of our institutions.

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Teamwork in science

The editorial in *Current Science* (2002, 82, 609–610) has raised very creditable ethical issues. Sharing credit within a team of scientists has not been fair as in any other professional activity. The quote by Max Perutz, 'I had my reward in their lasting respect and affection and it did not damage my scientific career' is very pertinent. The matter hinges critically on the transparency of personality and behaviour of the group leader. In the context of our country, the following considerations may help raise the ethical standards besides help encourage bright young students to opt for research in basic sciences, an issue that has already assumed serious proportions.

(a) Over-ambitious leaders have unduly boosted egos. As most scientific endeavours today require good team work, it may be wise to

implement schemes of rewards/incentives for a team's achievement in projects, rather than try awarding individuals. Such encouragements may be instituted right from the school stage in order to curtail harmful effects of individual egos that start building from the formative years.

(b) The administration of science and educational institutions needs to curb arbitrariness/adhocism in decision-making. Mandatory provisions to ensure such governance may have to be considered. The functioning has to become transparent to any scrutiny by a concerned individual and/or authoritative professional bodies.

(c) There is a lot of talk about achieving excellence in science in our country. It is necessary to note that freedom and expansiveness of the

thought process only can result in excellence. It requires a high degree of self-discipline, self-critical capacity, humility and the ability to discriminate relevant material out of a sea of information available. One also needs to train to grasp inspirational ideas as and when these come and then give the same a practical shape, free from preconceived bias. There is thus a need to identify peers/experts who can rise above self-projection. Usually such persons are not easily visible during a casual search.

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Sterile intellectuals

Intellectuals, being the conscience keepers of the society, it is essential that they must express their opinion candidly with honesty to defend truth without any fear or fervour to authority in power. Today, in India, we have a large pool of intellectuals. Unfortunately, only a microscopic minority have the courage to stand up to the authorities to speak their mind, even if the truth is harsh and bitter. Most others, however, prefer to be obedient, subservient and behave like chameleons, which is in sharp contrast to the expectation of the Nobel Laureate C. V. Raman who has said: 'Even a man of sensitivity and imagination can become

bound and unfree when he has to falsify his feelings. If he forces him to say that he likes what he dislikes and that he believes what he does not believe, then he will have to pay the price in that his spontaneous and his creative faculties will dry up.'

It is an irony that in the post-independence period, only mass production of such sterile intellectuals has been entertained. This is amply evident from the fact that even though we have celebrated the golden jubilee of our independence, we in India have not produced a single Nobel Laureate in the post-independence period. What is still more shocking is that the research

papers with thousand citation counts are either rare or nonexistent, in spite of fabulous funding on national research institutes. Further, such deplorable decline of quality has also percolated to other fields of human activities like politics, administration, administration of justice which consume enormous amount of public time and money. As a result, the institutions that have produced them and the institutions that have sustained them are cracking under their weight and are heading towards redundancy. Since these sterile intellectuals have lost their ability to speak the truth, there is a strong decline, not only in the quality of education and research,