



41

Encouraging students to ask right questions

Sangeeta N Kale

It is normally said that teachers lay the foundation for the kind of person one becomes. At the college and university level, I was very fortunate to have such people around. Since childhood I was fond of experimental science. I developed a habit of trying to do simple experiments either at home or in the school. I also loved to write down small diary of my curiosities in science a random set of notes, from “Black Holes”, “Teleportation”, and “evolution of mankind” to “walk on moon”!!

After my graduation (science) and post-graduation (Electronics-Science) from Pune University, I started my Ph.D. in Materials-Science in parallel with teaching at one of the top colleges in India, Fergusson College. I then went to University of Maryland, as a post-doctoral research fellow for duration of about two years. I have been quite fortunate to deal with various aspects of academics, right from formal teaching and handling research projects to counseling of students, formulation of university syllabi and doing administrative duties. I have been formally teaching basic Material-Science and Electronics courses. It was during this journey of teaching and research that I realized a gap

in formal education of city colleges where there was compartmentalization of education and research.

I feel that education is a continuous learning process. This is accomplished by gaining knowledge which has already been unleashed, and experimenting to know deeper and better. I have always thought that an ideal education system is one which strives to give both conventional science education, as well as being a platform for students to satisfy their curiosity and do experimental and theoretical research.

As a faculty in Fergusson College, along with formal teaching and laboratory assignments, I attempted to give my students more than what the curriculum could offer. This included extra talks by in-house and invited experts in various fields, from basic sciences to technological current-edge advancements. Since my area of research has been material-science in general and nanomaterials in particular, I established a base in this area in the institute and developed a modest research laboratory in the year 2003 with funds from Indian Space Research Organization (ISRO), University Grants Commission (UGC)-Department of Atomic Energy (DAE) and Department of Science and Technology (DST). This was an extremely difficult period for me, but we published many articles from (visiting scientist) at Fergusson College. I also got recognition as an Associate Member International Center for Theoretical Physics (ICTP), Italy.

Our research group has published many research contributions since 2003, which are published in peer-reviewed international journals like Physical Review Letters, Applied Physics Letters, Physical Review-B, IEEE Transaction on Magnetics, Journal of Applied Physics, Journal of Biomedical Technology, Applied Surface Science and Nanotechnology, among various others. My students have attended many international and national conferences to present their work. Students and young staff members work in my group, which are not only from Fergusson College, but also from colleges in and around Pune.

Especially for women professionals, family support is extremely important. The support of my husband, Narendra and most importantly, my mother-in-law, has been extremely

significant. My in-laws have unique qualities and provide constant encouragement, freedom and appreciation of my academic endeavors. There have been crucial times when I had to leave my two years old daughter (Nikita) with my in-laws to go for doing my post-doctoral studies. Only family support ensured that I could take this opportunity, which was one of the landmarks in my academic career.

A strong desire to pursue research has taught me that with immense hard work and sincere efforts, everything is possible. I have been very passionate about good quality research. Connection to research makes the process of education intrinsically dynamic. While it is essential for faculty in educational institutes to keep abreast of new knowledge through research, a proper balance needs to be struck between commitments and teaching as well. This is particularly true when under-graduate students are involved. I dream of a vibrant, creative, knowledge-based environment, which will not only benefit the students from career point of view, but will also enhance the institutional growth. It is this motivation, which has kept me going and hence also involving young students in my work.

Scientific research has its origins in a very fundamental human character – curiosity. It is very important though, to ask the right question. And I believe that it is one's job (as a faculty and researcher) to make students ask right kind of questions!!