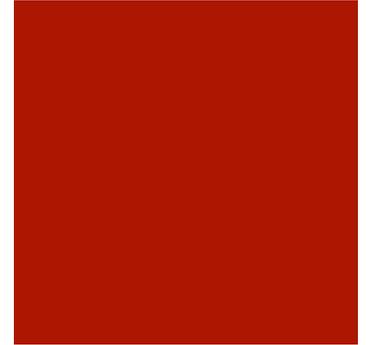# CPSC 304 Course Transformation
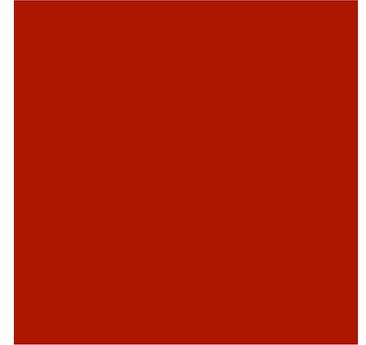
Ed Knorr, Rachel Pottinger, Benjamin Yu

Preparation

- Data Collection

    - Attitudinal Surveys
    - Pre / Post Tests
    - Traditional Assessments (Assignments, Midterms, Final)
    - Learning Management System (Vista)
   - Student Interviews

Sample Attitudinal Survey Questions

- What are the main reasons for taking this course?

- How many hours do they expect to spend on this course?

- What excites / worries them the most in this course?

- How have the lectures / tutorials / clicker questions / textbooks / etc. contributed to their learning?

- What works / can be improved in this course?

Sample Pre / Post Test Questions
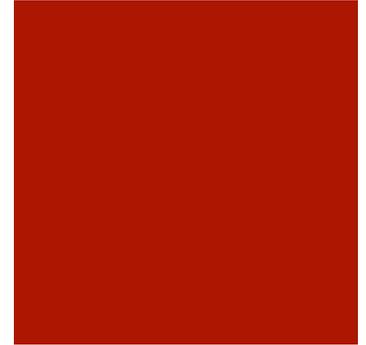
- Given a business case, design a data model to capture what data needs to be stored, and how the data can be used.

- Given a sample database or a spreadsheet, how can the data be reorganized to reduce redundancy?

- How can locking be used to ensure data integrity in a database?

- How can data be accessed using formal languages as well as commercial languages?

Learning Management System (Vista)
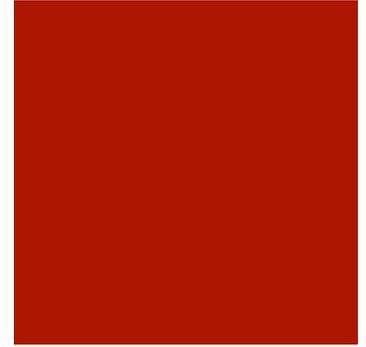
- Number of visits to a given page

- Number of user sessions

- Average session length

- Most active days

- Most active times

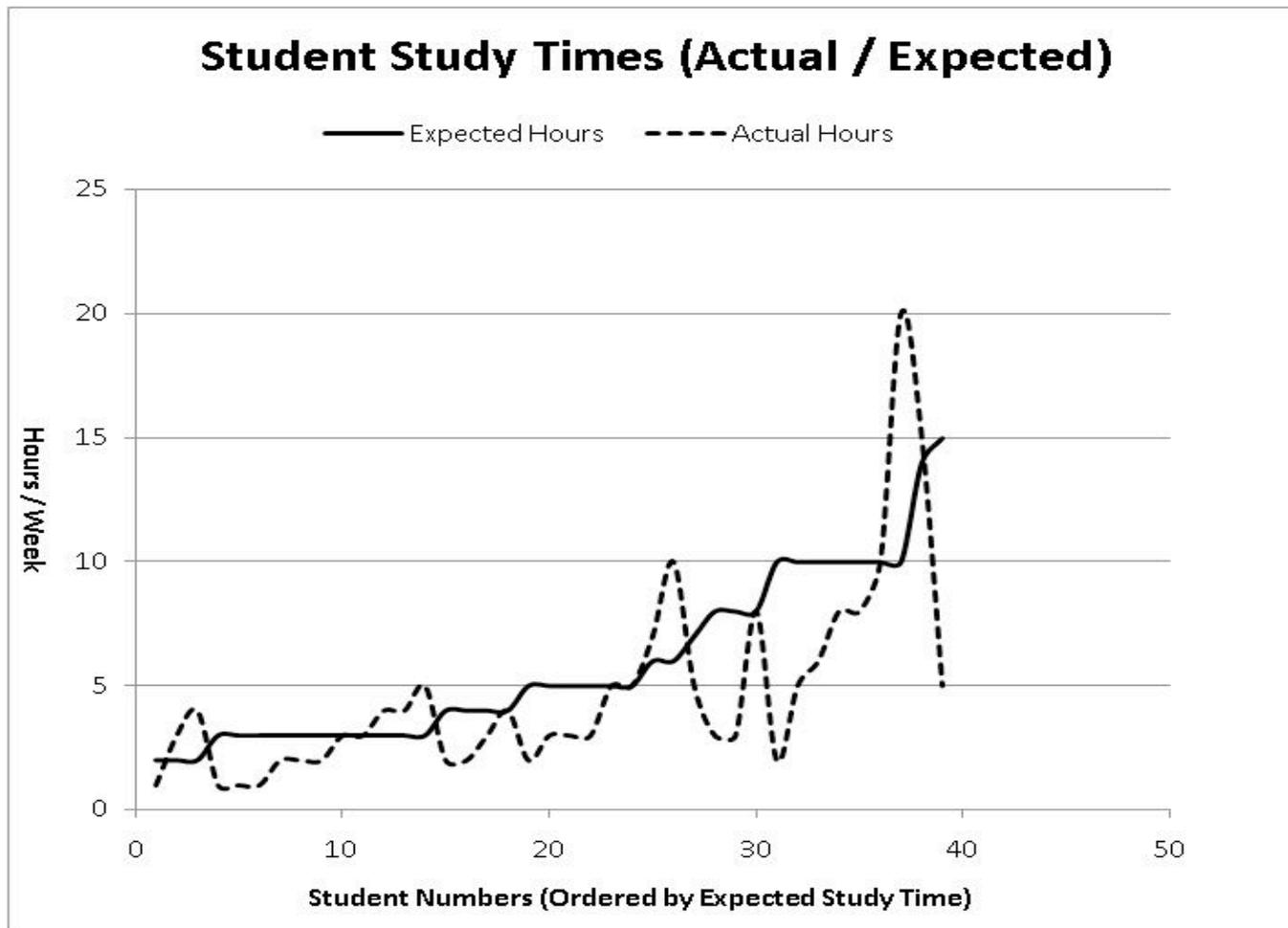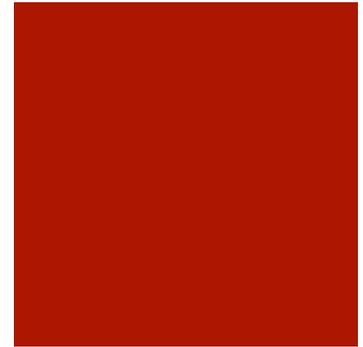- Most viewed pages

- Most discussed topics

Result: Usefulness of Course Activities / Components

Course Activities	Percentage of Respondents
Lectures	86%
Clicker Questions	81%
Tutorials	58%
Assignments	76%
TAs' Office Hours	21%
Instructor's Office Hours	29%

Note: data is based on midterm survey with N=58, total class size=91.

How Much Do They Study?

Data Correlation

|	Pre-Test	Mid-term 1	Mid-term 2	Post-Test	Final Exam
Avg. Score:	53%	70%	71%	68%	74%
Minimum:	12%	24%	26%	32%	44%
Maximum:	85%	97%	100%	85%	98%
Correlation					
Pre-Test	1.00	0.47	0.48	0.48	0.43
Midterm 1	0.47	1.00	0.78	0.49	0.77
Midterm 2	0.48	0.78	1.00	0.56	0.81
Post-Test	0.48	0.49	0.56	1.00	0.61
Final	0.43	0.77	0.81	0.61	1.00

Making Changes
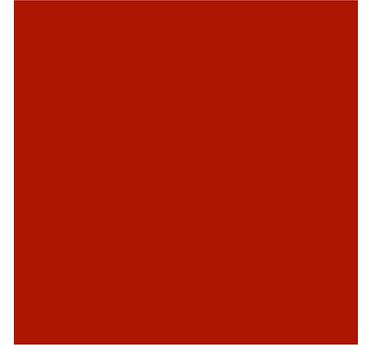
- Observations:
  - tutorial attendance could be improved
  - TAs required support to conduct tutorials
  - students needed help on project and practice on difficult topics

- Goal: improve tutorial usefulness to students

- Instructional Goal: provide worked examples and require student reflective thinking during tutorial sessions

Tutorial Transformation

- STLF consults with instructor on the tutorial material

- STLF prepares material for the TAs prior to the tutorials every week

- STLF meets with TAs and go over tutorial material every week

- TAs conduct the tutorials

- STLF attends all tutorials and provide support during tutorials

- STLF collects feedback form from students and reviews the material after each tutorial
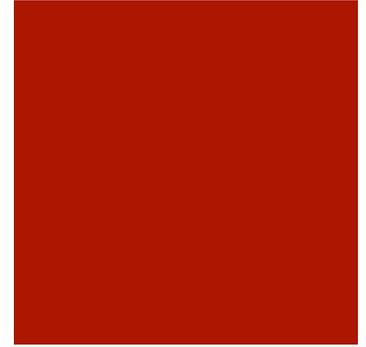
Strategies Used in Tutorials
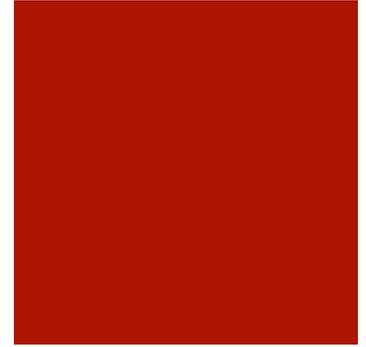
- Worked examples: go through entire example exercises with students

- Reflective exercise: have students come up with their procedure of solving problems in their own words

- Application: students apply what they learned in their term project

- Meta-cognitive reflection: students reflect on what has changed in their understanding

Student Feedback Form Questions (10 mins at end of tutorial)
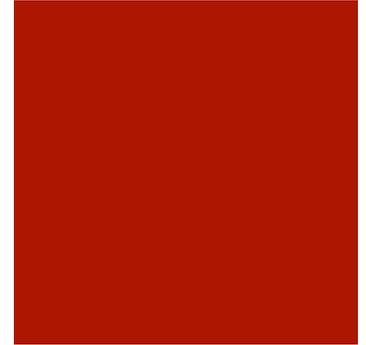
- What did you not know before this tutorial but you learned from this tutorial?

- What did you find out in this tutorial that was incorrect in your understanding of concurrency control before?

- What is something you are still not sure of?

- (One more question specific to the tutorial.)

Results

- Question: How useful have the tutorials been for your learning? (Tutorial 4)

- 25 students answered the question and 83% of them indicated the tutorials have been useful (from somewhat useful to very useful)

- Attendance increased from around 35 students (Winter 1) to around 60 students (Winter 2) with about the same number of registered students

- Tutorial attendance dropped during transition from classroom tutorial sessions to lab sessions
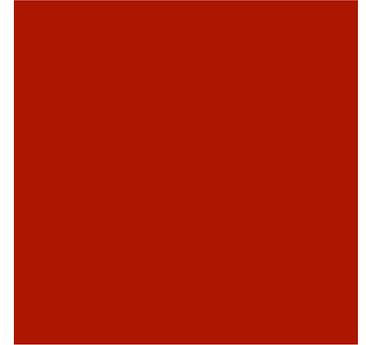
Next Steps

- Correlate student attendance of tutorial sessions with performance on specific questions in midterms and final exam.

- Provide better TA support and training in engaging students in discussions and interactive learning (e.g. use of Socratic dialogue).

- Develop pre – post tests for each tutorial.

- Investigate the integration of lecture and tutorial (lecture –tutorial) during the lecture hours.

- Have students develop concept maps as they work through the material in the course during the tutorial sessions.