

Fast Track Developmental Math 2 (Arithmetic) and Math 3 (Algebra I)

Executive Summary

In the summer term of 2006, Mountain Empire Community College implemented fast-track (FT) curricula for two of its developmental math courses. The goal was to help more students complete their developmental requirements in a shorter timeframe, thus saving them time and money. This initiative was built on the premise that some students need only a refresher course.

This study looked at the performance of all students enrolled in fast-track math courses over four terms: summer 2006, spring 2007, summer 2007 and fall 2007. (The course was not offered in fall 2006.) Because of the small number of students being studied, the methodology for the analysis was a case study. Each student's initial and subsequent performances in math courses were tracked. Since the fast-track courses were offered only during the day time, comparative data for the previous three years was limited to day classes. (Studies have shown that night and web students perform at a different rate than day students.)

This study showed a much higher success rate for students taking the fast track courses; 89% and 92%, respectively for the FT MTH 2 and FT MTH 3 initial enrollments. Baseline data showed the success rate for the three previous years ranged from 44% to 68%. Performance of FT MTH 2 and MTH 3 students in subsequent math courses was not as high as their initial success.

The data show the fast-track math curricula to be a very positive academic option for some students. It also demonstrates the College's effort to work with students who enroll with different developmental needs. An important aspect of this success is the careful screening of students. The College should ensure that all processes to inform students of the fast-track options are maintained. Since both courses are offered back-to-back each term, the total enrollments (FT MTH 2 & 3) for each term have been 14, 14, 14, and 8, respectively. If adequate enrollments can be maintained, then the cost-benefit of these courses further supports the College continuing to offer fast-track math courses.

Development and Implementation

Sylvia Brown, Assistant Professor of Mathematics at MECC, attended a presentation on fast-track math by William Coe at the Virginia Mathematical Association of Two Year Colleges conference (VMAYTC). With funding provided through MECC's Achieving the Dream grant, Brown then observed Coe teaching at Montgomery College. She also received three hours of released time with grant funding to develop the curricula, which included the development of a textbook for MTH 2 from COMPASS materials she had previously developed; for MTH 3 she used Coe's Basic Fast Track textbook supplemented with her own materials.

Selection criteria were established for enrollment in the two classes. For MTH 2, the student needed a COMPASS score of 20 (the upper limit cutoff score). For MTH 3, the student should have had a COMPASS recommendation into the course and to have passed Algebra I in high school with a C or better. Students were counseled on the rigors of the courses before being granted permission to enroll.

The new courses were piloted in the summer of 2006. To 'fast-track' the courses, MTH 2 was taught in one week as a one-credit course, followed by MTH 3 being taught two-weeks as a two-credit course. MTH 2 is traditionally taught in the summer over ten weeks as a three-credit course; MTH 3 is taught over ten weeks as a five-credit course.

Students were very successful in the initial piloted courses; both had 100% pass rates. Students in the fast track MTH 2 course had a final exam average of 93%, compared to an average of 75% for students in traditional courses. Brown surveyed the students and found positive responses. Referencing the FT MTH 3 students, she stated, "They were very bright. When surveyed, six students said the course moved at just the right pace. Two students said the course moved too slowly."

The courses were then developed for a regular term – MTH 2 being taught the first five weeks and MTH 3 being taught the final ten weeks – and were offered in spring 2007. The courses have, at the time of this study, been offered summer and fall 2007 and are currently being offered spring 2008.

Findings

Table 1 shows the number of students taking Fast Track courses and their outcomes. Fast track students comprise approximately 25% of the all summer MTH 2 and MTH 3 enrollees, whereas the percentage is less than 10% for the spring and fall terms which have a much larger number of students. In the summer of 2007, the day courses were only offered in the fast track format, along with an evening MTH 3 and MTH 2 and 3 web courses. The college should be diligent in ensuring that students meeting the selection criteria are aware of the fast track options.

It should be expected that performance outcomes will be higher for the fast-track students, who were selected for enrollment. However, the success rates (percent of students receiving S or satisfactory grade) of 89% for MTH 2 students and 92% for MTH 3 students range from approximately 20% to 40% higher than student performance in traditional MTH 2 and 3 courses during the previous three years.

The percentage of fast track students enrolling in subsequent math courses is also quite high (67% for MTH 2 and 64% for MTH 3), although their performance in these courses is quite mixed. Even though they are highly successful in the initial courses, their continued success is not as high.

Table 1. Student Outcomes for Fast Track MTH 2 and MTH 3

Fast Track MTH 2		Fast Track MTH 3	
Dates offered	Enrollments	Dates offered	Enrollments
Summer 06	6	Summer 06	6 (plus 2 from FT MTH 2)
Spring 07	4	Spring 07	8 (plus 2 from FT MTH 2)
Summer 07	4	Summer 07	10
Fall 07	4	Fall 07	1 (plus 3 from FT MTH 2)
Total	18	Total	25 (plus 7 from FT MTH 2)
Pass Rate: 89% (16 of 18) on first enrollment, compared to ranges of 52% to 68% in traditional MTH 2 classes for AtD cohorts 2002-05. 100% overall.		Pass Rate: 92% (23 of 25) on first enrollment, compared to ranges of 44% to 55% in traditional MTH 3 classes for AtD cohorts 2002-05	
<ul style="list-style-type: none"> • Summer 06: 100% passed, 6 of 6 • Spring 07: 3 of 4 passed; the one took traditional MTH 2 in summer 07 and passed • Summer 07: 3 of 4 passed; the one took traditional MTH 2 in fall 07 and passed • Fall 07: 100% passed, 4 of 4 		<ul style="list-style-type: none"> • Summer 06: 100% passed, 6 of 6 (plus 2 passed coming from FT MTH) • Spring 07: 6 of 8 passed; one received W; one received U, then S in FT MTH 3 in fall 07 (2 coming from MTH 2 received Ws) • Summer 07: 100% passed, 10 of 10 • Fall 07: 100% passed, 1 of 1 (plus 1 of 3 coming from FT MTH 2) 	
Retention: 66%; 12 of 18 took subsequent math courses		Retention: 64%; 14 of 22 took subsequent math courses	
<ul style="list-style-type: none"> • Summer 06: 2 of 6 still enrolled fall 07 • Spring 07: 2 of 4 still enrolled fall 07 • Summer 07: 4 of 4 still enrolled fall 07 		<ul style="list-style-type: none"> • Summer 06: 6 of 6 still enrolled fall 07 • Spring 07: 7 of 8 still enrolled fall 07 • Summer 07: 9 of 10 still enrolled fall 07 	
Subsequent Success in Math Courses (not offered fall 06)		Subsequent Success in Math Courses (not offered fall 06)	
<ul style="list-style-type: none"> • Summer 06: 4 of 6 took subsequent courses; 3 of the 4 took math in following term: 1 - W in MTH3 1 - S in FT MTH 3; two U's in MTH 4 1 - S in FT MTH 3; D in MTH 126; retook and got C 1 - D in MTH 141 (2 did not return) • Spring 07: 3 of 4 took subsequent courses; 1 in following term: 2 - W in FT MTH 3 1 - S in MTH 2 after failing FT MTH 2; F in MTH 141 (1 did not return) • Summer 07: 2 of 4 took subsequent course in following term 1 - S in MTH 3 1 - W in MTH 3 (1 - S in MTH 2* after failing FT MTH 2; 1 in General Studies returned but did not take subsequent course) • Fall 07: 3 of 4 took FT MTH 3 in same term 1 - S in FT MTH 3 1 - R in FT MTH 3 1 - W in FT MTH 3 (1 in pre-Respiratory Therapy did not take MTH 3, but not required for major) 		<ul style="list-style-type: none"> • Summer 06: 5 of 6 took subsequent courses; 5 of 5 took math in following term: 1 - S in MTH 4, B in MTH 163, C in MTH 164, C in MTH 273 1 - D then C in MTH 126, A in MTH 141 1 - D in MTH 126 1 - U in MTH 4 1 - W then U in MTH 4 (1 in pre-nursing returned but has taken no other math courses) • Spring 07: 4 took subsequent courses in fall: 1 - A in MTH 141 1 - B in MTH 126 1 - S in MTH 3 after not passing FT Mth 3 in spring 07 1 - U in MTH 4 (1 in Education returned but did not take subsequent course; 1 in Bus Admin got W, returned but did not re-enroll in MTH 3) • Summer 07: 5 of 10 took subsequent fall courses 2 - Cs in MTH 126 1 - W in MTH 126 1 - S in MTH 4 1 - U in MTH 4 (5 returned but did not take subsequent course - 1 in General Studies, 2 LPN, 1 pre-RN, and 1 Med Lab Tech) 	