The article describes a professional development program for middle school mathematics teachers. The program focused on developing a deeper conceptual understanding of the mathematics with connections to instructional practice. In terms of instructional practice we consider the teachers’ role in supporting student understanding, perception of what it means for a student to understand the mathematics, and instructional strategies used. The article describes shifts that were evidenced in teacher analysis of student response and in the range of pedagogical moves the teacher would make based on that analysis.