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Shawn McMurrin TSSA Winter 2013

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WINTER 2013 TEACHING SKILLS STUDY AWARD REPORT
Shawn McMurrin, Department of Mathematics, smcmurra@csusb.edu, 7-7249
Joint Mathematics Meetings, January 2013

Teaching Skills Studied:

- Promoting and assessing writing in mathematics
- Developing conceptual understanding and promoting active classroom learning, use of real data, and technology in an introductory statistics class

Impact on/How Applied to Current Teaching:

I attended a minicourse on Teaching Introductory Statistics that proved invaluable in constructing a course that I taught for the first time in Spring 2013: Probability and Statistics from a Teaching and Problem Solving Perspective. This course is designed for secondary teachers in the Master of Arts in Teaching Mathematics program. Since most of the teachers in the course do not (and probably will not) teach a statistics course, my goal was to consider those concepts in probability and descriptive and inferential statistics that would help prepare my students to be better teachers of not only statistics, but also mathematics in general. I wanted to not only provide teachers with a basic understanding of the mathematics underlying statistical ideas, but also with tools and examples from statistics that could be used to enhance and make relevant topics in other classes such as algebra and calculus. The minicourse helped tremendously with the latter.

I learned ways in which to use real data in the classroom. With the background gained, we ended up analyzing several case studies in the course I taught. Based on what I learned in the minicourse, I also was able to emphasize the importance statistical literacy and demonstrate how the development of statistical thinking can be incorporated in other math classes with the benefit of providing relevance and natural interactive activities. The emphasis was on conceptual understanding rather than mere knowledge of procedures. With this emphasis we were able to better see the connections between statistics and other mathematical ideas. I learned how technology could be used to enhance understand in a user-friendly way. For example, we used the program FATHOM to visualize statistical concepts such as why many phenomena can be describe with normal curves. We not only explored how sampling can be used to make inferences about population parameters, but why the procedures used make sense. Our text, Online Statistics Education: A Multimedia Course of Study¹, is a (free) interactive online textbook that features interactive demonstrations and simulations, case studies, and an analysis lab.

¹ Lane, David M. (principal developer and project leader). <http://onlinestatbook.com/>. Developed by Rice University, University of Houston Clear Lake, and Tufts University.