THE UNIVERSITY OF UTAH
DEPARTMENT OF
PSYCHOLOGY

Trafton Drew: Teaching Statement

My approach to teaching is grounded in the memory and attention research that serves as the bedrock for my research interests. When I design courses, my ultimate goal is to create situations that maximize the likelihood that: (1) the information I am providing is relevant and accessible to the students and, (2) they will retain the information after the class has concluded. In order to ensure that we are focusing on materials that are pertinent to the students, I frequently solicit the students for their interests and cater the focus of subsequent classes accordingly. This can be challenging in large undergraduate classes like Brain & Behavior, where it is important to cover certain materials (e.g. action potentials) even if few of the students are enthusiastically asking to address these topics. In cases where topics that need to be covered do not align with students' interests, knowing their learning goals helps shape how I frame these topics. One example of this approach is using videos and stories involving neuropsychiatric patients (which many students find fascinating) to contextualize the importance of the dopaminergic pathways in the brain (which most students do not find so fascinating). I apply this approach of catering the class to student interests in my graduate teaching as well. I teach my graduate level neuropsychology class by focusing on the different methods that are employed in this field. In this class, I ask the students to complete a survey of what neuroscientific methods they are most interested in and specifically highlight those methodologies throughout the class. This means that the class is different each time I teach it, allowing the topics covered to more closely align with the students' interests.

My hope is that this focus on making the materials relevant naturally results in more material being retained by the students. There is also a wealth of research from cognitive psychology researchers like Daniel Schacter and Hal Pashler that demonstrates that a variety of simple techniques which facilitate active learning result in improved retention of course materials. Repeated testing has been shown to be more effective than spending the same amount of time teaching or reviewing the same materials. As a result, I make an effort to quiz my students frequently on new materials they have learned. An added benefit of this approach is that it provides all students with an indication about how well they understand the materials we have covered in class so that they may seek additional help on the material prior to larger examinations. I also strive to find active learning exercises that will more fully engage the students. Some examples of this approach include asking undergraduates to debate what structures of the brain may be impaired in the zombies of 'Walking Dead,' and pitting teams of graduate students against each other in 'Neurotransmitter Taboo' games. These activities make it more likely that students will access prior knowledge during learning and encourage them to retrieve relevant information rather than simply recognizing the correct answer.

Over the course of the last year, I have developed a new course: Advanced Cognitive Electrophysiology. This class is the result of a new research group that I helped found, the Neural Oscillatory Research Group (NORG), and the grant that our group wrote together to help foster more interdisciplinary EEG research here on campus. In talking with students in NORG we found that there was a great deal of interest in learning more about EEG research. We now have a quite a few labs that employ electrophysiological measures, but there was no formal training on EEG methodology. The newly created class is a project-based course where the students form groups at the beginning of the term and then propose a project that culminates in a final paper. Projects are broken into two categories: new data collection and secondary data analysis. New data collection projects involve design, programming, data collection and analysis. It is a large amount of work, but it gives the students to learn by doing, which I believe is a much more effective way to teach them than to focus on lectures alone. This class has both advanced undergraduates and graduate students with a large range of experience with EEG, so finding a good balance for the level of material is challenging. To address this potential concern, I ask for each individual to declare a formal personal goal by the end of the class. Some examples include an undergraduate in the class who has the goal of becoming an expert at capping EEG participants, and a graduate student who is creating an analysis script that includes artifact detection using independent components analysis. One of our goals for this class is that anyone who completes it will be capable of designing and analyzing an EEG experiment to be conducted in the recently funded EEG facility. As we (this is a collaborative effort with Matt Euler and Brennan Payne) wrote in our application for funding for this facility, we believe that this new class and access to the new EEG facility will foster a new era of interdisciplinary collaborations across campus that involve EEG.

Although there is a tendency to focus on rote learning of facts during many neuroscience classes, I have found that my efforts to cater course materials to students’ interests and engage with active learning exercises shifts the emphasis towards more ‘real world’ applications of the material. I find that this emphasis informs my own research: I am continually searching for new ways to apply my neuroscience background to more applied questions. Ultimately, this has led to a mutually beneficial interaction between the overlapping fields of my teaching and research interests.