

Implementing Computer Algebra Systems and Writing to Learn in Linear Algebra and Differential Equations

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Nebraska Wesleyan University's NSF/ILI grant builds upon the progress already made in incorporating technology into the teaching of Calculus to include the use of *Mathematica* and writing-to-learn in the study of Linear Algebra and Differential Equations.

Our project will

- Improve student understanding through the use of technology for visualization and experimentation;
- Improve student understanding through their written formulation of the mathematics studied;
- Produce competent users of “industrial-strength” mathematical software;
- Improve students' appreciation of the applicability of mathematics to the real world; and
- Produce students able to write lucid mathematical prose.

These objectives will be attained through the establishment of a computer lab with PowerPC-based machines running *Mathematica* and *Microsoft Word*. The lab will be used for a scheduled weekly laboratory period, homework, and projects. Specific writing components will be present in the computer lab experiments, and in application-based projects.

In this poster, we show the planned layout of the computer laboratory, with motivation for its configuration. Examples of the lab experiments that have been developed are given. Specific projects which demonstrate the use of mathematics in real-world applications are also shown, with results from similar projects currently being used in the Calculus sequence which demonstrate their expected efficacy.