

Preliminary Report for LITRE GRANT  
"Creation of Interactive Maple Practice Sessions  
and QuickTime Video Versions of Maple Lessons"  
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The 2005-2006 part of the project was to analyze archived data from past semesters in order to create (during 2006-2007) new interactive Maple worksheets for lessons 2 and 3 of MA 242's Maple Basics Lessons.

To analyze this data I hired Rob Stapleton, a Mathematics Department graduate student. Rob wrote several programs in the Python computing language that extracts information from the "student\_error.log" files that are created whenever eGrader is asked to grade a Maple worksheet. Whenever eGrader encounters a mistake on a problem that is not accounted for in the partial credit assignments for that problem, eGrader writes a short summary of the error and appends it to a "student\_error.log" file. We have archived student\_error.log files from the spring and fall 2005 semesters, and from the spring 2006 semester. We ran these student\_error.log files through the programs and have created a list of new partial credit assignments for the problems in MA 242 Maple Basics Lessons #2 and #3. Our goal is to try to create as complete as possible set of partial credit assignments for each of the problems in homeworks 2 and 3 for MA 242 so that each error made by a student is covered in a useful way by one of the partial credit assignments. "Useful way" means that the reply (supplied by eGrader when a student makes a mistake in one of the problems in an interactive worksheet) gives the student useful information that will help correct the mistake, as opposed to saying something like "You missed the problem".

The project is on target. During July and August I plan to create the interactive worksheets for MA 242 Maple homeworks 2 and 3. I will then redo the MA 242 Maple Basics Lessons #2 and #3, now only in Maple worksheet format, and create QuickTime video versions of the lessons. I then will set up the program for assessing the usefulness of these tools during the fall 2006 semester. The goal is to examine the following questions.

1. Do the Maple lessons help students to learn MA 242 calculus better?
2. Do interactive practice sessions help MA 242 students learn calculus better?
3. Are QuickTime videos of the lessons better than the Maple worksheet versions of the lessons in helping MA 242 students learn calculus?