# Improving our scientific attitudes and capabilities through good teachers and leaders

The dearth of creative and original thinking in our country has been observed with concern. Nirad C. Chaudhury[1] pointed out the lack of original thinking by academics, who terminated research on getting a job. T. K. Oommen[2] notes that the senior and entrenched scientists are chary of peer review of their work, except if done by a Western scholar. Amartya Sen[3] has noted that Western perceptions and characterization of India have had considerable influence on the self-perception of Indians themselves. Western scholars like Edward Shils have also noted the sterility of the Indian intellectual[4].

What we have noted concerning social scientists may well be applicable to the scientific and technical community. Editorial dialogues in the *Current Science* issues of 1999 and 2000 are illuminating[5]. The flaws and deficiencies are: (a) inability to articulate; (b) lack of quality in thinking clearly; (c) decline in verbal and written skills. Greater attention to teaching skills for effective scientific presentation is suggested.

P. V. Indiresan[6] comments on the lowly status and self image of the Indian scientists. He blames our backwardness to viewing technology as a problem, rather than viewing/absorbing technology to solve a problem.

Paul Dibb[7] of the Australian National University, Canberra while surveying the Revolution in Military Affairs (RMA) brought about by information technology, concludes the lack of pivotal system integration skills as the weakness of a successful RMA in India. Some reasons cited are lack of creativity, innovation and unconventional thought.

The aforesaid weaknesses may be directly attributable to our educational system. Foremost is the need for a high quality of instruction. Whereas educational psychology and teachers' training is a prerequisite for teachers in schools, for lectures, readers and professors who are supposed to educate the under- and post-graduates in colleges and universities, no such scientific technique to teach is imparted or is a prerequisite to become a *guru*. This may be a fundamental flaw. Another pitfall is not to update the syllabus and keep abreast with changes in knowledge. The attitudes of a teacher are infectious. Students will be a near mirror image of teachers.

The defence services universally were pioneers in fields such as management and leadership. Now, in the development of instructors and teachers for our civil academic fraternity, some of the training methods in defence forces could be adopted.

'Grooming instructors' is given serious attention by the defence forces. Students are assessed on their ability to impart instructions. Equal value is given to the 'methods' and the 'content'. Peer criticism is invited during rehearsals of lectures for classes, seminars or presentations for improvement and adherence to the time allotted.

Although one's teaching abilities can be improved by such strategies, we are still left with other deficiencies like lack of creativity and looking to the West for approval. The leaders are the ones who can show the way by example and who can help to develop creativity. Mistakes must be permitted. Scholars and students must be encouraged to express their views in seminars. In certain fields like computer software, the younger person may be far ahead and the senior must make efforts to be abreast with the latest research and events to be better than his juniors. The juniors must be fired with the scientific zeal and spirit to excel. This is the unending cycle of scientific inquiry and temper that must be institutionalized in the student community.

We cannot become original thinkers by not contributing articles to journals abroad. In fact, we should encourage students to contribute to foreign journals in all disciplines to give them a challenge to complete with international standards. Simultaneously, we should improve our own journals to become world class. Strategies for the same have been articulated elsewhere[8].

In conclusion, the weaknesses can be overcome provided our scientific community and leaders are trained to be good instructors and leaders. Creativity must be nurtured with emphasis on holistic/system level thinking.


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