

STLF Report to CWSEI and Mathematics Department

STLF: Joseph Lo

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Specific activities performed by STLF

- 1) Professional development
 - Attended reading group (Mar 8)
 - Attended the Lunch Series in Teaching and Learning (Feb 28, Mar 14)
- 2) Math SEI general meetings/activities
 - Met with Sarah and Math-SEI group to review current projects and discuss future plans (Feb 13)
 - Attended weekly STLF meetings (Feb 15, 29, Mar 14)
 - Met with Costanza to review current projects and discuss future plans (Feb 15, 29, Mar 14)
 - Met with Math-SEI group to review current projects and discuss future plans (Feb 15, 29, Mar 7, 14)
- 3) Course-specific meetings/activities

MATH 210 – Introduction to Mathematical Computing

- The midterm was done on Feb 17 in a computer lab. Students were expected to complete the test on computer and submit a Maple file through Vista at the end of the test. The average grade was 69%. Students have more difficulties on mathematical concepts than on technical aspects of Maple. The test was run smoothly without major technical problems. However, a student writing in A&D was unfamiliar with the system used there and could not complete the test. The cause was that Maple over there was in a different display mode and the students do not know how to change the display mode or work on that mode.
- I have been developing some worksheets and in-class activities for the MATLAB section of the course. Instructor usually teaches on board for approximately 20 minutes in the beginning of classes and students work on activities for the remaining 30 minutes. Students sometimes need to submit their activities at the end of classes.
- We notice that a large portion of students do not copy notes during lecture time and depend only on online course notes which are not available before classes. These students therefore do not know how to do the activities. Some students prefer doing homework instead of activities during class time.
- Student found that the switch from Maple to MATLAB was rather abrupt and the time covering the basics of MATLAB was not enough. So far students have a lot of difficulties with loops and function construction in MATLAB, some also seem to have forgotten the basics of vectors and matrices. With Maple, students tend to copy the commands from course notes when working on problems. With MATLAB, however, students are expected to create scripts and functions without sufficiently similar codes available. This is one of the reasons why student found the switch from Maple to MATLAB difficult to handle.
- Some students complain that Maple and MATLAB were not available for free and hence they cannot do homework or study outside the computer lab. Even though Octave is an alternative to MATLAB, some students do not know how to use it because it lacks the GUI MATLAB has.

- I will given an end-of-term survey around the last week of classes. The main focus will be on students' attitudes towards the usage of computers in math , the difficulties students found in Maple and MATLAB, and their perceptions of have classes held in a computer lab.
- I have been and will be attending all classes and labs. Short discussion with the instructor were made after classes.

MATH 110 – Differential Calculus

- Remedial assignments
 - Participation rate continues to drop to less than 50% in Term 2.
 - The last remedial assignment will be due during Week 11 (Mar 23). The post-diagnostic test will be given during Week 12. I will use the results of the diagnostic test to evaluate the effectiveness of the remedial assignments. Based on the evaluation we will decide how these remedial assignments should be continued next year.
 - Another plan is to combine these remedial assignments with the online Basic Skills module developed by Greg Mayer and promote to other differential calculus course such as Math 180 and 184.
- Workshops attendance
 - Attendance by time (MT1: Oct 2011, E1: Dec 2011, MT2: Feb 2011)

	2011				2010			
	# Students	Attendance			# Students	Attendance		
		Pre MT1	MT1-E1	E1-MT2		Pre MT1	MT1-E1	E1-MT2
09:30	61	79.0%	68.3%	69.2%	53	87.2%	78.0%	80.0%
12:30	72	88.9%	79.9%	79.2%	77	87.5%	78.4%	80.5%
15:30	109	77.4%	65.7%	68.3%	117	82.7%	71.2%	79.3%

- Attendance this year in general is lower than in 2010, especially for 09:30 and 15:30 sections. There are noticeable differences in attendance for different workshop sections, ranging from 54% to 88%. However, there is no evidence that these differences are due to specific TAs.
- The attendance in Term 2 has slightly increased. This is also observed in 2010. Note that the format of the workshop has changed in Term 2 in 2010. The same thing did not happen in 2011.

- Attendance based on the change of TAs

	# Students	MT1-E1	E1-MT2	Difference
Workshops run by the same TAs in both terms	103	71.2%	68.0%	-3.2 ± 3.0%
Workshops run by different TAs in Term 1 and Term 2	139	70.1%	74.5%	+4.3 ± 2.0%

- Some TAs were assigned different workshops in Term 2 due to their availability. A new graduate TA joined this term. We noticed that the attendance increases in all workshops where the TA has changed, but 4 out of 5 workshops run by the same TAs in both terms had the attendance decreased.
- Question: is it preferable to have TAs switch workshops in Term 2?

- Attendance by December exam marks

	2011			2010		
	# Students	MT1-E1	E1-MT2	# Students	MT1-E1	E1-MT2
E1 top third	76	81.4%	81.1%	77	81.4%	87.3%
E1 middle third	88	74.4%	76.8%	88	73.1%	79.3%
E1 lower third	78	55.8%	56.9%	79	70.5%	72.4%

- This year the attendance rate of the lower-performing students is significantly lower than those in 2010 (55.8→56.9% vs 70.5→72.4%), both before and after the exam. The same is not observed for higher-performing students. Is it due to this year's workshop format (problem-solving oriented) which might have discouraged these weaker students from attending because they might find it more difficult to contribute?
 - It appears that the change of workshop format in 2010 (discussion + two-stage quiz) attracted more high-performing students than low-performing students to attend workshops. The increase was approximately 6% for students in top and middle third. For lower-third students, the attendance only increased by 2%.
 - A workshop survey for students with low-attendance rate
 - We have given a survey to those who do not regularly attend workshops. So far we have sent out the survey to 15 students (only 1 out of 3 instructors sent out the invitations). Only 1 replied after a week. This student mentioned that the "length" of the workshop (not sure in which sense) discouraged him from attending the workshop. He suggested that a faster pace may help.
- Study habit survey
 - I have prepared a survey about students' study habits. The instructors agreed to have the survey append to the regular homework so students receive a mark upon completion of the survey.
 - Some information found from the survey given last year:
 - Does the commuting time affect the course grades?
 - Yes, but in a way I did not expect. Those who live within 15 minutes of commuting time did worse than others. Is it because they live in dorms?
 - Does workload (number of courses) affect the course grades?
 - Possibly, but not obvious.
 - Do students without taking math courses for a long time do worse?
 - Likely in the first term, but not in the second term.
 - Do students who start their homework early tend to perform better in the course?
 - Yes. The difference was obvious.
 - Do students who spend more time on homework tend to perform better in the course?
 - Apparently yes, but with doubt. Some students claimed that they spent excessive amount of time on homework, which I am not sure if their claim is reliable.
 - Do students who found their textbook useful perform better?
 - Apparently yes. However, students' perception to the textbook can be influenced by the instructors' point of view.
 - Do high-performing students and low-performing students do different things when they study?
 - There are some differences. Some study techniques are more effective than others.
 - This year I would like to confirm some of the finding from last year. I would also like to find out what kind of challenge students think they have which might hinder their success in math.
- Online textbook search

- The instructor wants to provide students free online materials next year. This includes
 - a free online textbook (the instructors, Warren, Greg Meyer and I will be involved in making the choice of the textbook)
 - practice problems on WeBWork,
 - a reference consists of all theorems and formulas but no worked examples.
- So far we have a list of approximately 6 books + some online tutorials to choose. Two of them might be appropriate for use next year. The instructors and I will discuss about these books some time these two weeks.

Mathematics Attitudes and Perceptions Survey (MAPS)

- In September 2011, we have given MAPS to Math 100/180, 104/184, 110, 120 (all Calculus I), 200 (Calculus III) and 226 (Advance Calculus I).
- We hope to do some longitudinal tracking and observe how students' attitudes and perceptions have changed after taking two courses. During the last two week of classes, we will give the survey to the following courses:
 - Math 101, 104, 121, 227 (subsequent courses of Math 100, 104, 120 and 226)
 - Math 110 (second term)
 - Math 221 (linear algebra, the most popular course taken right after Math 200)
 - Math 200 (these students did not do the survey in Sept)

Series Diagnostic Test

- Since series is incorporated in Math 101 and 105, we would like to measure how much students have learned after taking these courses. We are planning to give a diagnostic test to Math 200 in Summer in the beginning of the term.

Current project status (material prepared by either STLFF or other members of the MATH SEI)

MATH 110:

Learning Goals: 3rd draft of learning goals is complete.

Assessments: Study Habit survey will be given during Week 11. End-of-term workshop survey will be given during the last week of classes.

New Methods/Materials: New problem-solving based workshops, remedial work on basic skills

MATH 210:

Learning Goals: Complete

Assessments: End-of-term survey given during the last week of classes.

New Methods/Materials: The MATLAB module is new. Redevelopment of course materials on Maple is complete.

MATH 305:

Learning Goals: Complete

Assessments: Final exam done.

New Methods/Materials: None at this point

Plan for immediate future work

MATH 110:

1. Continue with the creation of remedial assignments.
2. Prepare for and give the attitude survey, study habit survey, and end-of-term workshop survey.

3. Find a possible online textbook for next year.
4. Analyze the effectiveness of remedial assignments.
5. Analyze the results from the study habit survey

MATH 210:

1. Continue attending lectures and workshops.
2. Prepare for and give the end-of-term survey.

MATH 305:

1. Process the end-of-term surveys.

Series Diagnostic Test:

1. Request for permission to run the diagnostic test in Math 200 in Summer.