1003-97-1057 **Walker M White*** (`wmwhite@udallas.edu`), Department of Mathematics, University of Dallas, 1845 East Northgate Drive, Irving, TX 75062. *Discovery Learning in Logic Education.*
Mathematical logic is often seen as a technical discipline with little relevance to how "mathematics is done". But this is a complaint about logic education — which often focuses on formal syntax — and not the field itself. With discovery learning in logic education, students can learn how logic and mathematics relate to their everyday use of language.

In this talk, we show how to introduce discovery learning by focusing on natural language, and deemphasizing formal syntax. Students learn to use natural language to prove theorems and construct models for axiom systems. They also learn how to use nonstandard models as counterexamples, insights into a proof, or the motivation of new axioms.

By itself, however, this is not enough for discovery learning. The structure of the course must motivate and reward this type of learning. We will also dicuss how institute portfolio grading, and how this can encourage students to attempt challenging and unfamiliar problems.

Throughout the this talk, we will examine the opportunities and challenges that have been encountered in these types of courses over the past 30 years. We show how it has been successfully adopted at all levels of the curriculum, from bridge courses for majors to liberal-arts mathematics classes. (Received October 03, 2004)