

Abstract: 2005-2006 Wisconsin Teaching Fellow SoTL Project
Carol E. Seaman, University of Wisconsin Oshkosh

Learning through problem solving and writing across the curriculum are two major threads found in the literature on the scholarship of teaching and learning. The National Council of Teachers of Mathematics (2000), in adopting the *Principles and Standards for School Mathematics*, advocated that all students of mathematics engage in problem solving and communication, both oral and written, at all grade levels. “Solving problems is not only a goal of learning mathematics but also a major means of doing so” (p. 52). “Communication is an essential part of mathematics and mathematics education. It is a way of sharing ideas and clarifying understanding.... When students are challenged to think and reason about mathematics and to communicate the results of their thinking to others orally or in writing, they learn to be clear and convincing” (p. 60). Mathematics education researchers have established that problem solving and written communication are also essential components of the mathematical preparation of preservice elementary teachers (Emenaker, 1995; Griffith, 1989; Kim, Sharp, & Thompson, 1998; Pokay & Tayeh, 1996).

This SoTL project is a systematic investigation into the effectiveness of writing assignments in a course in geometry and measurement for elementary education majors. This course has been designed so that all students work collaboratively to solve problems and then provide a written report in which they describe their solution and present a justification for that solution. As part of the process of grading these reports, the instructor provides written comments on their use of language (both common and technical) and on the form and logic of their arguments. The objective is that, through these comments, students will learn to write about mathematics, using both the English language and the mathematical language of the course correctly and appropriately. And so this study asks: 1) Do these written assignments improve students’ abilities to talk and write about mathematics? and 2) In particular, do the instructor’s written comments on students’ use of language and logic assist them to develop more sophisticated and mathematically correct written expositions of their mathematical thinking? The study uses qualitative methods (interviews of students and open-ended questionnaires) to determine students’ use of the instructor’s written comments and the effect of such comments and the writing process on their ability to present effective explanations and clear and convincing justifications. The analysis of the results is currently in progress.