Statement of Teaching Philosophy

Heather Lehr

My teaching philosophy is a work in progress – each new teaching and learning experience seems to shed new light on the learning process. In this essay, I would like to explain where I currently stand as a result of nine years of private tutoring, assisting, teaching, and developing and organizing programs. From my observations, there seems to be an endless list of ways in which learning can occur and no one way which can guarantee it. This is why having my students actively engaged in their learning process is very important to me. My aim in any class I teach is to encourage my students to take responsibility for their learning.

Philosophy & Implementation

I value active participation and discussion in class. Student participation allows them to clarify for themselves and me what they do and do not understand and tailors the class to their needs. As such, my classes are often part lecture and part Socratic questioning session. After presenting material, I sometimes ask the students to work a new problem or two, either in groups or individually. As a result, they learn straight away that following my words in lecture is not necessarily equal to actually understanding it, encouraging more critical thinking and questioning during class.

Expecting active participation from a group of new students requires that they do not feel too vulnerable to say whatever they need to say. I put a high priority on personal relationships between myself and the students, individually and as a class. Learning student names and respecting the students as adults are my starting point for creating a solid learning environment.

I have experimented with aiding students outside of the classroom as well. For example, I encourage the students to talk to each other and exchange phone numbers and email addresses the first day. I have also taken steps to help catalyze formation of study groups. This was in part motivated by my experience in the Spring of 2000. The UT Learning Skills Center employed me and a colleague to develop a study group program for two special Calculus sections which were without discussion sections.

As a Supplemental Instructor for three semesters, I assisted in several first semester calculus courses. My students were often either first semester freshmen or had previously taken and failed the course. I believe that a student's difficulty in learning often stems from their beliefs about who they are and what they are capable of accomplishing. I saw repeatedly that fear truly could be a great hindrance to learning. Helping a student to just acknowledge these blocks can be all they need to begin to clear their path to learning. I saw that the difference between a successful student and one who was not can be as simple as persistence and a willingness to simply try something when faced with a new problem. I encourage my students to begin to be able to sit down to new homework sets and start from knowing that it is okay to not immediately know what to do – and keep moving.

I ask students to keep their focus on understanding the material. I remind them that when they truly understand the material, memorization is unnecessary and the A follows. I also hope to help them identify mathematics as a way to understand their world, rather than a magic set of rules used to obtain an answer. However, I do acknowledge from memorization and practice, understanding can follow. As a result, I try to teach in a way that naturally develops the material and consider it a matter of respect toward them to indicate a sense of why as well as how.

Truly, I feel the most important thing to awaken in my students is an ability to teach themselves. This desire has motivated me to stress several things I may not otherwise. I encourage them to be precise with mathematical language. This is one of the first steps I take to help them be able to read their textbooks. I occasionally walk them through understanding the statement of a theorem in a way that gives them an idea of how this can be done on their own. I often encourage my students to compose their own review sheets to pull together what they are learning. Early on I give them skeleton review sheets and pare it down to nothing as the semester progresses, leaving it entirely for them to create.

As a graduate student, I believe that becoming an independent learner is the single most valuable gift I have received. It has enabled me to open my mind and learn far more than I ever expected I could about a wide range of topics within and outside of mathematics. To plant that seed in my students is my highest hope. While this is an area I would really like to develop to become a better teacher, I am aware of at least a few people who responded to my approach and the results were very encouraging. The joy they find in being able to figure out a problem or understand a concept on their own is irreplaceable.

Other Special Experiences

While much of my teaching experience has been with Calculus, PreCalculus, and high school level students, I have assisted in higher level courses as well. These courses were structured so that students did even more leading and the teacher less to no lecturing. In the Biological Modeling course which I team taught with Dr. Karen Uhlenbeck, the students completed and presented original research projects. We had frequent active discussions over readings that were done outside of the classroom and a computer component of the course which was also done primarily outside of class. The Plan II Math course for non-math major honors students which I team taught with Dr. James Vick was essentially a history of the ideas behind primary movements in research over the last few centuries. The daily class discussions and heated debates over topics from Cardinality to Hyperbolic Geometry were inspiring. It was a joy to see that their minds had stretched and their critical thinking skills improved as a result of this interaction. In the summer of 2002, I assisted in a summer REU program on Wavelets in which I held computer labs, gave help sessions, and mentored some student research projects.

During the 2002-2003 school year, I organized the outreach program Saturday Morning Math Group (website www.ma.utexas.edu/users/smmg). I and the presenting professor developed a presentation on a fun mathematics topic that the students would not normally see in school. The meetings were attended by teachers, parents, and high, middle, and some exceptionally bright elementary school students. Generally, a lecture was mixed with hands on activities or games which helped the students really explore the topic and enjoy it. As coordinator, I created many of the activities and so explored ways to make the ideas accessible to all levels while still challenging the stronger participants. For example, Dr. Chaim Goodman-Strauss gave a presentation on game theory, primarily the ideas in the work of John Nash. Throughout his game show style presentation, he taught the ideas by engaging the students, parents, and teachers in various games and asking for their conjectures about different strategies. This experience, along with that of volunteering for Expanding Your Horizons, taught me a great deal about the role that mathematicians can play in changing public perception about, and interest in, mathematics. I feel these program are very important and would like to be involved in similar projects in the future.

Excell.	Very Good	Satis.	Unsatis.	V. Unsatis.	# of eval.
47.5%	35.9%	15.1%	1.1%	0.4%	278

Table 1: Results from all evaluations

Teaching Evaluations

Table 1 shows the combined percentages from all the evaluations for all courses I have taught or assisted so far at UT Austin. The students' responses were their evaluation of the "overall instructor rating". See my curiculum vitae for a complete list of courses. Please note that in many cases, not all of the students enrolled in a course completed an evaluation.