

MathPath Program Analysis

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Office of Planning and Institutional Research



Executive Summary

An analysis was conducted to evaluate the effectiveness of the MathPath course offered during the summer of 2013, continuing the prior MathPath program work reported for summer of 2012 and summer of 2011. MathPath is a non-credit refresher course designed to help students refresh their prior math skills. Ninety-four students enrolled in five MathPath course sections scheduled for the summer of 2013 and early fall of 2013. This analysis examines the outcomes of the 73 students who attended at least six days of the eight-day MathPath course and completed both pre-course and post-course Compass testing.

Outcomes

Three outcomes were of interest in the present analysis: 1) percentage of students who moved up at least one math level by the end of MathPath, 2) differences in pre-course and post-course Compass Math scores, and 3) differences in the math course success rates of MathPath and non-MathPath students. Each of these outcomes and their results are discussed below.

Increasing Math Levels after MathPath

Thirty of the 73 students (41%) improved enough on the Compass Math placement scores to place at least one level higher, according to the Compass - Course Placement guidelines (17 moved up to Beginning Algebra, 12 moved up to Intermediate Algebra, 1 moved up to College Algebra). From 2011-2013, 42% of all MathPath students increased in course placement by at least one level. See Figures 1 and 2 below.

Figure 1. Percentage of 2013 MathPath Students Increasing At Least One Math Level

■ No Increase ■ Moved Up At Least One Level

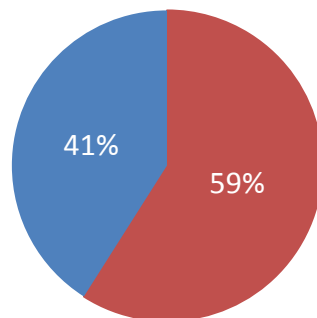
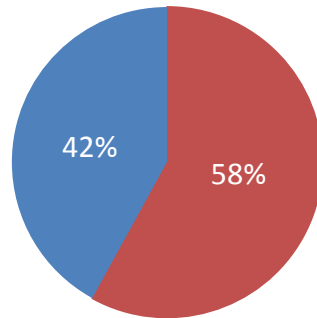


Figure 2. Percentage of 2011-2013 MathPath Students Increasing At Least One Math Level

■ No Increase ■ Moved Up At Least One Level



Pre- and Post-MathPath Compass Scores

Similar to previous findings, students’ the Compass Math scores were significantly higher after the MathPath course than before the course, for both the Pre-Algebra and Algebra tests. The post-MathPath scores of the 52 students completing the Compass Pre-Algebra test increased with a mean difference $M = 7.90$, $SD = 13$. The increase was statistically significant, $t(51) = -4.41$, $p < .001$. Likewise, the post-MathPath scores of the 72 students completing the Compass Algebra test increased with a mean difference $M = 10.82$, $SD = 12$. The increase was statistically significant, $t(71) = -7.65$, $p < .001$. See Table 1 below for means and standard deviations.

Table 1. Mean Scores on Compass Pre-Algebra and Algebra Tests

Compass Measure		Matched Sample Size (N)	Mean (Std. Deviation)	p-value
Pre-Algebra*	Pre-test	52	42.12 (19.78)	< .001
	Post-test	52	50.02 (19.17)	
Algebra*	Pre-test	72	27.06 (12.10)	< .001
	Post-test	72	37.88 (14.71)	

*Statistically significant difference with a 99% confidence level.

Course Success among MathPath and Non-MathPath Students

A comparison group was identified for this outcome, consisting of students who took the Compass Math test during the summer of 2013 and did not enroll in MathPath. This comparison only included students in the 2013 MathPath and non-MathPath cohorts who enrolled in the math course in which they were placed during the summer or fall semester of 2013. For the MathPath cohort, the analysis included only students who enrolled in the course in which they placed based on their post-MathPath scores. Success was defined as a grade of A, B, or C, with students receiving a grade of AU or N being excluded from examination. A total of 36 MathPath students and 1047 non-MathPath comparison students enrolled in the math course in which they were placed during summer or fall. Although MathPath students (67%) had a higher rate of success in their math courses than non-MathPath students (59%), a chi-square test revealed that the success rates of the two groups were not significantly different, $\chi^2(1, N = 1083) = .90, p = .34$.

Conclusions

Findings suggest that MathPath helped a number of students improve their math placement, as 41% of the students moved up one or more levels in developmental math placement by the end of the course. This is consistent with prior MathPath results, with overall results from years of the course revealing that a total of 42% of MathPath students have moved up at least one math level after taking the course. For these students, a two-week refresher course saved them at least an entire semester's worth of coursework.

Analysis of placement scores revealed that both Compass Pre-Algebra and Algebra scores increased significantly by the end of the MathPath course. These findings are consistent with prior findings showing that students' Compass scores increase after taking MathPath and suggest benefits of the program even for students who may not move up a level in math.

A comparison of course success indicated that MathPath students performed equally as well as non-MathPath students in their math courses. This difference also was not significant when only including MathPath students who moved up at least one level. Although it is tempting to conclude that students who move up a level in math after only two weeks of MathPath perform just as well as (or even better than) students who place into those same math courses without MathPath, caution is warranted in drawing firm conclusions based on such a small sample of MathPath students. Clearer conclusions regarding the course success of MathPath students as compared to other students will require larger samples from the MathPath course.