

Year One Impact Report  
Quality Enhancement Plan Impact Team



Middle Georgia Technical College

**Title and brief description as initially presented:**

Middle Georgia Technical College’s Quality Enhancement Plan (QEP) is titled Multiply Your Options with Math. The focus of the QEP is to enhance student learning by strengthening the computational and mathematical skills of students enrolled in learning support (developmental) math courses (MAT0097, MAT0098, and MAT0099). In identifying this topic, the College considered the Mission, assessment data and input solicited from faculty, staff, students, alumni, board members, and program advisory committee members (business and industry representatives who employ the College’s graduates).

**Original goals and intended outcomes of the QEP:**

The QEP identified four student learning outcomes that serve as the framework for the project’s assessment plan:

- Students will demonstrate mastery of the concepts in Learning Support math courses.
- Students completing Learning Support math courses will demonstrate mastery of the concepts in their core math courses.
- Students completing Learning Support math courses will demonstrate mastery of the mathematical concepts in the math portions of their occupational courses.
- Students completing Learning Support math courses will enter the workforce with appropriate math skills.

Assessment for each of these student learning outcomes and the original goals for each are listed in the table below:

<b>Learning Outcome</b>	<b>Goal</b>
<i>Students will demonstrate mastery of the concepts in Learning Support math courses</i>	
MAT 0097 Exit exam mean	<b>80.00</b>
MAT 0098 Exit exam mean	<b>85.00</b>
MAT 0099 COMPASS exam mean	<b>50.00</b>
MAT 0097 end-of-quarter students eligible for the final exam	<b>70.0%</b>
MAT 0098 end-of-quarter students eligible for the final exam	<b>80.0%</b>
MAT 0099 end-of-quarter students eligible for the final exam	<b>80.0%</b>
<i>Students completing Learning Support math courses will demonstrate mastery of the concepts in their core math courses</i>	
MAT 1012 final exam mean	<b>75.0</b>
MAT 1013 final exam mean	<b>70.0</b>
MAT 1011 final exam mean	<b>79.0</b>
MAT 1111 final exam mean	<b>84.0</b>
<i>Students completing Learning Support math courses will demonstrate mastery of the mathematical concepts in the math portions of their occupational courses</i>	
Notes test in ACC 102, subset mean scores	<b>85.0</b>
Ohm's test in IFC 101, subset mean scores	<b>85.0</b>
Drug Calculations in AHS 102, subset mean scores	<b>85.0</b>
Metric Conversion in MAS 103, mean test scores	<b>85.0</b>
Scales Worksheet in DDF 100, subset mean scores	<b>85.0</b>

*Students completing Learning Support math courses will enter the workforce with appropriate math skills*

Work Ready, math subset mean scores, diploma	<b>5.0</b>
Work Ready, math subset mean scores, degree	<b>5.75</b>
Employer satisfaction survey results	<b>100%</b>

In addition to these student learning outcomes, there are a number of ancillary goals that were established:

*Ancillary improvement*

Program ready versus learning support attainment (%,%)

MAT 1011	<b>80%</b>
MAT 1012	<b>80%</b>
MAT 1013	<b>80%</b>
MAT 1111	<b>80%</b>
Learning Support MAT course attainment	
MAT 0097	<b>80%</b>
MAT 0098	<b>80%</b>
MAT 0099	<b>80%</b>
Attrition	
MAT 0097	<b>30%</b>
MAT 0098	<b>30%</b>
MAT 0099	<b>30%</b>

The College planned for an ongoing process of review of the student learning outcomes and the related goals as a means of continuous improvement. Following the reception of Spring Quarter data related to the outcomes, the goals were analyzed and a number were recalibrated to reflect a more rigorous challenge. The updated goals are listed on page 12.

## Implementations

There are a number of implementations outlined in the QEP that lead to the established student learning outcomes goals. In addition, there are a number of efforts that have been revealed during the process of implementing the QEP that have proven to be beneficial. The original implementations were to be introduced in various phases and in differing time lines dependent in some part on the amount of time for development and testing. Changes to the order or timing of implementations are discussed further in this document on page 13. Those substantial implementations and the degree to which they have been initiated are shown below:

	<b>Degree Implemented</b>
Contextual workbooks	5 of 22 programs completed
Curriculum maps	100%
Math Bridged Lessons	Follows mapping and workbooks
Math lab renovation	100%
Embedded classroom tutors	To be piloted
Cohorts	Ongoing
Success coach	100%
Student Success course	100%: 24 sections, 327 students(FY2011)
Training, MAT faculty	Ongoing
Training, Occupational Program Faculty	Follows mapping and workbooks

### *Other significant items under development:*

- Early Warning System
- Professional Development for Faculty
  - Math in Career Technical Education
- Professional Development for Math Faculty
  - Math Instruction Techniques
  - Instructional Technology
  - Use of Work Ready scores

Professional development is a significant part of the QEP as it relates to the Math faculty. There have been a number of training sessions and other opportunities for faculty which are listed below:

<b>Training</b>	<b>Faculty</b>
Georgia Perimeter College Math Conference (Georgia Mathematical Association of Two-Year Colleges)	Math faculty: Joan Hoffmann, Esiquio Hernandez, Steve Starks
Assessment	17 faculty members (including Math)
Collaborative Learning	19 faculty members (including Math)
Learning Styles Linked to Instructional Methods	14 faculty members (including Math)
Instructional Technology	Math faculty: Joan Hoffmann, Esiquio Hernandez, Steve Starks, Adria Schneck-Scott
Use of WorkReady Scores	Ongoing online available
Innovation in Education Award presentation (winning project presentation)	Math faculty: Adria Schneck-Scott (presenter), Steve Starks and 6 other faculty members
Teaching Students How to Learn	Math faculty: Adria Schneck-Scott, Esiquio Hernandez, Joan Hoffman

## Changes to the QEP

There have been a number of changes made to the QEP due to departmental developments in terms of instructional delivery changes to learning support courses. In addition, a number of external events have influenced the implementations of the QEP. The initial timeline for fully implementing all phases of the QEP was found to be ambitious; a revised timeline is listed on page 13.

These changes have been slight; the core intent of the QEP is to improve student learning and that has not been affected. The original student learning outcomes have also remained as they were in the initial document. For the casual observer, it might appear that the QEP has not been altered at all.

The changes:

- The most direct change to the QEP was the decision to expand the assessment for the third Student Learning Outcome from five to ten. The results will be a more thorough evaluation of learning at the program level as some of the courses currently used are offered infrequently. Joining the Accounting, Electronics, Nursing, Medical Assisting, and Drafting programs as assessment points are Aircraft Structural Technology, Aviation Maintenance Technology, Radiology, Criminal Justice, and Machine Tool Technology. Assessment in these programs will begin Fall Semester. The initial goal for these was set at 85% and will be reviewed annually.
- For the first student learning outcome, MAT 0099 COMPASS pass rates were added as an additional assessment point.
- The Success Coach in his/her role as teacher in the COL0099 course will spend approximately ten minutes each class session reviewing related math concepts from the learning support course.
- The greatest impact on the QEP as both a project and a process has been the quarter-to-semester conversion; semester curricula begin in August.
  - The three learning support courses were initially referred to with a MAT prefix; the prefix is now MATH.
  - The name and numbering convention of the program courses that are evaluated in the third Student Learning Outcome will change. (for example, ACC 102 becomes ACCT 1100)
  - There have been curricular changes to the learning support courses, resulting in a review of the contextual workbooks and their arrangement of math concepts.
  - The development of contextual workbooks has been delayed as program faculty first develops course materials and instructional strategies for the semester curriculum as well as the amount of time needed to appropriately advise their students.
- Persistence has emerged as an ancillary assessment point.
- The General Education department has chosen to use SkillsTutor for the MATH0097 course, thereby making it a computer-instructed course. Prior to this it was a classroom-based course.
- Following an analysis of the first year's data, goals have been re-established in several areas. In most cases, the result is more rigorous but still reasonable expectations for the QEP effort. The new goals are discussed further on page 12 of this document.

## Direct Impact on Student Learning:

The QEP made a definite impact on student learning during the first year. Within the four student learning outcomes and the four quarters in FY2011, there were 67 possible assessment points and the goal for each was met 48 times, resulting in a goal-achievement rate of 72%. For each of the student learning outcomes, goal achievement occurred at a 71%, 94%, 64%, and 44% rate, respectively. The data for these outcomes are listed below with those meeting or exceeding the goal highlighted in yellow;

*Students will demonstrate mastery of the concepts in Learning Support math courses. Twenty of the twenty-eight assessment points (71%) for this learning outcome met or exceeded the established goal.*

	Goal	Summer 2010	Fall 2010	Win 2011	Spring 2011
MAT 0097 Exit exam mean	80.00	84.49	83.79	87.33	88.53
MAT 0098 Exit exam mean	85.00	85.61	79.60	83.34	79.75
MAT 0099 COMPASS exam mean	50.00	46.38	47.14	50.90	47.93
MAT 0099 COMPASS pass rate	85.00%	92.30%	85.71%	88.00%	76.19%
MAT 0097 end-of-quarter students eligible for the final exam	70.00%	75.00%	71.79%	88.23%	88.89%
MAT 0098 end-of-quarter students eligible for the final exam	80.00%	96.00%	88.46%	88.29%	89.70%
MAT 0099 end-of-quarter students eligible for the final exam	80.00%	81.25%	77.78%	80.64%	84.00%

*Students completing Learning Support math courses will demonstrate mastery of the concepts in their core math courses. Fifteen of the sixteen assessment points (94%) for this learning outcome met or exceeded the established goal.*

	Goal	Summer 2010	Fall 2010	Winter 2011	Spring 2011
MAT 1012 final exam mean	75	86.12	80.13	82.95	81.81
MAT 1013 final exam mean	70	76.63	76.45	77.58	70.29
MAT 1011 final exam mean	79	85.33	82.85	87.68	83.40
MAT 1111 final exam mean	84	86.49	88.79	86.77	82.61

Students completing Learning Support math courses will demonstrate mastery of the mathematical concepts in the math portions of their occupational courses. Nine of the fourteen available assessment points (64%) for this learning outcome met or exceeded the established goal.

	Goal	Summer 2010	Fall 2010	Winter 2011	Spring 2011
Notes test in ACC 102, subset mean scores	85	100%	100%	100%	100%
Ohm's test in IFC 101, subset mean scores	85	n/o	87.2%	75.7%	78.0%
Drug Calculations in AHS 102, subset mean scores	85	90.7%	81.9%	77.8%	86.0%
Metric Conversion in MAS 103, mean test scores	85	n/o	n/o	70.8%	n/o
Scales Worksheet in DDF 100, subset mean scores	85	n/o	85.7%	85.5%	n/o

n/o= not offered

Students completing Learning Support math courses will enter the workforce with appropriate math skills. Four of the nine assessment points (44%) for this learning outcome met or exceeded the established goal.

	Goal	Summer 10	Fall 2010	Winter 2011	Spring 2011
Work Ready, math subset mean scores, diploma	5.0	4.86	5.02	5.00	4.91
Work Ready, math subset mean scores, degree	5.75	5.63	5.17	6.00	5.25
		<b>FY11</b>			
Employer satisfaction survey results	100%	100%			

### Ancillary Outcomes:

#### Program Ready versus Learning Support Course Attainment

Attainment in the two tables below is defined as the percentage of students receiving A, B, or C.

	Goal	Summer 10	Fall 2010	Winter 2011	Spring 2011
MAT 1011	80%	75, 50	69, 50	60, n/a	68, 100
MAT 1012	80%	64, 13	56, 58	55, 50	56, 50
MAT 1013	80%	69, 25	49, 50	53, 50	49, 100
MAT 1111	80%	98, 100	63, 100	82, 100	66, 75

#### Learning Support MAT Course Attainment

	Goal	Summer 10	Fall 2010	Winter 2011	Spring 2011
MAT 0097	80%	46.15%	50.00%	66.67%	41.03%
MAT 0098	80%	68.27%	59.15%	66.40%	63.77%
MAT 0099	80%	60.00%	39.29%	56.76%	43.24%

### Learning Support Math Attrition

Attrition in the table below is defined as the percentage of students from a particular course who did not graduate nor are still enrolled.

		<b>Total</b>	<b>Graduated</b>	<b>Still Enrolled</b>	<b>Attrition</b>
MAT 0097	Summer 2010	52	0	5	90%
	Fall 2010	54	2	10	78%
	Winter 2011	45	1	11	73%
	Spring 2011	39	0	14	64%
MAT 0098	Summer 2010	104	6	18	77%
	Fall 2010	144	5	24	80%
	Winter 2011	125	6	34	68%
	Spring 2011	96	3	35	60%
MAT 0099	Summer 2010	20	6	4	50%
	Fall 2010	28	2	5	75%
	Winter 2011	37	7	5	68%
	Spring 2011	37	2	19	43%

### Persistence

During this first year, persistence has emerged as an ancillary improvement area of the QEP and may be valuable to the College as an indication of the achievements of the Success Coach and the COL0099 Study Skills course. The table below compares the persistence rates of students in MAT0097, MAT0098, and MAT0099 and focuses on those who had the benefit of the COL0099 course and those who did not. Persistence rates in this case are focused on student's completion of a specific quarter and are determined by the percentage of those students achieving a grade of A, B, C, D, or F in the course as opposed to those withdrawing or stopped attending, as indicated by receiving WF or WP.

### Percentage of MAT students achieving A, B, C, D, or F by course by quarter

<b>Summer 2010</b>	<u>Students completing COL0099</u>	<u>Student NOT completing COL0099</u>
MAT0097	76.19	51.61
MAT0098	85.71	60.00
MAT0099	83.33	78.57
<b>Fall 2010</b>		
MAT0097	78.79	61.90
MAT0098	84.93	52.86
MAT0099	50.00	70.00
<b>Winter 2011</b>		
MAT0097	80.00	60.00
MAT0098	82.54	67.74
MAT0099	78.57	86.96
<b>Spring 2011</b>		
MAT0097	45.83	50.00
MAT0098	81.58	70.69
MAT0099	80.00	52.94

*FY2011 Percentage of MAT students achieving A, B, C, D, or F by course*

	Students completing COL0099	<u>N</u>	Student NOT completing COL0099	<u>N</u>
MAT0097	71.68	113	55.26	76
MAT0098	83.86	245	62.45	223
MAT0099	75.00	48	72.97	74

*Success Coach and COL0099 Student Satisfaction*

Following implementation of the COL0099 course and the hiring of the Success Coach, assessment of each began in the form of student satisfaction surveys for both. In FY2011, students indicated 99% satisfaction with the Success Coach and indicated 99.7% satisfaction with the COL0099 course.

*Program Connection*

A survey was developed to attempt to measure the impact COL0099 and the Success Coach were having on student engagement. The Program Connection Survey was implemented for one quarter; the results are below:

COL0099 Program Connection Survey Summary			
N=30	Mean Scores		
	Pretest	Posttest	+/-
The name of the program chair of my program	2.90	3.79	0.89
The name of at least one faculty member that teaches in my program	3.30	3.79	0.49
The location of my program on campus	3.43	3.86	0.43
The location and appearance of classrooms or labs of my program	2.77	3.71	0.94
How important Math is in my program	3.40	3.79	0.39
The value of my math courses in my program	3.27	3.89	0.62
At least one example of using math in my program	3.03	3.79	0.76
I feel connected to my program	3.37	3.89	0.52
Pretest cumulative mean score	3.18		
Posttest cumulative mean score	3.81		
Difference	0.63		

1=I do not know

2=I think I know but I do not remember

3=I think I know

4=I know

### *COL0099 Attrition*

In addition, the attrition rate of those students taking COL0099 was also analyzed. The results have shown improvement in this area and are shown in the table below:

	<b>Total Students</b>	<b>Graduated</b>	<b>Still Enrolled</b>	<b>Attrition</b>
<b>Summer 2010</b>	94	2	19	77.6%
<b>Fall 2010</b>	152	2	26	81.5%
<b>Winter 2011</b>	96	5	26	67.7%
<b>Spring 2011</b>	79	0	31	60.7%

Attrition will naturally increase further from the original quarter. Additional analysis is being developed that will observe the impact COL0099 has on learning support student's persistence in terms of their passing a program-level math course within two following quarters of having had the learning support course. At this point, the data has not yet aged enough for a valuable assessment.

### *COL0099 Impact on Student Learning*

The GPA of students in math courses was analyzed. Those learning support students taking COL0099 were compared with those learning support students who had not taken COL0099. There were positive results in MAT 0098 and MAT 1111; in two of the four quarters students with COL0099 experience had a higher GPA in each of these courses. For one quarter, COL0099 experienced students in MAT 1015 had the higher GPA. As a result, an increased emphasis on specific math concepts is to be addressed in the COL0099 course for brief periods each day. The original intent of the COL0099 course is as a study skills course and not math-specific. The Success Coach will now address the current math concepts in the student's MAT course for ten minutes each day.

## Goal Realignment

Following the data results from the first year, the QEP Impact Team met to discuss changing the goals of the QEP. Of the nineteen assessment points of the student learning outcomes, two were raised ten percent; five were raised five percent, ten remained at their initial level, and two were lowered. Five assessment points were added and begin with a goal of 85. The re-established goals are:

Learning Outcome	Original	Goal+5%	Goal+10%
MAT 0097 Exit exam mean		84	
MAT 0098 Exit exam mean	85.00		
MAT 0099 COMPASS exam mean	50.00		
MAT 0099 COMPASS pass rate	85%		
MAT 0097 end-of-quarter students eligible for the final exam		74%	
MAT 0098 end-of-quarter students eligible for the final exam			88%
MAT 0099 end-of-quarter students eligible for the final exam	80%		
MAT 1012 final exam mean		79	
MAT 1013 final exam mean		74	
MAT 1011 final exam mean		83	
MAT 1111 final exam mean	84		
Notes test in ACC 102, subset mean scores			94
Ohm's test in IFC 101, subset mean scores	85		
Drug Calculations in AHS 102, subset mean scores	85		
Metric Conversion in MAS 103, mean test scores	85		
Scales Worksheet in DDF 100, subset mean scores	85		
(section tba), AST course, subset mean scores	85		
(section tba), AMT course, subset mean scores	85		
(section tba), RAD course, subset mean scores	85		
(section tba), CRJ course, subset mean scores	85		
(section tba), MCH course, subset mean scores	85		
Employer satisfaction survey results	100%		

Two of the nineteen assessment point goals were reviewed and considered to have been too ambitious. After an analysis of all scores, including those prior to the QEP, the goals for the Work Ready math subset mean score for both diploma and degree were significantly above the historical mean. The goal of 5.75 for the degree student scores was 11% over the historical mean and the goal of 5.0 for diploma student scores was 6% over. These goals were reestablished at 5% over the historical mean.

	Historical Mean	Original Goal	Historical Mean + 5%	
Work Ready, math subset mean scores, diploma	4.71	5.0	<b>4.95</b>	New goal
Work Ready, math subset mean scores, degree	5.20	5.75	<b>5.46</b>	New goal

## Next Steps

The first year of Multiply Your Options with Math has been challenging as the College shifts into the semester system. These changes are an exciting evolution in the Technical College System of Georgia but the core of the QEP will not waver. Learning Support math students will continue to benefit from implementations not yet introduced; specifically, the use of contextual workbooks and from meaningful professional development training using the Math-in-CTE approach.

The timeline for the remaining implementations:

Early Warning system	Completed and implemented Fall Semester
MAT0097 workbooks	Completed and piloted Fall Semester
MAT0098 workbooks	Completed and piloted Fall Semester
MAT0099 workbooks	Developed Fall Semester; completed and piloted Spring Semester
Math-in CTE training	Beginning Spring Semester