

## The Impact of Studying Skillful Teaching 1 (SST1) on Algebra 1 Classroom Practices

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### SST1 Background

Studying Skillful Teaching 1 (SST1) is a 36-hour course based on the framework of instructional parameters (i.e., management, instructional strategies, motivation, and curriculum planning) and a foundation of essential beliefs about student learning presented in *The Skillful Teacher* (Saphier and Gower, 1997). The course was designed by Research for Better Teaching and modified for the Montgomery County Public Schools (MCPS) to support MCPS professional development efforts.

The first SST course was delivered in MCPS in summer 2000, as a requirement for staff development teachers. In 2003–2004, a course designed specifically for algebra teachers was added. Participation in SST1 is not mandatory for classroom teachers, but is highly recommended because of its alignment with the teacher evaluation component of the Professional Growth System (PGS). In spring 2005, the PGS Implementation Team determined that completion of SST1 in the first five years of MCPS employment would be expected for teachers new to MCPS starting in July 2005. SST1 is required for staff development teachers and central services instructional specialists, so they can assist teachers with making systemwide initiative connections to the PGS standards. Since its introduction in 2000, approximately 3,500 MCPS teachers have taken SST1.

The purpose of this brief is to determine the impact of the SST1 course on classroom practices. If it is determined that classroom practices of teachers who have taken SST1 differ from practices of teachers who have not taken SST1, then student outcome data for the Algebra High School Assessment (HSA) also will be analyzed.

### Methods

Department of Shared Accountability (DSA) staff observed 39 Algebra 1 teachers (22 who had taken SST1 and 17 who had not taken SST1) in 20 middle and high schools for approximately 45 minutes each

during November 2005. Each teacher was observed “blind,” without the observer knowing who had taken SST1.

Following the observations, the literal<sup>1</sup> notes were analyzed using the following components of the SST framework:

- Routines and momentum
- Cognitive empathy
- Big picture
- Expectations
- Attention
- Personal relationship building and class climate

The analysis also determined whether the teacher presented a lesson that addressed a mastery objective.

Following each observation, DSA staff conducted a brief interview to ascertain teachers’ perceptions about the impact of the SST1 course on their classroom practices or the reasons why they had not taken SST1. Since the observers did not know ahead of time whether a teacher had taken SST1, they brought two sets of questions to the interviews.

### Summary of Findings

Teachers who had taken SST1 were observed more frequently teaching a mastery lesson than teachers who had not taken SST1. Among the teachers who had taken SST1, there was a relationship between those who taught a mastery lesson and which SST1 course they took. Teachers who took the SST1 course designed specifically for algebra teachers were most likely to teach a mastery lesson.

All teachers used a comparable number of instructional strategies from most of the domains targeted by SST1. Teachers who had not taken SST1 used a greater variety of strategies from the cognitive

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<sup>1</sup>Literal notes are a method of recording classroom and teacher activities during an observed lesson. Principals use literal notes in conducting their evaluative observations of teachers.

empathy and personal relationship building domains. However, teachers who took SST1 were stronger in delivering some of the strategies considered critical in teaching a mastery lesson, such as asking comprehension questions and communicating the lesson's objective. Additionally, teachers who had taken SST1 were less likely to miss opportunities to positively impact student learning than teachers who had not taken SST1.

The majority of teachers who had taken SST1 reported positive impacts on their teaching and classroom management strategies, as well as their participation in their schools' professional learning community (PLC). Those who reported no impact felt that the strategies taught in SST1 were repetitive to what they encountered in their master's or undergraduate programs.

Teachers who had not taken SST1 cited scheduling conflicts and time constraints as reasons they have not enrolled in the course. Several expressed no interest in the course, believing it to be repetitive of other professional development or preservice education experiences.

## Discussion of Findings

### *Teaching A Mastery Lesson*

A major goal of SST1 is for teachers to plan and deliver lessons that address mastery objectives, which focus on student learning and clearly communicate what a student should know and be able to do at the end of the lesson. The teacher who teaches to mastery has determined how to assess whether students have achieved the mastery objective and will include (in the lesson or follow-up assessment activities) a great deal of checking to see what students know, perceive, or can do (Saphier and Gower, 1997).

Teachers who had taken SST1 were more likely to teach a mastery lesson than teachers who had not taken SST1. Half (50%) of the teachers who had taken SST1 taught a mastery lesson when observed, compared with less than half (41%) of the teachers who had not taken SST1 and taught a mastery lesson. A majority of those observed teaching a mastery lesson had taken SST1 in 2003–2004 (7 of the 11 teachers who taught a mastery lesson), with nearly half (5 of 11 teachers) having taken the SST1 course designed specifically for algebra teachers. Only one of the four teachers who had taken the SST1 course that was mandated for some teachers in 2002–2003 taught a mastery lesson. Of those that did not teach a mastery lesson, only one teacher had taken the SST1

course designed for algebra teachers. Most of the teachers who did not teach a mastery lesson took the SST1 course offered in 2004–2005 or the 2002–2003 mandated course (Table 1). Multiple factors may have contributed to this finding, including the number of years of practice needed for a skill to become part of a teachers' repertoire or other factors influencing those who took the mandated course. Additional studies would be needed to determine what factors are influencing the practices of teachers with varying years of experience implementing these skills.

Table 1  
Number of Teachers Who Taught Mastery and Non-Mastery Lessons, by Year Enrolled In SST1

Year of Enrollment in SST1	Teachers	
	Teachers that Taught a Mastery Lesson N=11	that Taught a Non-Mastery Lesson N=11
2001–2002	0	1
2002–2003	1	2
2002–2003 Mandated	1	3
2003–2004	2	1
2003–2004 Algebra	5	1
2004–2005	0	3
Other*	2	0

\* Teachers took Observing and Analyzing Teaching 1 and 2.

Although all observed teachers used the same number of “big picture” strategies, there were differences in the choice of strategies employed. Teachers were relatively equally likely to share the lesson's itinerary with students (59% of teachers who had taken SST1 and 65% of teachers who had not taken SST1). However, teachers who had taken SST1 also were more likely to communicate the lesson's objective than were teachers who had not taken SST1 (68% and 52%, respectively). Communicating the lesson's objective, and not just the procedures, is an integral part of teaching a mastery lesson.

The observed questioning strategies for teachers who had taken SST1 were of a higher order than the questioning strategies of teachers who had not taken SST1. More than half (53%) of the questions asked by teachers who had taken SST1 were comprehension questions, while fewer than one third (31%) of the questions asked by teachers who had not taken SST1 were comprehension questions. High quality comprehension questions contributed to

teaching a mastery lesson and were one method teachers used to check for student understanding.

### *Components of the SST1 Framework*

The observation notes were analyzed to determine the variety of strategies used from each of the following domains of the SST1 framework:

- Routines and momentum—behaviors that a teacher uses to maintain the pace and flow of a lesson.
- Cognitive empathy—instructional strategies for helping teachers understand what students do not grasp and why, and providing appropriate clarification for students.
- Big picture—instructional strategies that help define the context of what students are learning (e.g., providing an itinerary, communicating the reason for the lesson, making connections between current lessons and previous or subsequent lessons).
- Expectations—key messages teachers communicate about students’ performance.
- Attention—methods teachers use to keep students on task.
- Personal relationship building and class climate—ways in which teachers relate to students (and students relate to one another) that influence the climate of the learning environment (Saphier and Gower, 1997).

All observed teachers used a similar number of strategies from most of the SST1 domains, with teachers who had not taken SST1 using a greater variety of strategies from the cognitive empathy and personal relationship building domains than teachers who had taken SST1 (Table 2). However, as discussed in the previous section, teachers who had taken SST1 used some key strategies more frequently within several of the domains that are associated with mastery lessons, than teachers who had not taken SST1.

The observed teachers used an equal variety of strategies to convey expectations, and the majority of them communicated key messages (“this is important; you can do this; I won’t give up on you”) to their students (81% of teachers who had taken SST1 and 76% of teachers who had not taken SST1).

By design, SST1 strategies may be infused into teachers’ repertoires from a variety of sources besides actual course enrollment. For example, Staff Development Teachers, instructional leaders, and central services instructional specialists bring skills from SST1 and Observing and Analyzing Teaching into their interactions and professional development activities with teachers. Therefore, even teachers who have not taken SST1 are exposed to the strategies to varying degrees.

Table 2  
Mean Number of Strategies Used by  
Observed Teachers by Enrollment in SST1

Type of Strategy	SST1 Teachers N=22	Non-SST1 Teachers N=17	All Observed Teachers
Routines and Momentum	2.4	2.5	2.4
Cognitive Empathy	4.0	4.8	4.3
Big Picture	2.0	2.0	2.0
Expectations	1.8	1.8	1.8
Attention	1.5	1.4	1.5
Personal Relationship Building/Class Climate	3.6	4.9	4.2

### *Missed Opportunities*

The analysis also included a determination of teachers’ “missed opportunities” in implementing the behaviors contained in the SST1 framework in a way that positively contributed to student learning. For example, a missed opportunity to provide cognitive empathy by checking for understanding can result in students remaining confused about a concept while the teacher moves on with the lesson. A missed opportunity to call on students equitably communicates negative expectations about the importance of students’ input to a classroom discussion.

Teachers who had taken SST1 were less likely to miss opportunities that positively impact student learning. Teachers who had taken SST1 committed a mean of 2.5 missed opportunities per observed lesson, compared with 7.1 missed opportunities by teachers who had not taken SST1. Across all 39 observed lessons, teachers who had taken SST1 committed less than one third (31%) of the missed opportunities, while teachers who had not taken SST1 committed more than two thirds (69%) of the missed opportunities (Table 3).

Table 3  
 Number and Percent of Missed Opportunities and  
 Mean Number of Missed Opportunities per Lesson  
 by SST1 Enrollment

	SST1 Teachers N=22	Non-SST1 Teachers N=17	All Observed Teachers
Mean Missed Opportunities per Lesson	2.5	7.1	4.6
Total Missed Opportunities	53	120	173
% of Missed Opportunities	31%	69%	N/A

### Teachers' Perceptions of SST1

Following the observations, the teachers who had taken SST1 were asked what impact the course has had on their teaching and classroom management practices. Of the 22 teachers who had taken SST1, 18 (82%) indicated that the effect had been positive. These teachers mentioned an increase of reflection, both on their own teaching and as an instructional strategy with their students. They also felt the impact of conveying key messages to students by sharing the purpose of a lesson with students, checking for students' understanding before simply moving forward, and calling on a variety of students. Those who indicated no impact on their teaching felt that the strategies learned in SST1 were repetitive of strategies they learned elsewhere, such as in their graduate program.

Fourteen (64%) of the teachers who had taken SST1 also indicated a positive impact on their participation in their school's PLC. According to one observed teacher, "I do more research and more sharing with colleagues. SST gives me ideas for my presentations." Another teacher shared similar sentiments by saying, "I can give resources and strategies for teachers to use, just as the SST instructors gave them to me." Those who did not report a positive impact either had a negative experience in SST1 or were in a school with a strong PLC prior to their taking SST1.

### Reasons for not taking SST

Ten (59%) of the teachers who had not taken SST1 expressed interest in taking the course. Typically, their reasons for not enrolling were due to time constraints from family obligations; other coursework, such as a master's program; or feeling overwhelmed by teaching and other school-related activities, such as coaching or sponsoring after-school activities. Seven (41%) of the teachers who had not taken SST1 expressed no interest in enrolling in the course. They also reported time constraints, as well as comparable exposure to the SST1 strategies from their recent master's or undergraduate program.

### Recommendations

- **Continue to offer SST1 courses that target specific subject areas or grade level teachers.** Several teachers who took the SST1 course designed for algebra teachers commented that it was helpful to be with others who teach the same content at the same grade level. These teachers also were more frequently observed teaching a mastery lesson. Alternatively, some teachers who had not taken the algebra-specific course felt the course they took was too generic because it targeted a wider audience.
- **Investigate alternative schedules and locations for offering SST1 to meet the needs of teachers whose schedules do not allow the flexibility to attend the course as it is currently offered.** A majority of the observed teachers who have not taken SST1 expressed an interest, but cited scheduling conflicts as the major reason for not enrolling.

### Reference

Saphier, J., and R. Gower. (1997). *The Skillful Teacher: Building Your Teaching Skills*. Acton, MA: Research for Better Teaching.

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