Personal Statement

Douglas Whitaker, Catherine Case, and Steven Foti

During the 2013-2014 school year, the University of Florida and P.K. Yonge Developmental Research School facilitated the implementation of an Advanced Placement Statistics course with a novel instructional approach. The instructor of record for the course – a highly regarded, experienced mathematics teacher – did not have previous experience with teaching statistics. Three graduate students in Statistics Education (the applicants) volunteered to join efforts with the classroom teacher, forming a four-person instructional team for the course. Though the three graduate students rotated the role of lead teacher for each lesson, we all participated in each class meeting, which presented rich opportunities for mentoring over the course of the year. The collaborative arrangement also sparked discussion of the importance of mentoring and provided occasion for us to refine our mentoring philosophies as a group, an experience that will surely affect our mentoring efforts and impact in the future.

Any statement about our mentoring efforts should acknowledge that our impact is a ripple effect of the mentors who have invested their time, energy, and knowledge in us. Fields like science, technology, engineering, and mathematics are as intimidating as they are fascinating, and we could never have reached the level of advanced graduate students without the guidance and encouragement of our teachers. For example, Douglas was introduced to academic research as an undergraduate by a professor who took a chance on him as a research assistant. Early on, she encouraged him to ask questions and found entry points for his meaningful involvement with the project, gradually increasing his responsibilities as he became more experienced. She guided him through the research process from formulating questions to exploring the literature to carrying out original research – skills that would prove invaluable in future graduate work. Currently, all three of us are fortunate to work with a Ph.D. advisor who takes very seriously his role as mentor. His support enables us to pursue our academic interests and take on challenges that would be daunting without his direction. These mentoring relationships have stimulated our personal and professional growth and have also motivated us to invest in the lives of others.

Inspired by the influence of past mentors and experiences over the course of the year, we have established several tenets of what could be called our mentoring philosophy. Perhaps the most important tenet of this philosophy is the one on which the others rest – availability. In AP Statistics this year, the team teaching arrangement resulted in an unusually favorable student-teacher ratio, which allowed time to connect with students individually. These interactions highlighted the importance of a flexible approach as different students require different kinds of support to thrive. Some students initiate relationships by asking questions and seeking feedback, while others are more reserved and respond well to more active support. In addition to observing and learning from each other’s teaching styles during the many hours we spent together in the classroom, we also learned to appreciate a diversity of mentoring styles.

Over the course of the year, we discovered that our mentoring efforts were most productive when we opened up and shared our own experiences. For example, AP courses represent some students’ first experience with difficult material that takes many failed attempts before it is mastered. As graduate students, we are no strangers to initial failure or pursuing subject matter that seems insurmountably complex. Our personal experience allowed us to empathize with their frustration while our subject matter experience allowed us to recognize their incremental progress and encourage them to persevere.
Supporting students to pursue a goal that at first seems out of reach is as important as any knowledge of statistical content we may hope to impart. Our current involvement with the university also led many students to view us as a resource for information about the next steps in their educational careers. We hope that our discussions of the application process, the nature of post-secondary education, and the many ways that quantitative disciplines can be pursued at the college level will serve students as they continue their education.

In our own academic careers, dedicated mentors have spurred our growth by taking note of our interests and ability levels then presenting us with challenges that stretched us beyond our comfort zones. Because it can be applied to a wide variety of topics, statistics is an excellent domain for practice of this mentoring strategy. For example, AP Statistics concluded with a final project that required students (working in pairs) to carry out the entire statistical process to investigate a research question related to their own interests. Students were largely unrestrained in their choice of topic, and we consulted with each pair at various stages to discuss statistical issues related to their projects and help them refine their plans. In some cases, new tools were introduced to enable students to complete their projects. For example, one pair of students learned new methods to address violations of statistical assumptions, while another explored use of the R programming language for data analysis and graphic representations. With support to develop their own ideas, we were impressed by the creative, well-designed, carefully-implemented projects completed by some students. We were especially proud of one pair of students whose project won third place in the national project competition organized by the American Statistical Association. After participating in the course, several students expressed interest in pursuing statistics as a major or minor at the college level. We believe that the experience of carrying out the research process themselves will benefit those students who pursue statistics as well as those who pursue research in other fields.

Beyond formal teaching of statistics, we hope that the mentoring provided through the team-teaching arrangement this year helped our students develop confidence and skills to pursue their future goals. Although the year is finished, we continue to be available to them as mentors, and several students have already reached out for advice on future projects or college applications. We will also continue our investment in future students beyond the team-teaching arrangement. Catherine is teaching A.P. Statistics at P.K. Yonge again this year, working more closely with the classroom teacher as she gains experience in statistics. As a group, our interests include statistical education of students at the K-12 and college level, preparation of teachers, and community outreach, and we intend to apply the lessons we have learned from our own mentors and from the experience of mentoring through team-teaching to each of these future endeavors.