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The Oregon Mathematics Leadership Institute (OMLI) is an NSF-funded partnership aimed at increasing mathematics achievement of students in partner K–12 schools through the creation of sustainable leadership capacity. OMLI’s 3-week summer institute offers content and leadership courses for inservice teachers. We report here on one of the content courses, entitled Comparing Different Geometries, which enhances teachers’ understanding of the (Euclidean) geometry in the K–12 curriculum by studying two non-Euclidean geometries: taxicab geometry and spherical geometry. By confronting teachers from mixed grade levels with unfamiliar material, while modeling protocol-based pedagogy intended to emphasize a cooperative, risk-free learning environment, teachers gain both content knowledge and insight into the teaching of mathematical thinking. (Received September 26, 2006)