

1078-97-307

**Roberto C Pelayo\*** (robertop@hawaii.edu), University of Hawai'i at Hilo, Mathematics Department, 200 W. Kawili St., Hilo, HI 96720, and **Matthew Haslam** (mhaslam@hawaii.edu), University of Hawai'i at Hilo, English Department, 200 W. Kawili St., Hilo, HI 96720. *A bottom-up approach to mathematical writing.*

Recently, much work has been done to effectively introduce writing into mathematical learning. Of these approaches, few focus on how mathematical writing enables the student learner to become a knowledge creator, as opposed to a knowledge consumer. To this end, the authors developed a curriculum for a summer transitional course in Pre-Calculus consisting of three major components: a mathematics workshop, learning logs, and mathematical discourse. In the workshop, students enter a collaborative environment in which individual computation serves as data for abstraction. Articulated in the Learning Logs, carefully scaffolded problems ask the student learners to generalize their computations into more symbolic theorems. Via these logs, trained teaching assistants enter into a discourse with the students, challenging their abstractions under more general and nuanced hypotheses. This framework gives the student the role of a knowledge creator, constructing his or her own generalizations and theorems. In this talk, we will present elements of this curriculum, along with various writing samples and results that illustrate its effectiveness. This talk will also touch on many of the cognitive psychological aspects of this “bottom-up” approach to mathematical learning. (Received December 12, 2011)