Achieving the Dream Report Series

July 3, 2013

College Math Tutoring Results Spring 2013

The College Math Tutoring Center at Northern Essex Community College opened its doors to students in the Spring 2009 semester. This report focuses on the overall use, growth and final outcomes for students who used the college level math tutoring services as compared with those who did not for the period of Spring 2012 to Spring 2013. The Fall data is presented for reference only. It is important to note that the Math Center serves students in both developmental and college level courses. For the purpose of this report only students taking one or more of the college level math courses were included in the "Tutoring" cohort. In Spring 2013, a total of 1,174 grades were distributed to 1,149 students enrolled in college level math courses during the term, 283 of which sought math tutoring services through the math tutoring center.

As can be seen in Table 1, there is a decline in the use of college level tutoring services between Spring 2012 and Spring 2013. The number of unduplicated students using the services decreased by 10.2% from 315 in Spring 2012 to 283 in Spring 2013. There were1,978 individual appointments, a decrease of 24.5%. The overall contact hours decreased by 3.1% from 5,649 to 5,476.

Table 1. College Level* Math Tutoring Spring 2012 compared with Spring 2013

Tutoring Activity						
		Fall 2011	Spring 2012	Fall 2012	Spring 2013**	% Change Spring'12 - Spring'13
# of Contacts	N	276	315	308	283	-10.2%
	Mean	8.6	8.3	7.9	6.9	-16.9%
	Median	3.0	4.0	4.0	3.0	-25.0%
	Mode	1.0	1.0	1.0	1.0	0.0%
	Sum	2,364.0	2,621.0	2,433.0	1,978.0	-24.5%
Contact Minutes	N	276	315	308	283	-10.2%
	Mean	1,288.9	1,076.0	1,339.2	1,161.0	7.9%
	Median	600.8	487.9	604.2	406.0	-16.8%
	Mode	60.0	60.0	60.0	60.0	0.0%
	Sum	355,735.9	338,955.0	412,471.5	328,564.0	-3.1%
Contact Hours	N	276	315	308	283	-10.2%
	Mean	21.5	17.9	22.3	19.4	8.4%
	Median	10.0	8.1	10.1	6.8	-16.0%
	Mode	1.0	1.0	1.0	1.0	0.0%
	Sum	5,928.9	5,649.0	6,874.5	5,476.0	-3.1%

*College level math courses include MAT111, MAT115, MAT118, MAT119, MAT120, MAT121, MAT122, MAT125, MAT130, MAT140, MAT145,MAT171,MAT 251, MAT252, MAT253 and MAT254.

**In Spring of 2013, 6 tutoring records were omitted due to unreliable data.

Table 2 shows that for Spring 2012 and Spring 2013 more male students overall took college level Math courses than did female students and the percentage of female students declined between Spring 2012 and Spring 2013 from 47.9% to 47.3% while the percentage of male students slightly increased from 52.1% to 52.7%. There were more male students (153) who used the tutoring services in Spring 2013 as compared to female students (130) who used the tutoring services in Spring 2013. The number of female students taking tutoring services declined by 20.0% between Spring 2012 (163 females) and Spring 2013 (130 females) while the number of males slightly increased by 0.6% between Spring 2012 (152 males) and Spring 2013 (153 males).

Table 2. College Level Math Tutoring by Gender

	No Tutoring				Tutoring				Total			
	Spring 2012		Spring 2013		Spring 2012		Spring 2013		Spring 2012		Spring 2013	
Gender	N	%	N	%	N	%	N	%	N	%	N	%
Female	371	46.4%	413	47.7%	163	51.7%	130	45.9%	534	47.9%	543	47.3%
Male	429	53.6%	453	52.3%	152	48.3%	153	54.1%	581	52.1%	606	52.7%
Total	800	100.0%	866	100.0%	315	100.0%	283	100.0%	1,115	100.0%	1,149	100.0%

Table 3 depicts the race/ethnicity distributions for those who received tutoring services and those who did not. The use of math tutoring services by Hispanic students has slightly declined from (32.4%) in Spring 2012 to (31.8%) in Spring 2013.The percent of White/Caucasian students using the tutoring center declined from 182 (57.8%) to 161 (56.9%), on the contrary the number of African American using tutoring services has increased by 1.2% from 13 (4.1%) to 15 (5.3%).

Table 3. College Level Math Tutoring by Race/Ethnicity

	No Tutoring				**Tutoring**				**Total**			
	Spring 2012		**Spring 2013**		**Spring 2012**		**Spring 2013**		**Spring 2012**		**Spring 2013**	
Race/Ethnicity	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
African-American/Black	21	2.6%	26	3.0%	13	4.1%	15	5.3%	34	3.0%	41	3.6%
American Indian/American Native	2	0.3%	1	0.1%	1	0.3%	0	0.0%	3	0.3%	1	0.1%
Asian	17	2.1%	14	1.6%	4	1.3%	5	1.8%	21	1.9%	19	1.7%
Hispanic	169	21.1%	248	28.6%	102	32.4%	90	31.8%	271	24.3%	338	29.4%
Multi-Racial	15	1.9%	12	1.4%	5	1.6%	4	1.4%	20	1.8%	16	1.4%
Native Hawaiian/Pacific Islander	7	0.9%	5	0.6%	2	0.6%	1	0.4%	9	0.8%	6	0.5%
Non-Resident Alien	3	0.4%	3	0.3%	3	1.0%	2	0.7%	6	0.5%	5	0.4%
Unknown	29	3.6%	23	2.7%	3	1.0%	5	1.8%	32	2.9%	28	2.4%
White/Caucasian	537	67.1%	534	61.7%	182	57.8%	161	56.9%	719	64.5%	695	60.5%
Total	800	100.0%	866	100.0%	315	100.0%	283	100.0%	1,115	100.0%	1,149	100.0%

Table 4 shows that the college level math tutoring services for Spring 2013 were used primarily by continuing students. This same pattern was there for Spring 2012. This is basically due to the fact that most of new students are assessed into developmental level courses and must complete these courses prior to being allowed to register for college level courses.

Table 4. College Level Math Tutoring by Status

	No Tutoring				Tutoring				Total			
	Spring 2012		Spring 2013		Spring 2012		Spring 2013		Spring 2012		Spring 2013	
	N	%	N	%	N	%	N	%	N	%	N	%
Continuing	656	82.0%	723	83.5%	283	83.5%	261	92.2%	939	84.2%	984	85.6%
New	52	6.5%	57	6.6%	3	6.6%	10	3.5%	55	4.9%	67	5.8%
Readmit	70	8.8%	60	6.9%	25	6.9%	9	3.2%	95	8.5%	69	6.0%
Transfer	22	2.8%	26	3.0%	4	3.0%	3	1.1%	26	2.3%	29	2.5%
Total	800	100.0%	866	100.0%	315	100.0%	283	100.0%	1,115	100.0%	1,149	100.0%

As displayed in Table 5 below, students seeking math tutoring services in Spring 2013 had a higher average age (25.2) than those who did not seek tutoring services (23.3). This is consistent with the new versus continuing pattern. However, the average age of those seeking tutoring services is down below Spring 2012 from 25.5 to 25.2.

Table 5. College Level Math Tutoring by Age

	No Tutoring		Tutoring		Total	
Age in Years	Spring 2012	Spring 2013	Spring 2012	Spring 2013	Spring 2012	Spring 2013
N	800	866	315	283	1,115	1,149
Mean	23.3	23.3	25.5	25.2	23.9	23.8
Median	21.0	21.0	22.0	22.0	21.0	21.0
Mode	19.0	19.0	20.0	20.0	19.0	19.0

The majority (median) of both college math students who received tutoring and those who did not were enrolled in 12 credits in both Spring 2012 and Spring 2013 (Table 6).

Table 6. College Level Math Tutoring by Credits Enrolled

	No Tutoring		Tutoring		Total	
Credits Enrolled	Spring 2012	Spring 2013	Spring 2012	Spring 2013	Spring 2012	Spring 2013
N*	800	866	315	283	1,115	1,149
Mean	10.8	10.9	11.8	11.4	11.0	10.9
Median	11.0	12.0	12.0	12.0	12.0	12.0
Mode	13.0	13.0	12.0	13.0	13.0	13.0

Table 7 shows that students who sought tutoring earned more credits on average than students who did not seek tutoring in both Spring 2012 and Spring 2013. However, a substantial number of students did not have earned data in both Spring 2012 and Spring 2013.

Table 7. College Level Math Tutoring by Earned Credits

	No Tutoring		Tutoring		Total	
	Spring 2012	Spring 2013	Spring 2012	Spring 2013	Spring 2012	Spring 2013
N	718	785	306	274	1,024	1,059*
Mean	33.0	35.7	40.0	43.1	35.1	37.6
Median	27.5	31.0	38.0	40.0	31.0	34.0
Mode	12.0	12.0	12.0	12.0	12.0	12.0

**90 students from Spring 2013 do not have earned credits data.

Tables 8a and 8b show that students who sought tutoring had a somewhat higher end of term GPA on average than students who did not seek tutoring in both Spring 2012 and Spring 2013.

Table 8a. College Level Math Tutoring by end of term GPA

	No Tutoring		Tutoring		Total	
	Spring 2012	Spring 2013	Spring 2012	Spring 2013	Spring 2012	Spring 2013
N	841	785	208	274	1,049	1,059
Mean	2.4	3.0	2.9	3.1	2.5	3.0
Median	2.7	3.1	3.1	3.1	2.8	3.1
Mode	0.0	4.0	4.0	4.0	0.0	4.0

Table 8b. College Level Math Tutoring by end of term GPA for ATD Cohorts

No Tutoring					Tutoring				
				Hispanic					Hispanic
	<=25	Males	Hispanic	Males		<=25	Males	Hispanic	Males
N	604	403	262	129	N	198	147	87	48
Mean	2.9	2.9	2.9	2.8	Mean	3.1	3.1	3.0	3.1
Median	3.0	2.9	3.0	2.8	Median	3.1	3.1	3.1	3.1
Mode	4.0	4.0	4.0	2.2	Mode	4.0	4.0	*	*

* Multiple modes exists

The following table shows that students who received tutoring had higher college level math course completion rates (CCRs) with grades A - C (C- is excluded) than those who did not in Spring 2013. For Spring 2013 students that received tutoring had a CCR of 68.2% compared to those that did not and had a CCR of 58.2%, a difference of 7.8%. Students that did not receive tutoring had an increase in CCRs by 2.2% from Spring 2012 (58.2%) to Spring 2013 (60.4%), whereas students that received tutoring also experienced a marginal decline in CCR by 6.7% from Spring 2012 (74.9%) to Spring 2013 (68.2%).

Table 9a. College Level Math Tutoring by Final Grade

Final Grade	No Tutoring				Tutoring				Total			
	Spring '12		Spring '13		Spring '12		Spring '13		Spring '12*		Spring'13**	
	N	%	N	%	N	%	N	%	N	%	N	%
A	177	20.5%	150	17.1%	80	19.6%	51	17.2%	257	20.2%	201	17.1%
A-	63	7.0%	73	8.3%	31	10.0%	36	12.2%	94	7.8%	109	9.3%
B+	66	6.2%	68	7.7%	35	9.3%	22	7.4%	101	7.0%	90	7.7%
B	56	8.8%	76	8.7%	33	10.9%	23	7.8%	89	9.4%	99	8.4%
B-	52	5.4%	58	6.6%	21	5.0%	19	6.4%	73	5.3%	77	6.6%
C+	21	2.9%	43	4.9%	11	5.0%	22	7.4%	32	3.5%	65	5.5%
C	40	6.9%	62	7.1%	34	8.4%	29	9.8%	74	7.3%	91	7.8%
C-	22	3.3%	24	2.7%	11	3.1%	7	2.4%	33	3.2%	31	2.6%
D+	19	2.3%	16	1.8%	11	2.8%	10	3.4%	30	2.4%	26	2.2%
D	35	4.4%	41	4.7%	8	8.1%	14	4.7%	43	5.4%	55	4.7%
F	98	13.8%	136	15.5%	26	7.8%	33	11.1%	124	12.2%	169	14.4%
I	20	2.4%	16	1.8%	9	3.1%	10	3.4%	29	2.6%	26	2.2%
NW	69	8.2%	55	6.3%	5	1.6%	1	0.3%	74	6.5%	56	4.8%
W	78	7.9%	60	6.8%	12	5.3%	19	6.4%	90	7.2%	79	6.7%
Total	816	100.0%	878	100.0%	327	100.0%	296	100.0%	1143	100.0%	1,174	100.0%
A - C Completion	475	58.2%	530	60.4%	245	74.9%	202	68.2%	720	63.0%	732	62.4%

*A total of 1,143 college math grades were distributed among 1,115 individual students during Spring 2012.
**A total of 1,174 college math grades were distributed among 1,149 individual students during Spring 2013.

The final table (9b) disaggregates the course completion rate data for Spring 2013. The largest difference in course completion rate between the two cohorts occurred with Hispanic males. Hispanic males that received tutoring completed with an A-C course completion rate of 68.6% while their counterparts had an A-C course completion rate of 48.1% (a 20.5% difference). The next largest gain in A-C course completion was for males by 12.6%. Hispanics A-C CCR gained by 9.0% while A-C CCR for students' age 25 or less gained by 7.5%.

Table 9b. College Level Math Tutoring by Final Grade

	No Tutoring								Tutoring							
	Age <=25		Hispanic		Males		Hispanic Males		Age <=25		Hispanic		Males		Hispanic Males	
Final Grade	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
A	104	15.5%	33	13.1%	59	12.9%	10	7.8%	31	14.8%	16	17.0%	30	19.0%	11	21.6%
A-	51	7.6%	15	6.0%	31	6.8%	3	2.3%	24	11.5%	12	12.8%	21	13.3%	8	15.7%
B+	52	7.7%	17	6.8%	34	7.4%	9	7.0%	16	7.7%	5	5.3%	8	5.1%	2	3.9%
B	56	8.3%	21	8.4%	40	8.7%	10	7.8%	13	6.2%	5	5.3%	12	7.6%	3	5.9%
B-	50	7.4%	19	7.6%	35	7.6%	13	10.1%	15	7.2%	5	5.3%	10	6.3%	3	5.9%
C+	29	4.3%	15	6.0%	20	4.4%	7	5.4%	17	8.1%	4	4.3%	13	8.2%	2	3.9%
C	49	7.3%	15	6.0%	34	7.4%	10	7.8%	21	10.0%	12	12.8%	13	8.2%	6	11.8%
C-	20	3.0%	7	2.8%	15	3.3%	4	3.1%	5	2.4%	3	3.2%	5	3.2%	3	5.9%
D+	12	1.8%	6	2.4%	21	4.6%	7	5.4%	13	6.2%	8	8.5%	8	5.1%	5	9.8%
D	34	5.1%	16	6.4%	5	1.1%	2	1.6%	9	4.3%	1	1.1%	6	3.8%	1	2.0%
F	114	16.9%	45	17.9%	86	18.7%	25	19.4%	28	13.4%	8	8.5%	22	13.9%	4	7.8%
I	12	1.8%	5	2.0%	8	1.7%	2	1.6%	5	2.4%	6	6.4%	0	0.0%	0	0.0%
NW	42	6.2%	16	6.4%	38	8.3%	12	9.3%	12	5.7%	0	0.0%	0	0.0%	0	0.0%
W	48	7.1%	21	8.4%	33	7.2%	15	11.6%	0	0.0%	9	9.6%	10	6.3%	3	5.9%
Total	673	100.0%	251	100.0%	459	100.0%	129	100.0%	209	100.0%	94	100.0%	158	100.0%	51	100.0%
A - C Completion	391	58.1%	135	53.8%	253	55.1%	62	48.1%	137	65.6%	59	62.8%	107	67.7%	35	68.6%

Interpretations of these findings as well as suggestions for further analysis are always welcome. Please direct questions and comments to Thomas Fallon, Dean of Institutional Research and Planning, via phone at 978-556-3866 or email at tfallon@necc.mass.edu.