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TSSA Report for Fall 2008

Awardee: Shawnee McMurrin (smcmurra@csusb.edu)

Mathematics Department

Name of Conference Attended: AMS Fall Western Section Meeting

Teaching Skills Studied:

I attended the special session focused on the history and philosophy of mathematics. Much of my experience with history of mathematics has focused on traditional Western Eurocentric topics and I am trying to develop a more diverse course in history of mathematics. This particular conference featured mathematicians who are considered experts on the mathematics of medieval Islam. Thus, the primary objective of attending this session was to bring other cultural perspectives and approaches to the historical mathematics presented in my Math 480 and MAT courses. In addition, a big push among math historians is the benefits of bringing “original sources” into any mathematics course. Many of the presentations focus on ways to do this, so the topics learned have the potential to enhance any math course I teach.

Impact on/How Applied to Current Teaching:

The presentations attended that directly relate to the primary objective given above were the following:

1. *The Math Wars: A Cultural Perspective*

This presentation was eye opening for me. I had never realized the depth to which cultural differences played a role in student learning. I have since attempted to learn more about how some students may perceive mathematics (and their instructors) through different cultural lenses and it has made me more sensitive to possible miscommunication in all my classes.

2. *Geometry and Architectural Design in Medieval Islam*

Religion as well as geometry played a role in the techniques used by Medieval Islamic artisans. Abu al-Wafa, a 10th century mathematician, wrote a book that presents a purely mathematical approach to the problems faced by these artisans. This book is not only a great original source that can be studied by students’ the topic also provides a great example of mathematics development based on real world considerations. In my class we will focus on al-Wafa’s intriguing “rusty compass” constructions.

3. *Trigonometry on the Edge: Interpolating Your Way to Medieval Astronomical Success*

This presentation discussed interpolation as branch of trigonometry during the medieval period in India and Islam. I was never aware of this topic and the connections between the historical approach and modern approaches. Thus the material not only makes for an interesting topic in Math 480, but can be used to enhance a numerical methods course.

Two other presentations also provided interesting new topics for my math courses are the following:

4. *Farey Series, Ford Circles & much more*

Here the presenter had a great hands-on activity involving fractions that I used in Math 308: Problem Solving for Elementary School Teachers.

5. *Impact of G.H. Hardy and a Course of Pure Mathematics*

G. H. Hardy had a great affect on the development of modern analysis and teaching reform in the early 20th century. I believe that discussions of both his serious mathematics and his influence on the teaching of mathematics are useful for my analysis students, especially those who plan to be secondary school math teachers.

Date Submitted: 8/31/10

Signature: _____

Shawnee McMurrin