1056-N1-2058 **Tina Louise Johnston*** (johnstot@onid.orst.edu), Department of Science and Math Educaiton, Weniger 239, Corvallis, OR 97331-6508, **Henry Gillow-Wiles** (gillowwh@onid.orst.edu), Department of Science and Math Educaiton, Weniger 239, Corvallis, OR 97331-6508, and **Margaret L. Niess** (niessm@onid.orst.edu), Department of Science and Math Educaiton, Weniger 239, Corvallis, OR 97331-6508. *Helping teachers develop algebraic reasoning skills through investigation of algebraic proofs and mathematical discourse experiences.*

When the National Council of Teachers of Mathematics (NCTM) included reasoning and proof in K-12 mathematics standards (NCTM, 2000), elementary teachers were placed in a key role in mathematics reform. However, many elementary teachers have little training or experience with aspects of mathematical reasoning that must become the norm in classroom instruction (Blanton & Kaput, 2005). Using a combination of written and video-recorded qualitative data with performance based quantitative data analysis, the effect of a 10-day intensive summer institute focusing on developing algebraic reasoning and concept skills in 12 in-service K-8 teachers was analyzed. Results indicate that the in-service teachers perceptions about algebraic reasoning showed evidence of growth to a more complete and thorough understanding. This new understanding was further expressed by a statistically significant increase in the teachers ability to construct coherent and correct algebraic proofs from both familiar and unfamiliar conjectures (p=0.012). Documented reflections of teachers during and after participation in the program suggests that the participating in-service teachers planned to integrate both the pedagogical aspects of the course into their teaching placements as well as ideas of algebraic proof. (Received September 23, 2009)