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David A. Brown* (dabrown@ithaca.edu), Dept. of Mathematics, 402A Williams Hall, Ithaca, NY 14850. *Experimental Mathematics and Writing: Motivating First Year Students.*

Combining computer experimentation, writing, and discussion in a course intended for second semester mathematics students, I witnessed the growing understanding of students in the creation of mathematics. Using open-ended problems and even some famous unsolved problems, such as the Collatz Conjecture, I crafted questions to motivate students to investigate topics. After a brief discussion, students would play with the problems, using Mathematica to generate and substantiate conjectures. Students continually discussed ideas with each other and with me, and kept a course log for recording ideas. Each week the students would produce a report, complete with supporting computer and mathematical evidence. Emphasis was placed on a clear style of mathematical writing. The course culminated with an in-depth research project.

In this talk, I discuss how this approach helped foster a deeper understanding of why we study mathematics and how mathematicians tackle ideas. I will illustrate, with concrete examples, how student understanding improved during a semester full of writing. I also indicate how student attitudes toward mathematics changed over the course of the semester. Many students did not initially care for the open-ended approach, but ultimately came to value it. (Received September 12, 2005)