

1135-97-39

Kevin C. Moore* (kvcmoore@uga.edu), 105 Aderhold Hall, Dept. of Mathematics & Science Education, University of Georgia, Athens, GA 30602. *Visualization: Constructing what is “out there”*.

The use of representations is pervasive to the teaching and study of mathematics, so much so that individuals often treat representations as being self-evident with respect to the ideas they are intended to represent. In this report, I draw on Piagetian ideas to characterize representational activity as a complex process of reflection, abstraction, and internalized mental coordinations that ultimately influences what we perceive as being “out there”. Specifically, I focus on evolutions in students’ ways of thinking for graphing to illustrate differences between thought dominated by sensorimotor experience and thought dominated by internalized mental operations that, in turn, become objects of thought. By focusing on the aforementioned differences in students’ thinking, I argue that the former ways of thinking—those dominated by sensorimotor experience—are less productive for students’ learning than the latter ways of thinking—those dominated by internalized mental operations. I also argue, however, that common instructional practices foster ways of thinking that foreground sensorimotor experience, thus not affording students sufficient opportunities to engage in representational activity that is conducive for their constructing generative mathematical ways of thinking. (Received June 28, 2017)