Session Title:
Greater Birmingham Mathematics Partnership – Change in Response to Realities

MSP Project Name:
Greater Birmingham Mathematics Partnership – Phase II Research

Presenters:
Rachel Cochran, UAB-CEA
Jason Fulmore, UAB-CEA
John Mayer, UAB-Math
Linda Ramsey, Evaluator
Ann Dominick, UAB-Education

Authors:
John Mayer, UAB-Math (Lead)
Rachel Cochran, UAB-CEA
Jason Fulmore, UAB-CEA
Ann Dominick, UAB-Education

Project Session

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Summary:
At several points toward the conclusion of Phase I and during Phase II, the Greater Birmingham Mathematics Partnership (GBMP) had to re-evaluate its implementation strategy in the light of observational data on implementation of inquiry-based learning (IBL) by teachers in the classroom. Without this observational data, self-evaluation by teachers of the extent of their implementing IBL methods would have been misleading. Professional Learning Communities (PLCs) were introduced at the end of Phase I, and formed a significant part of the intervention in Phase II, based upon observed and reported difficulties with teachers implementing. Again, based upon observation of PLCs and classroom implementation, PLC meetings were more highly structured and a modest amount of classroom coaching was introduced. There were measurable changes in teacher behavior, but not at the level predicted. The GBMP Theory of Action was confirmed as a set of necessary conditions for changing teacher behavior, but not as a set of sufficient conditions.

Section 1: Questions framing the session:
Our main research question in Phase I was “What does it take to move a teacher toward implementation of inquiry-based learning (IBL)?” The main (hypothetical) causal connection in our Theory of Action for Phase I was: if teachers are exposed to intensive, inquiry-based mathematics content courses as learners, then they will change their beliefs about themselves as learners, and change their belief about how they would want their students to be taught. Other factors included administrator sessions (focused on what it is
like to do mathematics) and (very successful) community math nights to get parents on board.

In Phase II, with stronger whole-school commitments, and PLCs in place or planned to start after the first round of summer courses, the main research question was “What does it take to move most teachers in an entire school toward implementation of inquiry-based learning?” Our Theory of Action included three chief prongs: intensive summer content courses modeling IBL, school-based PLCs, and school year sessions with teacher leaders who would facilitate the PLCs, with the expected outcome that most teachers would move toward effective implementation of IBL. Community math nights and administrator sessions (with more emphasis on what to look for in observing IBL teaching) continued as factors.

Throughout, an operational question of increasing importance became “What level of observational data about classrooms is necessary to understand change in teacher instructional behavior (or lack thereof)?”

Section 2: Conceptual framework:
Our presentation relates to “Evaluation, Research and Implementation: The Feedback Loop,” particularly the question “How did the vision and/or implementation plan change as a result of research findings?” In GBMP, a close connection existed between the researchers and implementers of the proposed intervention, a relationship established in Phase I and strengthened in Phase II.

In Phase I, observational, as well as survey and student achievement data, showed that if teachers did improve implementation, students performed significantly better, but there were obstacles to IBL implementation that we were not effectively addressing. The chief obstacle to wide-spread implementation appeared to be the belief among many teachers that while IBL was the best way to teach students, they did not know how to do it themselves, nor was there sufficient in-school support. Our responses, sequentially, were (1) more school-year follow-up sessions with teacher leaders beginning in the second year, with more explicit emphasis on implementation methods, and (2) instituting professional learning communities in several schools at the end of the fourth and in the fifth year. We were encouraged enough by the results to modify our theory of action in Phase II.

In Phase II, as initial research findings indicated impending failure in the main objective of Phase II, we were able to make significant changes in the intervention in response to this information. An important finding was that in comparing observational data to teacher self-reporting, we found little or no correlation between observers’ evaluation of time spent on various IBL activities and teacher self-reported evaluation. Our hypothesis was that teachers thought they were implementing IBL at a higher level than observation bore out, not that they were deliberately over-estimating their efforts. We had begun Phase II with each PLC choosing a particular approach and format in an effort to implement published research findings that teachers needed to have ownership of the PLC. Observation of PLCs indicated a wide variation in effectiveness, with most being
rather ineffective. Our response was to adopt a more uniform PLC approach across all schools, a system of rehearsing PLC facilitation with teacher leaders before each PLC meeting, and a modest amount of coaching of individual teachers in some schools. Observation confirmed that this level of direction was effective in raising the level of PLC involvement.

Section 3: Explanatory framework:
Of the lessons learned in the latter part of Phase I and throughout Phase II, several items stand out:

1. It is of vital importance to have frequent exchanges between researchers and implementers in making mid-course corrections to implementation and to data-gathering.
2. Self-reporting and survey data is no substitute for observational classroom data (though it can inform one’s understanding).
3. Change in teacher instructional behavior is slow for most teachers, and the identification of an emerging level of change is necessary, and possible, through observation and coaching.
4. Teachers need the opportunity to observe IBL in action in order to potentiate change.
5. There are many necessary conditions to enabling major changes in teacher behavior, but it is still unclear what is sufficient, and to what extent sufficiency depends upon local conditions.

Section 4: Discussion:
Closing the feedback loop is important to all MSPs. In the case of GBMP, we had to make changes midcourse more than once over Phases I and II. If we had not had a highly interactive partnership, we would not have made changes in a timely fashion. The importance of a strong, interactive partnership, and a close connection between implementation and research efforts cannot be underestimated. We hope to “warn” other partnerships.

Section 5: How will you structure this session? What is your plan for participant interaction?
We will focus the session mostly toward those responsible for the management and (re)direction of efforts. We will describe scenarios that we faced, and reactions that we considered, to which participants will be invited to suggest responses. (Co-)PIs and Project Directors often have to balance competing voices in moving partnerships toward consensus decision-making, not to mention stay within budget. Research data and preliminary analysis can positively influence these decisions. We will structure information provided with the scenarios so that suggestions for (re-)direction may be evidence-based.