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Costanza Piccolo*, costanza@math.ubc.ca, and **Warren Code**. *Insight on students' thinking as they solve related rates problems*. Preliminary report.

This study started with a thorough analysis of student work on problems involving related rates of change in a first-year differential calculus course at a large research university. In two sections of the course, we coded and analyzed students' solutions to geometric related rates problems on various course assessments (quizzes and exams), and tracked students' learning throughout the term. Our findings revealed a widespread, persistent use of algorithmic procedures to generate a solution, observed in both the treatment of the physical and geometric problem, and the approach to the differentiation. To investigate students' understanding of related rates further, we conducted "think-aloud" interviews with some students after they completed the course. In this talk, we will present an analysis of the student thinking observed during the interviews, and what insight we gained about typical student misconceptions involving related rates. We will discuss how our results compared with, and possibly enhance, existing work on student difficulties with related rates problems. (Received September 25, 2012)