

STCH 250 – Final Project Description

The main goals of this project are

- a) To familiarize yourselves with mathematics teaching resources (journals, web based, etc).
- b) To acquire some experience creating (or adapting) activities to help students learn a concept / topic in mathematics, with a particular emphasis on Conceptual Understanding.
- c) To explore how to use technology to teach mathematics.

For your project you should select a topic in Mathematics grades 7-12. Then you should find several activities that could be used in teaching that particular topic. I am not asking you to reinvent the wheel, but rather to be resourceful and find out about what is already out there. The only part that you may have to develop if you do not find anything appropriate that fits your topic would be the technology component.

Minimum requirements for your project:

- 1) An introduction that gives the topic and the general objectives for the activities that you selected / created.
- 2) Three to five activities, at least two of which should be technology based.
- 3) A three page write up on:
 - How these activities emphasize conceptual understanding.
 - Your personal reflection about doing this project.
 - A brief rationale (research based if possible) for the relevance of the topic you selected. (I am including some resources for this below and the trip to the library on 10/23 will be useful for this too!)
- 4) A list of references used in your project. You should have at least three references (in addition to the references you use for the research-based rationale), one of which should be either an article in *Mathematics Teaching in the Middle School*, or an article in the *Mathematics Teacher* (these are NCTM journals), or from an international journal in mathematics education (e.g., *The Australian Mathematics Teacher*, *Mathematics Teaching* (UK))

What you will be turning in and when:

On October 30: A short proposal of what your topic is going to be and with whom you will be working (you can work on this project individually or with one other student in the class). Ideally, you should include one article that you may be using as a reference. If you cannot have it by October 30, then I would like it by **November 4** (even though we do not have class that day). I need to have enough time to give you feedback on your topic and choice of source.

On November 20: I would like a progress report on your project. This should include once again your topic and evidence that you have been working on it. What do I mean by

evidence? It could be some activities that you are planning to incorporate; it could be a write-up on your research-based rationale for your topic; or a summary of an article that you are planning to use for your project. [**This progress report will be graded as a Homework assignment**]

On December 11 (Dead Day): your paper is due (that means, parts 1, 2, 3, and 4 above are due.

On December 18 (Day of your final exam): You will be displaying your project in a poster fashion. This will be your final exam. The posters will be “judged” by your peers as well as possibly by other mathematics education faculty / graduate students. Your poster will basically be parts 1), 2), 3) and 4), with an emphasis on the activities (part 2)). We will discuss the details of the actual poster presentation later in the semester.

Some useful resources:

- NCTM yearbooks; for example, *Teaching and learning mathematics in the 1990s* (QA1 .N3 1990). *The roles of representation in school mathematics* (QA1 .N3 2001). These are just two examples; each year NCTM publishes a yearbook on a theme. The chapters include ideas for lessons and sometimes research-based articles. All the yearbooks have a similar call number.
- *Research ideas for the classroom* (there are 3 volumes, 1 for elementary, one for middle school and one for high school). The call # for the Middle school one is QA135.5 .M53 1993 and for the High school one, QA12 .H54 1993
- *Lessons learned from research*. The library does not seem to have this one, but the Center for Recruitment and Retention has several copies and we could arrange for some of them to be loaned out. I will make the table of contents available to you to see if you may be interested in borrowing this book.