Research has shown that Peer-Led Team Learning (PLTL) is an effective recitation model for students to learn various STEM subjects. However, this model is not commonly used in mathematics courses at research institutions. In this talk, we will outline a large-scale implementation of a PLTL workshop model in a first-semester calculus course at the University of Rochester. We will describe the workshops themselves as well as the training class for the peer-leaders, and will discuss the effectiveness of this model as observed through improved student performance and leader growth. (Received September 22, 2015)