

Greater Birmingham Mathematics Partnership

(NSF Award # DUE 0632522)

Annual Report Project Year 6*

Sept. 1, 2009 – Aug. 31, 2010

Excerpts: Sections 1, 2 and 5

(*Year 4 under NSF Award # DUE 0632522)

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Section 1: Activities and Findings

Exhibit #1 Annual Implementation Matrix 2009-2010

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

1. Offer GBMP Summer Course (MSP Key Feature: T, P, C)	Completed		
	Responsible Party	Yes	No
Fall Tasks			
Consolidate feedback from past Summer courses and begin planning of next Summer course.	Dominick, Clark	X	
Begin recruitment efforts for Summer course.	District Liaisons, Dominick	X	
Begin processing enrollment information for Summer course.	Liaisons, Dominick	X	
Begin notifying teachers of prospective course offering and date.	Liaisons, Dominick	X	
Spring Tasks			
Finalize planning of Summer course: Date, Time, Location	Dominick	X	
Continue recruitment and publicity efforts.	District Liaisons, Dominick	X	
Continue processing enrollment information for Summer course.	Liaisons, Dominick	X	
Communicate information to teachers about UAB credit for GBMP course.	Liaisons, Dominick	X	
Send information letter to participants about Summer course (and orientation session if needed).	Liaisons, Dominick	X	
Order manipulatives that comprise teacher kits.	Moose	X	
Order professional development books to distribute to teachers (if required).	Moose	X	
Summer Tasks			
Send materials for GBMP course.	MEC	A	
Set-up for GBMP course.	Dominick, Moose	A	
Host GBMP course.	District	A	
Deliver GBMP course.	MEC	A	
Participate in GBMP course.	District Teachers	A	

2. Noyce Master Teachers Program (MSP Key Feature: T, P, C, I)		Completed	
Fall Tasks	Responsible Party	Yes	No
Develop Plan and curricula for twice monthly seminar.	Dominick, Smith, Mullins and Mayer	X	
Teach twice monthly mathematics seminar to be held at UAB (including math coaching seminar).	Smith, Mullins and Mayer	X	
Assure teachers chosen in January 2009 continue to teach targeted grades in Fall 2009.	Moose	X	
Advise teacher participants seeking masters, EdS, and doctoral degrees at UAB.	Mayer, Smith	X	
Manage the provision of program benefits such as monthly stipend and tuition payments.	Moose	X	
Monitor academic progress of those teachers seeking first Masters degree at end of Fall to assure they are making expected progress and continue to be eligible to participate	Mayer, Smith, Moose	X	
Participate in GBMP Evaluation efforts.	Noyce Teachers, Management Team	X	
Spring Tasks	Responsible Party	Yes	No
Develop Plan and curricula for twice monthly seminar.	Dominick, Smith, Mullins and Mayer	X	
Teach twice monthly seminar to be held at UAB.	Smith, Mullins and Mayer	X	
Advise teacher participants seeking masters, Ed.S, and doctoral degrees at UAB.	Mayer, Smith	X	
Manage the provision of program benefits such as monthly stipend and tuition payments.	Moose	X	
Participate in GBMP Evaluation efforts.	Noyce Teachers, Management Team	X	
Summer Tasks	Responsible Party	Yes	No
Enroll and participate in GBMP Summer course (unless already taken).	Noyce Teachers	A	
Advise teacher participants seeking masters, Ed.S, and doctoral degrees at UAB.	Mayer, Smith	A	
Manage the provision of program benefits such as monthly stipend and tuition payments.	Moose	A	
Participate in GBMP Evaluation efforts.	Noyce Teachers, Management Team	A	

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

1. Outreach Activities to the Community (MSP Key Feature: P)		Completed	
Fall Tasks	Responsible Party	Yes	No
Send update letter to individuals and businesses that supported or were asked to support GBMP.	Clark	X	
Continue conversations with AMSTI and MMI.	Dominick, Smith	X	
Continue conversations with AMSTEC and A+ College Ready Program.	Clark	X	
Update GBMP website.	Moose	X	
Update MSPnet.	Moose	X	
Fall Tasks	Responsible Party	Yes	No
Continue conversations with AMSTEC and A+ College Ready Program.	Clark	X	
Continue conversations with AMSTI and MMI.	Dominick	X	
Update GBMP website.	Moose	X	
Update MSPnet.	Moose	X	
Summer Tasks	Responsible Party	Yes	No
Continue conversations with AMSTI and MMI.	Dominick	A	
Continue conversations with AMSTEC and A+ College Ready Program.	Clark	A	
Update GBMP website.	Moose	A	
Update MSPnet.	Moose	A	

2. 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	X	
Oversee the efforts of the Project Co-directors and Project Management Team.	Mayer	X	
Serve as primary contact person for UAB administration and NSF.	Mayer	X	
Serve as primary project director for the summer course following project activities: Summer course, articulation with the Mobile Mathematics Initiative (MMI) and the Alabama Mathematics, Science, and Technology Initiative (AMSTI), and recruitment and public relations with school districts.	Dominick	X	
Serve as primary project director for the following project activities: outreach activities and public relations to the community, coordination of the Management Team, and primary contact for articulation with the Alabama Mathematics, Science, and Technology Education Coalition (AMSTEC) and the A+ College Ready Program.	Clark	X	
Seek appropriate media opportunities for GBMP.	Clark	X	
Hold meetings between Evaluation Team and PI/PDs to discuss all aspects of the research and evaluation plan.	Mgmt Team, Cochran, Fulmore	X	
Participate in budget meetings with Grants Administrator and Finance Director.	Mayer, Moose, White	X	
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	X	
Keep PDs and PI and Evaluation Team informed about IHE efforts.	Mayer, Mullins	X	
Deliver formative evaluation information as warranted.	Cochran, Fulmore	X	
Respond to formative evaluation information when received.	Management Team	X	
Report on research findings at local, regional, and national conferences.	Mgmt, Eval Teams	X	
Submit papers on research findings to journals for possible publication.	Mgmt, Eval Teams	X	
Submit invoices and documentation and any needed reports to Grants Administrator.	BSC, Hoover City Schools	X	
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	X	
Verify invoices for allowability of expenses and availability of funds.	White	X	

Fall Tasks	Responsible Party	Yes	No
Hold meetings with District Staff to update them on state of partnership and project efforts.	Dominick/Clark	X	
Remind Mgmt Team about forthcoming NSF Management Information System online surveys.	Moose	X	
Complete NSF Management Information System online surveys.	Mgmt Team	X	
Winter Tasks	Responsible Party	Yes	No
Attend NSF MSP Learning Network Conference and report about conference to rest of Mgmt Team.	Mgmt Team reps	X	
Spring Tasks	Responsible Party	Yes	No
Discuss the year-to-date efforts regarding public relations with the schools and the community, and communication with AMSTEC, AMSTI, and MMI.	Design Team	X	
Discuss any needed revision to plans for next year based on what has been learned this year.	Design Team	X	
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) information requested by Evaluation Team.	Management Team	X	
Draft of activities and findings report and management report sent to Management Team and Evaluation Team by April 15.	Mayer	X	
Management Team responds to draft report by May 1.	Management Team	X	
Final draft sent to Management Team by May 15.	Mayer	X	
Evaluation Team completes evaluation report by May 1.	Evaluation Team	X	
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	X	
Annual report submitted to NSF by June 1.	Moose	X	
Summer Tasks	Responsible Party	Yes	No
Review summer course implementation.	Mgmt Team	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	M e a s u r e	Benchmark	F e a t u r e	Level of Attainment (check one)						Brief explanation if a goal has not been met
				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)	M E C c o u r s e c o m p l e t i o n	By the end of Year 1, 90 grade 6-8 teachers will have completed one course	T C		X					
		By the end of Year 2, 180 grade 6-8 teachers will have completed one course			X					
		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				218 Grade 6-8 teachers completed one course
		By the end of Year 3, 132 grade 6-8 teachers will have completed two courses			X					
		By the end of Year 4, 274* grade 6-8 teachers will have completed one course (*unless population declines)				X				255 completed one course
		By the end of Year 4, 198 grade 6-8 teachers will have completed two courses				X				
		By the end of Year 5, 274* grade 6-8 teachers will have completed two courses (*unless population declines)				X				280 have completed 1 course, but only 182 have completed 2 courses
		By the end of Year 5, slots will have been provided for an average of three courses per grade 6-8 teacher			X					
		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					
		By the end of Year 5, at least 50 pre-service 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 (continued)	CKTM	80% of participating teachers master 75% or more of the material presented at posttest in each course			X	X				Benchmark met for CKTM-Geometry, not for Patterns where there was a 3-point improvement from pre to post administration, yielding medium effect size of .5.
		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 70% 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					
	Portfolio	After one course, 75% of teachers present evidence of high-quality problem solving in mathematics and thoughtful reflection about classroom practice.			X					
		After two or more courses, 90% of teachers present such evidence.			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 classroom instructional practices (Outcome I-B)	SECT	Among GBMP participants, a 10% improvement in curriculum and pedagogical ratings in the year after initial training	TC		X					Small sample size of repeated surveys
		An additional 5% improvement for each year that the teacher takes a subsequent course			X					Small sample size of repeated surveys
		GBMP participants will show greater improvement than the comparison group							X	No comparison group.
	RTO	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)	D a t a	During Year 1, at least 10 scholarships will be awarded to pre-service teachers to attend MEC courses	T C		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			X					
		By the end of Year 5, a total of 50 scholarships will have been awarded to pre-service teachers			X					
	D a t a	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			X					
		By the end of Year 5, at least 10 additional (total of 30) minority pre-service teachers have completed at least one GBMP course			X					
		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			X					
	D a t a	In Year 3, 5 students will be admitted to the new UAB middle school mathematics certification program				X				Delayed approval of certificate delayed admittance of students
		In Year 4 and Year 5, 5-10 students will be admitted to the program				X				Delayed approval of certificate delayed admittance of students
		30% of applications will be from minority groups			X					
		3 or more of the admitted students will be minority students			X					
		90% retention of students admitted to the teacher education program for the new middle school mathematics certification		X						Retention data not yet available due to delays in admittance of students

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		X					Very small sample
		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			X					Very small sample
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					Some delays on the approval side, but not on the development side
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		X					
		The percentage of middle school certification students placed in grade 6-8 best-practice settings will be 100% in each IHE by Year 5			X					

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					
	Log	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			X					
		By the end of Year 4, at least 75% of MST1's will provide support and technical assistance to colleagues			X					Still gathering data, on target based on samples
		By the end of Year 4, all eligible MST2's will have completed their first year of follow-up			X					
		By the end of Year 5, 50% of MST1's will facilitate sessions with parents				X				
		By the end of Year 5, all eligible MST1's will have completed their fourth year of follow-up			X					
		By the end of Year 5, 75% of MST2's will offer to serve as host teachers for pre-service teachers			X					
		By the end of Year 5, all eligible MST2's will have completed their second year of follow-up			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	
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					Based on small sample of teachers interviewed
		Colleagues will report changes in the nature of curriculum and teaching practices in a manner consistent with program expectation			X					
		Specific beneficial MST behaviors are identified			X					

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	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 the stakeholders' knowledge of mathematics education reform (Outcome III-A)	Focus / Log	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					
		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				X				
	Interview / Survey	Evidence of administrator leadership in promoting mathematics understanding and mathematics education as a school/community priority				X				Evidence of some support, but not much active leadership in promoting GBMP according to participating teachers

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	
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					
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	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 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 some grades
		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				X				Growth of 5% or more in some schools at some grades
		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				X				Growth of 5% or more in some schools at some grades
		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				X				Growth of 5% or more in some schools at some grades
		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				X				Evidence of decreasing gap for some participating grade levels within schools, but not all. Not cut by 1/3.
		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			

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 middle school students' abilities to solve mathematical problems and communicate their solutions in multiple ways (Outcome IV-B)	B a l a n c e d A s s e s s m e n t P r o g r a m	Rubric-based scores improve across time.	E C		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				There have been problems collecting pre-post evidence; sample sizes are too small to make judgments; tasks are reported by teachers to be too difficult for students

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)	Academic	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 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				About 80% meet some; about 35% meet most.
		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				X				About 70% meet some; about 20% meet most.
		For each additional course completed beyond three, an additional 5% of participants will meet most of the CCC criteria				X				
	Participant	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 criteria for CCC			X					Based on observation data for sample of teachers
		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					Based on observation data for sample of teachers
		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				X				High implementation occurring in about 15% of classrooms based on observation data from sample of teachers
		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				X				High implementation occurring in about 15% of classrooms based on observation data from sample of teachers

Narrative

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

Activity 1. MEC Summer Courses

The summer courses have been one of the most successful components of the partnership. In the summer of 2009 (Project Year 5), MEC (Mathematics Education Collaborative) offered four sections of the first nine-day content course, *Patterns: The Foundations for Algebraic Reasoning*, two sections of *Patterns II*, two sections of *Numerical Reasoning*, one section of *Geometry*, one section of *Probability*, one section of *Extending Algebraic Reasoning 1*, and one section of *Extending Algebraic Reasoning 2*. Courses were attended by pre-service teachers, grade 5-12 teachers, mathematics and education faculty members from Birmingham-Southern College (BSC), and mathematics faculty members from the University of Alabama at Birmingham (UAB). Kindergarten through 4th grade teachers also attended courses supported by local funds. To date, 27 university faculty have attended MEC's mathematics content courses alongside K-12 teachers. This has strengthened the work of the Partnership and has helped to bridge the divide between K-12 and IHEs. MEC instructors solicited feedback from all teachers and IHE faculty who attended courses and participant response to the courses continues to be highly positive.

The total number of targeted Year 5 participants (grade 5-12 teachers, pre-service teachers and IHE faculty) in each course is summarized below:

- Patterns: 75
- Patterns II: 57
- Numerical Reasoning: 59
- Geometry: 37
- Probability: 31
- Extending Algebraic Reasoning 1: 29
- Extending Algebraic Reasoning 2: 18

Details about participation by grade level are given in the Goals Matrix.

As planned, GBMP is offering 40 slots in summer courses for teachers in Phase I schools in Summer 2010 and as of late May, a total of 40 Phase I teachers are enrolled (who are supported by GBMP Phase I carryover funds). Local funds from the Malone Family Foundation and other sources are enabling 140 elementary school teachers to participate in summer courses. In addition, 70 slots are funded through GBMP Phase II, 16 slots are funded through the Noyce Master Teachers program (component of Phase I) and 3 slots have been awarded to parents to participate courtesy of MEC scholarships. Total enrollment in GBMP summer courses through all funding sources now stands at 269. This allows the following courses to be offered with a mixture of grade levels in each course (approximately 35-40 participants per course):

- *Patterns I: Foundations for Algebraic Reasoning* four sections
- *Patterns II* one section
- *Numerical Reasoning* one section

- *Geometry and Proportional Reasoning* one section

A summary of enrollment targets is found in the attached Goals Matrix.

Activity 2. Noyce Master Teachers Program

The GBMP Noyce Master Teachers Program retained 100% of participants from the previous year. As reported last year, the 16 participants come from 10 different schools and 4 different school districts. Seven of the participants teach grade 5, four teach grade 6, three teach grade 7, one teaches grade 8 and another teaches grades 6-12 (at an alternative school). Seven of the teachers are exclusively math teachers, the other 9 either teach math and 1 other subject or all subjects (5th grade teachers). Twelve of the teachers have an advanced degree. Fifteen of the 16 teachers are female, and 7 are of minority status. The Master Teachers continue to receive a salary stipend of \$10,000 per year in 12 equal monthly installments.

The Master Teachers continue to participate in twice monthly 2-hour mathematics seminars taught by John Mayer, Bernie Mullins, Tommy Smith, and Ann Dominick. In the fall semester, the seminars focused on logical reasoning, problem solving, fractions and proportional reasoning, and area models involving both whole numbers and variables. The teachers also read and discussed articles on pedagogy.

In the spring semester, the seminars focused on math coaching. Participants read and discussed the majority of the book Cultivating a Math Coaching Practice by Amy Morse. Chapters and discussion involved a variety of issues centered around being a successful math coach including working effectively with administrators, developing productive coaching relationships with teachers, and focusing on specific goals such as the numerical fluency and quality of communication in the classroom. The Master Teachers also gained practical experience through four test coaching experiences with volunteer teachers in their schools. The Master Teachers are not intended to be math coaches as part of the Noyce program since all participants are full-time classroom teachers. However, the intent of the math coaching portion of the seminar is to help equip them to take on such roles if opportunities arise in the future. Although the spring semester focused on math coaching, mathematics content was an integral part of each seminar. In some meetings, the mathematics content arose as part of the chapter in the coaching book. In other meetings, a mathematical task was chosen to complement the coaching aspect.

A homework assignment involving both a reading and a mathematics task was assigned for each seminar. At times, the assignment was to implement a mathematics task in their classroom. Each semester, the participants submitted a portfolio including mathematical tasks, and a reflection on teaching practice or coaching experiences.

Reflective writing comments from participants included the following:

- *The Noyce classes have given me the opportunity to discuss math issues with my peers and access to articles that have changed my ways of teaching. An example is questioning. After reading the article about questioning, at first I made a conscious effort to focus on questioning differently and not leading my students to the answer that I would have*

chosen. After several months I think that my questions have changed and now it is part of my daily practice. I do not have to write down the questions or remind myself in my plans.

- *I've also FINALLY digested that the power of the student communication is so much greater than me baiting them along while working out a problem. I've learned to bite my tongue and let the kids carry the conversation.*
- *Every day I am changing. The way I approach math is in the process of a big transformation.*
- *In my classroom I encourage them [students] to talk about and share their thinking with a partner or the whole group. The problems that I give in class have stated to challenge them and move them up the bloom taxonomy. We are doing a lot more analyzing, evaluating, and synthesizing.*
- *As a teacher of mathematics, I find myself with more confidence because I am able to explain the "why" better than before. At the same time, I have begun to place more and more emphasis on the students communicating their thinking about mathematics. I am still trying to increase my role as a facilitator in the classroom and apply better questioning rather than showing the students my thinking. We are doing more Number Talks in class which the students love (me too).... I see myself definitely changing as a learner and teacher of mathematics which will definitely have an impact on student learning in my classroom.*
- *I have struggled more this fall with the problems and their solutions.... Something beneficial this fall which does support some of the gaps in my thinking are the articles that have been presented in class. The articles related to specific content areas are most helpful in refreshing those weak areas—proportionality, algebra.*
- *I have definitely felt myself grow this semester in my learning of math. This semester challenged me in many ways. Many of the articles we read really made me think deeper about math and the true meaning behind the math. The research pieces were difficult, but they are ones that I got the most out of overall.... Next, I have grown as a teacher of math as well. I have learned new approaches to teach my children proportion and fractions since I now understand them more deeply.*
- *If I am confident in my answer [to the Noyce homework problem] I can not wait to leave school on our class nights. Each week I also share my thinking about our problems with my principal.*

For Summer 2010, all 16 Noyce teachers have registered for at least one GBMP summer course. At this time, 12 Noyce teachers hold a master's degree (one finished her degree with the program's support last summer). The other 4 Noyce teachers are currently enrolled in master's degree programs at UAB. Three are pursuing a master's in Elementary Education and the other a master's in High School Education. One of the three pursuing her degree in Elementary Education is on pace to finish this summer and will have completed her master's in just 6 semesters while teaching full time. In addition to the 4 Noyce teachers pursuing their master's degrees, 2 that already have earned theirs have used the benefits of the program to enroll in more graduate level courses.

Besides the twice monthly seminars, Noyce Master Teachers participated in 7 full days of Mathematics Support Team (MST) professional development this year. These sessions are

designed to help teachers implement inquiry-based instruction in their own classrooms and take on leadership roles such as encouraging the implementation of inquiry-based instruction in their schools, demonstrating number talks for their faculties, presenting parent sessions in their schools, facilitating professional learning communities, hosting pre-service teachers, and serving the school district on textbook adoption and curriculum writing committees. This year, one major focus has been on preparing them to lead professional learning communities. Noyce teachers have already taken on several of the leadership roles listed above and it is anticipated that at least 50% of Noyce teachers will facilitate PLCs in their schools in the 2010-2011 academic year.

In December 2009, at the end of the first full year of Noyce seminars, PI Mayer gave each participant an evaluation of their progress in the program. At this time, teachers were also asked to write a self-evaluation of their efforts to date and their plans for the future. The expectations for Noyce Master Teachers are listed below. At this time, all Noyce teachers are making satisfactory progress in the program.

- Attend and successfully participate in the twice monthly Mathematics Seminar for Master Teachers during the academic year, one 9-day GBMP course each summer, and 6 days of Mathematics Support Team professional development during the academic year, if available.
- Provide annual certification of employment in a high needs school while in the program.
- Participate in GBMP research and evaluation efforts.
- For those who do not already have a master's degree, apply, be accepted, and enroll in the UAB graduate school as a graduate student seeking a master's degree in Education (M.Ed.) with a concentration in mathematics at the earliest available date. Teachers also must make satisfactory progress toward obtaining their degree while in the program and take the Praxis II in middle school mathematics upon completion of the degree. Participants already holding their M.Ed. are encouraged to take courses toward an AA Certification or an Education Specialist degree (Ed.S.), but this is not required.
- Use what they learn in the Noyce Master Teachers Program by making a good faith effort to implement inquiry-based instruction in the classroom, presenting parent sessions, and taking on a leadership role at their school. Such a role may entail facilitating professional learning communities for other teachers, leading number talks, hosting pre-service student teachers, mentoring new teachers, serving the school district on textbook adoption and curriculum writing committees, etc.

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

Activity 1. Outreach Activities to Parents and the Community

The Project Directors sent letters to update local supporters who provided funding for grade K-4 teachers and the Community/Business Advisory Council on the progress and successes of GBMP. They also made a presentation at the culminating conference of the Mobile Mathematics Initiative. In addition, project management has continued to pursue collaboration with the state-funded Alabama Math Science and Technology Initiative (AMSTI) which focuses on training

teachers to use inquiry-based curriculum (*Investigations* and *Connected Math*). This persistence has resulted in nine AMSTI coaches participating in GBMP courses this summer. We are pleased by this development since AMSTI and GBMP are philosophically aligned and quality curriculum, in addition to mathematics content knowledge and pedagogical content knowledge, is essential for GBMP teachers to implement inquiry-based instruction in their classrooms.

Activity 2. Partnership-Driven Project Management

The GBMP Leadership Team continues to work well together and has met all objectives and deadlines. The Leadership Team holds monthly budget meetings as well as monthly research and evaluation meetings in addition to daily communication between meetings. The project directors, co-investigators, and graduate and undergraduate students have disseminated research results at the following conferences:

- 2010 Joint Mathematics Meetings, San Francisco, CA.
- NCTM 2010 Annual Meeting Research Pre-Session, San Diego, CA.
- Research on Undergraduate Mathematics Education, Raleigh, NC.
- Mobile Mathematics Initiative Conference, Mobile, AL.
- TEAM Math Conference, Tuskegee, AL.

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

All of the above activities contribute to Goal IV.

Annual Highlights

During the three pilot years before receiving NSF funding and during the first five years of Phase I, GBMP worked diligently to build relationships with a level of trust that lead to quality collaboration in pursuit of goals related to improved student achievement. Two examples of the results of the long-term cultivation of such relationships are:

1. The Alabama Math Science Technology Initiative (AMSTI) is a natural fit for working with GBMP since AMSTI emphasizes teaching teachers about quality curricula and GBMP emphasizes teachers learning mathematics content and pedagogy. Although collaboration has been minimal in the past, AMSTI trainers at two sites will participate in GBMP summer courses and have requested academic-year professional development from GBMP leadership.
2. GBMP received local funding for the summer courses during the three pilot years and for kindergarten through fourth grade teachers to attend summer courses during the five years of NSF support. The Community Foundation of Greater Birmingham has provided an increased level of funding each year since the pilot phase, the Hugh Kaul Foundation has provided repeated funding, and significant support has come from the Robert R. Meyer Foundation, the Alabama Power Foundation, and the Protective Life Foundation. Last year and this summer, Malone Family Foundation support has approached a quarter million dollars per year. Funders commented that continued support was due to the quality and results of the work.

An important part of our work in Year 6 has been disseminating our research results. Last year, we found that students in settings with a high level of inquiry-based instruction show significantly more growth in student achievement than students in settings with a moderate or low level of implementation. It has been particularly exciting to find that these results have been reinforced with this year's data. We have found numerous national opportunities to share these results with mathematics and education colleagues. In addition, these results have been particularly informative to local potential funders.

At UAB, a quasi-experimental design involving nine sections of Math 110 showed that IHE students in sections with an inquiry-based component show significantly more growth in problem solving and communication than students in the same course without an inquiry-based component. After a presentation at the NCTM pre-session, a written response by one person in attendance commented on the robust research design.

The summer courses were immediately oversubscribed with well over 100 teachers on the waiting list. As a result, additional local funds were secured to open an additional course. Still, many elementary teachers had to be turned away. Teachers repeatedly comment that these courses are the best professional development they have encountered in their career.

Two GBMP Noyce Master Teachers and one Phase 1 (and Phase II) MST were recognized for excellence this year through prestigious awards. Mindy Hermecz was named the Outstanding Master's Student in Elementary Education by the School of Education at the University of Alabama at Birmingham. Pam Davis received the Teacher of the Year award for Jefferson County Schools, a district of 35,000 students. Dilhani Uswatte was granted a Milken Award. A press release noted:

Uswatte became involved in the Greater Birmingham Mathematics Partnership (GBMP), a collaborative effort between UAB, Birmingham-Southern College, and area school districts that provides professional development programs for middle-school math teachers and studies the impact of those programs. "The GBMP courses dramatically impacted the way I teach," Uswatte says. "While I was already inclined to the 'constructivist' approach, which aims at understanding rather than memorization, it was the wonderful leaders at GBMP who were models of that kind of teaching and who helped solidify my thinking."

Section 2: Management Report

In Year 6, the GBMP leadership structure remained intact. Both the number and effort of participating IHE personnel were greatly reduced as the Non-Noyce portion of the project budget dropped to about 10% of its 2008-2009 level. The following STEM and education personnel contributed to the ongoing GBMP Phase I effort which includes offering a GBMP summer course, continued evaluation, research, and dissemination efforts, and the Noyce Master Teachers Program:

- John Mayer, PI
- Faye Clark, Project Co-Director
- Ann Dominick, Project Co-Director
- Bernie Mullins, Co-PI, BSC
- Tommy Smith, UAB
- Rachel Cochran, Center for Educational Accountability
- Jason Fulmore, Center for Educational Accountability
- Fanchon Muhammad, Bessemer City Schools
- Barbara McCambry, Fairfield City Schools
- Ron Dodson, Hoover City Schools
- Patrick Chappel, Homewood City Schools
- Karen Delano, Vestavia Hills City Schools
- Pat Hodge, Trussville City Schools
- Lisa Beckham, Mountain Brook City Schools
- Karen Gray, Jefferson County Schools
- Lewis Brooks, Shelby County Schools

No key personnel were added and all of the Engineering faculty including Co-PI Dale Feldman, most of the Education faculty, and most of the Mathematics faculty that had contributed effort on the project in prior years concluded their effort by August 2009. The subaward to Mathematics Education Collaborative, Inc., led by Co-PI Ruth Parker, ended as well, as did Parker's budgeted effort on the project. Despite the lack of project funding however, Co-PI Parker continued to support the project by contributing her expertise and counsel whenever asked by leadership. While Design Team Meetings generally did not involve school district liaisons this year, project leadership still communicated and consulted with partner district representatives as project decisions were made by the leadership team.

Section 5: Annual Implementation Plan 2010-2011

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

1. Noyce Master Teachers Program (MSP Key Feature: T, P, C, I)		Completed	
Fall Tasks	Responsible Party	Yes	No
Develop Plan and curricula for twice monthly seminar.	Mayer, Mullins, Smith		
Teach twice monthly mathematics seminar to be held at UAB.	Mayer, Mullins, Smith		
Assure all Noyce Master teachers continue to teach targeted grades in Fall 2010.	Moose		
Advise teacher participants seeking masters, EdS, and doctoral degrees at UAB.	Mayer, Smith		
Manage the provision of program benefits such as monthly stipend and tuition payments.	Moose		
Monitor academic progress of those teachers seeking first Masters degree at end of Fall to assure they are making expected progress and continue to be eligible to participate.	Mayer, Smith, Moose		
Participate in GBMP Evaluation efforts.	Noyce Teachers, Management Team		
Spring Tasks	Responsible Party	Yes	No
Develop Plan and curricula for twice monthly seminar.	Mayer, Mullins, Smith		
Teach twice monthly seminar to be held at UAB.	Mayer, Mullins, Smith		
Advise teacher participants seeking masters, Ed.S, and doctoral degrees at UAB.	Mayer, Smith		
Manage the provision of program benefits such as monthly stipend and tuition payments.	Moose		
Participate in GBMP Evaluation efforts.	Noyce Teachers, Management Team		
Summer Tasks	Responsible Party	Yes	No
Enroll and participate in GBMP Summer course (unless already taken)	Noyce Teachers		
Advise teacher participants seeking masters, Ed.S, and doctoral degrees at UAB.	Mayer, Smith		
Manage the provision of program benefits such as monthly stipend and tuition payments.	Moose		
Participate in GBMP Evaluation efforts	Noyce Teachers, Management Team		

2. IHE Course Redesign and Development (MSP Key Feature: I, P, T, C)		Completed	
Fall Tasks	Responsible Party	Yes	No
Implement comparison test of three plans for MA 098 class meetings.	Mayer, Stansell		
Offer Mathematical Reasoning track courses at UAB in regular course rotation.	Mayer		
Reflect on key aspects of challenging courses and curricula in preparation for continuing development and revision of courses.	IHE faculty		
Continue design of MA 411 <i>Integrating Mathematics Ideas: Algebra, Geometry, Probability, and Statistics</i> .	Mayer		
Analyze results of MA 098 study.	Mayer, Cochran, Fulmore		
2. IHE Course Redesign and Development (continued)		Completed	
Spring Tasks	Responsible Party	Yes	No
Offer Mathematical Reasoning track courses at UAB in regular course rotation.	Mayer		
Offer redesigned MA 098 <i>Basic Algebra</i> following UAB Quality Enhancement Plan, and results of Fall test of three plans.	Mayer, Stansell		
Offer new course MA 411.	Mayer		
Disseminate results of MA 098 study at Joint Meeting and/or CRUME.	Mayer		

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 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.