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Readiness for reform in middle schools
adopting PowerTeaching for mathematics instruction

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Abstract

Federal policy makers and school leaders increasingly recognize middle school math as a turning point in students' academic success, especially in predicting high school graduation rates. New i3 scale-up grants allow large-scale implementation of proven reforms that increase student achievement. PowerTeaching (PT) is one such reform that centers on cooperative learning. A five year technologically-facilitated scale-up of PowerTeaching will bring the reform to 185 high-needs middle schools nationwide. In this pilot phase of the project, we will examine eight schools' readiness for reform. Teacher questionnaires, interviews with school leaders, PT coaches and teachers, coaching feedback, and walk-through observation data will be used to determine school characteristics that impacted the initial implementation of the PT model and promote formative evaluation efforts.

Descriptors (3)

Educational change, school improvement programs – evaluation, pilot projects

Readiness for Reform

In 2011, only about one out of every three eighth graders across the United States demonstrated proficiency in mathematics, according to the National Assessment for Educational Progress (NAEP) assessment. Although this actually represents an improvement in average scores compared to prior years, the large number of students who are not “proficient” (65%) and who have not even achieved “basic” knowledge of mathematics (27%) is unsettling (National Center for Education Statistics, 2011). New bills in the United States House and Senate address this issue and would provide funding to states and districts that have low high school graduation rates and attendance or achievement problems at the middle school level. Twice now the proposed law has stalled in committee (*Success in Middle*, 2012a, *Success in Middle*, 2012b). To make matters worse, math performance has been shown to be an important predictor of future success whether in college or the workforce. Economically speaking, poor math skills have significant societal consequences (Bynner & Parsons, 2001; Rivera-Batiz, 1992; Schoon et al., 2002).

Background

Policymakers and school leaders both recognize middle school math as a turning point in students’ academic success, particularly in predicting high school graduation rates. By the time students reach high school, principals acknowledge that there is little they can do to alter the students’ data. Earlier middle school math success leads to later academic success and is an important contributing factor to future learning (House & Telese, 2008; Rowan-Kenyon, Swan, & Creager, 2012). Organizations like the National Center for Dropout Prevention, What Works

Clearinghouse, and America's Promise Alliance unanimously recommend engaging middle school students for success in middle school in order to secure their future endeavors.

Low middle-school math performance has been problematic for more than a decade (Beaton et al., 1996). Middle-school years are crucial in determining whether or not students will graduate from high school, continue post-secondary education or trade training, and in some way become productive members of society (Cleary & Chen, 2009; Ramdass & Zimmerman, 2008; Rowan-Kenyon et al., 2012; Slavin, Lake, & Groff, 2009). Eighth grade NAEP scores in 2011, although showing slight improvement over 2009, show the magnitude of the current problem – that one out of four students lacks even basic math skills (National Center for Education Statistics, 2012). When students' math skills and performance improve, the benefits are not only confined to better grades in math. Affective, social, and self-regulatory skills are shown to progress alongside middle school math improvements (Ramdass & Zimmerman, 2008; Rowan-Kenyon et al., 2012; Slavin & Karweit, 1984; Slavin, Madden, & Leavey, 1984). The link between middle school math and overall academic success and future performance is not unique to the U.S. school system. Researchers in other countries have recognized intermediate level math as an indicator in their countries also (Chiu & Klassen, 2010; Eklöf, 2007; Otto, Perels, & Schmitz, 2008; Perels, Dignath, & Schmitz, 2009).

Poor middle-school math performance is a persistent concern and clearly worth addressing by reform efforts. School reform, however, remains an almost infinitely complex subject. Institutionally and administratively the task of reform is influenced by countless factors, state and national policy among them, and all this before the characteristics and experiences of students are taken in to account. One frustrating issue with school reform has been a lack of long-term funding sources to help research-based reforms gain broader use (Elmore, 2004;

Nunnery, 1998; Slavin, 2008). Recently, the U.S. government created a new series of grant opportunities to encourage school reform efforts at different stages of use. The Investing in Innovation (i3) grant program awards federal funds to worthwhile projects in development, validation, or scale-up stages. The i3 scale-up grants fund large-scale implementation of innovative reforms that are research-proven – ones that have proven positive effects on student achievement.

One such middle school math reform is PowerTeaching, a technologically enhanced form of Student Teams-Achievement Divisions (STAD) math, both developed by the Success for All Foundation. A recent meta-analysis showed that STAD math and its emphasis on student team learning (Figure 1) had a positive effect on secondary students’ math achievement ($d = +0.34$) (Nunnery & Chappell, 2011).

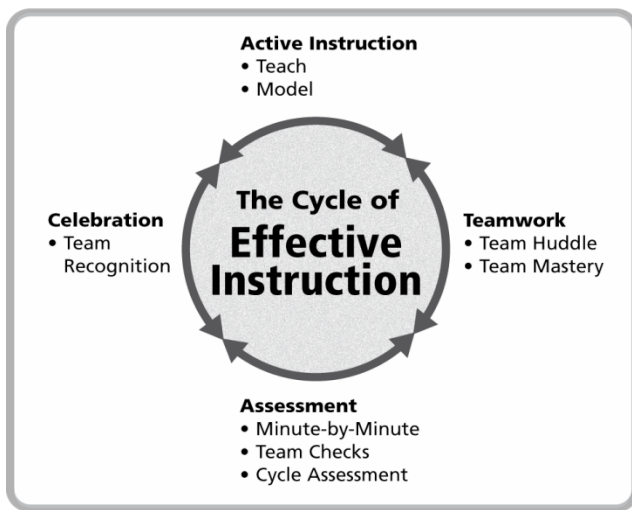


Figure 1

The Cycle of Effective Instruction

PowerTeaching (PT) was developed by the Success for All Foundation and provides an instructional framework that links educational standards and school curricula to research-based strategies and resources that actively engage students in rigorous learning (<http://sfapowerteaching.org/15161>). Students work together in teams to solve math problems resulting in an increased understanding of mathematics concepts through a student-centered environment. PT uses the Success for All's cycle of effective instruction (see Figure 1). This model incorporates active instruction, teamwork, assessment, and team celebrations. PT emphasizes teamwork so that team goals and the resulting team celebration are only achieved when all members of the team show evidence of improved achievement (Success for All Foundation, 2012).

Research Purpose

The research questions we will examine for the first year of implementation are as follows:

1. How was PowerTeaching implemented in the initial pilot phase?
2. What are teachers' concerns related to initial PowerTeaching implementation?
3. What factors do school and PT leaders perceive as most important to early implementation of PowerTeaching?

Theoretical Framework

Initial teacher perceptions of school reform programs are very important to the success of the reform and the academic achievement of students (Nunnery et al., 1997). Teacher perceptions of pedagogical change are significantly predictive of observations of specific teaching practices, and, in turn, accurately represent differences between teacher-centered

practices and student-centered practices similar to those used in PowerTeaching (Nunnery, Ross, & Bol, 2008). Overall, teachers can be seen as central to any school reform implementation (Bol & Berry III, 2005; Datnow & Castellano, 2000; Nunnery et al., 1997; Woodbury & Gess-Newsome, 2002). Extensive and continuous professional development for teachers is especially important in ensuring fidelity of implementation of a reform in order to achieve better student outcomes (Bol & Berry III, 2005; Bol, Nunnery, & Lowther, 1998; Ross et al., 2004). Blending on-line and in-person professional development is an effective means of training teachers (Owston, Sinclair, & Wideman, 2008) and will hopefully be effective in this large-scale reform.

Prior research provides a conceptual framework for understanding school readiness for reform. Datnow has studied how teacher attitudes are related to the implementation of Success for All reforms (Datnow & Castellano, 2000; Park & Datnow, 2008). She classified teacher attitudes using four levels of acceptance of change: strong supporters, general supporters, simple acceptors of change, and vehement objectors. Although these four attitudes could be clearly distinguished in conversation with the teachers, only one teacher attitude type negatively affected the implementation of reform. Aggressively objecting teachers were less likely to implement with fidelity and were vocal about their objections, influencing the climate toward reform at their school. Although almost all teachers found reasons to implement flexibly (usually due to classroom time constraints, wanting to continue teaching a special lesson, etc.), only attitudes of vehement objection were problematic. Teacher buy-in was unrelated to the initial vote to implement change, the school leader view, or any demographic variables. However, teacher support did relate to the beliefs a teacher had about what defines good teaching is and what helps students learn. Because initial teacher buy-in for a reform can also be affected by the politics surrounding the adoption of the reform and its hierarchical nature (at the district or school level),

we include qualitative self-report data related to these topics from teachers, school leaders, and coaches.

In order to quantitatively measure these important initial teacher perceptions, we developed a brief questionnaire grounded in the process of change described by the Concerns-Based Adoption Model (CBAM). A well-established model for evaluating innovations, it includes assessment of stakeholder perceptions of change (the stages of concern), and levels and fidelity of implementation (Hall, 1977; Hollingshead, 2009). After continued research and validation, others have also adapted its items and refined the scale itself (Bailey & Palsha, 1992; Cheung, Hattie, & Ng, 2001).

Methods

Various quantitative and qualitative methods were employed. The method is described based on the sequence of data collection. The first phase of data collection occurred during the initial training provided to school-based coaches. The research team conducted participant observations. We then administered questionnaires during the training provided to math teachers in August at each of the school sites. The next wave of data collection occurred during fall school visits. We conducted observations, nominal group interviews with teachers, principal interviews, and PT coach interviews. We shadowed the coaches during this visit and were afforded the opportunity to engage in more informal interviews and observations as well as attend professional development meetings (e.g., Team Component Meetings, and meetings with the principals). Interviews with the three SFAF coaches followed.

Initial School-based Coach Training

An initial week long training provided by SFAF was held at Old Dominion University. A total of eight coaches attended the training. One school sent two coaches who were sharing the job as did one of the school districts where they were planning to implement PT in their high school. Five of the eight pilot schools selected and sent PT coaches to the training. Six TCEP researchers attended and observed the training, two attending the first four days as full participant observers. Others attended less consistently, but most spent the equivalent of two days in the training. Field notes were recorded during the sessions followed by Post-Observation Analytic Memos.

Initial Teacher Training

During the month before school began, the teachers in each of the 8 pilot schools were invited to participate in a two-day training program provided by SFAF. Most teachers attended and those that did not were provided alternate training during the first few weeks of the school year. Because school districts wanted to ensure compensation for the teachers in attendance, in most cases the training was provided after teachers' contract year had begun and in the week before students returned to school. One TCEP researcher attended and observed the training as participant observer and recorded field notes.

Teacher questionnaire

At the completion of training provided in August at each of the school sites, a questionnaire was administered to PT teachers and coaches. A total of 82 participants responded to the questionnaire. On the first section of the questionnaire, participants were directed to generate an identification code to ensure confidentiality of responses. They were also asked for some basic demographic information that included grade level, subject taught, and role (coach,

math teacher or inclusion teacher). Five scales contained quantitative Likert-type rating scale items with 4 response options (“strongly disagree” = 1, “disagree” = 2, “agree” = 3, “strongly agree” = 4). Table 1 presents the scales, number of items by scale, and the Cronbach’s alpha’s computed to estimate reliability.

Table 1.

Scales and Reliabilities

Scale	Items	Coefficient Alpha
Training	7	.94
Implementation	17	
▪ Informational		.73
▪ Personal		.87
▪ Impact/collaboration		.60
▪ Refocusing		.63
Collaboration	6	.89
Teamwork Impact	6	.94

The questionnaire concluded with two open-ended items. The first asked respondents to identify their biggest concerns about implementing PT in their schools. The second asked for suggestions to improve the training.

Fall School Visits

Teams of two TCEP researchers were assigned to each school, with one researcher taking the lead in a school for coordination, data collection, analysis, and reports of findings. For each school visit, walk-through observations in PT classes, nominal group interviews, principal interviews, and PT coach interviews were conducted. The school visits corresponded to the dates that the SFAF coaches were scheduled in the schools for professional development in order to shadow these coaches. For distance sites, all data were collected at the schools for visits spanning two consecutive days. In local sites, the observations were conducted over two days

that corresponded with the SFAF coach visits, but the interviews were conducted at the convenience of the district, principals, and coaches.

The number of observations per school ranged from 6 to 13, with an average of about 10 per school. TCEP researchers shadowed the SFAF and PT coaches as they observed classrooms and provided feedback. In some cases the school principal accompanied the researchers. The observations were from 5 to 20 minutes in duration because this is typical for PT coach walk-through observations. The observations and memos focused on evidence of effective PT implementation and use of technology.

As noted, the procedure for nominal group interviews differed between local and distance schools. For one local site, the interviews took place on a designated professional development day held at one district middle school on November 6th. They were conducted separately by school in a classroom on campus. However, one school opted not to participate. For other sites, the interviews were conducted during visits at school sites. The number of participants per nominal group ranged from 3 (smallest school) to 16 (divided into two groups). The interviews lasted about 45 minutes each and were audio-recorded. The prompts consisted of asking teachers to identify the benefits and challenges of PT followed by a rank ordering of the responses cited. First teachers were asked to write their responses and then called them out in round robin fashion until all unique responses were exhausted. The responses were written by the moderator and numbered on a common display. Teachers were then asked to identify the three most important benefits and challenges on a separate sheet of paper.

Individual interviews were conducted with each of the PT coaches. These mostly occurred during the school visits but in one case the interview took place on a different day more convenient for the coach. The interviews lasted approximately 45 minutes. The questions

focused on perceptions of and support for PT at the school, the role and support provided by the PT coach, the impact of PT on teachers and students, resources provided and still needed barriers to implementation.

Individual interviews were also conducted with the school principals. These were scheduled for 30 minutes. Most were conducted during school visits in the principal's office at the schools. Exceptions were at local sites where the principal scheduled another time, and in one case, was interviewed by phone due to scheduling conflicts. The interviews centered on most of the same questions addressed in the PT coach interviews but also asked about their role in PT from a leadership perspective.

Results

Initial Implementation of PowerTeaching: The Pilot Phase

Observing initial implementation of PowerTeaching was central to our examination of readiness to reform. Our first research question addressed how PowerTeaching was implemented in the 8 pilot schools during the first semester of the first year. The observations during the fall school visit were central to answering this question as were our interactions with SFAF coaches.

Based on our fall classroom observations and shadowing of coaches we found that teachers in several schools were routinely implementing numerous program components, some with fidelity. We saw evidence of PT implementation and cooperative learning in a number of classrooms during our walk-through observations. The use of at least some PT terminology and strategies were consistently observed across classes. PT charts and posters were hung around rooms and related notes were written on the board. Some student teams were tracking progress

on their team score sheet and regularly using the student team folder. Many teachers were wearing their SFAF aprons. Most teachers were making the effort to implement PT in their classrooms.

Estimates of the percentage of time teachers versus students spent talking during observations suggest a move toward more student-centered classrooms. Across schools the average ratio of teacher to student talk was estimated to be 56/44. This means that a little more than half of time observed was teacher led and a bit less than half was student led. However, there was a large range. In one school where we were impressed with the extent of PT implementation the average ratio was 25/75; however, in another we were not so impressed, and the ratio was 79/21. Group work was more frequently observed than not, but the types of interaction understandably varied. The teamwork often appeared to be familiar to students and was often of high quality. We observed students in several of the classrooms interacting with one another, giving help to peers, and recording things in team folders. We noticed students checking answers with each other as well as instances of higher level student-to-student explanations of a math concept. High engagement teamwork with students substantively collaborating to solve problems was also observed. All in all, considering it was early in the school year, the students were mostly working together cohesively, helping one another understand and solve problems.

Conversely, the extent and fidelity of implementation was inconsistent across schools and within schools. The quality of implementation and the resulting levels of cooperation among students varied widely from classroom to classroom. The extremes included structural cooperation only (i.e., students sat in groups, but relied on teacher for support) to students actively supporting one another (e.g., listening and responding, comparing answers, working on

a common mathematical task). In some schools, classroom management in teams was problematic and diminished the effectiveness of cooperative learning. Some teachers already used the cycle of effective instruction and the templates provided to support the progression from direct instruction through team huddles and team mastery eventually leading to reflection. Other teachers were only using selected processes like “Get the Goof” at the beginning of the lesson or an occasional “think, pair, share.” One observer noted that “while teachers are making an effort to use PT, they do not appear to be using the full repertoire of strategies. Nor do they appear to be using the teams effectively for peer teaching. Teachers did reward points frequently, but it was not always evident why the points were awarded.” Another observer noted that on a few occasions “one team member was not willing to work cooperatively with his or her team members”, not discussing the problems or solutions. It seems clear that at the time these observations were conducted, many teachers displayed a more mechanical, sporadic implementation of PT rather than a consistent, routine implementation.

The problems associated with sporadic or ineffective use of PT components are exemplified by what we observed with respect to Random Reporter. Random reporter is a PT structure that is used to promote both teamwork and individual accountability (Success for All Foundation, 2012). We observed random reporter in use with team checking and students explaining their answers. We also observed random reporter incorrectly used as cold calling on students without the opportunity to check with their team mates in several other classes. In one class, random reporter was observed to be used incorrectly, then correctly in the same lesson, suggesting an emergent mastery of the strategy. Many did not differentiate how points were awarded by making them contingent on the quality or completeness of the response.

There was an almost complete absence of PT implementation at one entire school. Based on conversations with the two SFAF coaches working at this school, implementation seems to be regressing rather than progressing. Most of the classes were set-up the same way, with students in pairs or at tables of two rather than groups of three, four, or five. Only one classroom was evident as a PT classroom – the teacher was wearing the apron, students were working in teams, team celebration poster was displayed and used, and team cooperation goals were posted. In other classes, there were some attempts to implement cooperative learning but authentic cooperative learning was observed only in one classroom. In classrooms that were attempting to use a teamwork approach, the teacher was apt to lose control of the classroom much more easily. Most often, we observed either direct instruction from the teacher or independent work by students. Some teachers were also using what they called a “modified version” of PT (modified quiet signals, modified score sheets, and modified PT lesson formats).

In other schools we discovered one of two teachers who refused to implement PT (“isolators”), and instead employed very traditional instruction. The students were not grouped in teams and hardly interacted. Teacher-directed or independent seatwork was the norm. These teachers did not even pretend to implement PT and were largely left alone because they had seniority and a good record of student test scores. Overall, PT implementation was inconsistent across and within schools during the first semester.

Teachers’ Concerns Related to Initial PT Implementation

Readiness for reform hinges on teachers’ concerns as they relate program implementation. Thus, our second research question addressed how teacher concerns might be linked to initial PT implementation. We relied on questionnaire responses as one data source to help us answer this question. More specifically, we analyzed data from the revised Stages of Concern scale (Hall &

Hord, 1987). As previously described, the four stages are (1) Informational, (2) Personal, (3) Impact/ collaboration, and (4) Refocusing. Figure 1 graphically depicts the mean values by stage. Hall and Hord present the data graphically in order to detect patterns across stages and time. We have only one point in time, yet consider this to be valuable information to gauge initial teacher reactions.

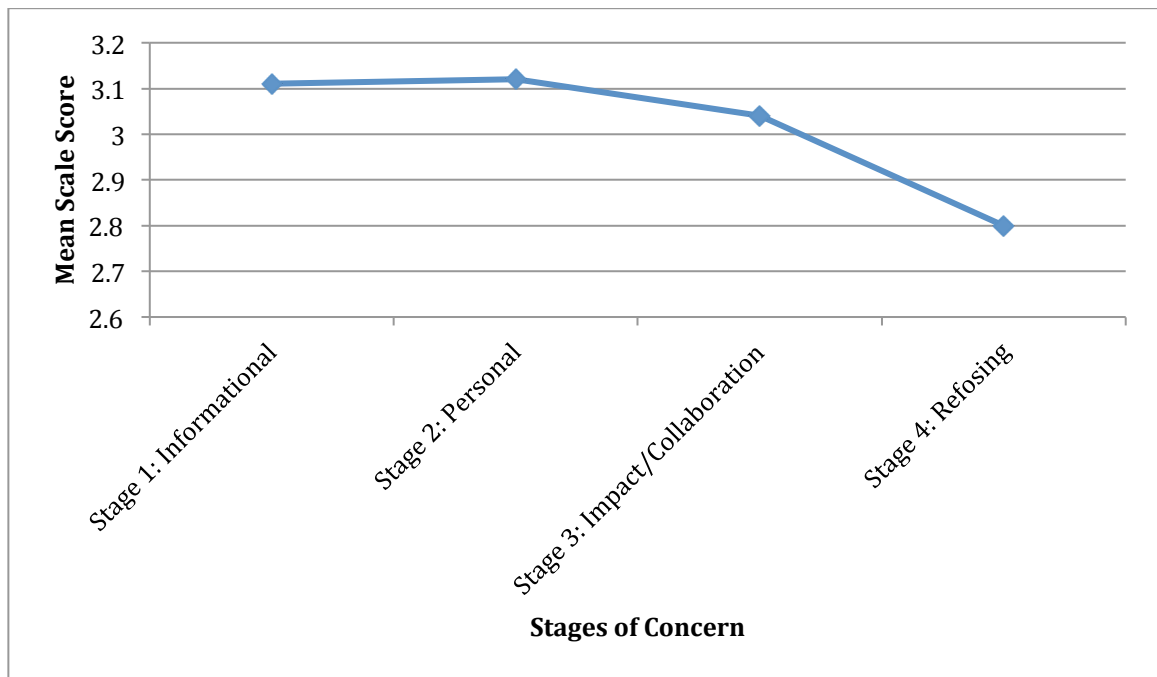


Figure 2

Mean Scores by Stage of Concern

The overall levels of intensity of teachers’ concerns were consistent with the Stages of Concern theory (Hall & Hord, 1987). Most teachers were Stage 1 (Informational) and 2 (Personal) reflecting primary concerns with getting information about the program and how it will affect them personally. An examination of the data by item helps to better pinpoint their concerns at the initial stages (see Table 2). For example, teachers wanted to know what would

be required of them in the immediate future ($M= 3.28$ on Item 1), and they were worried that they may not have enough time to organize themselves each day ($M=3.33$ on Item 5). As reflected by lower mean values, somewhat fewer teachers were concerned about the impact of PT and collaboration (Stage 3: Impact/ Collaboration). For example, a mean of 2.79 was observed on Item 11 pertaining to wanting to familiarize others about PT. And still fewer teachers were concerned about how to refocus or revise the innovation (Stage 4: Refocusing). The lowest mean scored ($M=2.38$) related to wanting to revise the approach of PT. We would expect that, as they progress in effective implementation of the program, they would move to the later stages of reform.

Table 2

Power Teaching Implementation

Item	n	Mean	StdDev	SD	Percentage by Response Category			
					D	A	SA	
<u>Informational</u>								
1. I would like to know what the use of PowerTeaching will require in the immediate future.	81	3.28	0.71	3.7	3.7	53.1	39.5	
2. I would like to know how PowerTeaching is better than what we have now.	81	3.01	0.75	2.5	19.8	51.9	25.9	
3. I would like to have more information on time and energy commitments required for PowerTeaching.	81	3.17	0.67	0.0	14.8	53.1	32.1	
4. I would like to know how my	82	2.99	0.79	2.4	24.4	45.1	28.0	

role will change when I am using PowerTeaching.

Personal

5. I am concerned about not having enough time to organize myself each day. 82 3.33 0.79 1.2 15.9 31.7 51.2

6. I am concerned about how to accomplish effectively what is required in PowerTeaching. 81 3.20 0.76 1.2 17.3 42.0 39.5

7. I am concerned about my inability to manage all that PowerTeaching requires. 82 2.98 0.85 2.4 29.3 36.6 31.7

8. I am concerned about time spent working with nonacademic matters related to PowerTeaching. 81 2.96 0.83 3.7 24.7 43.2 28.4

Impact/Collaboration

9. I am concerned about my impact on students. 81 2.95 0.82 2.5 28.4 40.7 28.4

10. I would like to develop working relationships with other teachers using PowerTeaching. 82 3.21 0.64 2.4 4.9 62.2 30.5

11. I would like to familiarize others with the progress of PowerTeaching. 82 2.79 0.77 3.7 30.5 48.8 17.1

12. I would like to coordinate my teaching with other teachers to maximize the effect of PowerTeaching. 82 3.21 0.68 3.7 3.7 61.0 31.7

Refocusing

13. I would like to use feedback from students to change PowerTeaching. 82 3.12 0.53 0.0 8.5 70.7 20.7

14. I am concerned about revising my use of PowerTeaching to improve its effectiveness.	82	2.84	0.68	2.4	24.4	59.8	13.4
15. I would like to revise the approach of PowerTeaching.	78	2.38	0.72	6.4	56.4	29.5	7.7
16. I would like to modify PowerTeaching based on students' learning experiences.	79	2.84	0.65	2.5	22.8	63.3	11.4
17. I would like to determine how to supplement, enhance, or replace PowerTeaching.	81	2.79	0.72	1.2	34.6	48.1	16.0

Note: StdDev = standard deviation; SD = strongly disagree, D = disagree, A = agree, SA = strongly agree

Because other teacher concerns may not have been captured in the close-ended rating scale items, we relied on one open-ended item on the questionnaire to more thoroughly address this question. Teachers were explicitly asked to identify their concerns about PT implementation. Table 3 presents the categories of the most frequently cited responses that emerged from the content analysis and accompanying illustrative quotes. It should be noted the numbers and percentages were based on the number of unique ideas contained in a response and not the number of teachers. Thus, one teachers' response might contain more than one unique idea and be counted more than once.

Table 3

Concerns about Implementing PT

Category	n	%	Illustrative Quotes
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Time to prepare in advance	26	26	“the lack of time to prepare”, “to do it as well as I can early in the year”, “implementation; it doesn’t seem to be ready to use from start to finish for our needs (in 6 th grade to change sequence)”
Time management	24	23.5	“time management in the classroom”, “having time to do it”, “time/planning”
Aligning curriculum, scope and sequence	16	15.7	“ fitting scope lessons into the format”, “finding curriculum to use with it”, “establishing consistency and routine”, “integrating previous and current state, city requirements and non-negotiables”
Group/Student Management	14	13.7	“nature of groups, takes more time, but it is effective”, “dealing with students who refuse to participate”, “just making sure SWD are able to fully participate in their groups”
Paperwork/Materials Overload	10	10.0	“ too much paperwork”, “the amount of additional paperwork”, “using score sheets”
Technology	4	3.9	“technology not here so we can’t practice”, “just getting it up and running”
Other	8	7.9	“parent concerns”, “support from faculty and staff” “Our administrators seem to be open to new ideas, but not flexible when it comes down to the end result (SOL scores) this concerns me”
Total	102	100	

The two most frequently occurring categories both related to time constraints. However, the first category pertained to not having enough time in advance to plan and prepare; whereas, the second category pertained to time management and the time needed to fully develop and plan for PT instruction in day-to-day teaching. This was evident in the teacher quotes. Key phrases like “not ready” exemplify the first category. In contrast phrases like “planning time illustrate the

second. Since schools were not informed that they would be implementing the program until just before school began the salience of these concerns was not surprising.

Other concerns included the alignment of the curriculum in terms of the scope and sequence demanded by the district and other guides; managing students within groups; the perceived burden of the paperwork, scoring and extra materials required; and technology needs and demands. There is a perceived contradiction between district and PT requirements associated with accountability pressures. Some teachers are struggling to align these perceived contradictions that may be impeding their instruction and predispositions to fully implement PT. Other teachers were not entirely comfortable with classroom management in group settings and worried about dealing with struggling students with conduct problems. The paperwork, scoring, materials, and technology needed for PT implementation were viewed as overly burdensome or complex.

The third data source we used to identify teacher concerns tapped results from the teacher nominal groups. We asked teachers to cite the major challenges associated with PT implementation. The most frequently cited challenges associated with PT appear in Table 4. Representative quotes for each category are also provided.

Table 4

Challenges with Implementing PowerTeaching Math

Category	n	%	Illustrative Quotes
Group Work Challenges	24	28	
Behavioral Problems	7	8	<i>“Individual learning may be compromised by too much group work”</i> <i>“Peer support as doing for others instead of helping”</i> <i>“Students are copying/cheating from teammates”</i>

Staying on-task	6	7	<i>“Keep students engaged on task”</i>
Team Composition	5	6	<i>“Personality conflicts in team structure” “Initial team set up – based on ability”</i>
Team Climate	3	3	<i>“Trouble encouraging team mentality rather than individuals”</i>
Noise	3	3	<i>“Allows for increased noise and behavior problems”</i>
Time Management	16	19	
PT Framework	11	13	<i>“Time needed to implement new framework” “Not enough time – process requires more time”</i>
Lesson Planning	5	6	<i>“Requires more time in lesson planning”</i>
Curriculum Challenges	15	17	<i>“Incorporating all PT components into existing framework/time allotment” “Modeling for co-teaching classrooms” “Difficult to individually assess without quizzes”</i>
Alignment and Support	14	16	<i>“Better coordination of district requirements and PT requirements, particularly when conflict exist” “Better discernment between PT and existing programs” “No support staff yet (school-based coach)”</i>
Paperwork Challenges	11	13	<i>“Record keeping – time consuming, burdensome” “Teacher Cycle Record Form – too cumbersome”</i>
Scoring/Point System Challenges	7	8	<i>“Students don’t understand scoring” “Maintaining point system”</i>

By far, the most challenging aspect of PT for these teachers was inherent in group work itself. They noted that behavioral issues compromised individual learning due to a lack of individual accountability or relying on others to complete work. Teachers mentioned copying one another’s work as more extreme example of not being held individually accountable. Other

difficulties stemming from group work included off-task behaviors, team composition that led to a negative climate and an inappropriately noisy classroom.

Teachers were also having difficulty managing the time needed to fully implement PT cycles and plan for their lessons. This is a familiar concern raised by teachers in response to questionnaire items. Implementing the entire cycle of instruction (what they termed the PT framework) in one class period seemed daunting to these teachers. Lesson planning aligned with the cycle of instruction was further perceived as a challenge in terms of time demands.

Many of the same concerns raised in response to open-ended questionnaire item emerged in these group interviews. They related to curriculum, support, and record keeping. Curricular challenges were directed at their ability to incorporate PT components into their existing framework and validity of assessing individual students. Support for program implementation could be bolstered by better coordination between district and PT requirements. In some schools, where the PT coach was not yet hired, teachers expressed a need for someone to fill this position and other support staff. The paperwork, record system, and scoring system were depicted as far too cumbersome or burdensome.

Factors Important in Early Implementation as Identified by School and PT leaders

Although teachers' concerns are extremely important to a school's successful implementation, school and PT leaders perceptions are also fundamental in studying the school's readiness for reform. The views of these additional stakeholders in the implementation were captured in individual interviews that occurred during the fall school visit. As noted, we conducted these individual interviews with principals, PT coaches, and SFAF coaches. Interviews focused on perceptions of the benefits and challenges of implementing

PowerTeaching and results are reported by theme within each category. Prominent factors emerged that school and PT leaders found to be important in early implementation of reform efforts.

Benefits of PowerTeaching.

School and PT leaders saw value in PowerTeaching. Nearly everyone we spoke to was favorable in assessing the potential of PowerTeaching as a reform strategy. They saw the promise of PT to promote engagement, collaboration, and critical thinking among students. Classrooms would be restructured to be more student-centered and less teacher-directed. This finding translates to more individual instruction of students through peer tutoring, more on-task behaviors, and more time for teachers to focus on group rather than individual instruction. Many thought that student motivation would be improved through group accountability and the enthusiasm generated by active learning and mastery. Not only should student achievement improve but conduct as well. Students are additionally acquiring valuable life-long skills such as cooperation, teamwork, and a tolerance for others.

The instructional strategies or PT components were viewed as strengths by many interviewed. Some recognized that many of these strategies were research-based and shown to promote student engagement and achievement. For example, rewarding students for not only arriving at the right answer but also for explaining answers in complete sentences would help students not only develop a better understanding of math but should transfer to other subjects. Another example was using random reporter to ensure that everyone remained engaged.

School and PT leaders thought PowerTeaching would benefit at-risk students. Finally, respondents thought that the model would be beneficial for diverse or at-risk learners. Most commented on special needs students and how PT was well aligned with strategies prescribed by

Special Education guidelines or IEP's. In a model based on teamwork these students "cannot hide" and are accountable to their team who will help them learn the material. They essentially receive more instructional time due to the peer interactions. As noted earlier, students should better recognize diversity and have more tolerance and patience.

School and PT leaders perceived the importance of coaching. The PT coach was viewed as a critical resource. The support provided by having school-based coaches was depicted as a key ingredient for promoting the success of PT. They not only provide critical information and resources but enhance morale and motivation among teachers. The PT coaches themselves were very positive about their role and their support for PT and described their numerous duties or responsibilities. These included providing materials, maintaining communications, visiting classrooms, modeling instruction, providing feedback, conducting meetings, and serving as a liaison among teachers, school principals, and district personnel. Although they were overwhelmed at times, they remained positive about their roles and their goal to enhance successful implementation of PT.

The SFAF coaching and support was also perceived as an essential resource. Principals and PT coaches spoke about the valuable direction, resources, feedback, and support provided by the SFAF coaches. PT coaches in particular were impressed with their readiness to provide assistance, and the prompt responses to any of their questions and requests. SFAF coaches serve as models and advisors. The relationships among all of the coaches seemed to be personable, friendly and trusting.

Challenges of PowerTeaching.

School and PT leaders perceived the importance of adequate preparation. The biggest challenge was the lack of communication about the impending PT implementation that precluded

adequate advance planning and preparation. We heard this from all respondents. It adversely affected not only the extent and fidelity of implementation but also teachers and leaders attitudes about the initiative. The late notice also impacted the timely hire of PT coaches and securing the necessary technology. Due to the nature of the grant and the pilot phase being on a particularly tight schedule, this was for the most part unavoidable. Stakeholders also perceived a need for ongoing training, both in coaching (for PT coaches) and in PowerTeaching strategies (for teachers).

School and PT leaders perceived frustration with aligning PT with other reform efforts. Another challenge was the perceived misalignment between PT and district requirements. They were viewed as sometimes at odds or contradictory. Principals and PT coaches expressed some discomfort with this misalignment and were worried about how it might affect their schools' test scores. SFAF coaches noted that more school and district leader support with regard to dealing with these seemingly conflicting demands would be essential.

Teachers were described as being overwhelmed in launching a new, very different program as well as dealing with the perceived competing demands. Many thought it was “too much, too soon” and worried about the time pressures associated with implementing a new reform model when teachers already had far too much to do. These pressures led to a sense that teachers could pick and choose particular PT components rather than try to implement the complete program or cycle all at once. Some of those interviewed explained that many of the PT components reflected prior teaching practices and were not considered new or innovative. For example, one principal noted that they were already implementing a version of random reporter and practicing higher order questioning skills.

School and PT leaders perceived challenges in learning new instructional and engagement strategies. Classroom and time management were related difficulties that emerged. We were told that teachers were having trouble managing student behavior in groups as well as

the time needed to complete an entire cycle of instruction. Some students were not accustomed to teamwork and preferred to be told what to do by the teachers. There was misconduct among students in groups that ranged from off-task behaviors to conflicts due to personality differences. Teachers were also experiencing some trouble moving from a largely teacher-directed to primarily student-centered classrooms. In the past, teachers did not rely as heavily on positive reinforcement to manage behaviors. The shift in teaching style and practice was described as more difficult for teachers and students in later grades.

A related challenge was the burden of added paperwork, particularly the Teacher Cycle Record Form. Record-keeping and the collection of this data was viewed as inessential and superfluous because they already collected a great deal of data on students. Problems associated with accessing and completing the forms complicated the task, leading teachers to further avoidance.

Discussion

In all, the levels of implementation of some teachers were impressive keeping in mind that our visit occurred after only three months of use. Such an early observation point could be argued to be of less value as full implementation can be expected to take multiple years. However, in the context of formative evaluation we contend that early implementation data are valuable and provide valuable information about the progress of the project. Classrooms were observed in which the PT framework was embraced and students cooperated with each other to learn math. At the other end of the spectrum, some very traditional classrooms were observed where teachers clearly resisted implementation. Overall, PT implementation was inconsistent across and within schools during the first semester. The quality of implementation and the resulting levels of cooperation among students varied widely from classroom to classroom, as

would be expected at the early stages of implementation (Datnow & Castellano, 2000; Smith et al., 1997; Stein et al., 2008).

Although classroom observations revealed a good deal of variation among schools with respect to the fidelity and extent of PT implementation, teachers' concerns were more consistent and largely aligned with Stages of Concern as posited in Hall and Hord's theory (Hall & Hord, 1987; Hall, 1977, 2011). Monitoring and alleviating teachers' concerns about reform efforts seem crucial for curtailing widespread resistance and frustration (Beatty, 2011; Gitlin & Margonis, 1995). Teachers were most concerned about understanding what the program entails and how the reform will affect them personally. The current findings suggest they are somewhat less concerned about the impact of reform on students and refining or tailoring the program to better meet their instructional needs. These patterns of findings make sense since teachers were just learning about PT and what it means for their instruction when the questionnaire was administered.

Teacher responses provided in group interviews and on the open-ended questionnaire item highlighted additional concerns not reflected on the revised Stages of Concern scale. Categories of responses were relatively consistent across schools and data sources. Three themes emerged most frequently. The first was a concern about time constraints as they pertained to both preparation for lessons and how to manage classroom time in order to complete the Cycle of Instruction prescribed in the program. Other researchers have similarly described time concerns among teachers in early phases of school reform (Bol et al, 1998; Nunnery et al., 1997). The second theme pertained to student conduct during group work and how to best manage classrooms in a model centered on teamwork. This may be particularly difficult adjustment for teachers who were less accustomed to student centered instructional approaches as well as their

beliefs about the effectiveness of group learning (Brody & Davidson, 1998; Lumpe, Haney, & Czerniak, 1998). The third most salient concern was how the PT model would align with district curriculum standards and requirements. This perceived lack of alignment is linked to stakeholder worries about how the PT model would impact student scores on high-stakes tests. Numerous studies have pinpointed stakeholder concerns that more innovative school reform models would adversely affect standardized test scores and in turn reflect poorly on teachers and their schools (Bol & Nunnery, 2004; Bol, 2004; Datnow, 2005).

During interviews, nearly everyone we spoke to was favorable in assessment of the potential of PT as a reform strategy. They saw the promise of PT to promote engagement, collaboration, and critical thinking among students. They understood that classrooms would be restructured to be more student-centered and less teacher-directed. This finding translates to more individual instruction of students through peer tutoring, more on-task behaviors, and more time for teachers to focus on group rather than individual instruction. Many thought that student motivation would be improved through group accountability and celebration and the enthusiasm generated by active learning and mastery. Not only should student achievement improve but conduct as well (Brody & Davidson, 1998; Slavin et al., 2009). Students are additionally acquiring valuable life-long skills such as cooperation, teamwork, and a tolerance for others (Barbato, 2000; Kramarski & Mevarech, 2003).

Factors that might promote better initial implementation were universal across stakeholders. Training could be more extensive and occur earlier than the week before students arrived allowing teachers more time to prepare. Additional support throughout the year, particularly of effective team work strategies, would be helpful for stronger implementation. Transparent and vocal alignment of district and school goals with PowerTeaching is also noted

as an important factor. Those schools with unconnected district responsibilities or school reform efforts experienced additional challenges, even when the external reforms might have merged easily within the PowerTeaching framework. Finally, participants perceived the required data collection and record-keeping to be challenging. This research serves as only a baseline for understanding the factors that contribute to a school's readiness for reform.

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