

# **Greater Birmingham Mathematics Partnership**

## **Annual Report Project Year 3 June 2006 - August 2007**

***Excerpts- Sections 1, 2, 5***

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## Section 1: Activities and Findings

### Exhibit #1: Implementation Matrix

#### Goal I: To increase the effectiveness of middle school mathematics teachers within GBMP school systems

1. (a) MEC Summer Courses (MSP Key Feature: T, P, C)		Completed or will be by 8/31/07		
Fall Tasks	Responsible Party	Yes	No	
Consolidate feedback from past Summer courses and begin planning of next Summer courses.	Parker	X		
Begin recruitment efforts for Summer courses.	District Liaisons,	X		
Create and distribute materials to advertise and promote Summer courses.	Dominick, Moore			
Begin processing enrollment information for Summer courses.	Liaisons, Dominick	X		
Begin notifying teachers of course date assignments.	Liaisons, Dominick	X		
Seek opportunities to give “update” talks to stakeholders in districts.	Liaisons, Dominick	X		
Collaborate with UAB mathematics faculty members to develop new MEC course, <i>Integrating Mathematical Ideas: Algebra, Geometry, Probability and Statistics</i> .	Millie Johnson	A		
Spring Tasks	Responsible Party	Yes	No	
Finalize planning of Summer courses.	Parker	A		
Invite 1-2 local leaders to begin the internship process to become MEC instructors.	Parker, Dominick	X		
Continue recruitment and publicity efforts for Summer courses.	District Liaisons,	X		
	Dominick, Moore			
Continue processing enrollment information for Summer courses.	Liaisons, Dominick	X		
Continue notifying teachers of course date assignments.	Liaisons, Dominick	X		
Communicate information to teachers about UAB credit for MEC courses.	Liaisons, Dominick	X		
Select sites for Summer 2007 courses.	Liaisons, Dominick	X		
Select dates for Summer 2008 courses.	Liaisons, Dominick	X		
Send information letter to participants about Summer courses and orientations sessions.	Liaisons, Dominick	A		
Send letter to IHE faculty members prior to Summer courses.	Parker	A		

1. (a) MEC Summer Courses (continued)	Completed or will be by 8/31/07		
Spring Tasks (continued)	Responsible Party	Yes	No
Research items (manipulatives, supplies, etc.) to go into teacher kits.	Moore, Dominick	A	
Research items (books, videos, etc.) to distribute to teachers.	Moore, Dominick	A	
Order teacher kit, including graphing calculators for new course Extending Algebraic Reasoning.	Moose	A	
Order professional development books (Connected Math Project, etc.) to distribute to teachers.	Moose	A	
Continue collaborating with UAB mathematics faculty members to develop new MEC course.	Millie Johnson	X	
Pilot new MEC course to gain input from IHE faculty.	Millie Johnson	A	
Arrange enrollment for Summer course to include both middle school teachers and IHE faculty	Dominick	X	
Summer Tasks	Responsible Party	Yes	No
Continue recruitment and publicity efforts for GBMP.	District Liaisons, Dominick, Moore	A	
Attempt to accommodate teachers still requesting to attend Summer courses.	Liaisons, Dominick	A	
Prepare for orientation sessions to be held on the day before the start of each section of <i>Patterns, Functions, and Algebraic Reasoning</i> .	Dominick	A	
Send materials for MEC courses.	Parker	A	
Set-up for MEC courses.	Dominick	A	
Host MEC courses.	Districts	A	
Offer orientation sessions prior to each section of <i>Patterns, Functions, and Algebraic Reasoning</i> .	Dominick	A	
Offer MEC courses.	Parker	A	
Participate in MEC courses.	District Teachers	A	
Discuss definition of challenging courses and curricula.	MEC faculty	A	
IHE faculty members participate in MEC Summer courses.	IHE faculty	A	
IHE and MEC faculty members hold discussions following MEC courses.	IHE, MEC faculty	A	
Complete collaboration with UAB mathematics faculty members to develop new MEC course.	Millie Johnson	A	
Participate as interns with MEC instructors in Summer courses.	Interns	A	

<b>1. (b) Academic Year Follow-up: Grade-Level Sessions (MSP Key Feature: T, P, C)</b>		<b>Completed or will be by 8/31/07</b>		
<b>Fall Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Remind teachers and administrators about dates and locations of Fall grade-level sessions.	Liaisons, Dominick	X		
Invite IHE faculty to attend the Grade Level Sessions.	Dominick	X		
Register teachers for grade-level sessions.	Liaisons, Dominick	X		
Host grade-level sessions.	Districts	X		
Deliver grade-level sessions on Number Talk and on Connected Math Project units as a tool for implementation of challenging courses and curricula.	Lofgren, Local Leader	X		
Local leader co-facilitates Grade-Level Sessions.	District Leader	X		
Arrange for and fund substitute teachers.	Districts	X		
Participate in grade-level sessions.	District Teachers	X		
<b>Spring Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Remind teachers and administrators about dates and locations of Spring Grade-Level Sessions.	Liaisons, Dominick	X		
Invite IHE faculty to attend the Grade Level Sessions.	Dominick	X		
Register teachers for grade-level sessions.	Liaisons, Dominick	X		
Host grade-level sessions.	Districts	X		
Deliver grade-level sessions on Number Talk and on Connected Math Project units as a tool for implementation of challenging courses and curricula.	Lofgren, Local Leader	X		
Local leader co-facilitates Grade-Level Sessions.	District Leader	X		
Arrange for and fund substitute teachers.	Districts	X		
Participate in grade-level sessions.	District Teachers	X		
Select sites for 2007-2008 grade-level sessions.	Liaisons, Dominick	X		
Select dates for 2007-2008 grade-level sessions.	Liaisons, Dominick	X		

2. IHE Course Redesign and Development (MSP Key Feature: I, P, T, C)		Completed or will be by 8/31/07		
Fall Tasks	Responsible Party	Yes	No	
Offer revised MA 114 as MA 314 at UAB.	Smith	X		
Offer new course MA 123, <i>Calculus and Functions with Applications I</i> at UAB.	Ward	X		
Offer MA 372, <i>Geometry I</i> .	Mayer	X		
Reflect on key aspects of challenging courses and curricula in preparation for developing and revising courses.	IHE faculty	X		
Complete design of MA 124, <i>Calculus and Functions with Applications II</i> .	Ward	A		
Add new middle school major track to UAB catalog.	Mayer		D	
Recommend workshop activities for MA 105, <i>Pre-Calculus Algebra</i>	Mayer, Ware	A		
Begin redesign of UAB course MA 105, <i>Pre-Calculus Algebra</i> to include parallel activities from MEC course, <i>Extending Algebraic Reasoning</i> , and to follow new UAB Quality Enhancement Plan.	Mayer, Ward, Kravchuk, Johnson, Ware, Smith, Feldman, McClain			
Continue conversations with Millie Johnson regarding course development.	Mayer	A		
Design UAB course rotation to support Middle School Mathematics Certification.	Mayer	A		
Spring Tasks	Responsible Party	Yes	No	
Offer new course MA 124, <i>Calculus and Functions with Applications II</i> , at UAB.	Ward	X		
Recommend workshop activities for MA 110, <i>Finite Mathematics</i> based on MEC course <i>Numerical Reasoning</i> .	McClain, Mullins	A		
Recommend workshop activities for MA 110, <i>Finite Mathematics</i> based on MEC course <i>Probability and Data Analysis</i> .	Mayer, Ware, Meadows, Feldman, Kamii, Riley, Turner, Moore	A		
Begin redesign of MA 110, Finite Mathematics, to include parallel activities from MEC courses, Probability and Data Analysis and Numerical Reasoning to follow new UAB Quality Enhancement Plan for pilot Fall, 2007 at UAB.	Mayer, Johnson	A		
Begin design of new course, <i>Integrating Mathematics Ideas: Algebra, Geometry, Probability, and Statistics</i> in collaboration with MEC.	Mayer, Ware	A		

<b>2. IHE Course Redesign and Development (continued)</b>		<b>Completed or will be by 8/31/07</b>		
<b>Spring Tasks (continued)</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Continue redesign of MA 105, <i>Pre-Calculus Algebra</i> .	Kravchuk, Johnson	A		
Offer MA 313 and MA 314 on regular basis.	Smith	X		
<b>Summer Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Observe MEC courses.	Mayer, Ward, Kravchuk, Johnson, Ware, Meadows, Smith, Feldman, McClain, Mullins, Moore	A		
Complete redesign of MA 110, Finite Mathematics, to include parallel activities from MEC courses, Probability and Data Analysis and Numerical Reasoning, and to follow new UAB Quality Enhancement Plan for pilot in Fall, 2007 at UAB.	Mayer, Johnson	A		
Complete redesign of MA 105, Pre-Calculus Algebra, and to follow new UAB Quality Enhancement Plan for pilot in Fall, 2007 at UAB.	Kravchuk, Johnson		D	
Complete designing new course, Integrating Mathematics Ideas: Algebra, Geometry, Probability, and Statistics.	Mayer, Ware		D	
Design MA 473, Geometry II.	Ward	A		
Offer MA 313 and MA 314 on regular basis.	Smith	A		
Offer MA 123 and MA 124 on a regular basis.	Ward	A		

<b>3. Middle School Certification (MSP Key Feature: T, I)</b>		<b>Completed or will be by 8/31/07</b>		
<b>Fall and Winter Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Continue development of Middle School Track within the Mathematics Major: <ul style="list-style-type: none"> <li>- Publicize the major and get it into course catalogs</li> <li>- Schedule courses</li> <li>- Begin recruiting students</li> </ul>	Mayer, Ware, Ward, Froning, Meadows, Smith, Feldman	X		
Design UAB courses parallel to new MEC courses: Integrating Mathematics Ideas: Algebra, Geometry, Probability, and Statistics, and Connecting Mathematics Content to Science and Technology. Also Mathematics for Elementary Teachers 1-2	Mayer, Ward, with Smith, Froning	A		
Finish developing alternative Fifth-year program for middle grades mathematics. <ul style="list-style-type: none"> <li>- Align standards</li> <li>- Prepare checklists</li> <li>- Submit proposal to Alabama Board of Education for approval</li> </ul>	Smith, Froning		D	
Develop course list for Middle Grades Certification checklist. Determine if new courses are needed.	Froning, Smith, Meadows, Sims	X		
Design UAB course rotation to provide continuous support of MS certification		A		
Coordinate proposed checklist with new major in the mathematics department.	Smith, Mayer	A		
Prepare proposal to State Department of Education for its approval and forwarding to State Board of Education.	Smith, Froning	X		
<b>Spring Tasks</b>		<b>Yes</b>	<b>No</b>	
Follow up on Middle School Certification proposal submitted to Alabama State Board of Education.	Froning	A		
State Board of Education final vote to approve certification (July 2007).	Alabama Board of Education	A		



4. Engineering Projects (MSP Key Feature: P, C)		Completed or will be by 8/31/07	
Fall Tasks	Responsible Party	Yes	No
Continue accumulating background information on: (1) AMSTI and Connected Math (2) Existing hands-on mathematics and science application activities (3) Applications of middle school math in real world activities and careers	Feldman, Lalor, McClain	X	
Cataloguing information related to Alabama Course of Study (ACS) (1) Existing hands-on mathematics and science application activities (2) MEC class tasks ( <i>Numerical Reasoning</i> and <i>Probability and Data Analysis</i> ) (3) Relating MEC tasks to applications and careers	Feldman, Lalor, McClain	X	
Engineering project (EP) development (1) Reflect on key aspects of challenging courses and curricula in preparation for developing EPs (2) Review feedback of the Patterns EP from field tests in the MEC <i>Patterns, Functions and Algebraic Reasoning</i> course and UAB's <i>Mathematics for Elementary and Middle School Teachers I</i> (MA 313) and BSC's Teaching Mathematics (ED 320) taught over the Summer (3) Review feedback of the Patterns EP from field tests in MST classrooms (4) Refine Patterns EP (5) Development of EPs for menus in <i>Numerical Reasoning</i> and <i>Probability and Data Analysis</i> MEC classes	Feldman, Lalor, Meadows, McClain, Lucas	X	
			R
		X	
		X	
		X	
Engineering project implementation (1) Present information about EPs at MST session in September and get feedback (2) Have MSTs continue to field test the Patterns EP	Meadows, McClain, Feldman	X	
		X	
Engineering applications in new calculus courses (1) Field test an EP in UAB's new <i>Calculus and Function with Applications I</i> (MA 123) course (2) Develop an EP for UAB's new <i>Calculus and Function with Applications II</i> course	Feldman, Lalor, McClain		D
			D

4. Engineering Projects (continued)	Completed or will be by 8/31/07		
Spring Tasks	Responsible Party	Yes	No
Continue accumulating background information on: (1) Existing hands-on mathematics and science application activities. (2) Applications of middle school math in real world activities and careers	Feldman, Lalor, McClain	X	
		X	
Submit for publication a review on the project website of engineering projects available	Feldman, Lalor, McClain	X	
Cataloguing information related to Alabama Course of Study (ACS) (1) AMSTI and Connected Math (2) MST session tasks	Feldman, Lalor, McClain	X	
		X	
Engineering project (EP) development (1) Use feedback from MSTs in September and January to refine current EPs (2) Use feedback from MST pilot of EPs (March) and MST's field test of the EPs, for <i>Numerical Reasoning</i> and <i>Probability and Data Analysis</i> , to begin refining the EPs	Feldman, Lalor, Meadows, McClain, Lucas		R
			R
Engineering project implementation (1) Present information about new EPs ( <i>Numerical Reasoning</i> and <i>Probability and Data Analysis</i> ) at MST session in January and get feedback (2) Pilot the refined Numerical and Probability EPs with MSTs in March and have them field test the new EPs as well as the Patterns EP (3) Get feedback from MSTs on field tests (4) Field test the Patterns EP in the BSC <i>Teaching Mathematics</i> (ED 320) course	Meadows, McClain, Feldman		R
			R
			R
		A	
Engineering applications in new calculus courses (1) Refine the EP in UAB's <i>Calculus and Function with Applications I</i> (MA 123) course (2) Pilot the calculus EPs with BSC mathematics faculty (3) Field test an EP for UAB's <i>Calculus and Function with Applications II</i> course	Feldman, Lalor, McClain		D
			D
			D
Summer Tasks	Responsible Party	Yes	No
Continue accumulating background information on: (1) Existing hands-on mathematics and science application activities (2) Applications of middle school math in real world activities and careers	Feldman, Lalor, McClain	A	
		A	
Publishing a review on the project website of engineering projects available	Feldman, Lalor, McClain	A	

4. Engineering Projects (continued)	Completed or will be by 8/31/07		
Summer Tasks (continued)	Responsible Party	Yes	No
Cataloguing information related to Alabama Course of Study (ACS) (1) AMSTI and Connected Math (2) New MEC courses	Feldman, Lalor, McClain	A	
		A	
Engineering project (EP) development (1) Use feedback from MST's and BSC's <i>Teaching Mathematics</i> course field tests to refine the Patterns EP (2) Use feedback from the piloting of the Numerical and Probability EPs with the MSTs as well as the field testing in MST classrooms to refine the New EPs	Feldman, Lalor, Meadows, McClain, Lucas		R
			R
Engineering project implementation (1) Field test the Patterns EP for the second Summer in the MEC <i>Patterns, Functions and Algebraic Reasoning</i> course and the UAB <i>Mathematics for Elementary and Middle School Teachers I</i> course (2) Field test the new EPs in the MEC <i>Numerical Reasoning</i> and <i>Probability and Data Analysis</i> courses (3) Prepare to field test the Numerical and Probability EPs in the UAB <i>Mathematics for Elementary and Middle School Teachers II</i> (MA 314) course in the Fall	Meadows, McClain, Feldman		R
			R
			R
Engineering applications in new calculus courses (1) Refine the EP in UAB's <i>Calculus and Function with Applications II</i> course	Feldman, Lalor, McClain		D

<b>5. Recruitment of Pre-service Teachers (MSP Key Feature: T, I)</b>		<b>Completed or will be by 8/31/07</b>		
<b>Fall Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Meet with UAB student services staff and recruiting staff to enlist support in student recruiting.	Smith, Meadows, Froning	X		
Meet with staff of urban personnel prep grant to establish liaison and recruit from its cadre of new teacher recruits for Birmingham City Schools (mostly minority candidates).	Froning	X		
Announce GBMP opportunities for pre-service teachers in appropriate classes.	Froning, Moore	X		
Recruit pre-service teachers for Summer courses.	Froning, Moore	X		
Recruit minority pre-service teachers for Summer courses.	Froning , Moore	X		
Remind pre-service teachers about Fall grade-level sessions.	Froning , Moore	X		
Participate in grade-level sessions.	District Teachers	X		
<b>Spring Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Announce GBMP opportunities for pre-service teachers in appropriate classes.	Froning, Moore	X		
UAB Recruiting staff visits relevant classes.	Froning, Delmas	X		
Recruit pre-service teachers for Summer courses.	Froning, Moore	X		
Recruit minority pre-service teachers for Summer courses.	Froning, Moore	X		
Remind pre-service teachers about Spring grade-level sessions.	Froning , Moore	X		
Award pre-service teacher scholarships for Summer courses.	Froning, Moore	A		
<b>Summer Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Pre-service teachers participate in Summer classes.	Pre-service teachers	A		

**Goal II: To increase the leadership capacity of middle school mathematics teachers within GBMP school systems**

<b>1. Mathematics Support Teams (MSP Key Feature: I, P, T)</b>	<b>Completed or will be by 8/31/07</b>		
<b>Fall Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Delineate and document specific selection criteria for MSTs.	Design Team	X	
Select additional MSTs.	Liaisons, Instructor	A	
Prepare for September MST sessions.	Parker, Lofgren	X	
Order supplies for MST sessions.	Moose	A	
Notify teachers of dates and sites for MST sessions.	Liaisons, Dominick	X	
Invite IHE faculty to attend the MST Sessions.	Dominick	X	
Host MST sessions.	Districts	X	
Deliver MST sessions.	Parker, Lofgren	X	
Arrange for and fund substitute teachers.	Districts	X	
Participate in MST Sessions.	District MSTs	X	
Discuss implementation of challenging courses and curricula.	Parker, Lofgren	X	
Send follow-up communication to districts and MST's.	Dominick, Lofgren	X	
<b>Winter Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Prepare for January MST sessions.	Parker, Lofgren	X	
Send reminder about MST sessions.	Liaisons, Dominick	X	
Host MST sessions.	Districts	X	
Deliver MST sessions.	Parker, Lofgren	X	
Arrange for and fund substitute teachers.	Districts	X	
Participate in MST Sessions.	District MSTs	X	
Discuss implementation of challenging courses and curricula.	Parker, Lofgren	X	
Field-test engineering application task and provide feedback.	District MSTs	X	
Send follow-up communication to districts and MST's.	Dominick, Lofgren	X	

<b>1. Mathematics Support Teams (continued)</b>	<b>Completed or will be by 8/31/07</b>		
<b>Spring Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Prepare for March MST sessions.	Parker, Lofgren	X	
Send reminder about MST sessions.	Liaisons, Dominick	X	
Invite IHE faculty to attend the MST Sessions.	Dominick	X	
Host MST sessions.	Districts	X	
Deliver MST sessions.	Parker, Lofgren	X	
Arrange for and fund substitute teachers.	Districts	X	
Participate in MST Sessions.	District MSTs	X	
Discuss implementation of challenging courses and curricula.	Parker, Lofgren	X	
Field-test engineering application task and provide feedback.	District MSTs	A	
Send follow-up communication to districts and MST's.	Dominick, Lofgren	X	
Begin to plan for 2007-2008 MST Sessions, including use of graphing calculators.	Lofgren	A	
Select sites and dates for 2007-2008 MST Sessions.	Liaisons, Dominick	A	

**Goal III: To unite the GBMP stakeholders in support of mathematics education programs that are high quality and effective**

<b>1. Sessions for Administrators (MSP Key Feature: P, I)</b>	<b>Completed or will be by 8/31/07</b>		
<b>Fall Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Prepare for September administrator session sessions for cohort 1 and cohort 2.	Parker, Lofgren	X	
Notify administrators of dates and sites for administrator sessions.	Liaisons, Dominick	X	
Send reminder about administrator session.	Liaisons, Dominick	X	
Deliver administrator session for cohort 1 and cohort 2.	Parker, Lofgren	X	
Local leader co-facilitates <i>Lenses on Learning</i> with cohort 1.	Brown	X	
Participate in administrator sessions.	Administrators	X	
Discuss definition of challenging courses and curricula.	Parker, Lofgren	X	
<b>Winter Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Prepare for January administrator sessions for cohort 1 and cohort 2.	Parker, Lofgren	X	
Send reminder about administrator session.	Liaisons, Dominick	X	
Deliver administrator sessions for cohort 1 and cohort 2.	Parker, Lofgren	X	
Local leader co-facilitates <i>Lenses on Learning</i> with cohort 1.	Brown	X	
Participate in administrator sessions.	Administrators	X	
Discuss implementation of challenging courses and curricula.	Parker, Lofgren	X	
<b>Spring Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Prepare for March administrator sessions for cohort 1 and cohort 2.	Parker, Lofgren	X	
Send reminder about administrator session.	Liaisons, Dominick	X	
Deliver administrator sessions for cohort 1 and cohort 2.	Parker, Lofgren	X	
Local leader co-facilitates <i>Lenses on Learning</i> with cohort 1.	Brown		R
Participate in administrator sessions.	Administrators	X	
Discuss implementation of challenging courses and curricula.	Parker, Lofgren		R
Send follow-up communication to administrators.	Dominick	X	
Inform administrators that they are welcome to participate in MEC Summer courses.	Liaisons, Dominick	X	
Select sites for 2007-2008 administrator sessions.	Liaisons, Dominick	A	
Select dates for 2007-2008 administrator sessions.	Liaisons, Dominick	A	

<b>2. Outreach Activities to Parents and the Community (MSP Key Feature: P)</b>	<b>Completed or will be by 8/31/07</b>		
<b>Fall Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Send update letter to individuals and businesses that supported or were asked to support GBMP.	Clark	A	
Prepare for Fall community mathematics nights.	Parker	X	
Select sites for Fall and Spring community mathematics nights.	Liaisons, Clark	X	
Select sites for Fall and Spring community mathematics nights.	Liaisons, Clark	X	
Arrange logistics for Fall community mathematics nights.	Liaisons, Clark	X	
Identify new ways to encourage new participants and reluctant parents to attend.	Liaisons, Clark	X	
Distribute flyer (in English and Spanish) to promote Fall community mathematics nights.	Liaisons, Clark	X	
Publicize Fall community mathematics nights and seek media coverage.	Liaisons, Clark	X	
Host Fall community mathematics nights.	District Liaisons	X	
Maintain sign-in sheets to identify parents who attend. Also collect data on diversity of attendees and their willingness to participate in research.	Clark	X	
Deliver Fall community mathematics nights at six locations.	Parker	X	
Permeate community mathematics nights with four key aspects of challenging courses and curricula.	Parker	X	
Attend community mathematics nights.	Parents, Teachers, Administrators, Design Team	X	
Inform parents that some MEC scholarships are available for parents to participate in courses.	Liaisons, Clark	X	
Send thank you letters to school and community members who assisted with community mathematics nights.	Clark	X	
Continue conversations with AMSTI and MMI.	Dominick	X	
Continue conversations with AMSTEC.	Clark	X	
Confirm that Ann McMillan is willing to serve another term as CBAC chairperson.	Clark	X	
Select dates for Fall and Spring CBAC meetings.	Liaisons, Clark	X	
Select sites for Fall and Spring CBAC meetings.	Liaisons, Clark	X	
Arrange logistics for Fall CBAC meeting.	Clark	X	
Set agenda with CBAC Chair for Fall CBAC meeting.	CBAC Chair McMillan, Clark	X	
Send reminder to CBAC members about Fall community mathematics nights and CBAC meeting.	Clark	X	
Hold Fall CBAC meeting.	Clark, Parker	X	



<b>2. Outreach Activities to Parents and the Community (continued)</b>	<b>Completed or will be by 8/31/07</b>		
<b>Fall Tasks (continued)</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Create list of CBAC volunteers who are willing to serve as Career Day presenters in schools.	Clark		E
Keep CBAC meeting minutes.	Clark	X	
Send follow-up letter to CBAC members.	Clark	X	
Update GBMP website.	Moose	X	
Update MSPnet.	Moose	X	
<b>Spring Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Prepare for Spring community mathematics nights.	Parker	X	
Arrange logistics for Spring community mathematics nights.	Liaisons, Clark	X	
Distribute flyer (in English and Spanish) to promote Spring community mathematics nights.	Liaisons, Clark	X	
Publicize Spring community mathematics nights and seek media coverage.	Liaisons, Clark	X	
Host Spring community mathematics nights.	District Liaisons	X	
Maintain sign-in sheets to identify parents who attend. Also collect data on diversity of attendees and their willingness to participate in research.	Clark	X	
Deliver Spring community mathematics nights at six locations.	Parker	X	
Permeate community mathematics nights with four key aspects of challenging courses and curricula.	Parker	X	
Inform parents that some MEC scholarships are available for parents to participate in courses.	Liaisons, Clark	X	
Attend community mathematics nights.	Parents, Teachers, Administrators, Design Team	X	
Send thank you letters to school and community members who assisted with community mathematics nights.	Clark	X	
Continue conversations with AMSTI and MMI.	Dominick	X	
Continue conversations with AMSTEC.	Clark	X	
Arrange logistics for Spring CBAC meeting.	Clark	X	
Set agenda with CBAC Chair for Spring CBAC meeting.	CBAC Chair McMillan, Clark	X	
Send reminder to CBAC members about Spring community mathematics nights and CBAC meeting.	Clark	X	

<b>2. Outreach Activities to Parents and the Community (continued)</b>		<b>Completed or will be by 8/31/07</b>		
<b>Spring Tasks (continued)</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Hold Spring CBAC meeting.	Clark, Parker	X		
Keep CBAC meeting minutes.	Clark	X		
Send follow-up letter to CBAC members.	Clark	X		
Update GBMP website.	Moose	X		
Update MSPnet.	Moose	X		
<b>Summer Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Continue conversations with AMSTI and MMI.	Dominick	A		
Continue conversations with AMSTEC.	Clark	A		
Send update to CBAC members.	Clark	A		
Update GBMP website.	Moose	A		
Update MSPnet.	Moose	A		

<b>3. Partnership-Driven Project Management (MSP Key Feature: P)</b>		<b>Completed or will be by 8/31/07</b>	
<b>Ongoing Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Participate in Project Management Team meetings via email, phone, and in person, as needed.	Management Team	X	
Oversee the efforts of the Project Co-directors and Project Management Team.	Mayer	X	
Serve as primary contact person for BSC administration and NSF.	Mayer	X	
Serve as primary project director for the following project activities: MEC Summer courses, mathematics support teams, administrators sessions, and recruitment of pre-service teachers.	Dominick	X	
Serve as primary project director for the District Liaisons meetings.	Dominick	X	
Serve as primary contact for articulation with the Mobile Mathematics Initiative (MMI) and the Alabama Mathematics, Science, and Technology Initiative (AMSTI).	Dominick	X	
Handle public relations with the school systems.	Dominick	X	
Serve as primary project director for the following project activities: outreach activities to parents and the community (including GBMP website and MSPnet), IHE course redesign and development, middle school mathematics certification, and engineering projects.	Clark	X	
Serve as primary project director for the Management Team, Design Team, National Advisory Board, and Community and Business Advisory Council.	Clark	X	
Serve as primary contact for articulation with the Alabama Mathematics, Science, and Technology Education Coalition (AMSTEC).	Clark	X	
Handle public relations with the community.	Clark	X	
Seek appropriate media opportunities for GBMP.	Liaisons, Clark	X	
Hold monthly meetings between Evaluation Team and PI/PDs to discuss all aspects of the research and evaluation plan.	Mayer, Clark, Dominick	X	
Discuss a yearly overview for the Design Team and District Liaisons meetings, keeping in mind a focus on research and evaluation, the importance of operationalizing the definition of CCC, and furthering clarifying the roles of the District Liaisons.	Mayer, Clark, Dominick	X	
Keep PDs and PI and Evaluation Team informed about school system concerns and input.	Liaisons	X	
Keep PDs and PI and Evaluation Team informed about MEC courses and grade-level sessions.	Liaisons, Parker	X	
Keep PDs and PI and Evaluation Team informed about MST's.	Liaisons, Parker	X	
Keep PDs and PI and Evaluation Team informed about sessions for administrators.	Liaisons, Parker	X	
Keep PDs and PI and Evaluation Team informed about outreach activities.	Liaisons, Parker	X	
Keep PDs and PI and Evaluation Team informed about IHE course redesign and development.	Mayer	X	
Keep PDs and PI and Evaluation Team informed about middle school mathematics certification.	Froning	X	

<b>3. Partnership-Driven Project Management (continued)</b>		<b>Completed or will be by 8/31/07</b>		
<b>Ongoing Tasks (continued)</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Keep PDs and PI and Evaluation Team informed about engineering projects.	Feldman	X		
Keep PDs and PI and Evaluation Team informed about recruitment of pre-service teachers.	Froning, Moore	X		
Deliver formative evaluation information as warranted.	Snyder	X		
Respond to formative evaluation information when received.	Management Team	X		
Submit invoices and documentation and any needed reports to Grants Administrator.	MEC, BSC	A		
Process submitted invoices and documentation and reports; verify that expenses and deliverables are in accord with the budget and the Annual Implementation Plan.	Moose	X		
Review invoices and reports forwarded by Grants Administrator.	Mayer	A		
Verify invoices for allowability of expenses and availability of funds.	Thomas	X		
<b>Fall Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Hold meetings with all District Liaisons and all Superintendents to discuss challenging courses and curricula and the full scope of the partnership.	Dominick	X		
Remind Design Team about forthcoming NSF Management Information System online surveys.	Moose	X		
Complete NSF Management Information System online surveys.	Design Team	X		
Call and set agenda for District Liaisons meeting.	Dominick		E	
Call and set agenda for Management Team and Design Team meeting including discussion of big ideas of mathematics as related to challenging courses and curricula.	Mayer	X		
Participate in District Liaisons meeting.	District Liaisons		E	
Participate in Management Team and Design Team meeting.	Design Team	X		
Report to Design Team and Evaluation Team about areas of responsibility (see Ongoing Tasks).	Management Team	X		
Discuss MEC courses and course development, grade-level sessions, MST sessions, administrator sessions, outreach to parents and the community, IHE course development, middle school certification, recruitment of pre-service teachers, project management, implementation of challenging courses and curricula, and any district concerns.	Design Team	X		
Recruit potential interns for MEC Summer courses.	Management Team	X		
Keep District Liaisons Meeting minutes.	Dominick		E	
Keep Management Team and Design Team meeting minutes.	Clark	X		
Send quarterly report to Evaluation Team.	Clark, Dominick	A		
Remind IHE faculty to attend MST and/or Grade Level Sessions.	Clark	X		

<b>3. Partnership-Driven Project Management (continued)</b>		<b>Completed or will be by 8/31/07</b>		
<b>Winter Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Attend NSF MSP Learning Network Conference.	Design Team reps	X		
Begin preparations for annual National Advisory Board meeting.	Clark	X		
Call and set agenda for District Liaisons meeting.	Dominick			E
Call and set agenda for Management Team and Design Team meeting.	Mayer	X		
Encourage IHE faculty to participate in at least two MST and Grade Level Sessions.	Clark	X		
Participate in District Liaisons meeting.	District Liaisons			E
Participate in Management Team and Design Team meeting.	Design Team	X		
Report to Design Team and Evaluation Team about areas of responsibility (see Ongoing Tasks).	Management Team	X		
Discuss MEC courses and course development, grade-level sessions, MST sessions, administrator sessions, outreach to parents and the community, IHE course development, middle school certification, recruitment of pre-service teachers, project management, implementation of challenging courses and curricula, and any district concerns.	Design Team	X		
Keep District Liaisons Meeting meeting minutes.	Dominick			E
Keep Management Team and Design Team meeting minutes.	Clark	X		
Send quarterly report to Evaluation Team.	Clark, Dominick	A		
<b>Spring Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Set agenda for National Advisory Board meeting.	Clark, Parker	A		
Send details about annual meeting, agenda, travel reimbursement to National Advisory Board.	Clark	A		
Hold annual National Advisory Board meeting.	Clark, Parker	A		
Call and set agenda for District Liaisons meeting.	Dominick			E
Call and set agenda for Management Team and Design Team meeting.	Mayer	X		
Participate in District Liaisons meeting.	District Liaisons			E
Participate in Management Team and Design Team meeting.	Design Team	X		
Report to Design Team and Evaluation Team about areas of responsibility (see Ongoing Tasks).	Management Team	X		
Report to Design Team and Evaluation Team about MSP Learning Network Conference.	Attendees	X		
Discuss MEC courses and course development, grade-level sessions, MST sessions, administrator sessions, outreach to parents and the community, IHE course development, middle school certification, recruitment of pre-service teachers, project management, implementation of challenging courses and curricula, and any district concerns.	Design Team	X		

<b>3. Partnership-Driven Project Management (continued)</b>		<b>Completed or will be by 8/31/07</b>		
<b>Spring Tasks (continued)</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Discuss the year-to-date efforts regarding public relations with the schools and the community, the efforts of the CBAC and NAB, and communication with AMSTEC, AMSTI, and MMI.	Design Team Steering Committee	X		
Discuss any needed revision to plans for next year based on what has been learned this year.	Design Team	X		
Keep District Liaisons Meeting meeting minutes.	Dominick		E	
Keep Management Team and Design Team meeting minutes.	Clark	X		
Send quarterly report to Evaluation Team.	Clark, Dominick	A		
Evaluation Team requests any information needed for evaluation report by March 1.	Evaluation Team	X		
Grants Administrator sends reminder about information needed for annual report by March 1.	Moose	X		
Management Team sends information for the annual report to the Grants Administrator and Evaluation Team by April 1 including information for the (1) activities and findings report, (2) management report, (3) financial report, (4) information requested by Evaluation Team, and (5) annual implementation plan for the upcoming year.	Management Team	A		
Draft of activities and findings report, management report, and annual implementation plan for upcoming year sent to Management Team and Evaluation Team by April 15.	Mayer	X		
Management Team responds to draft report (activities, management, implementation) by May 1.	Management Team	A		
Final draft (activities, management, implementation) sent to Management Team by May 15.	Mayer	A		
Evaluation Team completes evaluation report by May 1.	Evaluation Team	A		
Project co-directors and co-investigators discuss the evaluation report, consider any needed actions, and write a response to evaluation report by May 15.	Clark	A		
Annual report submitted to NSF by June 1.	Moose	X		
Remind IHE faculty to attend MST and /or Grade Level Sessions.	Clark	X		
Select interns for MEC Summer courses.	Parker	X		
<b>Summer Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Send follow-up communication to National Advisory Board members.	Clark	A		
Call and set agenda for District Liaisons meeting.	Dominick		E	
Call and set agenda for Management Team and Design Team meeting.	Mayer	A		
Participate in District Liaisons meeting.	District Liaisons		E	
Participate in Management Team and Design Team meeting.	Design Team	A		
Report to Design Team and Evaluation Team about areas of responsibility (see Ongoing Tasks).	Management Team	A		

<b>3. Partnership-Driven Project Management (continued)</b>		<b>Completed or will be by 8/31/07</b>	
<b>Summer Tasks (continued)</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Report to Design Team and Evaluation Team about National Advisory Board Meeting.	Clark	A	
Discuss MEC courses and course development, grade-level sessions, MST sessions, administrator sessions, outreach to parents and the community, IHE course development, middle school certification, recruitment of pre-service teachers, project management, implementation of challenging courses and curricula, and any district concerns.	Design Team	A	
Keep District Liaisons meeting minutes.	Dominick		E
Keep Management Team and Design Team meeting minutes.	Clark	A	
Send quarterly report to Evaluation Team.	Clark, Dominick	A	
Remind IHE faculty to attend MST and/or Grade Level Sessions.	Clark	A	

**Goal IV: To increase the mathematics achievement of all middle school students in GBMP schools and reduce discrepancies in disaggregated mathematics achievement data within these schools**

All of the above activities found under Goals I-III also contribute to Goal IV.

**Key to 5 Key Features:**

C = Challenging Courses and Curricula

E = Evidence-Based Design and Outcomes

I = Institutional Change and Sustainability

P = Partnership-Driven

T = Teacher Quality, Quantity and Diversity

**Note Regarding Assignment of MSP Five Key Features in Matrix:**

Since more than one of the MSP Key Features describe most of the project's activities, the letter representing the key feature deemed most descriptive is listed first followed by the others that are applicable.

**Note Regarding "Completed..." Column:**

At the beginning of the year, the above matrix serves as the Annual Implementation Plan. At the end of the year, the above matrix serves as the Implementation Matrix that will be attached as Exhibit 1 to the Activities

and Findings section of the annual report. At the end of the year, for each task, the “Completed” column on the far right side of the matrix will be filled in with a letter according to the legend below.

In the “YES” Column:

“X” indicates task has been completed.

“A” indicates task is on schedule and will be completed by August 31.

In the “NO” column:

“D” indicates the task has been delayed

“R” indicates the task has been revised

“E” indicates the task has been eliminated

“N” indicates a new task has been substituted

An explanation will be given in the narrative for any action that is not carried out as planned



## Exhibit #2 Goals Matrix

Goal I: To increase the effectiveness of middle school mathematics teachers within GBMP school systems.										
Outcome	Measure	Benchmark	Frequency	Level of Attainment (check one)						Brief explanation
				On target to reach benchmark later as scheduled	Benchmark met	Benchmark not met	Target year has been revised	Benchmark has been revised	No longer a project benchmark	
Increase teachers' knowledge and understanding of mathematics (Outcome I-A)	MEC courses	By the end of Year 1, 90 grade 6-8 teachers will have completed one course	TC		X					
		By the end of Year 2, 180 grade 6-8 teachers will have completed one course				X			160 grade 6-8 teachers completed one course	
		By the end of Year 2, 66 grade 6-8 teachers will have completed two courses			X					
		By the end of Year 3, 225 grade 6-8 teachers will have completed one course				X			Only 2 teachers short of this goal (223 gr. 6-8 teachers completed or registered)	
		By the end of Year 3, 132 grade 6-8 teachers will have completed two courses		X					NA	
		By the end of Year 4, 274* grade 6-8 teachers will have completed one course (*unless population declines)							NA	
		By the end of Year 4, 198 grade 6-8 teachers will have completed two courses							NA	
		By the end of Year 5, 274* grade 6-8 teachers will have completed two courses (*unless population declines)							NA	
		By the end of Year 5, slots will have been provided for an average of three courses per grade 6-8 teacher							NA	
		By the end of Year 5, 100 grade 5 teachers will have completed at least one course		X						
		By the end of Year 5, at least 20 grade 9-12 teachers will have completed at least one course		X						

Outcome	Measure	Benchmark	Feature	Level of Attainment (check one)						Brief explanation
				On target to reach benchmark later as scheduled	Benchmark met	Benchmark not met	Target year has been revised	Benchmark has been revised	No longer a project benchmark	
Increase teachers' knowledge and understanding of mathematics (Outcome I-A) (Continued)	MEC  course  completion	By the end of Year 5, at least 50 pre-service teachers will have completed at least one course	TC	X						

Outcome	Measure	Benchmark	Feasibility	Level of Attainment (check one)						Brief explanation
				On target to reach benchmark later as scheduled	Benchmark met	Benchmark not met	Target year has been revised	Benchmark has been revised	No longer a project benchmark	
Increase teachers' knowledge and understanding of mathematics (continued)	CKTM	80% of participating teachers master 75% or more of the material presented at posttest in each course				X				The CKTM items do not closely match course content.
		90% of participating teachers will demonstrate gains of one level or more on one or more of the rubric dimensions during their first MEC course			X					
	Rubric	80% of participating teachers will score at Level 4 (proficient) or higher on all dimensions at posttest				X				There was statistically significant growth from pre-to post; however, at post, approximately 65% of participants scored at Level 4 or higher on all dimensions except accuracy (93% scored at Level 4 or 5).
		For all courses after the first, at least 33% of teachers will score above Level 4 on at least one dimension			X					
	P	After one course, 75% of teachers present evidence of high-quality classroom practice.			X					
	o	After two or more courses, 90% of teachers present such evidence			X					

Outcome	Measure	Benchmark	Frequency	Level of Attainment (check one)						Brief explanation
				On target to reach benchmark later as scheduled	Benchmark met	Benchmark not met	Target year has been revised	Benchmark has been revised	No longer a project benchmark	
Improve classroom instructional practices (Outcome I-B)	SEC	Among GBMP participants, a 10% improvement in curriculum and pedagogical ratings in the year after initial training	TC		X					
		An additional 5% improvement for each year that the teacher takes a subsequent course								SEC follow-up data not yet available
		GBMP participants will show greater improvement than the comparison group							X	No comparison group.
	RTO P	Among GBMP participants, mean ratings of key areas will increase by 10% in the year after initial training			X					Small sample of repeated measurement of participants who were observed at baseline.
		An additional 5% improvement for each year that the teacher takes a subsequent course			X					Small sample size of repeated measurements.
		GBMP participants will show greater gains than the comparison group							X	No comparison group.
	Survey	Evidence of both initial satisfaction with training and improved self-reports of understanding and practice			X					

Outcome	Measure	Benchmark	Frequency	Level of Attainment (check one)						Brief explanation
				On target to reach benchmark later as scheduled	Benchmark met	Benchmark not met	Target year has been revised	Benchmark has been revised	No longer a project benchmark	
Recruit and retain a diverse pool of candidates to middle school mathematics education (Outcome I-C)	Data	During Year 1, at least 10 scholarships will be awarded to pre-service teachers to attend MEC courses	TC		X					
		During Year 2, at least 10 scholarships will be awarded to pre-service teachers to attend MEC courses			X					
		During Year 3, at least 10 scholarships will be awarded to pre-service teachers to attend MEC courses		X						
		During Year 4, at least 10 scholarships will be awarded to pre-service teachers to attend MEC courses								NA
		By the end of Year 5, a total of 50 scholarships will have been awarded to pre-service teachers								NA
	Data	By the end of Year 2, at least 8 minority pre-service teachers will have completed at least one GBMP course			X					
		By the end of Year 4, at least 12 additional (total of 20) minority pre-service teachers have completed at least one GBMP course								NA
		By the end of Year 5, at least 10 additional (total of 30) minority pre-service teachers have completed at least one GBMP course								NA
		By the end of Year 5, at least 30 minority pre-service teachers will have graduated (under the current certification) having completed at least one GBMP course								NA
	Data	In Year 3, 5 students will be admitted to the new UAB middle school mathematics certification program				X				3 students admitted to date
		In Year 4 and Year 5, 5-10 students will be admitted to the program								NA
		30% of applications will be from minority groups			X					
		3 or more of the admitted students will be minority students				X				2 admitted students are minority students
		90% retention of students admitted to the teacher education program for the new middle school mathematics certification								NA

Outcome	Measure	Benchmark	Frequency	Level of Attainment (check one)						Brief explanation
				On target to reach benchmark later as scheduled	Benchmark met	Benchmark not met	Target year has been revised	Benchmark has been revised	No longer a project benchmark	
Pre-service teachers will demonstrate content knowledge and pedagogical skills consistent with standards and best practices (Outcome I-D)	Portfolio	90% of middle school certification candidates will yield rubric-based scoring at the “emerging proficient” level prior to student teaching on all domains	T							First candidates only just beginning certification program at time of report.
		90% of middle school certification candidates will yield rubric-based scoring at the “initial proficient” level at the end of student teaching on all domains								NA
Revise IHE courses and mentoring systems (Outcome I-E)	Evidence	Evidence of inclusion of MEC content and best teaching and assessment practices and include engineering activities developed (evidence gathered via syllabi, focus groups, RTOP)	IPT			X				Evidence of inclusion by some instructors, but not all.
		All necessary courses are designed (syllabi are developed) according to timeline			X					
		Mathematics and mathematics education curricula are approved by UAB and state according to timelines			X					
Place new teacher interns in best-practice settings (Outcome I-F)	Placement	The percentage of middle school certification students placed in grade 6-8 best-practice settings will increase by at least 10% each year in each IHE	T							NA
		The percentage of middle school certification students placed in grade 6-8 best-practice settings will be 100% in each IHE by Year 5								NA

**Goal II: To increase the leadership capacity of middle school mathematics teachers within GBMP school systems.**

Outcome	Measure	Benchmark	Frequency	Level of Attainment (check one)						Brief explanation
				On target to reach benchmark later as scheduled	Benchmark met	Benchmark not met	Target year has been revised	Benchmark has been revised	No longer a project benchmark	
MST's provide technical support to colleagues, provide model demonstration classrooms, mentor new teachers, and work with IHE faculty to improve teacher education (Outcome II-A)	Data	By the end of Year 1, at least 18-30 grade 5-8 teachers will have been identified as MST1's (first cohort)	IPT		X					
		By the end of Year 3, at least 20-30 grade 5-8 teachers will have been identified as MST2's (second cohort)			X					
	Long	By the end of Year 2, all eligible MST1's will have completed their first year of follow-up			X					
		By the end of Year 3, all eligible MST1's will have completed their second year of follow-up			X					
		By the end of Year 3, 75% of eligible MST1's will offer to serve as host teachers for pre-service teachers		X						
		By the end of Year 3, engineering projects will be included as follow-ups for MST1's who pilot projects		X						
		By the end of Year 4, all eligible MST1's will have completed their third year of follow-up								NA
		By the end of Year 4, at least 75% of MST1's will provide support and technical assistance to colleagues								NA
		By the end of Year 4, all eligible MST2's will have completed their first year of follow-up								NA
		By the end of Year 5, 50% of MST1's will facilitate sessions with parents								NA
		By the end of Year 5, all eligible MST1's will have completed their fourth year of follow-up								NA
		By the end of Year 5, 75% of MST2's will offer to serve as host teachers for pre-service teachers								NA
		By the end of Year 5, all eligible MST2's will have completed their second year of follow-up								NA

Outcome	Measure	Benchmark	Feature	Level of Attainment (check one)						Brief explanation
				On target to reach benchmark later as scheduled	Benchmark met	Benchmark not met	Target year has been revised	Benchmark has been revised	No longer a project benchmark	
Improved content and pedagogical knowledge by non-MST teachers attributable to mentoring or technical assistance by the MST's (Outcome II-B)	Survey	Colleagues and teacher candidates report specific content and pedagogical improvements attributable to interactions with the MST	T		X					NA
		Colleagues will report changes in the nature of curriculum and teaching practices in a manner consistent with program expectation			X					NA
		Specific beneficial MST behaviors are identified								NA



**Goal III: To unite the GBMP stakeholders (teachers, administrators, parents, IHE's and the public) in support of mathematics education programs that are high quality and effective.**

Outcome	Measure	Benchmark	Frequency	Level of Attainment (check one)						Brief explanation
				On target to reach benchmark later as scheduled	Benchmark met	Benchmark not met	Target year has been revised	Benchmark has been revised	No longer a project benchmark	
Increase the stakeholders' knowledge of mathematics education reform (Outcome III-A)	Focus / Long	Evidence of knowledge of the need for mathematics education reform, project efforts to improve mathematics teaching and learning, and evidence of support to schools who are making such reform efforts	P		X					
	Data	By the end of year five, the total attendance at public sessions will have been at least 1000	I		X					Attendance goal has accordingly been revised upward.
		Evidence of attendance at 3 or more sessions			X					
		Over 85% of survey respondents will have rated the sessions as 'informative' or 'extremely informative'			X					
Expand administrators' knowledge of and ability to support effective mathematics instruction (Outcome III-B)	Data	By the end of Year 2, school administrators from 30% of participating grade 6-8 schools will have participated in the public sessions and administrator sessions	IP		X					
		By the end of Year 5, school administrators from 90% of participating grade 6-8 schools will have participated in the public sessions and administrator sessions								NA
	Interview / Survey	Evidence of administrator leadership in promoting mathematics understanding and mathematics education as a school/community priority			X					

Outcome	Measure	Benchmark	Feature	Level of Attainment (check one)						Brief explanation
				On target to reach benchmark later as scheduled	Benchmark met	Benchmark not met	Target year has been revised	Benchmark has been revised	No longer a project benchmark	
Improve communication between K-12 school systems and IHE's (Outcome III-C)	Focus / Survey	Evidence that obstacles to successful communication are identified and solutions are jointly identified and implemented	IPT			X				Problems communicating with a handful of District Liaisons and administrators persist, although Project Management is continually working to identify obstacles and implement new strategies for dealing with those obstacles.
Support parents in their abilities to both understand and help their children as learners of mathematics (Outcome III-D)	Survey	Evidence of increased understanding of math, evidence of increased parent involvement in math education of children	I		X					
Form and nurture strong business and education partnerships in support of mathematics education (Outcome III-E)	Records	Evidence of expansion of number and nature of business involvements in GBMP efforts to publicize mathematics education reform and support reform efforts within the schools/IHE's	IP		X					

Goal IV: To increase the mathematics achievement of all middle school students in GBMP schools and reduce discrepancies in disaggregated mathematics achievement data within these schools.										
Outcome	M e a s u r e	Benchmark	F e a t u r e	Level of Attainment (check <u>one</u> )						Brief explanation
				On target to reach benchmark later as scheduled	Benchmark met	Benchmark not met	Target year has been revised	Benchmark has been revised	No longer a project benchmark	
Increase standardized mathematics achievement performance of middle school students in participating schools (Outcome IV-A)	A R M T	The percentage of students in each disaggregated subgroup performing at proficient levels will increase within each school (that meets the inclusion criteria) by at least 5% per year during Year 2 in grade 6 math	E C			X				Growth of 5% or more in some schools at grade 6, but not all; growth of 5% or more in several schools at grade 5.
		The percentage of students in each disaggregated subgroup performing at proficient levels will increase within each school (that meets the inclusion criteria) by at least 5% per year during Year 3 in grade 5-8 math								2006-2007 statewide test data not available until August.
		The percentage of students in each disaggregated subgroup performing at proficient levels will increase within each school (that meets the inclusion criteria) by at least 5% per year during Year 4 in grade 5-8 math								NA
		The percentage of students in each disaggregated subgroup performing at proficient levels will increase within each school (that meets the inclusion criteria) by at least 5% per year during Year 5 in grade 5-8 math								NA
		By the end of year five, we anticipate that the achievement gap between the underrepresented African American, American Indian and Hispanic students and the high achieving students at all participating schools will be cut by one third								NA
		Students in comparison schools will yield significantly lower gains within subgroups				X				Significant differences found for some schools.
	S A T	Improvements in average normal curve equivalent scores on math subscales				X				Significant differences found for some schools.

Outcome	Measure	Benchmark	Feature	Level of Attainment (check one)						Brief explanation
				On target to reach benchmark later as scheduled	Benchmark met	Benchmark not met	Target year has been revised	Benchmark has been revised	No longer a project benchmark	
Increase middle school students' abilities to solve mathematical problems and communicate their solutions in multiple ways (Outcome IV-B)	Balanced Assessment Program	Rubric-based scores improve across time.	EC		X					Evidence of change, but very small sample size
		At least 75% of students within each classroom perform at criterion-levels by the end of each year				X				No repeated measures and insufficient sample to draw definitive conclusions. It was found that students in classrooms labeled "high implementers" performed a median 1-point better on a 3-point rubric than students in classrooms labeled "low implementers".

Outcome	Measure	Benchmark	Frequency	Level of Attainment (check one)						Brief explanation
				On target to reach benchmark later as scheduled	Benchmark met	Benchmark not met	Target year has been revised	Benchmark has been revised	No longer a project benchmark	
Increase middle school students' access to and participation in challenging courses and curricula (Outcome IV-C)	Assess	Within one year of completing the first MEC course, at least 85% of participants will meet some of the criteria for challenging courses and curricula (CCC) in their teaching practice and at least 10% of participants will meet most of the criteria for CCC in their teaching practice	C		X					
		Within one year of completing a second course, at least 90% of participants will meet some CCC criteria for and at least 50% of participants will meet most CCC criteria			X					
		Within one year of completing a third course, at least 95% of participants will meet some CCC criteria and at least 75% of participants will meet most CCC criteria								NA
		For each additional course completed beyond three, an additional 5% of participants will meet most of the CCC criteria								NA
	Participate	By the end of year 2, 25% of grade 6-8 students will be participating in courses that meet some of the criteria for CCC and 5% of grade 6-8 students will be participating in courses that meet most of the criteria for CCC			X					
		By the end of year 3, 50% of grade 6-8 students will be participating in courses that meet some criteria and 15% will be participating in courses that meet most criteria			X					
		By the end of year 4, 75% of grade 6-8 students will be participating in courses that meet some criteria and 30% will be participating in courses that meet most criteria								NA
		By the end of year 5, 90% of grade 6-8 students will be participating in courses that meet some criteria and 50% will be participating in courses that meet most criteria								NA

## Narrative

**Goal I: To increase the effectiveness of middle school mathematics teachers within GBMP school systems.**

### **Activity 1. MEC Summer Courses and Academic Year Follow-Up (Grade-Level Sessions)**

During Year 3 of the project, the Mathematics Education Collaborative (MEC) offered four sections of the first nine-day content course, *Patterns, Functions and Algebraic Reasoning*, three sections of *Numerical Reasoning*, and two sections of *Probability and Data Analysis*. Courses were attended by pre-service teachers, grade 5-12 teachers, mathematics and education faculty members from BSC and UAB, and engineering faculty members from UAB. MEC instructors solicited feedback from all teachers and IHE faculty who attended the course.

In June and July 2007, MEC will offer four sections of the *Patterns, Functions and Algebraic Reasoning* course, two sections of *Numerical Reasoning*, one section of *Probability and Data Analysis*, two sections of *Geometry and Proportional Reasoning*, and one section of *Extending Algebraic Reasoning*.

Millie Johnson, MEC Associate, developed the first new course, *Extending Algebraic Reasoning*, and conducted an initial pilot of the content from the course in May 2006 with MEC instructors, Donna Ware, and Bernie Mullins. She has also begun work on the second course, *Integrating Mathematical Ideas: Algebra, Geometry, Probability and Statistics*, and will conduct the initial pilot of that course with MEC instructors, Bernie Mullins, John Mayer and Donna Ware in May 2007. The course will be finalized in August 2007 and will be offered to GBMP teachers in the Summer of 2008. Finishing touches will also be added to the *Extending* course at the May 2007 meeting in preparation for delivery in July 2007. Bernie Mullins and several MEC instructors will intern in the course during the Summer of 2007.

Again this year, Patty Lofgren, MEC Associate, provided two Grade-Level Sessions as school year follow-up sessions for grades 5-6 and grades 7-8 teachers. These follow-up sessions focused on developing numerical reasoning with whole numbers, fractions, decimals and percent, and on the arithmetic properties underlying diverse computational procedures and algorithms. The Grade-Level Sessions were not a part of the original Five-Year Strategic Plan, but continue to be offered at the request of the school districts. These sessions also serve as an effective recruiting tool for teachers who have not yet come to a GBMP summer course. All sessions were full and teachers' responses to the sessions were overwhelmingly positive.

In addition this year, local well-prepared teachers were invited to attend as interns to begin preparation to deliver these Grade Level Session in the future. The plan is for them to team together during the 2007-08 project year, with support from Patty Lofgren, to deliver the sessions and thereby become a resource for these sessions for all districts beyond the scope of the project.

We delayed offering Grade Level Sessions on Connected Math units for this year. A major part of the AMSTI professional development training for middle school teachers is teaching the use

of Connected Math units. This may be an area where GBMP can begin collaboration with AMSTI.

## **Activity 2. IHE Course Redesign and Development**

The planned transition of the partnership to UAB lead on June 1, 2006, was successful. John Mayer assumed additional responsibilities as PI for the partnership. He continues his lead role in the UAB Mathematics contribution to the partnership as well. The major IHE course redesign and development goals of Year 3 were submission and approval of the new Mathematical Reasoning track in the Mathematics Major, making progress on course redesign, and on new and revised course implementation. Overall, the results have been positive, with some parts ahead of schedule, others slightly behind schedule, and a few significant revisions.

The middle school track in the Mathematics Major, now re-titled Mathematical Reasoning, was approved by the UAB Provost, the Alabama System Board of Trustees, and the Alabama Commission of Higher Education (ACHE) by late Fall 2007. This was later than initially planned, but the schedule of approvals was not entirely under our control. The new track was submitted to the Alabama State Department of Education for review as a major suitable for a new middle school mathematics certification before its consideration at a State Board of Education meeting. The reviewer raised several questions and issues, mostly routine, but one questioned the appearance that the track was a mathematics major track restricted to students in the School of Education. (This is forbidden by state regulations.) While this was not the case, it was deemed advisable to title the track in a way more descriptive of its mathematical content. Mathematical Reasoning was well-received by the partnership as the new title. The state reviewer also requested the catalog copy that would replace the current catalog copy for Mathematics when the track officially takes effect in Fall 2007. That copy has been produced, approved by all requisite levels at UAB, and forwarded to the UAB School of Education to be used as an appendix to its reply to the review. We see no further obstruction to the new track and certification being in place in time for Fall Term 2007. Simultaneously, it will be added to the UAB Online Catalog as a track in the major.

Tommy Smith now regularly offers the redesigned and renumbered course MA 313 *Functional and Algebraic Reasoning*, which replaced the UAB course MA 113 *Mathematics for Elementary Teachers I* and closely parallels the MEC course *Patterns, Functions and Algebraic Reasoning*. He also offers the redesigned and renumbered course MA 314 *Geometric and Proportional Reasoning*, which replaced the course MA 114 *Mathematics for Elementary Teachers II* and closely parallels the MEC course *Geometry and Proportional Reasoning*. MA 314 was offered for the first time in Fall 2006. MA 313 and 314 are being offered on a rotating basis every other semester, including Summer Term. That is, over two years, each will be offered three times, once each of the three academic terms: Fall, Spring, Summer. If demand warrants, both courses will be offered more frequently. We see these courses as common foundational courses for both elementary and middle school pre-service teachers, and they are now institutionalized at UAB. A course similar to MA 313 is being offered at GBMP partner BSC by Eileen Moore, and at a non-partner university in Birmingham (Samford University) by Donna Ware.

In order to provide opportunities for in-service teachers to participate in well-designed courses, to help them toward becoming highly qualified under the state's "No Child Left Behind"

regulations, to promote the goals of GBMP, and to provide more variety for electives in the Mathematical Reasoning track, the UAB Mathematics Department has decided to offer close parallel courses to the MEC courses *Probability and Data Analysis*, *Numerical Reasoning*, and *Extending Algebraic Reasoning Using a Functional Point of View*. This summer, university credit will be given in the parallel courses MA 315 *Probabilistic and Statistical Reasoning*, MA 316 *Numerical Reasoning*, and MA 317 *Extending Algebraic Reasoning* to those GBMP course participants who wish to earn such credit. This includes pre-service teachers in the UAB and BSC mathematics majors. Subsequently, UAB will offer these courses to mathematics majors (including, but not limited to pre-service teachers) and to in-service teachers on a rotating basis, in support of the Mathematical Reasoning track in the major.

Jim Ward taught the first course in the new calculus sequence, MA 123 *Calculus with Functions and Applications I* in Fall 2006. The design of the second course, MA 124 *Calculus with Functions and Applications II*, was completed in Fall 2006 and he offered it in Spring 2007. Because, the new calculus sequence is also intended to serve life science students, and in keeping with the changes in the title of the new major track and other courses to make them more descriptive of course content, MA 123-124 have been re-titled *Calculus for the Life Sciences I and II*. Though the UAB Biology Department approved the courses as one of two ways of satisfying the department's mathematics requirement, initial enrollment has been modest. We expect the new title and description will encourage more biology students to take the sequence. This will help to institutionalize the course.

The redesigned course MA 372 *Geometry I* was offered for the first time in Fall 2005 (ahead of schedule) and again in Fall 2006. It is now scheduled to be offered each Fall Semester.

The major change in plans for redesigning MA 105 *Pre-Calculus Algebra* and MA 110 *Finite Mathematics*, reported last year, continues. Our redesign timetable for these courses continues to be subject to the university's schedule and constraints, including construction of a new academic building to house, among other things, a new Mathematics Learning Laboratory (MLL). Quoting from the Year 2 Annual Report:

"The redesign of the courses has become broader in scope and is now a university priority as part of its SACS-approved Quality Enhancement Plan (with more players and stakeholders than previously described). Along with all other pre-calculus courses at UAB, MA 105 and MA 110 will be offered in an active learning format making use of a newly designed Mathematics Learning Laboratory (MLL).

The 'high-tech, high-touch' MLL environment will provide the courses online, but in a computer lab where students have immediate access to tutorial assistance (from faculty, graduate assistants, and undergraduate assistants). The once-weekly class meetings will be organized as workshops and emphasize group learning activities. These plans are synergistic with GBMP goals, but are much broader from a university perspective, and include goals for improved student learning and success, and improved quantitative literacy. The university-planned pre-calculus course redesign begins with MA 098 and MA 102, prerequisite courses for MA 105/110, with pilots in Fall, 2006 and full implementation by Spring 2007. The university plan has MA 105 and 110 offered for the first time in this new format in Spring, 2008, with pilots in Fall, 2007. For this reason,



we have distributed the planned revision of MA 105 and MA 110 so as to coincide with the larger university plans.”

Yelena Kravchuk continues to have primary responsibility for the redesign of MA 105, John Mayer for the redesign of MA 110, and Walter Johnson oversees all pre-calculus revisions as Director of Pre-Calculus Instruction. All have taken GBMP summer courses. Walter Johnson will take a second GBMP course in Summer 2007. Because of the shortage of computer lab space during construction of the new academic building, we have had to delay the piloting of the revised MA 105 until Spring 2008. However, the revised MA 110 will be piloted on schedule by John Mayer in Fall 2007.

Bernie Mullins, Dale Feldman, and John Mayer attended a second run-through of the first new MEC course *Extending Algebraic Reasoning Using a Functional Point of View* this May in Bellingham, Washington, preceding its first offering this summer. At the same meeting, there was a preliminary run-through of the second new MEC course *Integrating Mathematical Ideas*. Dale Feldman, representing the Engineering component of the partnership, attended in order to accelerate the design and piloting of Engineering Projects in GBMP and IHE courses. All will contribute to the design of the UAB versions of these courses, MA 317 and MA 411, respectively, along with Jim Ward, Tommy Smith, and Donna Ware.

The UAB Mathematics Department hired two new faculty members who will have responsibilities for instruction in pre-calculus mathematics. Laura Stansell will take the GBMP *Patterns, Functions and Algebraic Reasoning* course this summer. Subsequently, she will become part of the GBMP Design Team. Scott Dixon is scheduled to take the same course next summer (2008). We expect both to contribute to course development in the partnership.

In addition, UAB faculty members will take second or third GBMP courses this summer (2007): John Mayer (3rd) *Extending Algebraic Reasoning*, Walter Johnson (2nd) *Probability and Data Analysis*, Tommy Smith (2nd) *Geometry and Proportional Reasoning*, after interning in *Patterns* in 2006, and Dale Feldman (3rd) *Extending Algebraic Reasoning*. We expect their input to contribute to the refinement of these courses and development of future courses.

BSC faculty member Jeff Barton will take *Patterns* this summer, after which, all BSC mathematics faculty members will have completed *Patterns*. In addition, BSC faculty member Kathy Chandler will be taking a second course this summer. Bernie Mullins will intern in the MEC *Patterns* course in Oregon this summer in preparation for becoming a MEC certified instructor as well as take *Probability and Data Analysis* and *Extending Algebraic Reasoning*. BSC faculty member Eileen Moore will take a third course, *Numerical Reasoning*. We expect their input to contribute to the refinement of these courses and development of future courses.

The Course Design Timetable found on the following page has been revised from the Year 2 Annual Report and is undergoing continuing discussion. The first block of four courses continue to be viewed as central to K-4 teacher preparation in mathematics, the second block of six is central to 5-8 teacher preparation in mathematics, the next block of three are precise parallels to current GBMP courses which may be used as electives and/or substitutes in the Mathematical Reasoning track, and the last block of six is a list from which a view of higher mathematics may be achieved for prospective middle school mathematics teachers.

**GBMP IHE Course Design Timetable, Updated and Revised April, 2007**

<b>Courses Common to elementary teachers and mathematical reasoning track</b>					
<b>UAB Course Number</b>	<b>Title</b>	<b>Parallel MEC Course (if any)</b>	<b>(Re)Design Date (IHE)</b>	<b>Implementation Date (IHE)</b>	<b>Responsible (IHE)</b>
MA 313	Functional and Algebraic Reasoning	Patterns, Functions, and Algebraic Reasoning	Summer 2005	Fall 2005	Smith
MA 314	Geometric and Proportional Reasoning	Geometry and Proportional Reasoning	Summer 2006	Fall 2006	Smith
MA 110	Finite Mathematics	Probability and Data Analysis Numerical Reasoning (in part)	Summer 2007	Spring 2008	Mayer
MA 105	Pre-Calculus Algebra	Numerical Reasoning (in part) Extending Algebraic Reasoning Using a Functional Point of View	Fall 2007	Spring 2008	Kravchuk
<b>Mathematical Reasoning Track</b>					
MA 123	Calculus for the Life Sciences I		Spring 2006	Fall 2006	Ward
MA 124	Calculus for the Life Sciences II		Summer 2006	Spring 2007	Ward
MA 361	Introduction to Mathematical Modeling		current	once yearly	Mayer
MA 411	Integrating Mathematics Ideas: Algebra, Geometry, Probability, and Statistics	Integrating Mathematics Ideas: Algebra, Geometry, Probability, and Statistics	Summer 2007	Fall 2008	Ware
MA 412	Connecting Mathematics Content to Science and Technology	Connecting Mathematics Content to Science and Technology	Summer 2008	Spring 2009	Ware
MA 311	History of Mathematics		current	once yearly	Johnson
<b>Mathematical Reasoning Electives (1 or 2)</b>					
MA 315	Probabilistic and Statistical Reasoning	Probability and Data Analysis		Summer 2007	Mayer
MA 316	Numerical Reasoning	Numerical Reasoning		Summer 2007	Mayer
MA 317	Extending Algebraic Reasoning	Extending Algebraic Reasoning Using a Functional Point of View		Summer 2007	Mayer
<b>Traditional Electives (1)</b>					
MA 372	Geometry 1		Summer 2005	Fall 2005	Ward
MA 473	Geometry 2		Summer 2007	Spring 2008	Ward
MA 434	Algebra 1: Linear		current	twice yearly	Ward
MA 435	Algebra 2: Modern		current	once yearly	Ward
MA 485	Mathematical Probability		current	once yearly	Mayer
MA 486	Mathematical Statistics		current	once yearly	Mayer

### **Activity 3. Middle School Mathematics Certification**

The new track in the mathematics major that the School of Education proposes to link to an Alabama teaching certification in middle school mathematics has been approved at all levels, including the UA System Board of Trustees and ACHE. The new track is entitled “Mathematical Reasoning” and it requires 33 semester hours in mathematics courses, 21 at the upper level (300+). The track is open to all qualified students, just as the other three mathematics tracks are, but it would be especially interesting and useful to students whose career goal is teaching at the middle school level in mathematics.

New catalog copy for Mathematics that describes all the degree options in mathematics will be in place beginning Fall Semester 2007. This catalog copy has been approved by the Provost’s Office (Dr. Philip Way, Associate Provost for Undergraduate Programs).

MA 313 and 314 are being offered regularly, alternating semesters (including Summer). MA 123-124 *Calculus for Life Sciences I-II* are being offered on a regular basis. The rotation for other courses in the track is under discussion between the UAB School of Education and Department of Mathematics.

Three students have been recruited for the track and are in the last year of completing requirements. There are plans to recruit additional students from interested elementary education majors. UAB Education faculty member Charles Calhoun is in charge of this recruitment effort.

Education faculty also continues to contribute to course design. The *Mathematics for Elementary Teachers I-II* has been replaced by MA 313-314, noted above. The design of MA 411 *Integrating Mathematics Ideas: Algebra, Geometry, Probability, and Statistics* will commence in Summer 2007, mainly by John Mayer, Jim Ward, and Tommy Smith, assisted by Donna Ware. Design of MA 412 *Connecting Mathematics Content to Science and Technology* will be completed in 2008.

The course list for the Education double major that accompanies the mathematics track has been completed and submitted to the State Department of Education. The middle school Education courses are already in regular rotation as they coincide in large part with existing courses. Design of the Alternative Fifth Year program has been delayed until Year 4 because of delays in approval by the State Department of Education for the undergraduate program.

The School of Education and the Mathematics Department will plan the sequence in which to offer the courses in this major track so that a student might complete a double major in mathematics and education in a reasonable amount of time and with related courses sequenced appropriately. Courses in the track at the lower level will be offered every year. Courses at the upper level will be offered on a rotating basis so that a student can complete all requirements in four years.

The proposal for middle school mathematics certification was resubmitted in late Spring 2007, with responses to the reviewer’s questions. The response includes the new catalog copy for the new major track. Approval by the State Board of Education is expected in Summer 2007.

## **Activity 4. Engineering Projects**

### **Year 3**

Virtually all of the tasks on the implementation plan for the Engineering Projects are on target to be implemented according to the revised schedule. The ultimate goal is to have a high percentage of partnership middle school teachers using the engineering project (EP) application tasks in their classrooms. This is broken into 4 specific objectives:

1. Collecting information related to math and science classroom activities,
2. Cataloguing and mapping these activities to the Alabama Course of Study (ACS),
3. Developing engineering projects (EPs) for GBMP summer courses and the corresponding pre-service courses, and
4. Efficiently and effectively disseminating these projects to in-service and pre-service middle school teachers.

During the course of this past year the specific tasks have been modified to better serve these four objectives. This has led to expansion of some tasks, revisions of others, and in some cases delaying of tasks. This past year the focus for the first two objectives has been a paper outlining the resources found and how this justifies the need for the EPs under development. The focus for the last two objectives has been to optimize the development and dissemination strategies to better reach middle school teachers and provide what is necessary for the teachers to use the EPs in their classroom.

### *Fall 2006*

- 12 of the 15 Fall tasks in the implementation plan were completed.
- Development and piloting of the EPs for the new calculus classes have been delayed one year because management prioritized task development for GBMP summer courses ahead of calculus courses.
- Although the strategy for development and dissemination has been evolving, all other fall tasks are complete with the field test of “The Wound Healing Task” in MA 313 at UAB in Spring 2007.
- Additional task: Based on feedback from MST sessions emphasis in the fall was placed on developing a website to address the needs and desires expressed by the MSTs.

### *Spring 2007*

- 11 of the 14 Spring tasks have been completed to date.
- The 3 tasks related to the calculus EP are delayed for one year.
- The strategy for development and dissemination has been evolving so the 5 spring tasks, although they will be completed, had a different emphasis than originally intended.
- A survey paper summarizing efforts on the EPs was written, reviewed, and accepted for publication/presentation.

### *Planned Activities for Summer 2007*

- EPs will be incorporated into GBMP Summer courses as shown in Table 4.1 below.
- Development of EPs for *Extending Algebraic Reasoning* and *Geometry and*

### *Proportional Reasoning.*

- Refinement of website and initial development of a “Just for Kids” page.

### **Peer Reviewed Publication**

A survey paper titled “Engineering Applications for Middle School Mathematics Education: Supporting an Inquiry-Based Classroom Environment” was written to summarize the results of our first two objectives, collecting information on existing middle school mathematics resources and cataloguing them with respect to the Alabama Course of Study (ACS). The paper also serves to justify and outline the strategy for addressing the second two objectives, the development of EPs and the dissemination of EPs to in-service and pre-service teachers. Through our research, we have located good sources where resources for middle school mathematics have been collected and organized. Many of these resources are relevant to the ACS. Our strategy has not been to duplicate these sources, but to share this information with Alabama teachers through the GBMP. These existing resources have been compiled into the following categories: word-type problems, related to pedagogy, menu-type tasks, science related kits and experiments, application oriented, engineering applications, supportive of pedagogy, and informational. The paper also describes how each category did not meet our design constraints and therefore provides the rationale for our approach as well as briefly outlining it. The paper was reviewed, accepted, and will be presented in the Mathematics Division at the ASEE (American Society for Engineering Education) Annual Conference and Exposition June 24-27, Honolulu, Hawaii and published in the conference proceedings (paper number: ASEE2007-2021). The paper is currently posted on the GBMP website and the ASEE conference proceedings, where the paper will be available for download, will be posted on-line at:

<http://www.asee.org/conferences/v2Search.cfm> after the conference.

### **EP Development and Dissemination**

By the end of Year 3, EPs will be completed for the *Patterns* class, *Data Analysis and Probability* class, and *Numerical Reasoning* class. The *Patterns* task has 4 problem extensions, the *Data Analysis and Probability* task has 3 problem extensions, and *Numerical Reasoning* has two tasks with 5 extensions total. The plan is to use the last two extensions of the wound healing task for *Geometry and Proportional Reasoning* with development of an additional task to lead up to it. Therefore there are 6 tasks (5 engineering tasks) and 10 extensions for 4 courses with teacher notes for all 5 engineering tasks as well as for extensions with full web support.

Table 4.1 EP Development through Year 3

GBMP/IHE Course	EPs	Extensions
Patterns, Functions, and Algebraic Thinking	“Will it Heal?”	1 Challenge 1 Dessert
Data Analysis and Probability	“The Paper Clip Task”	1 Challenge 2 Desserts
Numerical Reasoning	“The Shower Problem”	1 Challenge 2 Desserts
	“The Traffic Problem”	1 Challenge 1 Dessert
Geometry and Proportional Reasoning	“Wound Healing”	1 additional task

Efforts to optimize the development and dissemination strategies to better reach middle school teachers have taken many forms. Different strategies have been used for each of the 6 EPs that have been developed. For example, for the first EP, “Wound Healing”, a separate feedback session after an MST session last Spring elicited an excellent response: [the wound healing task] “justified the whole [Patterns] menu”. Unfortunately, due to tornado warnings, only 3 MSTs were able to attend. These three MSTs represented 15% of those originally introduced to the EP. These MSTs, however, presented and processed the task to 7 classes and about 125 students with over 100 giving feedback.

Feedback was solicited again at the Fall MST session. At this session, 35% of those who had attended the EP introduction had used the task. Feedback remained positive, but many teachers had still not used the EP. Based on the needs and desires of the MSTs from our feedback sessions and the Evaluation Team’s focus group in combination with input from the Design Team, we revamped the development and dissemination protocol. Although survey results on the use of EPs are not back yet, informal counting has shown at least 11 MSTs (of the 23 middle school MSTs) have used EPs in class.

#### EP Website

Priority was placed on developing a website to help disseminate the EPs. This provided the opportunity to include things the teachers wanted and to improve accessibility. Materials provided on the website include all tasks and extensions for each EP, ready to print handouts, teacher notes, color pictures, other support material for each task, and the opportunity to give us direct feedback. This website material is designed to provide enough information for those not previously exposed to the task to be able to use it. The website design is evolutionary with the addition of new materials and continued modification to old EPs based on feedback. A website with support for the EPs ‘just for kids’ is planned as well, with development beginning in summer 2007. In an effort to blend the EPs with other GBMP materials, it has been proposed that an interface to our website be presented in the same format as the GBMP main site. The response to the website from the teachers at the January ‘07 MST session was very positive.

#### Delivery and Processing of EPs

In an effort to increase the percentage of partnership middle school teachers using the engineering projects, we have implemented a number of strategies to more completely integrate the EPs into the MST sessions and GBMP summer courses. Existing menu tasks are typically introduced by summer course instructors, a selection of which are processed. EP tasks will now be added to the existing tasks, and course instructors will present the EPs, rather than having visiting members of the engineering team present the EPs. Having course instructors introduce and process EP tasks was implemented at both the January and March MST sessions and field tested in IHE classrooms at UAB and BSC; and worked well.

In summer 2007 the following tasks will be integrated or introduced into the corresponding summer courses: Wound Healing Task, part 1 into *Patterns*; Paper Clip Task into *Data Analysis and Probability*; and the Traffic Light Task into *Numerical Reasoning*. These tasks will be processed by course instructors. In addition, Wound Healing Task, part 2, is under development for the *Geometry and Proportional Reasoning* course.

The Engineering Team also had an opportunity to present EPs to 22 middle school teachers (including three MSTs) from two partnership school districts in spring 2007 during a professional development workshop. Time was set aside for processing of the task. This strategy worked very well and could serve as a valuable model for dissemination in the future. A summary of EP delivery activities is presented in Table 4.2. The number of teachers reached is summarized in Table. 4.3.

In 2006 the Engineering Team received feedback from students of MSTs who had been introduced to the task and processed it. We have student work from 7 classes with a total of 125 students with feedback from 108 students (Table 4.4). When asked if they enjoyed the task 80% of the students said yes with 15% saying it was OK or they only liked parts of it. Only 6% did not like the task. Those who did not like it said it was too hard, confusing or not relevant enough to students. However, 98% of the students would recommend the teacher using it in another class. Since this task was given to MSTs it has been modified based on MST comments, including those expressed here. Most of the comments have been addressed by the website. Concerns include better pictures (color ones on the website) more relevance and explanations both the math and science (also on the website). The new version will be processed this summer in the *Patterns* course

The majority of students thought it was challenging, made them think, was fun, was interesting, they enjoyed the application, and they liked to think like both a mathematician and a doctor. Some even thought it would be helpful for their future careers. Most students said they used addition, subtraction, multiplication, and division skills to solve the problem; however, many mentioned the use of measuring and some talked about equations and the use of patterns.

Initial experiences with these strategies have helped illustrate the importance of processing the EPs like other menu tasks. Processing influences a teacher's decision to use the activity with students in the classroom. We believe that presenting and processing EPs within GBMP courses is the most promising strategy to enable these teachers to use the EPs with their students, therefore EPs will be piloted and processed in the GBMP courses during summer 2007. These EPs will also be presented and processed in the corresponding IHE courses each time they are taught.

Table 4.2 EP Delivery for Spring 2007

Setting	Presenter(s)	Website Shown	EP	Introduced	Processed	Feedback Collected	Observed*
January MST Session	MEC Instructors	✓	Wound Healing		partially		
			Paper Clip Task	✓		✓	
March MST Session	MEC Instructors	✓	Paper Clip Task		partially		✓
			Shower Problem	✓		✓	
			Traffic Problem	✓		✓	
UAB: MA 313	Dr. Smith	✓	Wound Healing	✓	✓		✓
BSC ED 320	Dr. Moore		Wound Healing	✓	✓		✓
Homewood Prof. Develop	Engineering Team	✓	Wound Healing	✓	partially		
			Paper Clip Task	✓			
Advisory board	MEC Instructors and engineering team	✓	Paper Clip Task	✓	partially	✓	✓

\*Observed by member of Evaluation Team

Table 4.3 Dissemination of EP Materials to Teachers through GBMP Activities to Date

EP Materials	No. of Middle School MSTs	No. Other Middle School Teachers	K-6 pre service	Other pre-service
Wound Healing Piloted and Processed	17	18	12	2
Paper Clip Task Discussed	23	0		
Shower Problem Introduced	23	0		
Traffic Problem Introduced	23	0		

Table 4.4 Dissemination of EP Materials to Middle School Students to Date

EP Materials	No. of Middle School MSTs	No. Middle School Students	No. Middle school Classrooms	Student work collected	Student feedback collected
Wound Healing Piloted and Processed	3 +	125+	7+	125+	108

#### National Advisory Board Input

The first topic of the 2007 annual meeting of GBMP's National Advisory Board (NAB) was the engineering component of the project. NAB members received an overview of the website and did the Paper Clip Task. The response was enthusiastic and the advice was constructive. For example, NAB members suggested that part of the information given teachers (on the website) is samples of student work. To do this MSTs and or teachers taking summer courses will be encouraged to use the tasks in their classrooms and provide feedback. This includes collecting and sending student work and comments to be used to refine the tasks, identifying the big mathematical ideas that can come out of the tasks, and helping to determine the time it takes to successfully implement the EPs. In addition a survey has been generated to get more specific information about the EPs from MSTs and other teachers using the task. The Engineering Team will work with project co-directors, MEC instructors, MSTs and other teachers to both encourage the use of the EPs and student work as well as facilitate the collection and analysis of this information.

#### Revised Procedure for Dissemination of EPs

The implementation and dissemination strategy are still being optimized and should be finalized this summer; however, a revised dissemination procedure is detailed here:

1. Take or work through the menu items for the targeted GBMP course.
2. Catalogue and map course content to the Alabama Course of Study.
3. Reflect on key aspects of challenging courses and curricula in preparation for developing EPs
4. Develop the course specific EP within the engineering team.
5. Get feedback from MEC instructors and the design team prior to the upcoming MST session.
6. Place the EP on the website (listed as a task under development).



7. Have MSTs do the EP as a homework problem and process it during the MST session including going over the information on the website.
8. Encourage middle school MSTs to use the EPs, provide feedback from a survey, and submit student work and comments.
9. Use feedback to modify the EP and website.
10. Pilot and process the EP in the targeted GBMP class the following summer as well as the next time the corresponding IHE course is taught.
11. Encourage middle school GBMP course participants to use the EPs, provide feedback on a survey, and submit student work.
12. MSTs work with teachers in their schools to implement the task. MSTs may also collect examples of exemplary, typical, emerging student work.
13. Continually collect feedback on the website.
14. Revise the EP based on feedback from teachers, students, GBMP instructors, and the design team.

#### **Year 4**

For next year, we expect that our revised plan for development and dissemination will result in a high percentage of partnership middle school teachers using the EPs. We also plan to extend the conference paper from Year 3 for submission to the *Journal of Engineering Education*.

Tasks will be developed for 2 additional courses: *Extending Algebraic Reasoning and Integrating Mathematics Ideas*. In addition, the tasks for the calculus courses will be completed with an EP developed for each of the two new *calculus* courses and piloted both at UAB and Birmingham-Southern. The *Geometry* task will be ready to pilot and process in the Spring MA 314 course. An engineering team member, Dale Feldman, will take the summer course, *Extending Algebraic Reasoning*, and lead in the development of a corresponding task to be introduced at the January 2008 MST session and in the summer 2008 course. For the *Integrating Mathematics Ideas* task, a member of the Engineering Team went to Washington state for a run through of this newly developed course to help with its design as well as get information about the content and pedagogy to complete a companion task to be introduced in the summer 2008 course and the September 2008 MST session.

#### **Activity 5. Recruitment of Pre-Service Teachers**

All tasks are on the schedule for completion this year. Now that the new major track has been approved at UAB, it will be easier to recruit UAB pre-service students.

At UAB, three pre-service teachers have been recruited for the program and will be taking GBMP summer courses. Some in-service teachers completing the non-traditional fifth year program have been recruited for the GBMP summer courses as well.

Recruitment of pre-service teachers at Birmingham-Southern College has easily exceeded goals because of the excellent reputation GBMP courses enjoy among the students. Students who have taken GBMP courses in the Summers of 2005 and 2006 have become outstanding recruiters of their peers. Eileen Moore has used the BSC *Mathematics Methods* course as the major venue for discussing the opportunity. Nine candidates, one of whom is of minority status, have been

accepted for 2007. Of this number, two are returning students who will take their second GBMP course.

**Goal II: To increase the leadership capacity of middle school mathematics teachers within the GBMP school systems.**

**Activity 1. Mathematics Support Teams**

MEC staff developed and delivered three two-day leadership sessions for project Mathematics Support Team teachers (MSTs). The purposes of the sessions this year were to:

- Continue to deepen the mathematics content knowledge of participants (with attention to content knowledge specific to teaching).
- Provide a more focused opportunity for MSTs, within the context of a developing intellectual community, to examine and refine their classroom practice.
- Begin the process of preparing MSTs to lead from a place of confidence in their own understanding of mathematics and best classroom practice.

The content of these sessions was designed to reflect a deep level understanding of the mathematics that a well-prepared 9th grader would know upon entering high school. Pre-assessments delivered to MSTs prior to each of the content subject sessions indicated that many of the teachers had not yet mastered the content at a conceptual level. Session topics were as follows:

**September: Facilitating Numerical Reasoning**

At the request of the MSTs, this session was designed to give participants support in working with their students around fluency with number and in particular the facilitation of Number Talks. Participants worked in small groups to design number talks, anticipate and analyze student strategies, deliver the number talks and then debrief and refine their sessions. As new MSTs joined the project at this point, time was spent during this session reviewing the goals of the GBMP and familiarizing MSTs with the menu of leadership choices that would become available to them in Years 4 and 5.

**January: Simulating Probabilistic Situations**

This session builds on the *Probability and Data Analysis* course. The session was structured to build on ideas encountered in the GBMP summer course, but also to allow access to those participants who had not attended that particular course. Big ideas in this session included:

- The chance of an event occurring can be described numerically by a number between 0 and 1 (inclusive) and used to make predictions about other events.
- The chance of an event occurring can be estimated experimentally by the relative frequency of the occurrence of that event (experimental or empirical probability). For some events, the exact probability can be determined by an analysis of the event itself (theoretical probability).

- The Law of Large Numbers: for a given event, the experimental probability is more likely to approximate the theoretical probability as the sample size increases.
- Simulations allow people to estimate the likelihood of an event when it is impractical to experiment with the real event. To see what is likely to happen, a simulation must be designed that has the same probability as the real situation.

At the request of the Engineering Team, time was spent 1) collecting feedback on the first engineering task, ‘Wound Healing’; 2) perusing the newly designed website supporting the engineering tasks and mathematics teaching in general (the response to the site was enthusiastically positive); and 3) giving participants time to try the new engineering task ‘The Paper Clip Task’.

### **March: Simulation Session Continued**

Participants continued the work begun in January, with an additional focus on theoretical probability. Time was set aside to collect feedback on the ‘The Paper Clip Task’, but due to the pressures of the upcoming state testing, no MSTs had found time to pilot the task. Many expressed plans to do so after testing, however.

In addition to the mathematics done during each session, participants had homework assignments each evening consisting of professional readings around important issues in mathematics education. Time was devoted daily to discussion of these readings to allow participants to consider and more deeply understand issues in preparation for their eventual roles as leaders.

Additionally, at each of the three MST sessions, MEC staff presented one of MEC’s parent outreach sessions (developed under a previous NSF grant and published by Heinemann press) to prepare MSTs to present the sessions to their staff and parents. The parent outreach sessions were presented in the following order:

Fall – *Helping With Math At Home: Ideas for Parents*  
 Winter – *Understanding Multiplication Across the Grades*  
 Spring – *Helping With Math At Home: More Ideas for Parents*

**Goal III: To unite the GBMP stakeholders in support of mathematics education programs that are high quality and effective.**

### **Activity 1. Sessions for Administrators**

#### **Cohort #1**

MEC Associate, Patty Lofgren, working in concert with local administrative leader, Charlotte Brown, delivered the first two sessions of EDC’s *Lenses on Learning* administrator professional development module *Observing Today’s Mathematics Classrooms* to those administrators who had been through the project’s first two years of administrator sessions. The sessions were well received. Administrators found value in the opportunity to examine and refine their professional practice. Participants were given the following prompts: Pick an idea that came up today that you found particularly interesting. What is your current thinking about this idea? Where is your

school now with regard to this idea? What are one or two things that you, as an instructional leader, will go back and pursue to move yourself and/or your school along with this idea? Their responses included:

- *I am more determined than ever to make sure that all students are involved in the learning process. I will encourage and support teachers in using different strategies to help all children learn.*
- *I wonder how many of our teachers have really considered their own 'mathematical agendas' and what this looks like over the course of the year? I am going to introduce this concept into our conversations and I wonder how many of my teachers will have similar agendas. I believe this conversation will help move us along the right path to move students in the right directions, even though they may approach things differently.*
- *The importance of identifying a long-term math agenda will really help my teachers focus on the big ideas they should be teaching. And I think it will help us think more constructively about what to do when kids just don't get it. I plan to share this at my grade level meetings right away.*
- *Teachers need the support of others (particularly mentors) to be successful. The notion of the long-term math agenda fits perfectly into our mentor math program. It gives them something concrete to hang onto.*
- *It will be presented to lead teachers (Math Dept.) and discussed among math teachers to see if they think this will be beneficial to them. We are doing a lot of groundwork to establish and maintain a professional learning community in our school. This would definitely fit into that plan.*

The concluding two sessions of this *Lenses on Learning* module will take place in September and November of 2007.

## **Cohort #2**

MEC CEO, Ruth Parker, developed and delivered two half-day administrator workshops that were attended by administrators new to the project from participating GBMP schools (Cohort #2).

Session #1 focused administrators on things to look for when observing in a mathematics classroom. Administrators were asked to consider three questions as they engaged in a problem-solving task: (1) Is there substantive mathematics in the lesson? (2) Does the task lend itself to small group collaborative work or independent problem solving? and (3) Is the task expandable? Does it meet a range of learner needs and still challenge all learners? Administrators worked on the task Consecutive Numbers, and noted that it was a task that could be used with 4<sup>th</sup> graders, but also one that might be even more powerful in a pre-calculus course, thus meeting the desired characteristic of expandability.

Session #2 used the content of division of fractions to help administrators better understand the fragility of their own mathematical understandings, as part of building their commitment to

GBMP's mathematics improvement efforts. The focus of this second session was on the inability of students to use mathematical ideas when they have only memorized procedures without understanding the mathematical relationships involved.

Pedagogical practices appropriate to 5-8 classrooms were used to engage administrators in developing their understanding of equivalency, addition, subtraction, multiplication and division of fractions, and what it means to teach mathematics with meaning. Administrators then collaborated with GBMP staff in planning strategies for enrolling middle school teachers in the Summer 2007 GBMP courses, and for securing optimal parent and community participation in the Community Mathematics Nights.

Administrators were asked to reflect on the sessions by answering the following questions:

1. What new insight(s) do you have as a result of this session? 2. What questions or concerns do you have at this time? 3. Is there anything else you want us to know? Their responses indicate that they found the sessions valuable, as illustrated by the sampling listed below (responses numbered to match question number):

1. *[I] Needed the information, nudging, networking – I had not attended first sessions and today realize (that I) need to keep myself fresh, abreast of info[rmation]...*
  3. *Session, as always with Ruth, was interesting, included much thinking and stretching – well planned. Great time for working with colleagues from other systems as well.*
- 

1. *New insights I learned today are: - the power in developing a true understanding of mathematical reasoning. – how to encourage/support teachers in their endeavors*
- 

1. *Math is extremely engaging. I have very little number sense. It intimidates me.*
  2. *How can I promote to my high school the relevance of attending the Summer training?*
  3. *I think the concept and instruction is definitely necessary*
- 

1. *Each time I come I walk away amazed and wish I had learned math this way. It motivates me even more to pull and tug harder at those teachers who are reluctant to change.*
  3. *I don't have any questions, but thank you for your hard work and all you're doing.*
- 

1. *I simply need more information so I can get my teachers on track*
  3. *Excellent change in thinking, much needed at my school.*
- 

1. *This isn't a new insight but confirmation that collaborating in a group setting builds confidence to those of us who feel we are not as mathematically minded as others. Thanks for a delightful and informative session.*

Administrators as well as GBMP participating teachers, district personnel, IHE faculty and local leaders in the business community were invited to a special presentation by guest speaker Dr. Richard Elmore from the Harvard Graduate School of Education which was to supersede the Administrator sessions originally scheduled for March. When Dr. Elmore cancelled unexpectedly the night before, Ruth Parker did a substitute presentation addressing challenges that the GBMP faces, specifically the misinformation that is being presented about Reform Mathematics. She discussed ways to combat that misinformation with facts, and how to communicate the facts to parents, the public, and the education community. While a session with both cohorts of administrators was delivered, it was of a different nature than was originally planned which is the reason for the revision of two of the Spring Tasks listed on the Implementation Matrix.

## **Activity 2. Outreach Activities to Parents and the Community**

Ruth Parker offered a total of twelve Community Mathematics Nights during Year 3 of the project – two sessions in each of six geographic regions. Community Mathematics Nights actively engage participants in doing mathematics while developing their understanding of important ideas in mathematics education. The first five sessions: *Mathematics and Your Child's Future*; *Multiplication: Helping Children Know the Basic Facts*; *How to Help Your Child with Mathematics at Home*; *More Ideas for Helping Your Child with Mathematics at Home*; and *The Brain and Human Learning: Implications for the Mathematics Classroom* were all offered this year in different locations.

Year 3 attendance at these sessions totaled 1446, bringing the cumulative attendance at the Community Mathematics Nights (since project inception) to more than 2700, dwarfing our five-year project goal of 1000. Participants also continue to give these Community Mathematics Nights high marks. Ninety percent (90%) rate the sessions as 'informative' or 'extremely informative' with the modal response always at 'extremely informative.' The ratings have been positive across diverse populations that range from high minority and high poverty communities to highly affluent communities.

In advance of the sessions, flyers were sent by email to all administrators, teachers who had participated in GBMP summer courses, past CMN participants, and were then disseminated to parents. It was decided that for the locations targeted, flyers in Spanish were not necessary.

Of all the sessions, the fifth session (on the brain) drew the fewest participants. Students were not encouraged to attend this session with their parents as they had been for previous sessions, and the topic was of more interest to teachers than parents. GBMP has decided not to offer this session again. We have also decided to eliminate the session *Assessing Mathematical Understandings* because it is also potentially of more interest to teachers than parents. Additionally, we want to offer sessions which are of interest to students and which will promote parent/child interaction while doing mathematics. After offering the last session on *Algebra and Your Child's Future*, we will change locations within the same geographic region and start the series again.

MEC has developed Presenter's Guides for several parent sessions that have been published by Heinemann Press (2006). As previously mentioned, three sessions were introduced to MSTs this

year to be used with colleagues and parents during Years 4 and 5 of the project. After only an initial introduction, several MSTs have already begun using these sessions successfully in Year 3.

The mathematics initiatives across Alabama including GBMP, the Mobile Mathematics Initiative, TEAM -Math (MSP from Auburn University), Alabama Math, Science, Technology Initiative (AMSTI), and representatives from the Alabama State Department of Education, the Governor's office, and A+ (an education advocacy and policy organization) did not meet as a group during the year. Discussions of cooperation between GBMP and AMSTI were on-going during the year. The issues are complex and political and will affect GBMP's ability to reach the goal of having all middle school math teachers take at least two GBMP Summer courses.

At the advice of one of our NAB members, GBMP made an official proposal to AMSTI which was discussed but not accepted by AMSTI. In considering next moves, the district liaisons noted that it will likely only affect our ability to reach middle school teachers in three of our targeted schools, and the repercussions of pursuing this aggressively could cause a much bigger impact on reaching our goals in the long run. GBMP took the advice of the districts. We continue to keep lines of communication with AMSTI open, especially with regard to AMSTI's suggestion of having GBMP courses be a follow-up to AMSTI courses. This possibility could provide an excellent opportunity for sustainability and expansion of our work. The representatives from the other Alabama mathematics initiatives, with whom GBMP had met previously, as well as the GBMP Management Team and Community/Business Advisory Council (CBAC) were kept informed about the discussions with AMSTI.

CBAC met in November and observed in two classrooms of teachers who had taken several GBMP courses. This was a powerful experience and sparked discussions about the need for Boards of Education to see demonstration lessons. This has been implemented in one district so far. It also stimulated further discussions about what CBAC members could do to help GBMP with the challenges it faces with regard to getting the message out to all stakeholders and sustainability of the work of the project. It was decided that participation in Career Day programs would not be a priority for CBAC members.

The agenda for the March CBAC meeting was to be an address by Dr. Richard Elmore to be followed by a CBAC meeting in which Dr. Elmore was to share his expertise in helping districts match their resources with priorities. Instead CBAC members were treated to a stimulating substitute session by Ruth Parker (see previous Activity).

### **Activity 3. Partnership-Driven Project Management**

The tasks related to partnership-driven project management have been completed or are scheduled for completion prior to August 31, except that the task calling for District Liaisons meetings has been revised. District Liaisons are part of the Design Team, but they originally participated in both Design Team meetings and separate District Liaisons meetings. These separate meetings became inefficient so we made appropriate changes and eliminated the separate District Liaisons meetings.

## **Dissemination of Project Work**

In October 2006, Ann Dominick gave an overview of GBMP during a presentation at Birmingham-Southern College to the Associated Colleges of the South's Keck Foundation Conference. The overall focus of the conference was "Science Reform and Teacher Education."

In February, Bernadette Mullins presented a paper she authored along with Rachel Cochran (lead author) and John Mayer at the Mathematics Association of America Conference on Research in Undergraduate Mathematics Education in San Diego, CA. The paper shared the results of research about changes in GBMP participants' content knowledge and classroom practice and has been submitted for possible publication in the conference proceedings.

In March, John Mayer gave an expository talk about the new Mathematical Reasoning track at the Southeastern Sectional meeting of the Mathematical Association of America (MAA) in Statesboro, Georgia. The talk was well-received and faculty representing colleges and universities from five states had many questions about the program design and course content. At this same conference, BSC Mathematics faculty and GBMP National Advisory Board member Dr. Barry Spieler presented a short course on inquiry based learning.

Also in March, Tommy Smith and Donna Ware conducted a workshop for middle school teachers at the annual meeting of the National Council of Teachers of Mathematics (NCTM) in Atlanta. The workshop demonstrated by example the partnerships' definition and implementation of Challenging Courses and Curriculum in course design. At the same NCTM meeting, John Mayer reported on the work of an NSF-sponsored MAA panel *Algebra, Gateway to Technological Future*, and participated in a panel discussion of the findings.

### **Goal IV: To increase the mathematics achievement of all middle school students.**

All of the above activities contribute to Goal IV.

## **Annual Highlights**

GBMP believes that significant change in mathematics instruction requires the support of all the stakeholders in an education community. Community Mathematics Nights (CMN) are an important part of the effort to engage the greater community. Overall attendance at these sessions is nearly triple our five-year goal. Many factors have contributed to the success of CMNs including the following: The quality of the sessions; inviting students to attend with parents; support of administrators and teachers who promoted the sessions and rewarded students whose parents came with bonus points or homework passes; and tailoring incentives to the community such as providing pizza, giving away a donated bicycle and awarding donated gift certificates to teachers with the highest attendance.

IHE involvement continues to be a highlight of the project. By the end of year three all of the mathematics faculty and education faculty who teach mathematics at Birmingham-Southern College will have attended at least one GBMP summer course. The new mathematics track developed at UAB is in place and three students are already enrolled.



The thorough background review and careful development, piloting, revising and disseminating of the first task by the engineering team is paying dividends. One notable example is the development of an engineering website. This website includes all tasks and extensions for each EP, ready to print handouts, teacher notes, color pictures, other support material for each task; enough information so that those not previously exposed to the tasks are able to easily use them. At present, 4 EPs are listed on the site. The website design will continue to evolve with the addition of new materials and continued modification to old EPs based on feedback, which is encouraged on the site. A website with support for the EPs 'just for kids' is planned as well, with development beginning in Summer 2007. Response to date has been very positive. The website approach has provided the Engineering Team a way to include things in the EPs that teachers want and has improved EP accessibility.

The MSTs (the teacher leaders) are enthusiastic and some have taken on leadership roles a full year ahead of schedule. While the number of participating MSTs meets GBMP's overall goal, finding qualified candidates in all partnership schools is a challenge. (This challenge parallels the difficulty in those districts of retaining quality teachers.)

Recruitment of teachers to participate in GBMP summer courses is also a challenge in some districts. Mathematics teachers are needed to teach summer school which conflicts with attending the GBMP summer courses. GBMP will offer a summer course in July this year to help alleviate this problem. Interest in attending the courses has increased because of the recommendations of former participants, the preliminary findings about gains on the ARMT, and because the project directors and district liaisons have made concerted efforts to communicate with school administrators and teachers. A positive outcome of these recruitment efforts is that the number of grade 6-8 teachers registered for *Patterns* in 2007 is higher than expected. As a result, we have nearly eliminated our 20-teacher shortfall from 2006, coming within 2 teachers of our overall goal. It is possible that two additional teachers will register for the added July section.

Sustainability is both a highlight and a challenge. The potential in Alabama to sustain and extend the work of GBMP through the statewide initiative, AMSTI, is enormous and in our opinion essential to the success of AMSTI and to sustaining the work of GBMP. Making this happen is filled with challenges and will require the effort of many stakeholders.

## **Section 2: Management Report**

Since our 2006 annual report was written, the Greater Birmingham Mathematics Partnership has successfully transitioned lead institutions from Birmingham-Southern College to the University of Alabama at Birmingham. All support staff moved with the project to UAB and the key personnel have remained in place, with Dr. John Mayer assuming the Principal Investigator role and Dr. Bernadette Mullins assuming a Co-Principal Investigator role.

Our 2 Co-Project Directors continue in their roles although the relationship of each to the lead institution (UAB) has changed. A subcontract between UAB and the Hoover City School Board was recently added, and now co-project director Dr. Ann Dominick is employed on the project through that subaward. The partnership status of the Hoover City School Board has not changed although its role has expanded slightly to include responsibility for assuring the delivery of co-project director services through Dr. Dominick.

UAB also recently determined that the position of the other co-project director, Dr. Faye Clark, better fit the description of an employee rather than an independent contractor, the status in which she had been serving theretofore. As a result, Dr. Clark was hired as a UAB Mathematics Department employee effective January 1, 2007 and now operates in that capacity. In neither case have the responsibilities of the 2 co-project directors changed.

In the Fall of 2006, Cheryl Burns retired from the Fairfield School District and thus is no longer on the GBMP Management Team. She has been replaced both at Fairfield and on the GBMP Management Team by Barbara McCambry, who now serves as the GBMP district liaison for Fairfield City Schools.

## Section 5: Annual Implementation Plan for 2007-2008

### Goal I: To increase the effectiveness of middle school mathematics teachers within GBMP school systems

1. (a) MEC Summer Courses (MSP Key Feature: T, P, C)		Completed	
Fall Tasks	Responsible Party	Yes	No
Consolidate feedback from past Summer courses and begin planning of next Summer courses.	Parker		
Begin recruitment efforts for Summer courses.	District Liaisons, Dominick, Moore		
Create and distribute materials to advertise and promote Summer courses.	Liaisons, Dominick		
Begin processing enrollment information for Summer courses.	Liaisons, Dominick		
Begin notifying teachers of course date assignments.	Liaisons, Dominick		
Seek opportunities to give “update” talks to stakeholders in districts.	Liaisons, Dominick		
Collaborate with UAB mathematics faculty members to develop new MEC course, <i>Integrating Mathematics Ideas: Algebra, Geometry, Probability and Statistics</i> .	Millie Johnson		
Plan for integrating engineering tasks into Summer courses	Parker, Lofgren		
Spring Tasks	Responsible Party	Yes	No
Finalize planning of Summer courses.	Parker		
Invite 1-2 local leaders to begin the internship process to become MEC instructors.	Parker, Dominick		
Continue recruitment and publicity efforts for Summer courses.	District Liaisons, Dominick, Moore		
Continue processing enrollment information for Summer courses.	Liaisons, Dominick		
Continue notifying teachers of course date assignments.	Liaisons, Dominick		
Communicate information to teachers about UAB credit for GBMP courses.	Liaisons, Dominick		
Select sites for Summer 2008 courses.	Liaisons, Dominick		
Select dates for Summer 2009 courses.	Liaisons, Dominick		
Send information letter to participants about Summer courses and orientation sessions.	Liaisons, Dominick		
Send letter to IHE faculty members prior to Summer courses.	Parker		

1. (a) MEC Summer Courses (continued)	Completed		
	Responsible Party	Yes	No
<b>Spring Tasks (continued)</b>			
Research items (manipulatives, supplies, etc.) to go into teacher kits.	Moore, Dominick		
Research items (books, videos, etc.) to distribute to teachers.	Moore, Dominick		
Order teacher kit for new course <i>Integrating Mathematics Ideas</i> .	Moose		
Order professional development books (Connected Math Project, etc.) to distribute to teachers.	Moose		
Continue collaborating with UAB mathematics faculty members to develop new MEC course.	Millie Johnson		
Pilot new MEC course to gain input from IHE faculty.	Millie Johnson		
Arrange enrollment for Summer course to include both middle school teachers and IHE faculty	Dominick		
<b>Summer Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Continue recruitment and publicity efforts for GBMP.	District Liaisons, Dominick, Moore		
Attempt to accommodate teachers still requesting to attend Summer courses.	Liaisons, Dominick		
Prepare for orientation sessions to be held on the day before the start of each section of <i>Patterns, Functions, and Algebraic Reasoning</i> .	Dominick		
Send materials for GBMP courses.	Parker		
Set-up for GBMP courses.	Dominick		
Host GBMP courses.	Districts		
Offer orientation sessions prior to each section of <i>Patterns, Functions, and Algebraic Reasoning</i> .	Dominick		
Offer GBMP courses.	Parker		
Participate in GBMP courses.	District Teachers		
Discuss definition of challenging courses and curricula.	MEC faculty		
IHE faculty members participate in MEC Summer courses.	IHE faculty		
IHE and MEC faculty members hold discussions following GBMP courses.	IHE, MEC faculty		
Complete collaboration with UAB mathematics faculty members to develop 2 <sup>nd</sup> new MEC course.	Millie Johnson		
Participate as interns with MEC instructors in Summer courses.	Interns		

1. (b) Academic Year Follow-up: Grade-Level Sessions (MSP Key Feature: T, P, C)	Completed		
	Responsible Party	Yes	No
<b>Fall Tasks</b>			
Remind teachers and administrators about dates and locations of Fall grade-level sessions.	Liaisons, Dominick		
Invite IHE faculty to attend the Grade Level Sessions.	Dominick		
Register teachers for grade-level sessions.	Liaisons, Dominick		
Host grade-level sessions.	Districts		
Support Local leads as they deliver grade-level sessions on Number Talks.	Lofgren, Local Leaders		
Local leaders co-facilitate Grade-Level Sessions.	District Leader		
Arrange for and fund substitute teachers.	Districts		
Participate in grade-level sessions.	District Teachers		
<b>Spring Tasks</b>			
Remind teachers and administrators about dates and locations of Spring Grade-Level Sessions.	Liaisons, Dominick		
Invite IHE faculty to attend the Grade Level Sessions.	Dominick		
Register teachers for grade-level sessions.	Liaisons, Dominick		
Host grade-level sessions.	Districts		
Support Local leads as they deliver grade-level sessions on Number Talks.	Lofgren, Local Leader		
Local leaders co-facilitate Grade-Level Sessions.	District Leader		
Arrange for and fund substitute teachers.	Districts		
Participate in grade-level sessions.	District Teachers		
Select sites for 2008-2009 grade-level sessions.	Liaisons, Dominick		
Select dates for 2008-2009 grade-level sessions.	Liaisons, Dominick		

2. IHE Course Redesign and Development (MSP Key Feature: I, P, T, C)	Completed		
	Responsible Party	Yes	No
<b>Fall Tasks</b>			
Add new middle school major track to UAB catalog.	Mayer		
Reflect on key aspects of challenging courses and curricula in preparation for developing and revising courses.	IHE faculty		
Design UAB course rotation to support Middle School Mathematics Certification in conjunction with School of Education.	Mayer, Smith		
Implement engineering projects in new and redesigned courses.	Mayer, Feldman, McClain		
Offer MA 313 and MA 314 at UAB in regular course rotation.	Smith		
Offer new calculus courses MA 123 and MA 124 at UAB in regular course rotation	Ward		
Offer MA 372 <i>Geometry I</i> and MA 311 <i>History of Mathematics</i> at UAB in regular course rotation.	Mayer		
Recommend workshop activities for MA 110 <i>Finite Mathematics</i> based on GBMP courses.	IHE Faculty		
Continue design of MA 411 <i>Integrating Mathematics Ideas: Algebra, Geometry, Probability, and Statistics</i>	Mayer, Ward, Ware		
Begin design of MA 412 <i>Connecting Mathematics Content to Science and Technology</i>	Mayer, Ward, Ware		
Recommend workshop activities for MA 105 <i>Pre-Calculus Algebra</i>	Mayer, Ware		
Complete redesign of UAB course MA 105 <i>Pre-Calculus Algebra</i> to include parallel activities from MEC course, <i>Extending Algebraic Reasoning</i> , and to follow UAB Quality Enhancement Plan.	Kravchuk, Mayer, Ward, Johnson, Ware, Smith, Feldman, McClain		
Continue conversations with Millie Johnson regarding course development.	Mayer		
Attend some MST and/or Grade Level sessions.	IHE Faculty		
<b>Spring Tasks</b>	Responsible Party	Yes	No
Reflect on key aspects of challenging courses and curricula in preparation for developing and revising courses.	IHE faculty		
Design UAB course rotation to support Middle School Mathematics Certification with School of Education	Mayer, Smith		

2. IHE Course Redesign and Development (continued)		Completed	
Spring Tasks (continued)	Responsible Party	Yes	No
Implement engineering projects in new and redesigned courses.	Mayer, Feldman, McClain		
Offer MA 313 and MA 314 at UAB in regular course rotation.	Smith		
Offer new calculus courses MA 123 and MA 124 at UAB in regular course rotation	Ward		
Pilot redesigned MA 105 following UAB Quality Enhancement Plan.	Kravchuk, W. Johnson		
Offer redesigned MA 110 <i>Finite Mathematics</i> following UAB Quality Enhancement Plan.	Mayer, W. Johnson		
Continue design of MA 411 and 412	Mayer, Ward, Ware		
Attend some MST and/or Grade Level sessions.	IHE Faculty		
Summer Tasks	Responsible Party	Yes	No
Observe GBMP courses.	Mayer, Ward, Kravchuk, Johnson, Ware, Meadows, Smith, Feldman, McClain, Mullins, Moore		
Reflect on key aspects of challenging courses and curricula in preparation for developing and revising courses.	IHE Faculty		
Implement engineering projects in new and redesigned courses.	Mayer, Feldman, McClain		

2. IHE Course Redesign and Development (continued)	Completed		
	Responsible Party	Yes	No
<b>Summer Tasks (continued)</b>			
Complete design of MA 411 <i>Integrating Mathematics Ideas: Algebra, Geometry, Probability, and Statistics</i>	Mayer, Ward, Ware		
Continue designing MA 412 <i>Connecting Mathematics Content to Science and Technology</i>	Mayer, Ward, Ware		
Design MA 473 <i>Geometry II</i> .	Ward, Mayer		
Offer MA 313 and MA 314 on regular basis.	Smith		
Offer MA 123 and MA 124 on a regular basis.	Ward		
Offer MA 315, 316, and 317 in conjunction with Summer GBMP courses	Mayer		



3. Middle School Certification (MSP Key Feature: T, I)	Completed		
Fall and Spring Tasks	Responsible Party	Yes	No
Continue development of Mathematic Reasoning track within the Mathematics Major: <ul style="list-style-type: none"> <li>- Publicize the major and get it into course catalogs</li> <li>- Schedule courses</li> </ul>	Mayer, Ware, Ward, Froning, Meadows, Smith, Feldman		
Recruit pre-service teachers for Summer GBMP courses.	Calhoun, Froning, Smith		
Recruit students for new major track and middle school certification <ul style="list-style-type: none"> <li>- Recruit minority pre-service teachers</li> </ul>	Calhoun, Froning, Smith		
Arrange for pre-service teachers to participate in field experiences with MEC-trained teachers	Smith		
Design UAB courses parallel to new GBMP courses: <ul style="list-style-type: none"> <li>- <i>Integrating Mathematics Ideas: Algebra, Geometry, Probability, and Statistics</i></li> <li>- <i>Connecting Mathematics Content to Science and Technology.</i></li> </ul>	Mayer, Ward, Smith, Froning		
Finish developing alternative Fifth-year program for middle grades mathematics. <ul style="list-style-type: none"> <li>- Align standards</li> <li>- Prepare checklists</li> <li>- Submit proposal to Alabama Board of Education for approval</li> </ul>	Smith, Froning		
Refine UAB Education course rotation to provide continuous support of MS certification	Smith, Sims		
Coordinate proposed checklist with new major track in the mathematics department.	Smith, Mayer		
Follow up on Middle School Certification proposal submitted to Alabama State Board of Education.	Froning		

<b>4. Engineering Projects (MSP Key Feature: P, C)</b>		<b>Completed or will be by 8/31/08</b>		
<b>Fall Tasks</b>		<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Continue accumulating background information related to each application task (engineering project--EP) under development: (1) Connected Math (2) Existing hands-on mathematics and science application activities		Feldman, Lalor, McClain		
Cataloguing information related to each EP under development and mapping to the Alabama Course of Study (ACS) (1) Existing hands-on mathematics and science application activities (2) MEC course tasks (3) Fall MST session		Feldman, Lalor, McClain		
Application task (engineering project--EP) development (1) Review feedback of the EPs from field tests in the GBMP summer courses and website (2) Continue development of EP for <i>Extending Algebraic Reasoning</i> (3) Begin development of EP for <i>Integrating Mathematical Ideas</i> (4) Refine <i>Patterns</i> EP (5) Refine <i>Geometry</i> EP (6) Refine <i>Probability and Data Analysis</i> EP (7) Refine <i>Numerical Reasoning</i> EP		Feldman, Lalor, Meadows, McClain, Lucas		
Application task (EP) dissemination (1) Update website to include refinements and new EP for <i>Extending Algebraic Reasoning</i> (2) Present and process <i>Wound Healing</i> task in MA 313 (3) Have separate “Just for Kids” website operational		Meadows, McClain, Feldman		
Engineering applications in the new calculus courses (1) Field test an EP in UAB’s new <i>Calculus and Function with Applications I</i> (MA 123) course (2) Develop an EP for UAB’s new <i>Calculus and Function with Applications II</i> (MA 124) course		Feldman, Lalor, McClain		

4. Engineering Projects (continued)	Completed or will be by 8/31/08		
Spring Tasks	Responsible Party	Yes	No
Continue accumulating background information related to each EP under development: (1) Connected Math (2) Existing hands-on mathematics and science application activities	Feldman, Lalor, McClain		
Cataloguing information related to each EP under development and mapping to the Alabama Course of Study (ACS) (1) Existing hands-on mathematics and science application activities (2) MEC course tasks (3) Winter MST session	Feldman, Lalor, McClain		
Application task (EP) development (1) Review feedback of the EPs from the MST session, IHE pilots, and from the website (2) Complete development of EP for <i>Extending Algebraic Reasoning</i> (3) Continue development of EP for <i>Integrating Mathematical Ideas</i> (4) Refine <i>Patterns EP</i> (5) Refine <i>Geometry EP</i> (6) Refine <i>Probability and Data Analysis EP</i> (7) Refine <i>Numerical Reasoning EP</i>	Feldman, Lalor, Meadows, McClain, Lucas		
Application task dissemination (1) Update website to include refinements for <i>Extending Algebraic Reasoning EP</i> (2) Provide new <i>Extending Algebraic Reasoning EP</i> to be processed at Winter MST session (3) Update website to include new EP for <i>Integrating Mathematical Ideas</i> (4) Present and process extensions of the <i>Wound Healing</i> task in MA 314	Meadows, McClain, Feldman		
Engineering applications in new calculus courses (1) Refine the EP in UAB's <i>Calculus and Function with Applications I</i> (MA 123) course (2) Pilot the calculus EPs with BSC mathematics faculty (3) Field test an EP for UAB's <i>Calculus and Function with Applications II</i> (MA 124) course	Feldman, Lalor, McClain		

4. Engineering Projects (continued)	Completed or will be by 8/31/08		
Summer Tasks	Responsible Party	Yes	No
Continue accumulating background information related to each EP under development: (1) Connected Math (2) Existing hands-on mathematics and science application activities	Feldman, Lalor, McClain		
Cataloguing information related to each EP under development and mapping to the Alabama Course of Study (ACS) (1) Existing hands-on mathematics and science application activities (2) MEC course tasks	Feldman, Lalor, McClain		
Application task (EP) development (1) Review feedback of the EPs from MST session, IHE pilots, and from the website (2) Refine <i>Patterns</i> EP (3) Refine <i>Data Analysis and Probability</i> EP (4) Refine <i>Numerical Reasoning</i> EP (5) Refine <i>Geometry</i> EP (6) Refine <i>Extending Algebraic Reasoning</i> EP (7) Refine <i>Integrating Mathematical Ideas</i> EP	Feldman, Lalor, Meadows, McClain, Lucas		
Application task dissemination (1) Update website to include refinements (2) Pilot and process new EPs in summer classes <i>Integrating Mathematical Ideas</i> EP <i>Extending Algebraic Reasoning</i> EP (3) Continue to use and process EPs piloted the previous summer <i>Patterns</i> EP <i>Geometry</i> EP <i>Probability and Data Analysis</i> EP <i>Numerical Reasoning</i> EP (4) Use of <i>Wound Healing</i> task in MA 313	Meadows, McClain, Feldman		
Engineering applications in new calculus courses (1) Refine the EP in UAB's <i>Calculus and Function with Applications II</i> (MA 124) course	Feldman, Lalor, McClain		

<b>5. Recruitment of Pre-service Teachers (T, I)</b>		<b>Completed</b>	
<b>Fall Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Meet with UAB student services staff and recruiting staff to enlist support in student recruiting.	Smith, Meadows, Froning		
Meet with staff of urban personnel prep grant to establish liaison and recruit from its cadre of new teacher recruits for Birmingham City Schools (mostly minority candidates).	Froning		
Announce GBMP opportunities for pre-service teachers in appropriate classes.	Froning, Moore		
Recruit pre-service teachers for Summer courses.	Froning, Moore		
Recruit minority pre-service teachers for Summer courses.	Froning , Moore		
Remind pre-service teachers about Fall grade-level sessions.	Froning , Moore		
Participate in grade-level sessions.	District Teachers		
<b>Spring Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Announce GBMP opportunities for pre-service teachers in appropriate classes.	Froning, Moore		
UAB Recruiting staff visits relevant classes.	Froning, Delmas		
Recruit pre-service teachers for Summer courses.	Froning, Moore		
Recruit minority pre-service teachers for Summer courses.	Froning, Moore		
Remind pre-service teachers about Spring grade-level sessions.	Froning , Moore		
Award pre-service teacher scholarships for Summer courses.	Froning, Moore		
<b>Summer Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Pre-service teachers participate in Summer classes.	Pre-service teachers		

**Goal II: To increase the leadership capacity of middle school mathematics teachers within GBMP school systems**

<b>1. Mathematics Support Teams (MSP Key Feature: I, P, T)</b>	<b>Completed</b>		
<b>Fall Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Prepare for September MST sessions.	Parker, Lofgren		
Order supplies for MST sessions.	Moose		
Notify teachers of dates and sites for MST sessions.	Liaisons, Dominick		
Invite IHE faculty to attend the MST Sessions.	Dominick		
Host MST sessions.	Districts		
Deliver MST sessions.	Parker, Lofgren		
Arrange for and fund substitute teachers.	Districts		
Participate in MST Sessions.	District MSTs		
Incorporate challenging courses and curricula into MST sessions.	Parker, Lofgren		
Send follow-up communication to districts and MST's.	Dominick, Lofgren		
<b>Winter Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Prepare for January MST sessions.	Parker, Lofgren		
Send reminder about MST sessions.	Liaisons, Dominick		
Host MST sessions.	Districts		
Deliver MST sessions.	Parker, Lofgren		
Arrange for and fund substitute teachers.	Districts		
Participate in MST Sessions.	District MSTs		
Incorporate challenging courses and curricula into MST sessions.	Parker, Lofgren		
Field-test engineering application task and provide feedback.	District MSTs		
Send follow-up communication to districts and MST's.	Dominick, Lofgren		
<b>Spring Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Prepare for Spring MST sessions.	Parker, Lofgren		

<b>1. Mathematics Support Teams (continued)</b>		<b>Completed</b>	
<b>Spring Tasks (continued)</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Send reminder about MST sessions.	Liaisons, Dominick		
Invite IHE faculty to attend the MST Sessions.	Dominick		
Host MST sessions.	Districts		
Deliver MST sessions.	Parker, Lofgren		
Arrange for and fund substitute teachers.	Districts		
Participate in MST Sessions.	District MSTs		
Incorporate challenging courses and curricula into MST sessions.	Parker, Lofgren		
Field-test engineering application task and provide feedback.	District MSTs		
Send follow-up communication to districts and MST's.	Dominick, Lofgren		
Begin to plan for 2008-2009 MST Sessions.	Lofgren		
Select sites and dates for 2008-2009 MST Sessions.	Liaisons, Dominick		

**Goal III: To unite the GBMP stakeholders in support of mathematics education programs that are high quality and effective**

<b>1. Sessions for Administrators (MSP Key Feature: P, I)</b>		<b>Completed</b>	
<b>Fall Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Prepare for September administrator session sessions for cohort 1 and cohort 2.	Parker, Lofgren		
Notify administrators of dates and sites for administrator sessions.	Liaisons, Dominick		
Send reminder about administrator session.	Liaisons, Dominick		
Deliver administrator session for cohort 1 and cohort 2.	Parker, Lofgren		
Local leader co-facilitates <i>Lenses on Learning</i> with cohort 1.	Brown		
Incorporate challenging course and curricula	Parker, Lofgren		
Participate in administrator sessions.	Administrators		
<b>Winter Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Prepare for January administrator sessions for cohort 1 and cohort 2.	Parker, Lofgren		
Send reminder about administrator session.	Liaisons, Dominick		
Deliver administrator sessions for cohort 1 and cohort 2.	Parker, Lofgren		
Local leader co-facilitates <i>Lenses on Learning</i> with cohort 1.	Brown		
Incorporate challenging course and curricula	Parker, Lofgren		
Participate in administrator sessions.	Administrators		
<b>Spring Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Prepare for Spring administrator sessions for cohort 1 and cohort 2.	Parker, Lofgren		
Send reminder about administrator session.	Liaisons, Dominick		
Deliver administrator sessions for cohort 1 and cohort 2.	Parker, Lofgren		
Local leader co-facilitates <i>Lenses on Learning</i> with cohort 1.	Brown		
Incorporate challenging course and curricula	Parker, Lofgren		
Participate in administrator sessions.	Administrators		
Send follow-up communication to administrators.	Dominick		
Inform administrators that they are welcome to participate in MEC Summer courses.	Liaisons, Dominick		
Select sites for 2008-2009 administrator sessions.	Liaisons, Dominick		
Select dates for 2008-2009 administrator sessions.	Liaisons, Dominick		



<b>2. Outreach Activities to Parents and the Community (MSP Key Feature: P)</b>	<b>Completed</b>		
<b>Fall Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Send update letter to individuals and businesses that supported or were asked to support GBMP.	Clark		
Prepare for Fall community mathematics nights.	Parker		
Select/confirm sites for Fall and Spring community mathematics nights.	Liaisons, Clark		
Arrange logistics for Fall community mathematics nights.	Liaisons, Clark		
Identify new ways to encourage new participants and reluctant parents to attend.	Liaisons, Clark		
Distribute flyers to promote Fall community mathematics nights.	Liaisons, Clark		
Publicize Fall community mathematics nights and seek media coverage.	Liaisons, Clark		
Host Fall community mathematics nights.	District Liaisons		
Maintain sign-in sheets to identify parents who attend. Also collect data on diversity of attendees and their willingness to participate in research.	Clark		
Deliver Fall community mathematics nights at six locations.	Parker		
Insure community mathematics nights incorporate four key aspects of challenging courses and curricula.	Parker		
Attend community mathematics nights.	Parents, Teachers, Administrators, Design Team		
Inform parents that some MEC scholarships are available for parents to participate in courses.	Liaisons, Clark		
Send thank you letters to school and community members who assisted with community mathematics nights.	Clark		
Continue conversations with AMSTI and MMI.	Dominick		
Continue conversations with AMSTEC.	Clark		
Confirm that Ann McMillan is willing to serve another term as CBAC chairperson.	Clark		
Select/confirm dates for Fall and Spring CBAC meetings.	Liaisons, Clark		
Select/confirm sites for Fall and Spring CBAC meetings.	Liaisons, Clark		
Arrange logistics for Fall CBAC meeting.	Clark		
Set agenda with CBAC Chair for Fall CBAC meeting.	CBAC Chair, Clark		
Send reminder to CBAC members about Fall community mathematics nights and CBAC meeting.	Clark		
Hold Fall CBAC meeting.	Clark, Parker		
Keep CBAC meeting minutes.	Clark		
Send follow-up letter to CBAC members.	Clark		

<b>2. Outreach Activities to Parents and the Community (continued)</b>		<b>Completed</b>		
<b>Fall Tasks (continued)</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Update GBMP website.	Moose			
Update MSPnet.	Moose			
<b>Spring Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Prepare for Spring community mathematics nights.	Parker			
Arrange logistics for Spring community mathematics nights.	Liaisons, Clark			
Distribute flyers to promote Spring community mathematics nights.	Liaisons, Clark			
Publicize Spring community mathematics nights and seek media coverage.	Liaisons, Clark			
Host Spring community mathematics nights.	District Liaisons			
Deliver Spring community mathematics nights at six locations.	Parker			
Maintain sign-in sheets to identify parents who attend. Also collect data on diversity of attendees and their willingness to participate in research.	Clark			
Inform parents that some MEC scholarships are available for parents to participate in courses.	Liaisons, Clark			
Insure that community mathematics nights incorporate four key aspects of challenging courses and curricula.	Parker			
Attend community mathematics nights.	Parents, Teachers, Administrators, Design Team			
Send thank you letters to school and community members who assisted with community mathematics nights.	Clark			
Continue conversations with AMSTI and MMI.	Dominick			
Continue conversations with AMSTEC.	Clark			
Arrange logistics for Spring CBAC meeting.	Clark			
Set agenda with CBAC Chair for Spring CBAC meeting.	CBAC Chair, Clark			
Send reminder to CBAC members about Spring community mathematics nights and CBAC meeting.	Clark			
Hold Spring CBAC meeting.	Clark, Parker			
Keep CBAC meeting minutes.	Clark			
Send follow-up letter to CBAC members.	Clark			

<b>2. Outreach Activities to Parents and the Community (continued)</b>		<b>Completed</b>		
<b>Spring Tasks (continued)</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Update GBMP website.	Moose			
Update MSPnet.	Moose			
<b>Summer Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>	
Continue conversations with AMSTI and MMI.	Dominick			
Continue conversations with AMSTEC.	Clark			
Send update to CBAC members.	Clark			
Update GBMP website.	Moose			
Update MSPnet.	Moose			

3. Partnership-Driven Project Management (MSP Key Feature: P)	Completed		
Ongoing Tasks	Responsible Party	Yes	No
Participate in Project Management Team meetings via email, phone, and in person, as needed.	Management Team		
Oversee the efforts of the Project Co-directors and Project Management Team.	Mayer		
Serve as primary contact person for UAB administration and NSF.	Mayer		
Serve as primary project director for the following project activities: MEC Summer courses, mathematics support teams, administrators sessions, and recruitment of pre-service teachers.	Dominick		
Serve as primary contact for articulation with the Mobile Mathematics Initiative (MMI) and the Alabama Mathematics, Science, and Technology Initiative (AMSTI).	Dominick		
Handle public relations with the school systems.	Dominick		
Serve as primary project director for the following project activities: outreach activities to parents and the community (including GBMP website and MSPnet), IHE course redesign and development, middle school mathematics certification, and engineering projects.	Clark		
Serve as primary project director for the Management Team, Design Team, National Advisory Board, and Community and Business Advisory Council.	Clark		
Serve as primary contact for articulation with the Alabama Mathematics, Science, and Technology Education Coalition (AMSTEC).	Clark		
Handle public relations with the community.	Clark		
Seek appropriate media opportunities for GBMP.	Liaisons, Clark		
Hold monthly meetings between Evaluation Team and PI/PDs to discuss all aspects of the research and evaluation plan.	Mayer, Clark, Dominick		
Discuss a yearly overview for the Design Team meetings, keeping in mind a focus on research and evaluation and the importance of operationalizing the definition of CCC	Mayer, Clark, Dominick		
Keep PDs and PI and Evaluation Team informed about school system concerns and input.	Liaisons		
Keep PDs and PI and Evaluation Team informed about GBMP courses and grade-level sessions.	Liaisons, Parker		
Keep PDs and PI and Evaluation Team informed about MST's.	Liaisons, Parker		
Keep PDs and PI and Evaluation Team informed about sessions for administrators.	Liaisons, Parker		
Keep PDs and PI and Evaluation Team informed about outreach activities.	Liaisons, Parker		
Keep PDs and PI and Evaluation Team informed about IHE course redesign and development.	Mayer		
Keep PDs and PI and Evaluation Team informed about middle school mathematics certification.	Froning		
Keep PDs and PI and Evaluation Team informed about engineering projects.	Feldman		

<b>3. Partnership-Driven Project Management (continued)</b>		<b>Completed</b>	
<b>Ongoing Tasks (continued)</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Keep PDs and PI and Evaluation Team informed about recruitment of pre-service teachers.	Froning, Moore		
Deliver formative evaluation information as warranted.	Snyder		
Respond to formative evaluation information when received.	Management Team		
Submit invoices and documentation and any needed reports to Grants Administrator.	MEC, BSC, Hoover City Schools		
Process submitted invoices and documentation and reports; verify that expenses and deliverables are in accord with the budget and the Annual Implementation Plan.	Moose		
Review invoices and reports forwarded by Grants Administrator.	Mayer		
Verify invoices for allowability of expenses and availability of funds.	Thomas		
<b>Fall Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Hold meetings with District Liaisons and all Superintendents to discuss challenging courses and curricula and the full scope of the partnership.	Dominick		
Remind Design Team about forthcoming NSF Management Information System online surveys.	Moose		
Complete NSF Management Information System online surveys.	Design Team		
Call and set agenda for Management Team and Design Team meetings.	Mayer		
Participate in Management Team and Design Team meeting.	Design Team		
Participate in monthly meetings with Center for Educational Accountability (CEA)	Mayer, Cochran		
Participate in monthly meetings with Grants Administrator and Finance Director	Mayer, Moose, Thomas		
Participate in quarterly meetings with engineering team	Lucas, Mayer		
Report to Design Team and Evaluation Team about areas of responsibility (see Ongoing Tasks).	Management Team		
Discuss GBMP courses and course development, engineering tasks, grade-level sessions, MST sessions, administrator sessions, outreach to parents and the community, IHE course development, middle school certification, recruitment of pre-service teachers, project management and any district concerns.	Design Team		
Recruit potential interns for MEC Summer courses.	Management Team		
Keep Management Team and Design Team meeting minutes.	Clark		
Send quarterly report to Evaluation Team.	Clark, Dominick		
Remind IHE faculty to attend MST and/or Grade Level Sessions.	Clark		

<b>3. Partnership-Driven Project Management (continued)</b>		<b>Completed</b>	
<b>Winter Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Attend NSF MSP Learning Network Conference.	Design Team reps		
Begin preparations for annual National Advisory Board meeting.	Clark		
Call and set agenda for Management Team and Design Team meeting.	Mayer		
Encourage IHE to participate in at least two MST and Grade Level Sessions.	Clark		
Participate in Management Team and Design Team meeting.	Design Team		
Participate in monthly meetings with Center for Educational Accountability (CEA)	Mayer, Cochran		
Participate in monthly meetings with Grants Administrator and Finance Director	Mayer, Moose, Thomas		
Participate in quarterly meetings with engineering team	Lucas, Mayer		
Discuss GBMP courses and course development, engineering tasks, grade-level sessions, MST sessions, administrator sessions, outreach to parents and the community, IHE course development, middle school certification, recruitment of pre-service teachers, project management and any district concerns.	Design Team		
Keep Management Team and Design Team meeting minutes.	Clark		
Send quarterly report to Evaluation Team.	Clark, Dominick		
<b>Spring Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Set agenda for National Advisory Board meeting.	Clark, Parker		
Send details about annual meeting, agenda, travel reimbursement to National Advisory Board.	Clark		
Hold annual National Advisory Board meeting.	Clark, Parker		
Call and set agenda for Management Team and Design Team meeting.	Mayer		
Participate in Management Team and Design Team meeting.	Design Team		
Participate in monthly meetings with Center for Educational Accountability (CEA)	Mayer, Cochran		
Participate in monthly meetings with Grants Administrator and Finance Director	Mayer, Moose, Thomas		
Participate in quarterly meetings with engineering team	Lucas, Mayer		
Report to Design Team and Evaluation Team about areas of responsibility (see Ongoing Tasks).	Management Team		
Report to Design Team and Evaluation Team about MSP Learning Network Conference.	Attendees		
Discuss GBMP courses and course development, engineering tasks, grade-level sessions, MST sessions, administrator sessions, outreach to parents and the community, IHE course development, middle school certification, recruitment of pre-service teachers, project management and any district concerns.	Design Team		

<b>3. Partnership-Driven Project Management (continued)</b>		<b>Completed</b>	
<b>Spring Tasks (continued)</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Discuss the year-to-date efforts regarding public relations with the schools and the community, the efforts of the CBAC and NAB, and communication with AMSTEC, AMSTI, and MMI.	Design Team Steering Committee		
Discuss any needed revision to plans for next year based on what has been learned this year.	Design Team		
Keep Management Team and Design Team meeting minutes.	Clark		
Send quarterly report to Evaluation Team.	Clark, Dominick		
Evaluation Team requests any information needed for evaluation report by March 1.	Evaluation Team		
Grants Administrator sends reminder about information needed for annual report by March 1.	Moose		
Management Team sends information for the annual report to the Grants Administrator and Evaluation Team by April 1 including information for the (1) activities and findings report, (2) management report, (3) information requested by Evaluation Team, and (4) annual implementation plan for the upcoming year.	Management Team		
Draft of activities and findings report, management report, and annual implementation plan for upcoming year sent to Management Team and Evaluation Team by April 15.	Mayer		
Management Team responds to draft report (activities, management, implementation) by May 1.	Management Team		
Final draft (activities, management, implementation) sent to Management Team by May 15.	Mayer		
Evaluation Team completes evaluation report by May 1.	Evaluation Team		
Project co-directors and co-investigators discuss the evaluation report, consider any needed actions, and write a response to evaluation report by May 15.	Clark		
Annual report submitted to NSF by June 1.	Moose		
Remind IHE faculty to attend MST and/or Grade Level Sessions.	Clark		
Select interns for MEC Summer courses.	Parker		
<b>Summer Tasks</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Send follow-up communication to National Advisory Board members.	Clark		
Call and set agenda for Management Team and Design Team meeting.	Mayer		
Participate in Management Team and Design Team meeting.	Design Team		
Participate in monthly meetings with Center for Educational Accountability (CEA)	Mayer, Cochran		
Participate in monthly meetings with Grants Administrator and Finance Director	Mayer, Moose, Thomas		

<b>3. Partnership-Driven Project Management (continued)</b>		<b>Completed</b>	
<b>Summer Tasks (continued)</b>	<b>Responsible Party</b>	<b>Yes</b>	<b>No</b>
Participate in quarterly meetings with engineering team	Lucas, Mayer		
Report to Design Team and Evaluation Team about areas of responsibility (see Ongoing Tasks).	Management Team		
Report to Design Team and Evaluation Team about National Advisory Board Meeting.	Clark		
Discuss GBMP courses and course development, engineering tasks, grade-level sessions, MST sessions, administrator sessions, outreach to parents and the community, IHE course development, middle school certification, recruitment of pre-service teachers, project management and any district concerns.	Design Team		
Keep Management Team and Design Team meeting minutes.	Clark		
Send quarterly report to Evaluation Team.	Clark, Dominick		
Remind IHE faculty to attend MST and/or Grade Level Sessions.	Clark		

**Goal IV: To increase the mathematics achievement of all middle school students in GBMP schools and reduce discrepancies in disaggregated mathematics achievement data within these schools**

All of the above activities found under Goals I-III also contribute to Goal IV.

**Key to 5 Key Features:**

C = Challenging Courses and Curricula

E = Evidence-Based Design and Outcomes

I = Institutional Change and Sustainability

P = Partnership-Driven

T = Teacher Quality, Quantity and Diversity

**Note Regarding Assignment of MSP Five Key Features in Matrix:**

Since more than one of the MSP Key Features describe most of the project's activities, the letter representing the key feature deemed most descriptive is listed first followed by the others that are applicable.



**Note Regarding Completed Column:**

At the beginning of the year, the above matrix serves as the Annual Implementation Plan. At the end of the year, the above matrix serves as the Implementation Matrix that will be attached as Exhibit 1 to the Activities and Findings section of the annual report. At the end of the year, for each task, the “Completed” column on the far right side of the matrix will be filled in with a letter according to the legend below.

In the “YES” Column:

“X” indicates task has been completed.

“A” indicates task is on schedule and will be completed by August 31.

In the “NO” column:

“D” indicates the task has been delayed

“R” indicates the task has been revised

“E” indicates the task has been eliminated

“N” indicates a new task has been substituted

An explanation will be given in the narrative for any action that is not carried out as planned.