

Mathematics Lab

Executive Summary

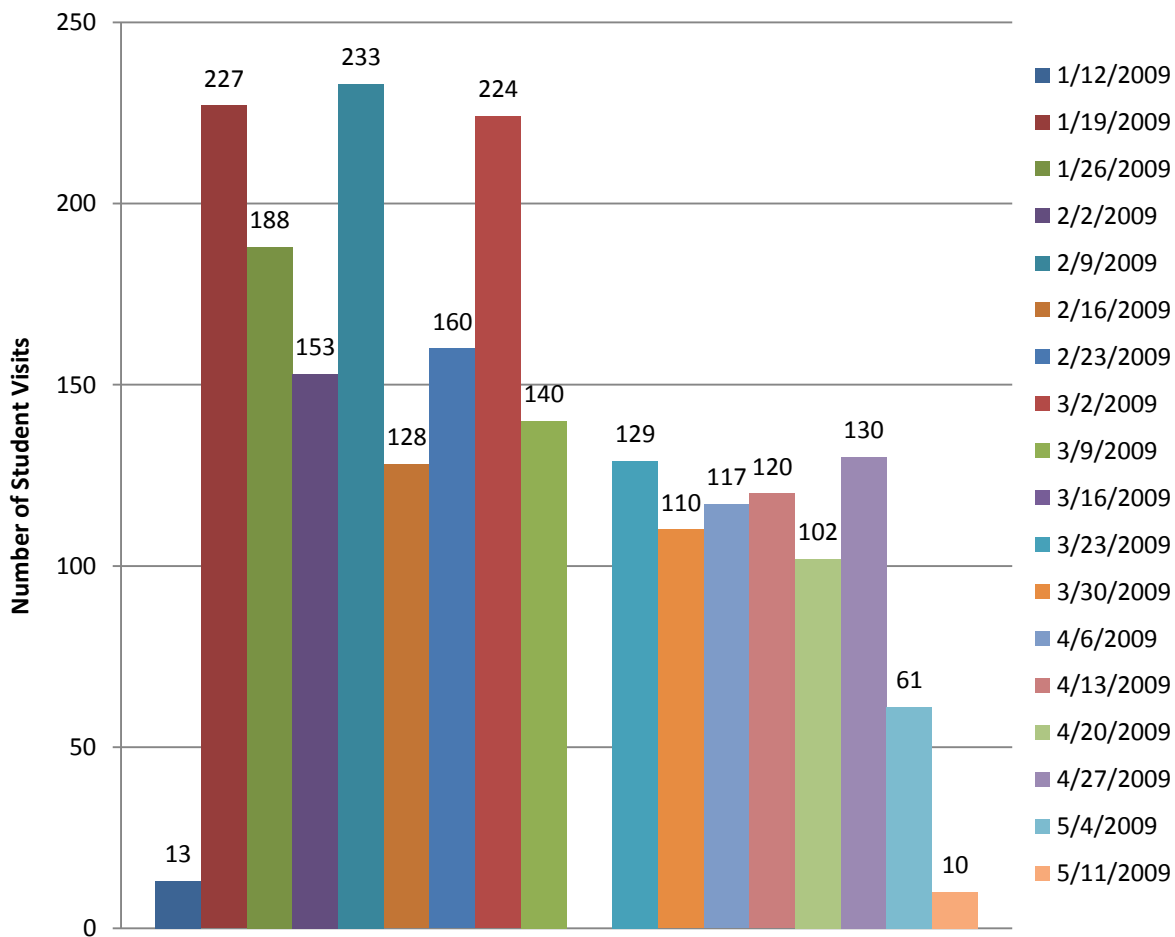
The University of Texas at Brownsville and Texas Southmost College funded the Math Lab component of Learning Enrichment during the spring 2009 term. The Math Lab provides peer tutoring for math across the curriculum and prepares students for the math section of the COMPASS.

To determine the impact of math tutoring on student academic performance and retention, this report will analyze student participant and nonparticipant attendance patterns, academic progress, demographic information and survey responses. In general, students who attended math tutoring more frequently earned higher average course grades and withdrew at a lower rate than those who did not attend.

Attendance

The graph below provides the total number of weekly contacts in the Math Lab for spring 2009.

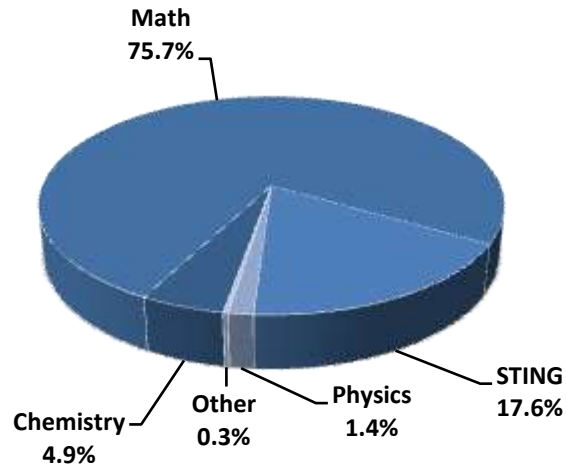
Spring 2009 Math Lab Weekly Attendance



Peaks in student visits occurred during the second week of class, the first quarter of the semester and mid-semester. Math tutoring was not offered during spring break, 3/16/2009 – 3/20/2009. The last week of tutoring, 5/11/2009, consisted of only two work days during a time when most students had already taken their final exams; it therefore had very few student visits.

The pie chart below illustrates the subjects for which students requested tutoring at the math Lab.

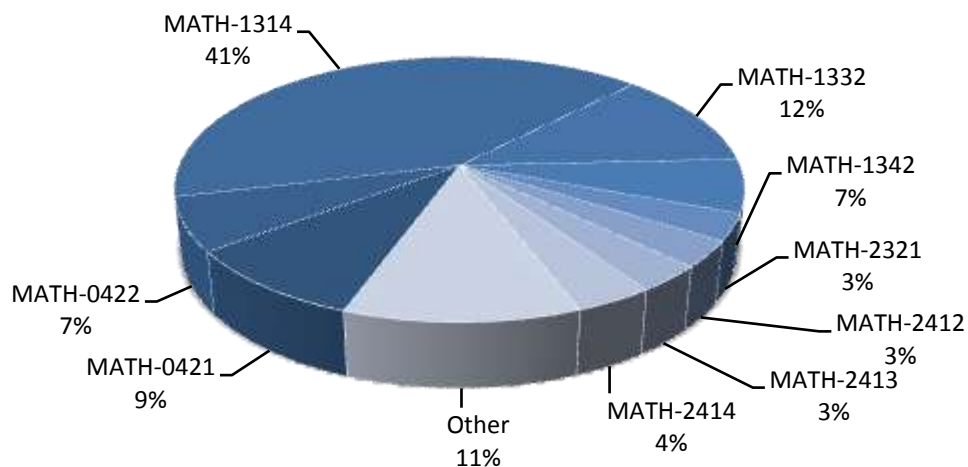
Spring 2009 Math Lab Traffic by Subject



A majority of students visited the Math Lab for tutoring in mathematics courses, but the number of chemistry students attending the lab began increasing in February. The number of students requesting help with physics as decreased since last semester. The “other” category consisted of subjects that accounted for less than 1% of courses tutored; they include psychology statistics, education, and engineering courses.

The course breakdown for mathematics courses is as follows:

Spring 2009 Math Lab Traffic by Course - Math



College algebra continues to bring the largest group of students into the lab. Courses in the “other” category consisted of courses that accounted for less than 1% of tutoring; they include Survey of Mathematical Concepts and Principles, Linear Algebra, Geometry, and Problem Solving for Teachers.

Three courses were analyzed to see what impact the tutoring had on student performance in the class: Introductory Algebra, College Algebra, and Math for Liberal Arts. For the tables below, Average GPA is the average grade in the course converted to a GPA.

Introductory Algebra

Number of Visits	Number of Students	Average GPA	DFW%
None	122	1.51	46.72%
1 to 4	11	1.73	36.36%
5-9	6	2.33	0.00%
10 or more	0	N/A	N/A

College Algebra

Number of Visits	Number of Students	Average GPA	DFW%
None	255	1.15	63.53%
1 to 4	49	1.98	36.73%
5-9	19	2.05	31.58%
10 or more	8	2.63	25.00%

Math for Liberal Arts

Number of Visits	Number of Students	Average GPA	DFW%
None	136	1.5	48.53%
1 to 4	19	1.95	26.32%
5-9	2	2.5	0.00%
10 or more	1	0.0	100.00%

In summary, increased student access to the Mathematics Lab led to increased academic performance in the aforementioned classes. The only exception occurred in the analysis of Math for Liberal Arts, for which only 1 student attended more than 11 times and earned an F. More accurate results can be obtained by using larger attendance groups.

Below is a list of all the subjects for which assistance was provided in the Math Lab:

- Introductory Mathematics
- Intermediate Mathematics
- College Algebra
- Pre-Calculus
- Math for Liberal Arts
- Calculus I
- Calculus II
- Calculus III
- Trigonometry
- Linear Algebra
- General Physics
- University Physics
- General Chemistry
- Organic Chemistry
- Elementary Statistics
- Statistics

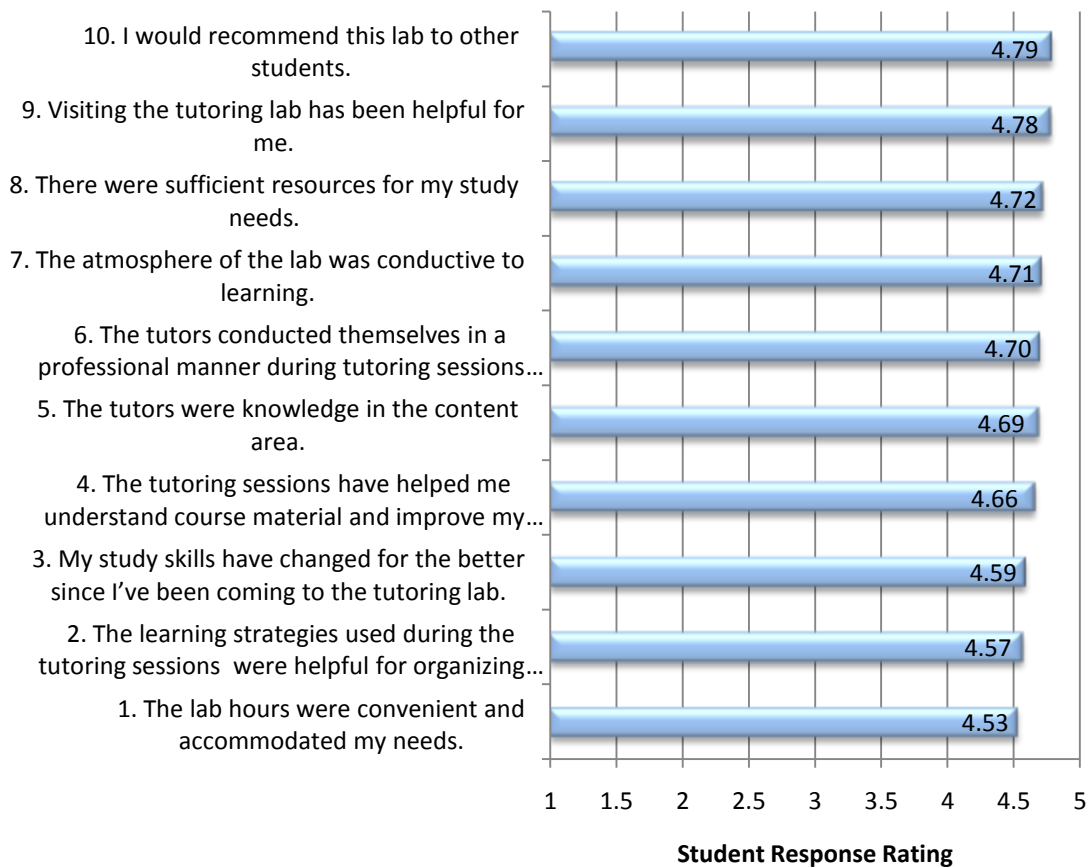
SPRING 2009 Math Lab Workshops		
Workshop	Date	# of Participants
COMPASS Workshop	Feb. 7, 2008	5
COMPASS Workshop	Feb. 14, 2008	1
COMPASS Workshop	Feb. 21, 2008	8
COMPASS Workshop	April 4, 2008	3
COMPASS Workshop	April 11, 2008	7
COMPASS Workshop	April 18, 2008	3
Total		27

Assessment

In order to provide quality instruction and better service for our students, the Math Lab surveyed visitors during April and May 2009. A total of 68 surveys were collected.

Surveyed students were asked to indicate their level of agreement with the following statements by circling the appropriate number, where 1 = “strongly disagree” and 5 = “strongly agree.” The survey also provided a space for comments and suggestions. The bar graph below shows the average score for each question.

Spring 2009 Math Lab Student Survey Results



Results indicate that students were generally satisfied with mathematics tutors, with the lowest average score of 4.53 given to the convenience of operating hours.

A majority of the surveyed students left comments, of which 87% were positive and 13% were negative. Without a Mathematics specialist, providing sufficient access to tutors has been a challenge. LE staff has sought to hire more versatile tutors who are able to provide tutorial support for a wide scope of mathematics and physics courses. Comments regarding tutor conduct have aligned with observed behavior of specific tutors who will not be rehired in future semesters.

See below for a list of student comments:

- Too loud for me!
- Need colored chalk to demonstrate things in a better way; need classical music, helps study
- We need better tutors!
- Not all tutors were knowledgeable in content area most would confuse me more than help me. Angel is a great tutor he's a lot of help.
- Needs more skilled tutors on math and tutors that know how to help on any subject on math. And stop the extra talking and sleeping that got anything to do with this lab. I am very disappointed!
- Great tutors!
- I would only like that on Fridays could close at 7pm; everything its perfect. Very good tutors!! Excellent.
- If anything you be able to, in future, be able to open on weekends for those who work 8-12hours day shift through the week.
- Great experience
- We need more colorful rooms
- The math tutors do help understand the problem in every angle. They give us a sense of comfort when doing work problems as well. They do go the extra mile when needed, some student tutors do stay after hours or help as when their not even working in their shift. I would definitely recommend this lab to the students.
- Great tutors! Keep the good job!
- Thanks for all your help
- It is a great lab, very helpful.

Math Lab Student Learning Outcome – Math STING

In spring 2009, LE set Student Learning Outcomes (SLOs) for each LE component. For the Math Lab, the SLO targeted STING math tutoring, which provides weekly tutoring in skills needed to pass the COMPASS math section:

70% of students participating and completing the STING math program will demonstrate competency in the mathematical skills required to pass the COMPASS exam.

Student participants were asked to take a COMPASS benchmark on 4/22 or 4/23 to assess their math skills. The benchmark consisted of 15 questions taken from COMPASS practice exams. Results are displayed in the table below:

Spring 2009 Math STING Benchmark Results

	Number of Students	Percentage of Group
Passed (above 70% correct)	5	8.20%
Borderline (60%-70% correct)	13	21.31%
Below (under 60% correct)	43	70.49%

As a result of these findings, LE will collaborate with Mathematics Department to contextualize the skills development that takes place in STING Math. Not only will Math STING improve student ability to successfully complete the COMPASS, but it will also provide much needed support for students to successfully complete the developmental academic course that they are enrolled in.

The collaboration will reinforce learning already taking place in their math class, and as a result, will provide students with increased motivation to actively participate in STING Math, enabling higher success rates for both courses. In the future, students will also be given a pretest, which will help determine the extent to which their math skills have improved by the end of the semester.