

1077-O5-1158

**Douglas B Meade\*** (meade@math.sc.edu), Department of Mathematics, University of South Carolina, Columbia, SC 29208, and **Philip B Yasskin** (yasskin@math.tamu.edu), Department of Mathematics, Texas A&M University, 3368 TAMU, College Station, TX 77843-3368. *Improving Pedagogy Through Adaptive Problem Selection in Online Tutors.*

An essential part of online mathematics courses is the way students complete homework. Explicit lists of exercises are insufficient for poorly-prepared students and unchallenging for high-performing students. This problem is amplified by randomly generated problems with widely varying levels of difficulty.

The Maplets for Calculus (M4C) are used in several online courses as an effective electronic tutor. The 129 applets present algorithmically-generated problems, require correct intermediate responses before moving on to the next step, employ computer algebra to analyze student responses and provide customized hints and feedback. Algebraic, graphic, numeric and verbal approaches support diverse learning styles.

One innovation being added to M4C is the replacement of randomly selected problems by an adaptive system that moves to progressively more difficult problems only after the student exhibits mastery of the current level and moves to simpler problems or suggests another applet on prerequisite skills when students have trouble.

The matching of level of difficulty and identification of underlying weaknesses improves the pedagogical effectiveness of a resource like the M4C, particularly in online courses where direct monitoring of student work is not easily achieved. (Received September 17, 2011)