Science writing course at the college and university level

There have been frequent discussions, write-ups, articles and viewpoints on the declining quality of scientific publications and reporting of science-related news and events in the media at various national and international fora. The most important reason for this decline is that science students and researchers do not lay much emphasis on communication and language; rather they focus on the scientific content of the subject. The most glaring defect pointed out among science students is their inability to use the English language well. Actually, many scientifically trained men and women lack the ability to express their thoughts clearly, systematically and impressively. Technically sound people are mostly poor in self-expression.

A clear style of writing is desirable for science students and researchers because a considerable portion of scientific activities is conducted by written communication of some sort. These include writing original scientific papers, reports, reviews, theses, presentations and correspondence with funding agencies. If these are in bad form or fail to convey the information accurately, these interfere with the progress and advancement in the career of the person concerned. Everyday something new is happening in the field of science, which is proven by observations and experimentation. But we do not have many well-trained and qualified people who can put down scientific achievements and breakthroughs in black and white in an elegant and simple manner. Therefore, the research conducted remains on the shelves of laboratories and loses its glory with the passage of time. Most of the Ph D students are not able to publish their work in reputed journals because of their inability to write accurately, precisely and in a lucid manner. The ability to express one's ideas effectively, either orally or in writing cannot be gained solely by reading books on improving writing skills or by mere practice. It has to be taught at some level.

In order to narrow the gap between actual research conducted in the laboratory and its communication to a wider scientific audience, I would recommend starting a special course in science writing at undergraduate and postgraduate levels, and it should be included in UGC model curriculum. This course should be made mandatory for all students studying science. A course in writing techniques is not considered necessary for science students because most teachers feel that it will be a waste of time. Also, many people assume that an average B Sc/M Sc student has already studied all the formal courses in English that he needs at the school level. It is the responsibility of a teacher to insist that a student's expression, whether oral or written, is important and that mastery over writing is not only desirable, but can be a stimulating experience. The course should also attempt to tap the potential of those who have an inborn flair for writing who then can pursue a career in science writing.

Students should be taught to write reports on seminars attended, write reviews of articles read and give presentations of scientific papers published in reputed journals. These courses will be of immense help to those who lag behind their contemporaries because of poor communication skills. Such courses will help in developing clarity of thought as well as understanding of the subject. Effective and impressive writing is a barometer to know how much a student has absorbed and understood the subject. Colleges/universities should invite guest lecturers who are well known in the field to inspire young students to improve their writing skills. Seminars and workshops can be organized to impart skills of good writing techniques among the students.

Written reports of progress of researchers should be made compulsory. These should be graded as much as on their rhetoric, composition and spelling as on factual data presented. Improvement in writing and communication skills becomes important when the researcher advances to a point where he has to make contacts with others for taking on a new scientific initiative. Good ideas that are clearly expressed will help the student reach great heights, whereas good ideas that are improperly expressed will get one nowhere. Science-writing course is the need of the hour for those involved in scientific activities.

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Mad rush for a career in computers: Symptom or disease?

I read with interest a letter by Prathap[1], lamenting the mad rush behind 'scope' and 'opportunity' through a career in computers. While Prathap has highlighted the symptoms, this letter attempts a diagnosis.

In earlier times, social status [or the lack of it] was guaranteed by one's birth into a given caste. The caste system maintained permanent social divisions with no lateral mobility between them. But today, social status comes from economic security, 'dignity' and 'prestige' that a job [not work of course!] confers upon an individual. With the 'job identity' gradually beginning to replace the 'caste identity' as a determinant of social status, the middle class is anxious and uncertain.

To put it in another way, in recent times, caste identities have been redefined [especially among the middle class] through the examinations one passes and the degrees one earns. Dave and Hill[2] have observed, way back in 1974, that 'Examinations in India form the basis of an educational caste system, where one's status in life, value in the marriage market, etc. are decided based on degrees earned'.

There is an inescapable link between job and the degree in India, because there is no lateral mobility between one profession and another. Consequently, there is no opportunity for correcting a mistake later in life. Today, it is widely believed

that the easiest way to settle down to a comfortable and 'respectable' job is through a degree related to computers. No wonder, it is the first choice.

In the hierarchy of motives defined by Abraham Maslow[3], the ambitious middle class Indian is forever struggling at the level of 'esteem'. He cannot aim higher. The obsession for a 'white-collar job' has been the consequence of social upheavals in the context of a caste-ridden society. In the West, people switch from one profession to another with facility and freedom. Such dynamism thrives in the West because their esteem needs are already met in good measure. Even average careers operate at a relatively higher level in Maslow's hierarchy.

In USA, a student aspiring for a university degree is supposed to prepare and submit a statement of purpose. It is supposed to spell out the reasons for pursuing a given field of interest. If an ambitious plus-two student from India is asked to submit a statement of purpose, it would be simple and almost universally similar: 'I want to get into an IIT. The course does not really matter. If that does not work out, I should study medicine at AIIMS. If that too does not work out, I shall do a degree in economics at JNU or some such place and pursue IAS'. And he/she would add helplessly. 'That is what everybody tells me!' Anything is acceptable as long as the degree guarantees a job of high social rank. It is the 'job' and the 'perks' that matter, not the 'work' and duties associated with it.

Ironically, we had first-rate scientists during the British rule when caste system was in place. Raman, Ramanujan, Bose, Ramachandran and others were born into a caste-ridden society. None of them studied in an IIT. They never needed to prove their social ranks by earning degrees. They pursued knowledge in its pure form and were creative. They operated at the highest level in the Maslow hierarchy. They pursued self-actualization through excellence.

Western education is eclectic. It nurtures individuality, promotes genius, tolerates eccentricity and is divergent in purpose. Quite by contrast, our education is hopelessly exam-oriented, our curriculum is oppressive, convergent and conformist. Naturally, the West is more successful.

Feudal sentiments and caste feelings continue to run deep in the Indian psyche. That is why our students are after power and position, not knowledge or skills. Even the conduct of the Indian Science Congress[4] has often betrayed the feudal attitude of the scientist community. Democracies have proved themselves better at doing science. Excellence and creativity are inescapably linked to the freedom of the mind.

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Millennium development goals and biodiversity

Attempts to conserve biodiversity are of paramount significance for every nation and accordingly, different steps are being taken by many countries. The local, regional and national scenario is that each habitat is unique and possesses specific groups of microorganisms and other community structures, and endemism is quite pronounced. Specific attempts are being made to locate, identify and screen these organisms for novel qualities in some dedicated laboratories. The geological and geographical variations in the landscape and waterscape, and variations in the edaphic and climatic factors support many diverse organisms.

The need for screening, documenting and conserving these unique life forms is now focused due to the novel characters that they may possess or the genomic structure that they have, which could be used for application of technology for human welfare or productive purposes. One of the main targets of millennium development goals is biodiversity conservation, combating desertification furthered by sound water management to ensure environmental sustainability.

Policies and programmes to arrest loss of environmental resources and biodiversity loss for sustainable development have been initiated by many countries. But in our country, a lot needs to be done if we have to reach the goal by 2015. Already five years are over and India has to catch up with the targets. In this direction, many of the government organizations, corporate sectors and autonomous bodies like power plants, defence establishments, etc. have vast stretches of land- and waterscapes under their custody and protection. These are well-protected areas, which could be encashed to enrich our diversity. Being well-protected areas and also distributed at various locations in our country, they represent different ecological habitats and harbour different types of communities, thus helping perpetuate local and regional wealth. In other countries, business and biodiversity are taken hand in hand and accepted as main interactions by many corporate sectors; many companies have come forward to support this venture. We also see the private sector moving toward greater corporate social and environmental responsibility and accountability. In India also, with a vision and commitment, some of these agencies should come forward, reorient their policies, motivate their personnel, and promote establishment of an indigenous biodiversity park. Commitment and involvement of the top management would yield results. Budgetary provisions need not be much, but with a little investment it can be their 'flagship' towards biodiversity conservation for sustainable development. Support from NGOs or academic institutions could also be used towards this goal.

Tremendous scope exists for building partnerships among the governments, private sector and NGOs to address environmental sustainability and biodiversity conserva-