

1023-Q1-948

Clark Wells* (wells@gvsu.edu), Department of Mathematics, Grand Valley State University, 1 Campus Drive, Allendale, MI 49401. *Guided Discovery of “Big Picture” Results in Analysis.*

It can be difficult to show students the beautiful picture of analysis that we see. If we help students understand why such a picture needs to be painted, though, they will not only paint their own pictures, but, as they paint, they will insist on describing the beauty to us!

A great strength of the Moore Method is that it puts the responsibility for the proof of theorems into the hands of the students, which builds ownership and understanding. Inspired by this idea of release of responsibility from instructor to students, Dr. Jonathan Hodge and I created a collection of discovery assignments and activities that we used in a Fall 2006 class as a “sketch book” in analysis. Extending the painting metaphor, we have the students step away from what they may see as color-by-numbers pointillism, in which the placement of colored dots may seem to have no rhyme or reason, envision the finished painting, and draw it in bold strokes!

Starting by using Newton’s method to help students see why calculus needs real numbers, the activities lead students through the construction of the reals and guide them to discover for themselves not just proofs, but some of the main theorems of first semester analysis. In this talk, I will discuss the activities and outcomes from the class. (Received September 23, 2006)