

1077-VI-2406      **Jason Samuels\*** ([jsamuels@bmcc.cuny.edu](mailto:jsamuels@bmcc.cuny.edu)). *An Innovative Approach to Derivative Instruction Using Technology to Explore Local Straightness.*

Many students taking calculus for the first time are perplexed by the use of limits and the role of infinity in developing the derivative. As a result, they implement symbolic procedures with no understanding. I will present an approach to first semester calculus instruction which allows students to build on previous knowledge of rate and slope. In this approach, the derivative is introduced by focusing on its essential geometric property, local straightness. I have designed a mathlet to help students discover the derivative in this context. This novel sequence of instruction begins with guided discovery and leads to techniques of differentiation and the familiar symbolic definition using limits. The presentation will include a summary of the approach from the initial intuitive introduction to the extension to formal techniques, a demonstration of the mathlet, and examples of student learning. (Received September 22, 2011)