

STLF Report to CWSEI and Mathematics Department

STLF: Sandra Merchant

Period: 01/05/10 – 15/05/10

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Specific activities performed by STLF

1) Professional development

- Attended the weekly Reading Group discussion (May 3 & May 12)
- Attended the weekly STLF meetings (May 5 & May 10)

2) MATH SEI general meetings/activity

- Attended the weekly Math-CWSEI meetings (May 3)
- Attended the tea for Math-CWSEI members where projects for the next year were discussed and faculty members were given our timelines for these planned projects (May 4)

3) Course-specific meetings/activities

Tracking Proof Skills Project (MATH 220-Mathematical Proof and subsequent courses)

1. Continued interviews of past Math 220 instructors about student difficulties and teaching methods for proof skills. I interviewed Keqin Liu (May 11) and Jingyi Chen (May 14) this week, thereby completing my intended instructor interviews for this course. I will now write a summary of student difficulties commonly cited in these interviews.
2. Continued interviewing instructors for 300-level courses for which Math 220 is a pre-requisite. For Math 312 I interviewed Vinayak Vatsal (May 7), Zinovy Reichstein (May 7) and Keqin Liu (May 11). For Math 342 I have interviewed Brian Marcus (May 14). For instructors who are away, I prepared an e-mail questionnaire that Steph van Willgenburg reviewed and also completed regarding her experience teaching Math 342. I still need to interview instructors for Math 308, Math 320 and Math 322.
3. I have closed the web surveys set up for Math 220 – 2009W Terms 1 and 2, and compiled the results. I think it would be helpful to have these results distilled into a more useful form, so I intend to write a brief summary of each survey's most relevant and interesting results.
4. Following the Math-CWSEI meeting on May 4, it was decided to also survey Math 220 students from 2008 (both winter terms). In addition to some of the questions on the 2009 survey, this survey would determine what content from Math 220 students have used in the year after they took the course, and also which courses they use these skills in (to ensure I am considering the most relevant 300-level courses). With the assistance of Andrew Rechnitzer, I prepared and administered this survey. As for the other surveys, the results still need to be distilled into a summary.
5. Attended the current session of Math 220, to see the content from the student's perspective and think about relevant learning goals.

6. Continued my comparison of student performance in Math 220 vs. subsequent 300-level courses. I am still in the process of writing a detailed report on this, but there are some interesting results and I have provided a summary of these at the end of this report.
7. In the process of my Math 220 instructor interviews, I was made aware that the course is taught in at least two very different styles (and with two different textbooks). I therefore have also studied student performance in 300-level courses under these two different versions of Math 220. Some of the results from this are also provided at the end of this report.

Current Project Status (material was prepared by either STLFF or other members of the MATH SEI group)

MATH 220:

Learning Goals: Faculty interviews are still in progress to compile suggestions for course-level learning goals.

Assessments: None yet. A literature review is still in progress to determine meaningful scoring/coding schemes for proof problems.

New Methods/Materials: Surveys have been prepared for Math 220 – Winter 2009 (students who have recently completed the course) and Math 220 – Winter 2008 (students who completed at least one year ago). The results of these surveys have been compiled in detailed reports.

Plan for immediate future work

MATH 220:

1. Interview instructors of Math 308, 320 and 322 for input into course-level learning goals, as well as to determine the amount of proof in these 300-level courses.
2. Attend the summer session of Math 220 and each week develop a few learning goals as well as class exercises or other material to be used in the fall term.
3. Summarize the results of each of the Math 220 surveys, as well as compare the responses on the common questions.
4. Establish questions and protocol to be used for student interviews (there are at present 5 volunteers).
5. Continue literature survey of proof skills, to determine how to categorize student difficulties and code errors. Also look at student responses on past Math 220 final exams to help with this.
6. Obtain and examine final exams for Math 308, 312, 320, 322 & 342 to assist in developing a proof error coding scheme, as well as to determine the frequency and difficulty level of proof questions in these courses.
7. Based on the results of 1. and 6., determine which 300-level courses to study in 2010W and what activities this study will require.