

MathPath Intervention Analysis

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Office of Planning and Institutional Research



Executive Summary

Building on the work already completed by the Math faculty at TCC, an analysis was conducted to evaluate the effectiveness of the MathPath Achieving the Dream (AtD) Intervention, which took place during Summer 2011. MathPath is a non-credit refresher course designed to help high school graduates improve their college math skills. Sixty-eight students enrolled in MathPath and 43 students took math placement tests both prior to MathPath and at the end of MathPath (one student enrolled twice and took pre- and post-tests both times). The analysis included the 43 different students completing both a pre- and a post-test.

Outcomes

A number of outcomes were of interest in the present study: 1) percentage of students who moved up at least one math level by the end of MathPath, 2) percentage of students who enrolled in their new level in Fall 2011 out of all those who moved up at least one level, 3) percentage of students in #2 above who earned a grade of C or better in the course, and 4) differences in pre- and post-test COMPASS Math scores.

Results

Of the 43 different MathPath students taking both pre- and post-tests, 22 (51.2%) of them improved at least one level when taking COMPASS Math tests at the end of MathPath. In addition, 12 of those 22 (54.5%) enrolled in that new level in Fall 2011, and 11 of those 12 students (91.7%) earned a C or better in that course. The 91.7% success rate is particularly high, considering that success rates in developmental math typically range from 50-60% for first-time students. Figures 1 and 2 below show the improvement and course success rates.

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

■ No Increase ■ Moved Up At Least One Level

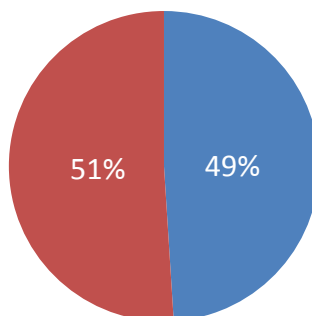
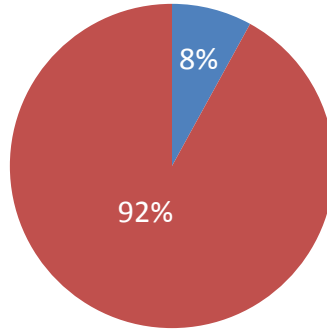


Figure 2. Percentage of MathPath Students Earning a C or Better in New Level

■ Lower than C ■ C or Better



Of the 43 students who completed the pre- and post-test assessments, 15 (34.9%) were in the Fall 2011 AtD cohort. Among the 15 AtD students, 8 (53.3%) moved up at least one level by the end of MathPath, and 6 (75.0%) of those students enrolled in their new level in Fall 2011. All 6 (100%) of the students enrolling in their new level earned a C or better in the course.

In addition to examining improvements in math placement levels as well as enrollments and success in Fall 2011 courses, comparisons of pre- and post-test scores on the COMPASS Pre-Algebra and Algebra tests were conducted (pre-test scores for the COMPASS College Algebra test were not reported for any students; thus, there is no comparison for that test). A confidence level of 95% was used for all tests.

The results from a paired-samples *t*-test revealed that post-test scores were significantly higher than pre-test scores on the Pre-Algebra test, $t(27) = -2.09, p = .046$. However, a second paired-samples *t*-test indicated that the difference between pre- and post-test scores on the Algebra test was not statistically significant, $t(41) = -.33, p = .742$ (see Table 1 below for statistics for each measure; the significant difference is highlighted in yellow).

Pre- and post-test comparisons were also conducted for only the students in the AtD cohort. Despite the smaller sample size ($N = 15$), findings were consistent with those including all students, with significantly higher post-test scores ($M = 41.18, SD = 16.84$) than pre-test scores ($M = 29.09, SD = 9.87$) on Pre-Algebra, $t(10) = -2.59, p = .027$. Also consistent with the overall findings, the comparison for the Algebra test revealed no significant difference across pre- and post-test scores for the AtD cohort, $t(13) = -.31, p = .760$ ($M = 26.64, SD = 12.36$ and $M = 27.43, SD = 10.85$ for pre-test and post-test, respectively).

Table 1. Pre-test and Post-test Mean Scores on COMPASS Pre-Algebra and Algebra Tests

Measure		Matched Sample Size (N)	Mean (Std. Deviation)	p-value
Pre-Algebra*	Pre-test	28	37.82 (18.20)	.046
	Post-test	28	45.64 (18.36)	
Algebra	Pre-test	42	29.79 (28.14)	.742
	Post-test	42	31.33 (14.17)	

*Statistically significant difference with a 95% confidence level.

Conclusions

Findings suggest great benefits of taking the MathPath refresher course, as over half of the students moved up one or more levels in developmental math placement by the end of the course. This result is critical when considering the College's efforts to help students progress through the developmental sequence as quickly as possible. For these students, a two-week refresher course saved them as much as an entire semester's worth of coursework.

Another encouraging finding is that over half of the students moving up at least one level enrolled in their new math level during Fall 2011, and all but one of those students (11 of 12, or 91.7%) earned a C or better in that new course. This result suggests that MathPath not only prepares students to enroll in a higher level of math, but also to successfully complete a course at the new level.

Analysis of the actual placement scores revealed that COMPASS Pre-Algebra scores increased significantly by the end of the MathPath course, although the increase for Algebra scores was not significant. The Math faculty can best hypothesize as to why the findings differed across these two tests.

It is important to note that some students taking MathPath did not intend to take any credit courses at TCC. Indeed, one student indicated that she already has a bachelor's degree and was taking MathPath just as a review for the Graduate Record Exam (GRE). Thus, the percentages presented in this report likely underestimate the true benefits of the MathPath course, especially regarding the rates of students who enrolled in their new math level. Nevertheless, the present findings suggest strong, positive results of the MathPath pilot intervention.