Classroom coaching is an on-site professional development model based on a partnership between a teacher and a classroom coach and focused on research-based instructional strategies and mathematics content. Its ultimate goal is improved student learning in mathematics. Examining Mathematics Coaching (EMC) is a research project studying the types and depth of knowledge held by effective mathematics classroom coaches. EMC researchers have been working with mathematics coaches and teachers in grades K-8 classrooms for over three years. This talk will describe what makes a knowledgeable coach, elements of professional development for coaches that is focused on standards-based mathematics, and opportunities for mathematicians to engage in mathematics classrooms through coaching. (Received August 21, 2012)