962-P1-425 **Diane M. Spresser*** (`dspresse@nsf.gov`), National Science Foundation, 4201 Wilson Blvd., Room 885, Arlington, VA 22230. *Handshaking problems: paths to generalization and proof.* Preliminary report.

As discrete models, graphs are a potentially fruitful vehicle by which to introduce to undergraduates, as well as to high school students, the role of generalization and proof in mathematics. Graph models provide many opportunities to delve into important dimensions of how one thinks in mathematics, in a context rich with examples that are accessible to students in grades 10-14. We consider a handshaking problem and its generalization as an example of this, and reflect on the increased mathematical demands placed on both teacher and learner as the learner moves progressively from concrete problem solving, to generalization/conjecture, and then to age-appropriate justification and proof. We also explore another dimension important in mathematics: challenging the necessity of each assumption and the ramification of its removal or relaxation. (Any opinions expressed are those of the author and do not necessarily reflect those of the National Science Foundation.) (Received September 14, 2000)