

Background:

Developmental Mathematics Tutorial Services:

Transition from the LEC to the IU Kokomo Math Lab:

Prior to Fall 2006, tutorial assistance was provided to students enrolled in M007 (Elementary Algebra), M117 (Intermediate Algebra) and M125 (Pre-calculus Mathematics) at the IU Kokomo Learning Enhancement Center (LEC). The center provided one-on-one 30-minute tutoring appointments with peer and professional tutors, group study tables conducted by an instructor or a professional tutor, as well as a variety of textbook and video resources. Tutoring was available during the fall and spring semesters, Monday through Thursday, from 9 am to 7 pm. During the summer sessions, a tutor was available to conduct a morning and an afternoon study table on those days that the math classes met.

A mathematics faculty member was assigned, with one course release, as LEC co-director, to recruit, schedule and oversee the math tutors. This person also dealt with LEC budgetary and miscellaneous policy issues, in cooperation with the LEC English coordinator.

Starting in Fall 2006, all students enrolled in M007, M117 and M125 were required to complete online homework and quizzes using the textbook based website, MyMathLab, and the IU Kokomo Math Lab was created to support this requirement. All tutorial assistance was moved from the LEC to the new math lab. The LEC co-director for mathematics became the math lab coordinator and assumed the additional responsibilities of creating and managing the MyMathLab courses. The lab coordinator was also responsible for training the faculty in the use of the website, assisting with the website registration process at the start of each semester, and troubleshooting website related problems.

Math Lab Services/Hours:

Students can access the MyMathLab homework assignments and quizzes from any computer that has a reliable internet connection. Students are encouraged to work on their assignments in the IU Kokomo Math Lab, where they can also receive assistance from qualified peer and professional math tutors. There is always one tutor on duty to assist the students on a “roaming basis”. Students who need help with an exercise can put up a flag to request the tutor’s attention. During many hours throughout the week, there are two tutors on duty so students can also make appointments for one-on-one tutoring sessions. Initially study tables were included in the schedule but the assistance provided by the tutorial resources built into the website and the personal attention provided by the roaming tutors made the study tables unnecessary.

The Math Lab was open 48 hours week in the fall 2006 semester (Monday through Thursday, 8 am to 8 pm). During the spring 2007 semester the lab the hours were extended to 53 per week by adding a session from 9 am to 2 pm on Fridays.

During Summer Session I 2007, there were only three sections of developmental math taught, one section each of M007, M117 and M125. The classes met at 9 am and 6 pm. The lab was open from noon to 6 on the days when classes met and from 9 to noon and 6 to 8 pm on the other week days. During Summer Session II 2007, M117 met at 6 pm and M125 met at 9 am. There was no section of M007 offered. The lab was open noon to 6 pm on the days when classes met. Very few students used the lab on the non-class days during Summer Session I so those hours were eliminated during the second session.

The fall 2007 lab schedule was determined using patterns of usage from the first year. It was open 48 hours per week (Monday through Thursday, 9 am to 8 pm, and Friday, 10 am to 2 pm). Due to low usage in the evenings, starting in Spring 2008 to the current, the hours were reduced on Thursdays to 9 am to 6 pm.

During Summer Sessions 1 and 2 of 2008, the lab was open noon to 6 on the days that Math classes met (M, W and alternate Fridays). Only one tutor is on duty during the summer sessions.

Whenever the lab is open there is at least one peer or professional tutor on duty. In order to allow for one-on-one appointments, there are two tutors on duty during many time periods during the week. The number of available one-on-one tutoring hours has varied:

- Fall 2006: 15.5 hours each week
- Spring 2007: ??
- Fall 2007: 31 hours per week
- Spring 2008: 27 hours per week
- Fall 2008: 25 hours per week
- Spring 2009: 16.5 hours per week

Measures of effectiveness:

Student visit data (developmental students – M007, M117, M125):

The tables show, for each semester indicated, the number of students who made at least one visit to the LEC or Math Lab, the total number of visits made by all students who used the LEC or Math Lab, and the approximate ABC rate for those students who visited the LEC. Separate tables are provided with DFW rates for students using the Math lab later in this report. The approximate number of students enrolled in a developmental math class at the start of the semester is provided for selected semesters. This data was not routinely included in the LEC end-of-semester reports.

NOTES:

The totals for the LEC include one-on-one tutoring as well as study table visits.

Starting in Fall 2006, students were strongly encouraged to complete a course pretest and a course posttest, which required visits to the lab. Some students never visited the lab at any other time during the semester, so the increase in number of students served is inflated by the mandatory testing visits.

FALL AND SPRING:

Semester	Year	Number of Students served	Number of visits	% ABC (w/o ZZ)	
LEC					
Fall	2002	110	708	66.4	
Spring	2003	93	436	60.2	
Fall	2003	104	499	59.6	
Spring	2004	98	604	54.1	
Fall	2004	168	992	44.1	
Spring	2005	140	764	50.0	
Fall	2005	172	1022	50.9	802
Spring	2006	142	835	57.1	
MATH LAB					Number enrolled:
Fall	2006	525	3726		682
Spring	2007	265	1418		580
Fall (*)	2007	381	2564		611
Spring (*)	2008	251	1712		454
Fall (*)	2008	306	1799		569

(* student count and visit count is for M007, M117 and M125 only; other semesters might include M118 and M119 students in visit total, student total)

OBSERVATIONS:

While the number of students served and total number of visits have increased dramatically with the introduction of the math lab, the percentage of students who use the lab regularly is well below 20% (see section on DFW rates). This is an area that requires attention in future semesters.

The lab does not have an electronic sign-in procedure. While it is relatively easy to determine the total number of students who have visited the lab during the semester from the sign-in sheets, the data must all be entered into a spreadsheet to determine the number of actual students and the number of visits made by each student. These values for Fall 2007 will be available later during the spring semester.

SUMMER:

		Number of	Number of	% ABC	
Semester	Year	Students served	visits		
LEC					
Summer I	2003	21	64	61.9	
Summer II	2003	4	14	100	
Summer I	2004	11	36	72.7	
Summer II	2004	4	5	25	
Summer I	2005	24	111	75	
Summer II	2005	not offered			
Summer I	2006	15	52	66.7	
Summer II	2006	not offered			
MATH LAB					Number enrolled
Summer I	2007	28	97		62 (*)
Summer II	2007	37	141		58
Summer I	2008	45	163		74
Summer II	2008	28	86		52

(*) Summer data includes M007, M117 and M125 students only.

Summer I: One section each of M007, M117 and M125/MA153

Summer II: One section each of M117 and M125/MA153

NOTE:

Due to the lack of an electronic sign-in procedure, determining the number of students served is time-intensive and has not been done for the summer sessions.

All students are strongly encouraged to complete a pretest and a posttest. The 5th through 8th rows of this table show the number (and percentage of all enrolled) who have attended the lab more than twice.

Number of students with visit count/ percent of enrolled	Fall 2006 682 enrolled	Spring 2007 580 enrolled	Fall 2007 611 enrolled	Spring 2008 454 enrolled	Fall 2008 569 enrolled	Spring 2009 401 enrolled
At least 1	521	252	387	251	306	
	76.4%	43.4%	63.3%	55.3%	53.8%	
At least 2	381	181	286	189	200	
	55.9%	31.2%	46.8%	41.6%	35.1%	
More than 2	293	132	216	155	156	
	43.0%	22.8%	35.4%	34.1%	27.4%	
More than 10	109	46	70	46	51	
	16.0%	7.9%	11.5%	10.1%	9.0%	

Number of students with visit count/ percent of enrolled	Summer One 2007 62 enrolled	Summer Two 2007 58 enrolled	Summer One 2008 74 enrolled	Summer Two 2008 52 enrolled	Summer One 2009 enrolled	Summer Two 2009 enrolled
At least 1	28	37	45	28		
	45.2%	63.8%	60.8%	53.8%		
At least 2	16	26	33	16		
	25.8%	44.8%	44.6%	30.8%		
More than 2	9	20	22	12		
	14.5%	34.5%	29.7%	23.1%		
More than 5	6	7	8	4		
	9.7%	12.1%	10.8%	7.7%		

IU Kokomo Math Lab TUTORING appointment usage:

It was expected that the need for one-on-one tutoring would decline with the use of MyMathLab because the students have immediate access to online help. The data supports this prediction.

FALL 2005: (BEFORE using MyMathLab)

	M007	M117	M125	totals
Number of students using tutoring	44	76	42	162
Total number of appointments	276	435	276	987
Percentage by appointment	28.0%	44.1%	28.0%	

SPRING 2006: (BEFORE using MyMathLab)

	M007	M117	M125	totals
Number of students using tutoring	40	35	47	122
Total number of appointments (or study tables)	208	309	228	745
Percentage by appointment	27.9%	41.5%	30.6%	

FALL 2006: (After the introduction of MyMathLab)

	M007	M117	M125	totals
Number of students using tutoring	4	16	7	27
Total number of appointments	8	42	24	74
Percentage of appointments	10.8%	56.8%	32.4%	

SPRING 2007: (After the introduction of MyMathLab)

	M007	M117	M125	totals
Number of students using tutoring	5	1	12	18
Total number of appointments	8	1	44	53
Percentage of appointments	15.1%	1.9%	83.0%	

FALL 2007:

	M007	M117	M125	totals
Number of students using tutoring	8	5	12	25
Total number of appointments	26	14	40	80
Percentage of appointments	32.5%	17.5%	50.0%	

SPRING 2008:

	M007	M117	M125	totals
Number of students using tutoring	6	6	6	18
Total number of appointments	20	18	16	54
Percentage of appointments	37.0%	33.3%	29.6%	

FALL 2008:

	M007	M117	M125	totals
Number of students using tutoring	4	7	10	21
Total number of appointments	7	13	31	51
Percentage of appointments	13.7%	25.5%	60.8%	

NOTES:

The help provided by the roaming tutor varied from a quick explanation of a student's error to an extended session, equivalent to a one-on-one appointment. If a student had many questions, and there were no other students requesting help at that time, the tutor worked with the student until the material was understood. We did not record these sessions as one-on-one sessions since no appointment had been made.

The lab will continue to offer appointments for one-on-one tutoring so that students can be guaranteed 30 minutes of undivided attention.

**Instructional Support for
M118 (Finite Mathematics) and M119 (Survey of Calculus):**

Prior to spring 2007, students enrolled in M118 and M119 had no assistance available outside of class other than their instructors' office hours. Attempts were made to hire tutors to work with these students but qualified candidates could not be recruited.

During spring 2007, the Dean provided the lab coordinator with an additional course release to provide approximately 10 hours of study sessions per week, on a drop-in basis, for students enrolled in M118 and M119. Study sessions for the M118 and M119 students were conducted by the lab coordinator during the fall 2007 semester as well.

Measures of effectiveness:

Student visit data (M118 and M119) SPRING 2007 through FALL 2008:

During the spring semester, 33 students made use of the lab study sessions, with a total of 173 visits over the course of the semester.

In the fall semester, 37 students attended the study sessions, with a total of 185 visits.

In Spring 2008, 20 students made a total of 139 visits.

During the fall semester of 2008, 30 students made a total of 96 visits.

Grade distributions of students using the M118/M119 help sessions in the lab:

SPRING 2007:

Note: percentage of group earning ABC is based on students in M119 only. Grades for those students enrolled in the Purdue equivalent, MA221, are not included since Purdue grades are not available online.

	M118	M119
A		
B		4
C	1	8
D		6
F	1	2
W	3	3
ZZ		3
Total	5	26
% ABC	20	52.2
(zz omitted)		

The number of visits made by the one M118 student who earned a grade of C:
13 (nearly once per week)

The number of visits made by the four M119 students who earned a grade of B:
8, 8, 3, 2

The number of visits made by the eight M119 students who earned a grade of C:
9, 1, 10, 13, 8, 7, 9, 2

The number of visits made by the six M119 students who earned a grade of D:
2, 1, 8, 6, 1, 4

The number of visits made by the two M119 students who earned a grade of F:
1, 1

SPRING 2007:

Assistance for M119 and M118 students is **not** provided during the summer sessions due to budgetary and staff constraints.

FALL 2007:

Note: percentage of group earning ABC is based on students in M119 only. Grades for those students enrolled in the Purdue equivalent, MA221, are not included since Purdue grades are not available online. The two students who did not have the prerequisite course necessary for M119 were also excluded from the computation of the ABC rate.

	M118	M119
A		2
B	6	7
C	4	3
D	1	3/1
F	1	2
W	1	2/1
ZZ		2
Total	13	21/23
% ABC (zz omitted)	76.9%	57.1%

Krause taught 2 sections of M118:

11 students used the lab sessions for a total of 43 visits
 Number of visits and grade earned for these students:
 4(B),11(B-), 1(B+),15(B),1(B),4(B)
 1(C),1(C), 1(C)
 1(F)
 3(W)

Symonds taught 1 section of M118:

2 students used the lab sessions for a total of 17 visits
 Number of visits and grade earned for these students:
 2 (C),
 15(D)

Hansen taught 1 section of M119:

4 students used the lab sessions for a total of 7 visits
 Number of visits and grade earned for these students:
 2(A-)
 1 (B+),
 1(C),
 3(D), 1(D)

Widland taught 2 sections of M119:

19 students used the lab sessions for a total of 118 visits
 Number of visits and grade earned for these students:
 3(A)
 10(B),17(B),18(B+),2(B), 1(B), 1(B-),
 14(C), 7(C),
 19(D), 11(D – did not have the prerequisite course)
 1(F), 5(F)
 4(ZZ), 1(ZZ),
 1(W),1(W)
 1(W – did not have prerequisite course),

SPRING 2008:

Note: percentage of group earning ABC is based on students in M119 only. Grades for those students enrolled in the Purdue equivalent, MA221, are not included since Purdue grades are not available online. The two students who did not have the prerequisite course necessary for M119 were also excluded from the computation of the ABC rate.

	M118 – Krause	M119- Gottemoller	M119 - Widland
A	1	1	2
B	1	2	1
C	2	2	1
D	1		
F			1
W	1		
ZZ		2	
Total	4/6	5/5	4/5
% ABC (zz omitted)	66.7%	100%	80%

Krause taught 2 sections of M118:

6 students made a total of 61 visits
 Number of visits and grade earned for these students:
 37(A+)
 2(B+)
 2(C)
 8(C)
 11(D)
 1(W)

Gottemoller taught 1 section of M119:

7 students made a total of 39 visits
 Number of visits and grade earned for these students:
 1(A)
 13(B)
 2(B)
 10 (C)
 8(C)
 1(ZZ)
 4(ZZ)

Widland taught 2 sections of M119:

5 students made a total of 30 visits
 Number of visits and grade earned for these students:
 16(A)
 5(A)
 2(B)
 1(C)
 6(F) – did not have prerequisite course (?) (transfer credit for Maths 125 at Ball State)

1 student from M120 visited the lab 5 times; he earned an F in the course
 1 student from MA154 asked questions 3 times; grade is unknown because he is SWT
 1 student asked questions once about probability exercises in a business stats class

Fall 2008:

Note: percentage of group earning ABC is based on students in M119 only. Grades for those students enrolled in the Purdue equivalent, MA221, are not included since Purdue grades are not available online.

	M119 – Krause	M119- Symonds	M118 - Widland
A	1		2
B	2		4
C			4
D	1	1	2
F			1
W			5
ZZ	2	6	
Total	4 IUK / 2 SWT	1 IUK / 6 SWT	17
% ABC	75%	100%	52.9%
(zz omitted)			

Krause taught 1 section of M119:

- 6 students made a total of 21 visits
- Number of visits and grade earned for these students:
- 1 student earned an A, with 5 visits
- 2 students earned a B, with 1, 1, visits
- 1 student earned a D, with 3 visits
- Two students were in the Purdue programs (no grade accessible) with 8, 3 visits

Symonds taught 2 sections of M119:

- 7 students made a total of 16 visits
- Number of visits and grade earned for these students:
- 1 student earned a D, with 1 visit
- 6 students were in the Purdue programs (no grade accessible) with 1, 2, 1, 3, 6, 2, visits

Widland taught 3 sections of M118:

- 17 students made a total of 59 visits
- Number of visits and grade earned for these students:
- 1 student earned an A with 2 visits
- 4 students earned a B, with 8, 8, 6, 2 visits
- 4 students earned a C, with 4, 4, 1, 1 visits
- 2 students earned a D, with 5, 3 visits
- 1 student earned an F, with 2 visits
- 5 students withdrew, with 6, 2, 2, 2, 1 visits

Observations (SPRING 2007):

The response from the students has been favorable, but the percentage of students taking advantage of this resource is low.

Very few students made use evening sessions in the lab.

The usage of the sessions increased during the later part of the semester. Initially, the majority of the M119 students came to the study session to get help on graded homework assignments. Toward the end of the semester they started using the sessions to review for tests and the final exam as well as to work on textbook homework.

The two M118 students who attended regularly requested help from the textbook homework and supplemental handouts. One chose to withdraw right before the deadline and the other continues to use the sessions to prepare for the final exam. Another who came fairly regularly withdrew after doing poorly on test #3, even though she still had a good chance of passing the course.

One M119 instructor requested a copy of the study session schedule but did not allow me to come to his class to invite participation. He does not assign graded homework and his students have not been attending the study sessions.

Observations (FALL 2007):

In the spring there were two sections of M118 and three sections of M119. In the fall semester there were three sections of each of these courses.

The majority of the M119 students have been requesting help with their graded homework assignments.

The M118 students have been using the study sessions to work the assigned textbook exercises and review returned tests.

During the last week of the semester and finals week, several M118 and M119 students attended the sessions to review tests and previous homework assignments, in preparation for their final exams.

More students would have been assisted if help had been available throughout the day. Several students dropped in for help and said their schedules would not permit coming at the scheduled times.

Observations (SPRING 2008):

At least one student requested assistance on 55 of the 62 days on which help was available. The total number of students requesting help was lower than previous semesters. The pass rate (A, B or C) was 81.3% for the students who took advantage of the M118/M119 study sessions (rate does not include the three Purdue students for whom grade information is unavailable).

Observations (FALL 2008):

The study sessions continue to be underutilized. Dr. Widland assigns graded homework exercises on a weekly basis and these assignments account for the majority of the M118 visits.

When the new campus-wide general education guidelines are implemented, we are likely to have a greater need for these sessions since M125 will no longer satisfy the quantitative literacy goal.

Having assistance available on a drop-in basis throughout the day, rather than at the limited times currently offered, might increase the usage. This will not be possible without hiring tutors who are qualified to work with these students. Recruiting tutors with knowledge of Finite Mathematics and concept-based calculus has not been successful in the past.