Statement of Teaching Philosophy – Timothy Mulrooney

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As a geographer and Geographic Information System (GIS) specialist, I’ve seen the field of geography explode since I took my first geography course more than 29 years ago. Courses focusing on qualitative descriptions and the memorization of countries and capitals have given way to geospatial data analytics, digital data curation and geostatistical calculations as part of data-driven decision making. We all use geospatial data on an everyday basis, whether looking up directions to the nearest restaurant, finding a land parcel on a county GIS site or looking at tomorrow’s weather forecast on a weather map. In the more than 20 years since I took my first GIS course, GIS technology has evolved from instructions typed at a command line to applications designed to create beautiful paper maps to the newest version of GIS software that allows users to consume, create and publish data and maps to the cloud for instantaneous use on devices everywhere. It is my responsibility to develop the next generation of GIS professionals and problem solvers that will be ready for the workforce or graduate school.

As someone who brings professional work experience to the classroom, I believe in inquiry-based learning where students can ask questions of interest to them whose answer requires a number of different skills. By the end of the semester, we will have covered the techniques that help students arrive at these larger answers. In many of my classes, students typically perform a semester-long project in which they use GIS technology to answer questions of interest to them. For example, in my lower-level GIS course, students may want to map some particular phenomenon (homelessness, health outcomes, air quality, etc.) of interest to them in order to explore spatial patterns, and more importantly determine the ‘why’ to this phenomenon. Students can use their subject matter experience to dictate ways to address this phenomenon. Throughout the course, we cover the topics on data types, field calculations, data importation and mapping techniques to support this work. In our upper-level classes students learn more advanced spatial clustering, interpolation and correlation techniques to make associations between phenomena (for example, food accessibility and COVID-19 incidence rates) and learn the sampling and testing skills to see if and to what degree these phenomena are related to each other. Regardless of the level of class, work in my classes is meaningful, utilizes skills that will
be required in today’s ever-changing workforce and plays on the foundation of data-informed decision making which guide decisions to improve institutional and organizational success.

Part and parcel to this these techniques are flipped learning scenarios where students spend quality time in the classroom applying critical thinking skills to some of the real-world problems that exist. In my classes, we address and answer real-world mapping problems that are also part of my research, including food security, COVID-19, health outcomes and the cataloging and data quality parameters required for high-quality research. We also address mapping and spatial problems related to crime, environmental justice, census data, parcels, spending patterns and utilities that are part of professional GIS realm. In support of our flipped classrooms, I have developed a YouTube web page (http://www.youtube.com/DEEGSNCCU) where I have personally created more than 80 tutorials covering different techniques covered in classes in support of GIS technologies. These videos have been viewed more than 675,000 times by the GIS user community worldwide and have been instrumental to students in this pandemic-affected academic environment.

During the summer of 2021, I spent countless hours developing data and updating these videos for my classes as the GIS community has migrated to a new version of desktop software that better enables GIS professionals to work seamlessly with cloud-based data and services. Other state universities are still using the older version of GIS software. It is essential that students are trained using the most current technologies to be workplace-ready and are provided with the support and training through these tutorials to be on the forefront of the most current technologies. This on-demand learning can reinforce skills learned in the classroom and cover terminology that is part of the professional lexicon while saving classroom meeting time to be a dynamic and interactive learning environment. Furthermore, this on-demand learning gives students an opportunity to learn or relearn these techniques on their own terms, whether it be after their part-time job, late at night or on the weekends. This YouTube portal also contains short presentations given at research forums by our students, giving insight into the inquiry-based learning we perform and examples of how this work can be applied professionally. These in-class projects make students competitive for coveted industry-based internships, which in turn make students that much more marketable and ready for the workforce.

While technical skills are needed to help get students secure that coveted job, soft skills are required to keep them. In our classes, we discuss current job listings in the field, salary
expectations, the technical requirements for these job listings, and ways to address deficiencies in skillsets using existing resources. We address techniques to answer technical questions at interviews, writing cover letters that will be seen by hiring committees, as well as life and work skills required to be successful in the workforce. Our inquiry-based presentations typically require a presentation component, so we talk about marketing yourself and presenting yourself professionally.

Professionally, the most satisfying part of my job is seeing students achieve success. This success can take on many forms. Since I started advising graduate students in 2012, I have mentored 17 graduate students to graduation. This represents well over ¼ of all graduate students (from a faculty of 7 or 8 during this time) who graduated from our department over this time. As part of student presentations based on inquiry-based problems stemming from my classes, 22 students under my tutelage have earned awards at conferences and workshops such as the NCCU Research Symposium, North Carolina Geographical Society Annual Meeting, the North Carolina GIS Conference and the National Society for Black Engineers Annual Conference among various majors such as Environmental and Geographic Science, Social Work, Physics and Biology. This success can also be former students who fostered these skills and have gone onto successful careers in the field at places such as the North Carolina Department of Transportation, City of Durham, Environmental Protection Agency, Lowe’s Corporation, National Forest Service, Army Corps of Engineers, real estate firms and private contractors or students who have gone onto Ph.D. programs at places such as North Carolina State University, North Carolina A&T State University and the University of North Carolina, Greensboro.

Lastly, beyond the pedagogical theory and technologies which help me best do my job, enough can’t be said about forging positive and transformative relationships with a student’s well-being in mind. In a day and age where it is easy to criticize, there still exists value in the qualities of integrity, decency, empathy and understanding that are unique to every student. While I expect a lot from students, I am receptive to the many challenges that our students face. Not only are our students sitting in our classrooms as students, but they may also be parents, care-givers, first-generation college students, full-time employees, veterans, current military service members, third-shift workers and people. I did not have those responsibilities as an undergraduate student and have worked hard over my last 18 years of teaching higher education to balance empathy and understanding while still holding students to high standards. I feel my
SRI scores speak for themselves and statements from these student evaluations such as ‘in his office frequently’, ‘videos for lecture and labs were very helpful in the learning process’, ‘helpful’, ‘organized’, ‘positive learning environment’, ‘understanding and helpful’, ‘received feedback’, ‘meeting the needs of students to succeed during the circumstances of this semester [pandemic]’, ‘always fair’, ‘concerned about student progress’, ‘homework is meaningful and relevant’, ‘always willing to help’, ‘passionate about teaching’, ‘enthusiastic’, ‘appreciate how you took the time to make the videos’, and ‘cares a great deal about his students’ speak to my commitment to student success and my understanding of the NCCU student body.

NCCU faces competition from for-profit universities, good-paying trades and other high-quality universities within the Research Triangle. As a result, NCCU must be receptive to the changing and fluid employment landscape, and ultimately the skills which are required to fill today’s and tomorrow’s jobs. It is paramount students have cutting-edge, disciplined, thought-provoking and caring educators who can prepare them for today’s ever-competitive job market. High quality teaching entails the ability to prepare students for the workforce or graduate school – this includes both the technical aptitude to be successful employees and the skills it takes to be part of a team, present in front of others, solve difficult problems and eventually become leaders. I am proud my teaching has been instrumental to the success of so many Eagles and look forward to facilitating continued success as I prepare more of them to leave the nest.