

**Meeting:** 1003, Atlanta, Georgia, MAA CP V1, MAA Session on Research on the Teaching and Learning of Undergraduate Mathematics

1003-V1-956      **Glenn Ledder\*** (gledder@math.unl.edu), Department of Mathematics, 203 Avery Hall, University of Nebraska-Lincoln, Lincoln, NE 68588-0130. *Using Web-Based Testing Software for Calculus Instruction*. Preliminary report.

Web-based testing software has considerable potential for instructional use, but this potential remains largely untapped. The University of Nebraska-Lincoln has been working on a project funded by NSF's Assessing Student Achievement (ASA) program; the goal of the project is to determine the best question types and assignment protocols for instructors to use in writing the assignments and the best strategies for students to use to learn course material from doing the assignments. We hope to improve student learning by generating knowledge that can help students get the most out of their study time.

UNL's web testing software allows for questions with randomized parameters and answers in the form of mathematical formulas. The system allows questions with some abstraction. An example of this type of question, which students find difficult, is to find the derivative of  $xf(x^2)$ , given that  $f' = g$ . (No formulas are given for the functions  $f$  and  $g$ .) A great variety of assignment protocols is possible, including single-attempt quizzes, "gateway" quizzes that are taken until passed, and mastery assignments that require students to meet specific objectives to complete an assignment. Strategy choices consider what students do after they get a question wrong. (Received October 01, 2004)