TEACHING STATEMENT
José I. Pareja

GENERAL STATEMENT

I believe that teaching really starts in the heart. You need to love to teach, love what you teach and most importantly know and understand why you teach in order to do it well. In my eyes the utmost important thing about teaching and learning (the why you teach) is the learner. Caring for the learner and showing them that you care about their learning and their success, gives you a head start in achieving this goal. This ideal applies to any level of the education continuum, be it K-16, graduate school or continuing education. Many times, as a high school teacher, a graduate student and a lead-instructor at the university, I realized that students needed to be actively engaged in relevant and meaningful experiences. I have seen how people shut down, doze off or even perform poorly when you simply ignore the relevance of the course to their everyday life and backgrounds, or when you just fail to address difficulties they might be having during the course. You need to challenge them (have high expectations) but not discourage, you need to be fair but not stupid, you need to be transparent with what you know and not omniscient, and finally you need to understand that even as a teacher you are still a learner.

I believe that learners need to experience more than a course focused in content area, or more than the struggle for a good grade. They need to learn how to think critically about their own learning, about what they are learning and about whom they are learning with. They need to experience this kind of learning in an environment outside their comfort zone in a different context, if possible in a different country. Furthermore, technology should be an important scaffold to their learning.

I believe that these considerations will help students become life long learners, responsible professionals and world citizens. To know the concepts of the discipline is not enough, although very important, learning about rainforests in a temperate zone is totally different from learning it in the Amazon. Or, learning about how to teach science with technology in a high school setting in a classroom at a university is not the same as learning it while teaching at a school, being mentored by a high school teacher and guided by your professor. In summary, learners need to understand the nature of their discipline. They need to experiment in it and with it. They need to touch, feel and apply their learning in different contexts, they need to make mistakes, they need to engage in field related investigations, when pertinent get exposure to situations or professionals in the studied area either through live encounters or through their literature, and finally they need to be reflective practitioners. They need to constantly ask questions like: how can I improve what I did? Where did I go wrong? Why? How can I change it?

How do I see teaching and learning in my different areas of expertise?

In biological sciences

I believe that each person is naturally curious and has an innate desire to understand his/her surroundings. Thus when students leave my science classroom, discussion, lab or field trip I want to have encouraged this curiosity and not discourage it. I want them to (1) be cognizant that science is an on-going process and not just a compilation of knowledge, (2) realize that science operates in a societal and worldwide context and not in “ether” or a bubble, (3) understand and integrate fundamental theories to solve real-world problems in conservation and related areas, 4) appreciate the diversity of life, in its simplicity and complexity, and 5) understand how technology has played an important role in the advancement of science. In my
teaching so far I think I have managed to achieve these goals successfully. An example I would like to share is when I developed the human footprint activity for the Applications of Geographic Information System (GIS) in a biology graduate class. The project was an anchoring assignment where participants had to make use of the learned technology and their ecology skills to solve a real conservation problem. They had to integrate primary literature in their final presentation and work with real data (spatial and biological). At the end they had to make a presentation to an audience that would challenge their claims. Many students had encouraging comments for this activity, and the fact that some of the ideas were drawn from a published paper made an immediate connection that what they were doing was science.

A second example is when I led groups of International Baccalaureate students to the Amazon rainforest (I have done this for 4 years). While in the forest students were engaged in group research projects. I followed the Organization for Tropical Studies (OTS) field course teaching model where students look for questions to be answered and then perform research for a short period of time, and finally present their outcomes to the class before leaving the area. The level of engagement and the number of positive comments that I received were very encouraging. People come back after five years and not only remember the field course, but their interaction with the native community in the area. Just being able to cope with a harsh environment out of their comfort zone and survive was eye-opening for them. Engaging students and encouraging them to become critical thinkers is paramount to the understanding of scientific principles. As a result, I am a strong proponent of inquiry-based learning in real contexts. I am also very fond of international exposures whenever possible. I like interactive lectures when appropriate, with group work and spicy discussions when possible. I am very well aware that not all students learn the same way, so having alternative and creative teaching strategies in my teaching approach will most certainly be valued.

As far as assessment practices go I believe assessments need to be diverse and contexts dependant. In an ideal world a series of essays or a practical assessments followed by simulations or case studies would be a good way to evaluate student’s level of understanding. I also believe that formative assessment needs to occur at all times during instruction. For example, if you have a classroom with 200 students’ maybe an objective test and a few short answer questions will be a preferred testing method. It would be more manageable and time effective especially if there is little or no help to grade. However, during the lecture one should constantly be assessing students understanding by asking questions and observing non-verbal/verbal cues. In this way one would learn about the learner’s prior knowledge, the difficulty areas, and one would be able to reflect on ways of improving and customizing the instruction as needed. Being aware of the context in which you teach, the students to whom you teach, the philosophy of the institution that you teach in, in addition to the content, the pedagogical strategies and assessment practices available is crucial to be a successful teacher. Finally, I think that technology must be used as a support for teaching and learning.

At the end I believe that enthusiasm and energy, a clear agenda of what you want to accomplish and truly caring about the learner will make me a better teacher. I also believe that my research has provided me with insights that would help tailor my educational approach in biological sciences. It will also help me contribute to the broader body of knowledge in the area of science education.
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In science education
Research is central to education. In science education constructivist theory, experiential learning and inquiry-base learning are important components for the understanding of teaching and learning processes. I strongly believe that a harmonic mix of these three should be the base of my teaching philosophy in the learning sciences classroom. Moreover in science education I believe that a thorough understanding of: 1) the nature of science, 2) the discipline content knowledge, 3) the pedagogical content knowledge, and 4) how scientist go about doing research in such discipline should be central to the curriculum (See above teaching biological science statement). The phrase depth or breadth is a conundrum. I believe in depth and a strong science content knowledge foundation. If the base is strong, building more complex concepts on top of this schema will be much easier. From a learner’s point of view I would encourage students to take science courses in different disciplines so that they can integrate and link concepts among science subjects more easily and hence approach more of an interdisciplinary or cross-disciplinary approach if desired. This perspective is based on my four year teaching experience at Markham College High School where I taught physics, chemistry and biology from grades 6-12.

If I were to teach a science method class, for example, I would base it on pedagogical content knowledge and its components (student knowledge, teaching strategies knowledge, assessment knowledge, context knowledge, and curriculum knowledge) as the core and make it very practical. For example, as part of the student knowledge component I will try to cover misconception, prior knowledge theory and conceptual change theory. As part of strategies knowledge I would cover inquiry-base learning and models like the GLM and Learning Cycle. I would talk about problem-based learning, collaborative approaches to learning, project-based learning, especially those strategies that reinforce how scientist do science. In terms of assessment, I would try to touch base on uses and types of assessments as applied to science education and uses of assessment. In terms of technology, I would make technology an integral part of the course. I would also use the national science standards in combination with the benchmarks of scientific literacy and the state’s standards to guide my teaching and model teaching to students. Finally, I would use ideas from Wiggins and McTighe Understanding by Design approach to design my curriculum.

In applications of technology to education and biological sciences
I believe that in today’s society knowing about technology and learning how to effectively use technology are crucial components of ones professional development. Being able to teach with technology and show others how to successfully integrate technology in their professional practice is an important task for faculty members. I think that integrating technology needs to occur with in a context and it needs to be meaningful.

If I were to teach prospective/ pre or in-service high school teachers how to incorporate technology in their classes, the first thing I would do is make sure that they have taken at least a pre-requisite courses in basic computer technologies and software programs before signing up for my course. With this as a base I would proceed to model, discuss and allow learners to experience the different uses of technology in either a real classroom or a modeled class, and I will ask learners to reflect on their practices. Additionally, I would strongly emphasize a hands-on approach with a problem-based inquiry touch as I did when I taught the graduate course in Teaching and Learning with Technology/ Geographic Information Systems GIS. This experience
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taught me that the slowest member of the class affected enormously the pace of the class and that the use of multiple tools to explore GIS reduced the development of expertise in any particular tool. Additionally, to make this experience more meaningful I would invite local educators (master teachers), when possible, to conduct part of a lesson and share their experiences and uses of technology in their classrooms to support learning. I might arrange for an ITV conference (synchronous communication) to remotely experience the use of technology in a classroom. Finally, I would use literature and research based arguments to strengthen the use and misuse of such technologies in classrooms.

The uses of technology are only limited to our imagination. I believe in embracing technology, testing its uses, reflecting, and re-testing if necessary. Being cognizant that technology should not be used for the sake of using the technology is important. I think that encouraging creative uses of technology is important and very stimulating for learners. Furthermore, reflection during the implementation, learning and applications of such technology in classrooms needs to occur in an almost automatic way. Finally, I am aware that technology is mainly a support for learning, however I am also aware that in today’s society technology literacy is more and more a requirement for many if not all job applications.

I feel very confident that I possess appropriate skills to integrate and teach successful classes in education technology, uses of technology in science education, biological sciences and teaching methods. I also embrace the challenge of using new emergent technologies in education.