

1125-E5-2338 **Michael E. Gage*** (gage@math.rochester.edu), Department of Mathematics, Hylan Building,
University of Rochester, Rochester, NY 14627. *WeBWorK, linear algebra and the simplex
method*. Preliminary report.

This talk will showcase the WeBWorK "scaffold" question type which enables the construction of worksheet like on-line homework, delivered in segments. Later segments are not available to students until the first segments have been completed correctly.

The principal example will be a worksheet from operations research that guides students to a better understanding of the connection between the Gauss elimination procedure from linear algebra and the simplex method.

Students often memorize the simplex procedure without coming to grips with its connection to Gauss elimination and to geometric principals from calculus. Two dimensional examples help make the geometric connection but are sufficiently obvious visually that students ignore the algebra. Using the sectioned worksheet to force careful step-by-step analysis and explanation of two and then three dimensional examples of the simplex method leads students to a deeper understanding both of the simplex method and of procedures from their matrix algebra course.

Automatic grading allows examples like this to be used in large classes or assigned as optional independent study. The interoperability of WeBWorK with Geogebra and Sage also plays a role in constructing these worksheet problems. (Received September 20, 2016)