

Relja Vulanovic's Teaching Experience and Philosophy

Experience. I am an active and prolific researcher, but I also enjoy teaching mathematics classes of any level. For me, there is a connection between research and teaching. I find that research enriches me and makes me a better teacher overall. Research, no matter how applicable, without possibility to convey the knowledge and experience to students, is barren to some extent. I have a lot of experience and I like to share it with my students.

I started teaching in the U.S. in the Spring semester of 1992. Since then, I have taught a wide range of college/university math courses, from remedial mathematics to numerical analysis for graduates (a complete list can be found in my CV). I have had both “traditional” and “non-traditional” students and on both ends of the spectrum regarding their math background and willingness to study and learn. I usually have full control of my classes, except for the textbook prescribed by the department and the topics that need to be covered. However, I have also taught classes in which the departmental syllabus and block testing are strictly imposed.

My teaching practices are based on my experience and are, therefore, in a constant process of changing, adjusting, and improving. I often find something that can be done better next time around and I change my syllabi accordingly. These improvements are not necessarily in the absolute sense, but relative to my students’ characteristics that seem to be fairly invariant over several years.

Teaching Philosophy. I describe below my views and practices in those classes which I control. As for the classes in which my syllabus is governed by a higher authority, I can only say that I am a good team-player, even when I disagree with some particularities of the course set-up. I welcome such classes as an opportunity to more accurately compare the effectiveness of my teaching to that of my colleagues, who have to obey the same rules.

I strongly feel that the word “pedagogy,” although it is commonly used, is not appropriate for higher education and that it should be replaced with “andragogy.” Translated from Greek, these words have the following literal meaning: pedagogy = “child-leading” and andragogy = “man-leading.” Therefore, the term “pedagogy” is better suited for education of children and “andragogy” for adult education. The difference is not just formal. Adult learners are more responsible and have better internal motivation because they are more aware of their goals. This is indeed how I approach my students. I fully realize that some students do not behave like adult learners, but the only way to help them get on the right track is to treat them as such. Consequently, I try to instill independence and self-responsibility in my students, to the degree which is directly proportional to the class level. For instance, rather than punishing students for being absent, I motivate them to come to class by giving them regular in-class exercises, which I help them solve and which I grade afterwards. I also usually assign two types of homework problems: problems for class discussion, which I do not grade, and problems which are to be done online and graded automatically by programs like WebAssign. I stimulate students to do the first type of homework by including a selection of these problems in each test.

I take every opportunity to involve students in the learning process. I communicate with them and solicit their input during my lectures. Then, lectures are usually followed by the above-

mentioned in-class exercises. Students collaborate, working in pairs, and I walk around and observe their work, pointing out mistakes and giving suggestions. They write their work in blue books, which I collect and grade after each exercise. Regardless of how mathematically weak or strong my students are, my goal is to make them realize that mathematics is an important part of our culture and that it is everywhere around us. Whenever possible, I use appropriate examples (application problems, historical facts, and anecdotes) to point this out.

Over the years, I have come to the realization that weak basic math-literacy skills are the main reasons for difficulties many students have with math. This is why I teach my students to read and write math properly. I am fully convinced that this helps understanding. I wrote a 150-page-long manual on math literacy, parts of which I share with my students. Unfortunately, the increase in online testing and in the general use of technology work against the efforts to improve the writing component of math literacy. Reading, at least, is something we can still emphasize. I teach my students to recognize different mathematical objects and problem types (to be able to distinguish between terms and factors, between different types of equations, etc.) and to know the appropriate strategies for those problem types. On the one hand, I want students to pay attention to details, but, on the other hand, I also want them to see the “big picture.” There are two sides to every mathematical problem: the general strategy that is needed to solve the problem and the technical side, the execution of the strategy. Both are important and I emphasize them both.

Technology. There are two ways how I utilize modern technology in my teaching duties: inside and outside the classroom. As for the latter, I post my syllabi and all course materials online. All class documents, including test and other points and grades, are available to my students through Blackboard. I use online systems, like WebAssign or MyMathLab, for homework assignments, since students usually like the immediate feedback these programs provide (the correctness of the answer submitted and the overall score).

In the classroom, my teaching practices are enhanced by the use of technology. I regularly utilize the program which emulates the TI graphing calculator (the picture of the graphing calculator is projected overhead and the students can see the keystrokes necessary for various uses of the grapher). I find more advanced technology helpful in upper-level courses. During my career, I have used Mathematica, Derive, and Maple in many classes I taught. My general view is that the technology in the classroom is useful and important, but only as a tool which helps learning and understanding. I therefore use it in moderation and only when appropriate.

Since the Fall Semester of 2013, I have started teaching online classes. I find the preparation for online teaching interesting and challenging and I use all my organizational and andragogical skills to present the material clearly and effectively. I use Panopto and Blackboard in my online teaching. However, the class does not have to be an online class in order to provide students with recorded lessons. Starting in Spring 2014, the students of my traditional trigonometry classes have online access to all my lectures which I prepared separately (these are not video and audio recorded classroom lectures). In this course I also use my own text, which I make available to my students for free. Samples of my lectures can be found on my teaching webpage.