STATEMENT OF TEACHING PHILOSOPHY
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I believe great teaching is a combination of science and art. The scientific aspect of teaching requires instructors to master the subject matter and to follow standard educational guidelines, while the art aspect of teaching needs teachers to understand how students learn and to treat each of them individually with respect and care. Ramirez (2020) summarized the five curricular recommendations and competencies for a neuroscience education: *1) promote critical and integrative thinking, 2) develop oral, written, and visual communication skills, 3) articulate the interdisciplinary and interdependent nature of the field, 4) build competency in quantitative reasoning, 5) build competency in experimental design, and promote an appreciation for how neuroscience may contribute to solving pressing societal problems*. I believe that only teachers who understand students' needs and challenges can help them achieve these goals effectively. The statement below will discuss ways that I used to approach my teaching goals in neuroscience education.

A. *Building a safe and inclusive environment for* students:

Fear and stress have a negative impact on memory, cognition and student learning. For this reason, many educators follow the mantra "Maslow before Bloom" meaning that we should not expect students to retain information or engage in higher order thinking tasks if they feel embarrassed, threatened or excluded by their teachers, peers or the complexities of science. In my classroom, I first make sure that I am teaching with a friendly attitude, so that students feel welcomed. Science is difficult and sometimes intimidating, so students need to stay positive to do their best. Thus, I give positive feedback as often as possible to encourage perseverance, teamwork, and creative thinking. If I need to provide criticism, I keep it constructive, specific and directed toward improvement. In a heterogeneous classroom, some students struggle with basic concepts and procedures, such as locating a sample under the microscope or calculating R^2 for a linear regression. It is crucial for these students not to feel inadequate or ashamed of their challenges, so I encourage those who have not yet experienced success to spend more time on their tasks, by praising their persistence and patience and by being present with them as they continue. Transforming the classroom environment, as a whole, means being approachable and available to students and emphasizing that mistakes are not things to fear or hide; errors are steppingstones toward success. I want all students, especially the most challenged students to know that in my classroom persistence and effort will lead to success. Taking this approach in the first few weeks of class, I am usually able to change a tense and nervous environment to one that is relaxed, focused and suitable for learning.

B. Student centered learning:

Feeling safe and included is just the beginning; student-centered learning requires teachers to recognize that individual students process information in different ways and that learners in the classroom can come to us with very different levels of content knowledge and lab skills. To address the first issue, I take the time to develop course materials in multiple formats (text, image, and video) to accommodate students with different learning preferences. In order to understand where students are in the learning process with skills and content knowledge, I leverage survey technology and frequently survey my students anonymously to assess comprehension without threatening their grades. I share these results to help students understand where they stand among their peers, and to encourage them to be better prepared for upcoming challenges. These surveys also help me to tailor my lectures to meet a particular cohort's needs and to prepare additional support for students who might need it. For example, I have provided guided reading for individual students who are facing challenges with lab manuals and instrument instructions.

C. Motivating Learning:

When designing my courses, I like to consider the M.U.S.I.C. Model of Academic Motivation developed by a VT professor Dr. Jones. The "S" & "C" in this model relates to students' perception that the teacher cares (C) about their learning and that they have a reasonable chance to succeed (s) in the course, both of which I addressed in the sections above. Here I will address how I motivate students by making my courses interesting (I) and demonstrating the usefulness (U) of content.

One reliable way to lose students' attention and interest is to overload them with facts and abstract concepts. I have a variety of tools for capturing students' attention and making abstract concepts comprehensible. For example, I integrate humorous animations into my online learning materials that keep students' attention, by making the material interest at the limbic brain level. To make the learning interesting and useful to the neocortex, I relate learning to students' everyday lives. For example, after teaching them about measuring nerve conduction velocity, I had students test the hypothesis that frequently playing video games can increase median nerve conduction velocity. We discussed the results of their tests and engaged in theory construction when the null hypothesis was true. Noticing that students are fond of energy drinks, I had them test the effect of Red Bull on nerve activity in crickets. Students' interest in this experiment provided me with an opportunity to engage them in data literacy and quantitative analysis, so I revised this lab to teach students how to run statistical analyses on collected data and test hypotheses on neuronal activity. They were surprised to discover that caffeine actually inhibits neural activity in insects, so I encouraged them to discuss whether or not caffeine could be used as a safe pesticide.

My goal in these strategies is to keep students engaged in learning, to encourage the use of the scientific method and to help them develop the habit of looking for practical applications of learning. These behaviors are key to building many of the competencies that Ramirez discusses, such as the development of critical, integrative and computational thinking and the ability to engage in experimental design and testing.

D. Teach students the art of learning:

In the last 7 years of my teaching career, I have focused not only on teaching the subject matter but also on teaching students how to learn; and learn effectively and efficiently. Bloom's Taxonomy suggests that establishing a robust knowledge base is the foundation for higher-level learning. Thus, I encourage students to take the challenge to memorize at their full capacity. But rather than coercing students into memorization fueled by exam anxiety, I equip them with effective strategies to navigate material that requires intense memorization. For example, I teach them about Ebbinghaus's Forgetting Curve and effective note taking skills. I also use structured assignments to give them opportunities to review course materials periodically.

I also encourage students to be interdisciplinary learners by bringing in methods and theories from different disciplines. For example, when I teach students to sort coronal mouse brain slices, I share the master painter Rembrandt's method of 'highlighting one important thing' in an image. This guides students to focus on one key structure in each brain slice. By applying Rembrandt's method 85% of students are able to sort brain slices correctly without any help, enabling students to process imaging information effectively and efficiently. Students also learn to appreciate how interdisciplinary approach can benefit their learnings.

While teaching the graduate-level course "Current Topics in Neuroscience," I focus on instructing students in efficiently and effectively extracting key concepts from any given complex scientific paper. This process transforms learning the subject matter into a by-product of them practicing effective reading strategies.

E. Fair and careful evaluation of learning outcomes:

A good evaluation system provides timely and accurate feedback to both students and instructors on their performance. I write every single question for all the courses I teach at VT. I collect stats on student answers and adjust my teaching strategy accordingly. I deliberately include challenging questions, but these questions are either tested by my TAs or reviewed with senior faculty to ensure fair evaluation. I also write individual feedback for questions in weekly assignments that are frequently answered incorrectly. This ensures that students are not just completing assignments for grades but also learning through the process. I encourage students to reflect on the questions they answered incorrectly, prompting them to identify key points they missed. When I was teaching first year community college students, I also guided them to recognize errors made under pressure during exams. By sharing my stress management techniques, I help them stay calm and focused, preparing them not only for exams but also for bigger challenges they may face in the future.

In conclusion, my teaching philosophy intertwines the precision of science with the nuance of art, emphasizing a deep commitment to each student's unique journey. By fostering a classroom environment that is both safe and inclusive, I ensure that every learner feels valued and supported. Ultimately, my teaching is driven by the commitment to unlocking students' potential and preparing them with essential learning tools for the myriad challenges they will encounter in the real world.