THE BERC GROUP

Microsoft Math Partnership (MMP)
Year 2

BAKER ▪ EVALUATION ▪ RESEARCH ▪ CONSULTING

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Powerful Teaching and Learning in MMP Classrooms

Incorporated into Powerful Teaching and Learning™ is an emphasis on student engagement and teacher support. Structured drills alone are not effective if the goal is to move students toward higher, analytic ways of thinking. Researchers suggest that "to know" something does not simply mean a student receives the knowledge; it means that the student is able to interpret it and relate it to other knowledge. It is the integration of skill efficiency and conceptual understanding (Hiebert & Grouws, 2008).

The STAR Classroom Observation Protocol™ is a research-based instrument designed to measure the degree to which Powerful Teaching and Learning™ is present during a classroom observation. The STAR Protocol helps participants view Powerful Teaching and Learning™ through the lens of 5 Essential Components (*Skills, Knowledge, Thinking, Application, Relationships*) and 15 Indicators.

As part of the program evaluation for the Microsoft Math Partnership (MMP), two researchers from The BERC Group conducted classroom observations at all of the MMP-funded schools from March to June of 2009. In all, the researchers observed 102 classroom lessons for approximately 25 minutes. Each lesson is given an overall score (not at all, very little, somewhat, or very) and each Essential Component and Indicator is given a score from 0 to 4, with 0 being '*not observable*' and 4 being '*clearly observable*'. These results were compared to results from Year 1 of the initiative. Results for the Essential Components and the Overall Component are displayed in Table 1.

In addition to collecting observation data, the research team also gathered perception data during interviews and focus groups. In Year 2 of the initiative, MMP coaches demonstrated more awareness and confidence in their role of improving instruction. A teacher provided evidence of this shift in coach role by stating,

> "I thought from last year that the coach was just a second teacher working with the kids, but this year it is more focused on how I am as a teacher and what I can improve on."
>
> ~ Teacher

MMP coaches and school administrators are becoming more intentional about their efforts to deprivatize classrooms and encourage teacher dialogue around teaching and learning occurring in their classrooms. To further this process, coaches and administrators are thinking of creative ways to support teachers in trying new instructional approaches in their classrooms. One coach described this stating,

> "We started something this year where I would go and sub for a teacher so they could observe another math teacher. That was an extremely powerful thing that happened. …What started to happen is that they started to have conversations about instruction."
>
> ~ Coach

On the Overall Component of the STAR Classroom Observation Protocol™, the majority of scores for MMP schools fell in the *Very Little* to *Somewhat* range. This was similar to the Year 1 results and to the STAR average for middle school math in Washington State. One noticeable difference between the Year 1 and Year 2 results was a significant decrease in the percentage of lessons scoring in the *Not at All* range.

The first Essential Component of the STAR Protocol, *Skills*, measures whether students were actively reading, writing,

and/or communicating during a lesson. In Year 1 and Year 2, the majority of scores on this component fell at or above a 3, indicating that students in most of the classrooms were practicing skills during their lessons.

The second Essential Component, *Knowledge*, measures whether students demonstrate conceptual understanding during a lesson. In roughly half of the classrooms, engaging discussions around relevant topics improved scores substantially on this component. However, in-depth discussions among students were relatively rare in most classrooms.

The third Essential Component, *Thinking*, measures whether students demonstrate metacognition and/or reflection during a lesson. This component continues to be one of the weakest for the MMP schools. In many classes, students were rarely given time to reflect on their own learning, and many teachers did not encourage thinking by asking open-ended questions. In classes scoring 3 or higher, teachers asked students to explain their thinking or to provide extended answers to questions.

The fourth Essential Component, *Application*, measures whether students extend their learning into relevant contexts. Like *Thinking*, this component was one of the weakest for MMP schools. There were few instances of teachers and students relating disciplinary knowledge to other subject areas, to personal experiences, or to contexts outside the classroom. If lessons incorporated *Application,* it was typically seen within the context of story problems, which were not always well developed or discussed.

The fifth Essential Component, *Relationships,* measures whether the interpersonal interactions in the classroom reflect a supportive learning environment. The majority of classroom lessons for Year 1 and Year 2 scored at or above a 3 on this component, indicating strong and supportive interactions between students and teachers. However, in many cases, lessons lacked sufficient challenge. Additionally, students only occasionally collaborated with one another to share knowledge or to work on projects.

District and school administrators must work together to support teachers in providing a rigorous and engaging instructional experience for all students. In Year 2, STAR results reveal that the focus on teaching and learning needs to continue within all of the schools. Classroom lessons are too often teacher-centered. While the majority of lessons focus on specific math skills, few are challenging students to gain conceptual knowledge of math. More emphasis on teacher questioning strategies and students being provided with opportunities to explain their thinking and reflect on their learning are needed. Additionally, classroom lessons show little evidence of making the learning relevant to students.

Reference:
Heibert, J., & Grouws, D. A. (2008). *Conceptual teaching for the development of skill and conceptual understanding of number: What is the most effective?* Reston, VA: National Council of Teachers of Mathematics. Available at: http://www.nctm.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=8448.

Table 1.
MMP STAR Protocol Results - Year 2 compared to (Year 1)

Essential Components Results	***0 Not Observable***	***1***	***2***	***3***	***4 Clearly Observable***
SKILLS: Did students actively read, write, and/or communicate?	1% (0%)	3% (6%)	19% (25%)	42% (39%)	35% (30%)
KNOWLEDGE: Did students demonstrate depth of conceptual knowledge?	1% (0%)	19% (17%)	30% (34%)	31% (32%)	19% (18%)
THINKING: Did students demonstrate thinking through reflection and/or metacognition?	4% (3%)	26% (30%)	33% (30%)	25% (27%)	12% (7%)
APPLICATION: Did students extend their learning into relevant contexts?	45% (32%)	22% (26%)	21% (24%)	8% (10%)	5% (8%)
RELATIONSHIPS: Do interpersonal interactions reflect a supportive learning environment?	0% (0%)	4% (4%)	30% (30%)	37% (40%)	28% (26%)
Overall Component Results		***Not at all***	***Very little***	***Somewhat***	***Very***
OVERALL: How well was this lesson aligned with Powerful Teaching and Learning?		5% (11%)	45% (35%)	33% (36%)	17% (18%)

Note. Refer to the Year Two Evaluation Report for additional information and recommendations around the STAR Protocol.