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Teaching Statement

Right from my early childhood, I have had a fascination with Mathematics. Through all the years of my student life, I was fortunate to encounter some fantastic teachers. They were instrumental in inculcating exquisite taste for Mathematics in me. Simultaneously, I also encountered some teachers who believed in learning through rote and were not so effective. Although it is impossible to codify all points that distinguish an effective teacher from an ineffective teacher, there are some non-negotiable principles of fundamental importance. My teaching philosophy is guided by the following observations gathered through my teaching and learning experience:

- To be effective in classrooms, in addition to having command over the subject, a teacher must have good speaking skills so that various complex ideas can be presented in a simple and lucid manner. The focus is generally on “performance” of the teacher (rock star kind of image) and it needs to change to facilitate learning.
- Learning without objectives can be boring and I am of the belief that learning is more effective through interactions. Thus, for a constructive learning environment, it is important that the teacher is also a good listener. Moreover, it is important that a teacher has extraordinary patience when dealing with students.
- The attention span of an average student is not more than 20 minutes in a 60-minute lecture. Most students comprehend only 20-40% of a lecture and this percentage decreases as the course progresses.
- Overloading with information is counterproductive to learning. Students are good at capturing information that can be related to ideas and concepts they are familiar with.

- There is an acute shortage of qualified teachers worldwide and providing quality education to aspiring students is a big challenge. Use of technology may be useful in this direction.

Based on the above observations, I have come up with following *mantras* for effective teaching and learning outcomes:

Communication: For effective lecturing it is essential that the teacher can effectively communicate with students and capture their attention. To achieve this lecture are to be delivered slowly (with pauses in between) and in simple functional language. Students should be encouraged to actively participate in discussions in whatever form of communication they are comfortable with. Each lecture/course should start with objectives and a roadmap of the lecture/course and end with a concrete summary of the lecture/course. It is also helpful to provide a conceptual framework for understanding the lecture/course.

To achieve above objectives, the following points may be helpful:

- ✓ Have a plan for each lecture – time to be spent on various topics, Logical sequencing of topics.
- ✓ Prepare lectures in a manner that it is easy to provide outline in terms of three to four bullet items.
- ✓ Identify the objectives of the lecture and the questions which the lecture would address?
- ✓ Start your lecture with a summary of relevant portions covered in the past (before watching the sequel of a movie, sometimes it is useful to watch the trailer of prequel);
- ✓ Give examples which are relevant, and students can relate to;
- ✓ Do not overload students by covering too much material.

Creating conducive environment for effective learning: To provide a conducive learning environment it is important that students feel comfortable to ask questions in the class and actively participate in the discussions. To do so a teacher must be polite and patient while addressing questions and doubts raised by students. It is essential that a teacher caters to the academic appetite of both bright and weak students. Though it is a difficult exercise but with proper preparation of

lectures it can be achieved. It is useful to encourage the participation of bright students in discussions as fundamental questions asked by them during discussions help the whole class.

Continuously challenging the students: Learning is more effective through interactions. For students to be interactive in the learning process, it is essential that they are adequately challenged from time to time. Since a teacher must cater to academic appetite of bright as well as average students, students should be posed questions of various levels. Introducing unusual analogies, provocative questions and statements in between the lectures is also useful.

Effective assessment of students: For meaningful learning outcomes it is important that students are continuously evaluated through Short Quizzes, Home Assignments, and Examinations etc. It is also essential to provide timely feedback to students on their performance in Quizzes, Home Assignments, and Examinations etc.

Understand expectations of students: It is very important to know the expectations of students from the course. In this regard, using some Learning Management System (LMS) which provides forums for online interactions with the students is very useful. LMS is also useful in providing all the information about the course (e.g., Attendance Policy, Continuous Evaluation Policy, Grading Policy (at least general guidelines); Textbooks and other reference material; Code of conduct), announcement of all course related policies, and feedback to students on their evaluation.

Using technology to cater to the needs of nation in imparting education: There is a large population of aspiring students against severe dearth of qualified teachers. In the next few years, a large pool of well-trained manpower will be required. To cater to this requirement, it is essential to make use of available technology through which some courses by qualified teachers can be made available online.

Teaching Experience and Courses Taught: I have more than 34 years of teaching experience and have taught a variety of UG (Undergraduate) and PG (Postgraduate) courses. For my excellent teaching, I have regularly received letters of appreciation from the Chairman, Senate of IIT Kanpur. I also have experience of teaching at three US universities, University of California, Santa Barbara, West Virginia University, Morgantown and Marquette University, Morgantown. Here too my teaching was appreciated by students as reflected in the Students Reaction Survey of courses that I taught in these places. Additionally, I have also been a Research Fellow at the

Katholieke University, Leuven, where I helped a master's student in her MS project. I can teach a variety of Statistics courses at UG and PG level, some of which are listed below:

Statistics courses: Probability and Statistics, Introduction to Probability Theory, Sampling Theory, Real Analysis, Matrix Algebra and Linear Estimation, Probability Theory (Measure Theoretic), Elementary Stochastic Processes, Inference-I, Inference-II, Statistical Computing, Linear Regression and ANOVA, Non-Parametric Inference, Multivariate Analysis, Statistical Decision Theory, Statistical Reliability Theory, Order Statistics.

Mathematics courses: Mathematics-I (real and multivariable calculus); Real and Complex Analysis (advanced multivariable calculus and complex analysis); Real Analysis (metric spaces based); Mathematical Methods (Differential equations and special functions), Operations Research.

I have also taught elementary (non-mathematical) courses on “Probability” and “Probability and Statistics” to “Nursing” Students, and “Probability and Statistics” course to students of “Nursing and Biosciences”.