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Evaluation of District and School Transformation School-Level Coaching and Professional Development Activities

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EVALUATION OF DISTRICT AND SCHOOL TRANSFORMATION SCHOOL-LEVEL COACHING AND PROFESSIONAL DEVELOPMENT ACTIVITIES

Executive Summary

North Carolina's Race to the Top (RttT)-funded initiative to Turn Around the Lowest Achieving Schools (TALAS) is one of the most ambitious school turnaround efforts undertaken across the United States, including other states supported through the federal RttT Fund. In 2012-13, the District and School Transformation (DST) Division of the North Carolina Department of Public Instruction (NCDPI) continued to work on the transformation of North Carolina's 118 lowest-achieving schools (11 of which have closed since the beginning of the initiative) and also work with 12 districts to support and sustain the transformation implementation. Also in 2012-13, North Carolina began administering new, more rigorous assessments based on the Common Core State Standards and fewer students were found to be proficient on assessments of these higher standards than on previous state assessments. As a result, schools across the state had lower Performance Composites. Even so, comparing changes in Performance Composites from 2009-10 to 2012-13, the schools targeted by DST experienced smaller declines than did other schools at their grade level. On average, under the more rigorous standards, DST elementary schools declined 7.9 points less than did other elementary schools; DST middle schools declined 4.4 points less than did other middle schools; and DST high school changes were about the same as those of other high schools in North Carolina.

We focused much of our attention in this third evaluation report on leadership coaching and how it may affect the leadership and organizational characteristics of DST target schools. The focus on coaching drew on DST's theory of action, as well as on conversations with RttT and DST leadership at NCDPI. In addition, a recent federal report noted that coaching was the primary support for transforming the DST target schools (USED 2014)¹. This report relied on survey responses by principals and teachers in a random sample of North Carolina public schools gathered by the evaluation team each spring from 2011 through 2013. Throughout the report, the information provided on leadership and organizational characteristics reflects the experiences and perceptions of teachers and the information provided on coaching reflects the experiences and perceptions of principals.

Changes in Leadership and Organizational Characteristics

Overall, leadership and organizational characteristics of all North Carolina public schools, as perceived by teachers, have changed very little from spring 2011 to spring 2013. The largest changes, which amounted to about 1/10th of a point on a seven-point scale, indicated very slight and statistically non-significant declines in classroom management, ratings of principals' instructional leadership, and teachers' use of higher-level instructional practices. By spring of 2013, DST target schools registered higher levels on two of nineteen dimensions of leadership and organizational conditions—teacher knowledge-sharing and use of formative assessment—

¹ *Race to the Top, North Carolina Report Year 3: School Year 2012-2013*. U.S. Department of Education; March 19, 2014. Downloaded from: <http://www2.ed.gov/programs/racetothetop/performance/north-carolina-year-3.pdf>

than did the comparison schools that were similar on these measures in 2011. DST target schools improved at a slower rate than did the comparison schools on two other measures of leadership and organizational characteristics: teacher-leader respect and team orientation; it seems reasonable, however, that the lack of improvement on these two measures may be associated with the effects of being designated a turnaround school, or with staff responses to the types of changes (such as increased accountability) that occur in turnaround schools.

Leadership Coaching

Principals of DST schools agreed that their DST School Transformation Coaches had helped them do a better job. When comparing DST principal responses with responses of principals of comparison schools (for whom coaches were defined as someone who “has provided you with deliberate, sustained assistance designed to help you learn or figure out how to improve your school”), DST coaching was rated higher in terms of improving shared leadership and order. The two sets of principals reported no differences in the effectiveness of the coaching they received for improving teaching and assessment practices or for improving teacher efficacy and responsibility. Principals of DST schools either with less experience, or who were rated as having lower skill levels, or both, rated their coaches as more effective than more experienced and higher-skilled principals. This finding suggests that principals at this level of experience found the presence of DST coaches to be more beneficial than did more experienced, higher-skilled principals, and that perhaps this information might be useful for developing a targeting strategy when resources become more limited.

Principals in both the DST target schools and the comparison schools reported that they had been working with their current coaches between four and ten months. Principals of DST schools reported meeting with their coaches a little more often than once every two weeks, while principals of comparison schools reported meeting about once a month with the individuals from whom they received assistance and support. Principals in DST target schools reported that their coaches were significantly more likely to suggest actionable approaches or solutions to the challenges and problems they faced than were reported for the coaches in non-DST schools. Other coaching strategies (such as providing effective feedback and modeling effective behaviors) were reported to be about the same in both DST and comparison schools. All responses from principals in the comparison schools were based on their views of individuals who they personally identified as fulfilling the functions of a coach; as such, their responses were not about a specific source or formal set of coaches.

Across DST and comparison schools, more effective coaching as perceived by principals was associated with a positive and significant difference in four of nineteen dimensions of leadership and organizational conditions that were measured via surveys of teachers: alignment of professional development, program coherence, teacher-teacher trust, and data-driven instruction. This finding suggests that supporting principals through coaching or mentoring can and does make a difference in some important aspects of their schools’ working conditions, but that both the principal coaching presumably provided by some districts or through other sources such as School Improvement Grants as well as coaching provided by DST produced positive effects.

Effects of DST on Leadership and Organizational Conditions

While, overall, teachers' responses about leadership and organizational characteristics of schools did not change significantly, we found that teachers' ratings of teacher-leader respect and team orientation within the school went down in DST schools. These changes cannot be attributed to any single cause—such as having been labeled as one of the lowest-performing schools, or any changes in the school as a result of turnaround. This finding could be used to increase awareness of and support for team-building and the development of positive relationship between teachers and leaders.

DST Professional Development

In addition to evaluating DST coaching, we assessed the professional development that DST provided to school leaders. DST provided five professional development experiences that drew between 96 and 198 of the leaders from target schools and districts. The sessions were geared to the specific needs of turnaround schools and, overall, all of the sessions were highly rated by participants. In addition, of the 15 segments of the professional development sessions observed by the evaluation team, the eight characteristics of quality professional development occurred in between 67 and 100 percent of the segments. All occurrences of the eight characteristics of quality were rated “good,” and between 64 and 100 percent of the professional development segments had “a lot” of each high-quality characteristic.

Next Steps for the Evaluation

In the final phase of the evaluation of the RttT DST initiative, the evaluation team will begin to assess the overall impacts of the initiative on student achievement, teacher effectiveness, teacher retention, and other measures. In addition, we will examine, to the extent possible, how DST has influenced improvements in performance to help guide future turnaround efforts.

Introduction

The District and School Transformation Division (DST) of the North Carolina Department of Public Instruction (NCDPI) has been charged with turning around the state's lowest-achieving schools and school districts.

Supported by a portion of the funds from North Carolina's 4-year, \$400 million Race to the Top (RttT) grant from the United States Department of Education, the DST intervention is designed to achieve three major goals:

1. Turn around the lowest 5% of conventional elementary, middle, and high schools based on the 2009-10 Performance Composite;
2. Turn around conventional high schools with a 4-year cohort graduation rate below 60% in 2009-10 and either 2008-09 or 2007-08; and
3. Turn around the lowest-achieving districts with a 2009-10 Local Education Agency (District) Performance Composite below 65%.

In 2012-13, DST intervened with 107 of the 118 schools that were originally identified as lowest achieving in the state (11 closed since the beginning of the initiative) as well as with 12 school districts, providing district coaching, school leader coaching, instructional coaching, and professional development for school leaders, among other supports for these schools and districts. Separate from DST efforts to turn around schools, these schools may have received other RttT-funded supports, including recruitment incentives, high-growth incentive bonuses for teachers, the New Teacher Support Program, North Carolina Teacher Corps members, recruitment and retention planning assistance, and leaders trained by the Regional Leadership Academies. In this report, we focus on two of the supports provided directly by DST: school leader coaching, referred to as school transformation coaches; and professional development for turnaround school leaders.

Purpose of the RttT Evaluation and of this Report

One of four pillars of North Carolina's RttT grant is a commitment to turning around the lowest-achieving schools in the state. North Carolina's proposal also included an independent, external evaluation of the initiatives designed to help meet the state's goals. This evaluation is being conducted by the Consortium for Educational Research and Evaluation—North Carolina (CERE—NC), a partnership of the Education Policy Initiative at Carolina (EPIC) at the University of North Carolina at Chapel Hill, the Friday Institute for Educational Innovation at North Carolina State University, and the SERVE Center at the University of North Carolina at Greensboro.

This is the third annual evaluation report intended to inform DST's efforts to make improvements in low-achieving schools and school districts. In the first report, we found that those efforts had been effective in increasing test scores in the turnaround high schools, and we detailed the characteristics of the turnaround efforts in North Carolina prior to RttT that appeared to have contributed to rapid school improvement (Thompson, Brown, Townsend, Henry, & Fortner, 2011). We identified three key processes associated with improvement: (1) a planning process within each school, led locally but guided by DST's Framework for Action, (2)

professional development designed to help school leadership teams understand and use the Framework, and (3) coaching provided by NCDPI and partner organizations to support implementation of the improvement plans. In addition to these findings, this study also found that districts often either could promote or undermine school turnaround efforts.

The second evaluation focused on the role of the districts and found that in many cases, the connections that were necessary for improving student performance (e.g. connections between superintendents, their boards, central office administrators, and principals) were not present in some of the schools and therefore that the existing connections were not conducive for producing positive change in these schools (Thompson, Brown, Townsend, & Campbell, 2013).

Across these two evaluations, DST interventions to guide and support reform of low-achieving schools included efforts to help school leaders: (1) assert accountability for improved discipline and student achievement while also drawing teachers into the process of deciding how to accomplish these goals; (2) build the knowledge and skills necessary to get better results; (3) make sure that all staff continue to put their new skills and knowledge into practice and also go on building new knowledge and skills; and (4) develop processes for teachers to assess what students were learning or failing to learn as well as to identify and implement additional ways to help them learn.

For this evaluation, the available resources and time did not permit us to assess the separate contributions of each component of DST intervention. After discussions with DST and NCDPI leadership, we chose to focus on leadership coaching at the school level—the ongoing advice and support provided to principals in an effort to help them “turn their schools around” and the professional development provided by NCDPI to support leadership development. Because it was premature to examine the impact of DST on student and teacher performance, the evaluation focused extensively on examining the changes in leadership and organizational conditions in the turnaround schools and any associations between coaching and those conditions. To examine the effects of leadership and organizational conditions, we address the following evaluation questions:

1. How has the performance of the schools changed through the third year of RttT (2012-13)?
2. What is “school-level coaching,” how do these coaches intervene to help principals and other local educators improve their schools, and how does school-level coaching fit within the full set of DST interventions?
3. How do school principals assess the school-level coaching provided by DST and how does it compare to that reported in comparison schools?
4. What was the effect of the school-level coaching provided by DST upon these leadership and organizational conditions?
5. What was the impact of the full set of DST interventions upon key leadership and organizational conditions in the target low-achieving schools during the first three years of the RttT grant (2010-11, 2011-12, and 2012-13)?
6. What are the types and quality of DST school leader professional development activities undertaken during 2012-13?

The ultimate goal of the DST interventions is not primarily to improve leadership and organizational conditions in the target schools, but instead to improve student achievement and graduation rates. However, research supports the proposition that interventions to increase leadership effectiveness and improve organizational conditions in schools is a promising strategy for improving both teacher performance and student outcomes (e.g. Grissom, Kalogrides, & Loeb 2014; Schweig 2013; Thompson et al. 2011). The present study is an effort to assess whether and to what degree DST in general and school-level coaching in particular have improved leadership and organizational conditions in the target schools. Another reason to focus the present study on improvement in leadership and organizational conditions, rather than on student achievement, is that data from the state's testing program for 2012-13 were not available for analysis until after the submission of this third report. These student achievement data will be included in a series of analyses in the final evaluation report designed to assess the extent to which DST's interventions have improved student achievement in the target schools and the extent to which coaching has contributed to any observed improvement.

We now turn to a brief description of the methods employed in the present study. More details about data and methods can be found in this report's appendices. After describing the study methods, we present our findings in greater detail, followed by the conclusions we have drawn from the three study years.

Methods

Data Sources for the DST School-level Coaching Examination (Questions 1-5)

The first question was addressed relying upon the school performance data provided by NCDPI. To address our next four questions—concerning the nature of DST-provided school-level coaches and coaching—we relied on both (a) qualitative data, including the interviews, document collection, and observations conducted during our two prior years of study as well as new documents provided by DST; (b) school principals’ responses to survey questions about the coaching they have received; and (c) teacher survey responses to items about school and leadership conditions, which were collected via the Race to the Top Omnibus Survey. The qualitative data enabled us to describe the coaches, coaching, and the DST intervention and the principals’ survey responses enabled us to describe in more detail the frequency, duration, and nature of the strategies employed by the coaches. The Race to the Top Omnibus Survey was developed by EPIC with input from CERE-NC evaluation leads, and is administered annually through the SERVE Center at UNC-Greensboro

Variables

Dependent variables. The RttT Omnibus Survey includes items to assess the key elements of the school improvement process that we identified in our initial study for this ongoing evaluation—a retrospective examination of NCDPI’s School Turnaround Program from 2006-07 to 2009-10. The Omnibus Survey dimensions in Table 1 (following page) enumerate the elements of the school improvement process and corresponding dimensions, and constitute the full set of dependent variables for the present study. A more detailed table displaying the items in each dimension may be found in the Appendix A.

Focal independent variables. Through the addition of a new set of items to the 2012-13 Omnibus Survey, we measured three distinct aspects of school-level coaching: (1) amount (frequency & duration), (2) strategies, and (3) the school functions which coaches may have helped principals improve. In the present study, we used the third set of items, where available responses ranged from Disagree Strongly to Agree Strongly on a 5-point Likert scale, as the focal independent variables.

Principals were asked to agree or disagree with a statement that their coach helped them to do a better job of performing a certain leadership function, such as “. . . keep a steady focus on improving student learning,” or “. . . increase teachers’ sense of urgency about improving student learning.” Through Exploratory Factor Analysis and subsequent refinements via Confirmatory Factor Analysis (see Appendix B for details), we grouped these coaching survey items into three coaching factors: (1) Coaching for Teaching and Assessment Practices, (2) Coaching for Teacher Responsibility and Efficacy, and (3) Coaching for Shared Leadership and Order. The principals tended to think in terms of these three *sets* of functions rather than distinguishing among the individual functions we asked about. So their responses were combined into these three factors and the items that loaded most strongly on each of the three factors are presented in Table B.2 in Appendix B.

Table 1. Omnibus Survey Dimensions Mapped onto Elements of the School Turnaround Process

Elements of the School Turnaround Process	Omnibus Survey Dimensions
<i>Commitment, Climate, & Culture</i>	
<i>Dimensions</i>	
Establishing Goals, Standards, & Accountability: Asserting responsibility for high student achievement	<ul style="list-style-type: none"> • Principal Instructional Leadership
Forging Bonds & Mobilizing Engagement: developing trust & bonds	<ul style="list-style-type: none"> • Teacher-Leadership Respect • Evaluation of Teachers
Forging Bonds & Mobilizing Engagement: engaging teachers in planning, policy making, and problem solving	<ul style="list-style-type: none"> • Distributed Leadership • Team Orientation
Commitment to New Goals, Standards, and Policies (Overall)	<ul style="list-style-type: none"> • Common Purpose
More Orderly & Caring Environment	<ul style="list-style-type: none"> • Safe, Orderly, & Caring Environment • Teacher-Student Relationships • Classroom Management
Stronger Pressures & Rising Expectations for Student Learning	<ul style="list-style-type: none"> • Academic Rigor
<i>Knowledge & Skills</i>	
<i>Dimensions</i>	
Developing Human Capital: Focusing PD on Problems	<ul style="list-style-type: none"> • Quality of PD • Alignment of PD
Developing Human Capital: Following through with coaching (Focal independent variables)	<ul style="list-style-type: none"> • Coaching for Teaching and Assessment Practices • Coaching for Teacher Responsibility & Efficacy • Coaching for Teaching and Assessment Practices
<i>Structures & Support for Instruction</i>	
<i>Dimensions</i>	
Organizing and Managing Instruction: coordinating curriculum	<ul style="list-style-type: none"> • Principal Effectiveness • Common Core • Program Coherence
Organizing & Managing Instruction: supervising instruction	<ul style="list-style-type: none"> • Principal Instructional Leadership • Evaluation of Teachers
Organizing & Managing Instruction: building professional community	<ul style="list-style-type: none"> • Teacher-Teacher Trust • Teacher Knowledge Sharing • Collective Responsibility
Organizing & Managing Instruction: using assessment & organizing assistance for academically struggling students	<ul style="list-style-type: none"> • Data-driven Instruction
Solid Teaching & Re-teaching of the Standard Course of Study	<ul style="list-style-type: none"> • Level of Preparation for Tests • Teacher Self-Efficacy

Covariates. Addressing our evaluation questions required a comparison between the DST target schools and all other non-DST schools in the RttT Omnibus Survey sample that received principal coaching. The schools identified for comparison were as similar as possible to the DST schools, but because the DST schools were the lowest performing in the state, the comparison schools were not as low-performing in 2010-11 and may or may not have been provided with coaches who had the full range of responsibilities that the DST principal coaches had. For the comparison schools—those in the RttT Omnibus sample not targeted by DST—we asked principals to answer survey questions related to coaching by referring to the “person who has provided you with deliberate, sustained assistance designed to help you learn or figure out how to improve your school’s performance.” We included a set of covariates that measured school-level characteristics in 2010-2011 in our analyses—for example student demographic composition, school Performance Composite prior to RttT, student mobility, school size, and school resources (see Table D.1, Appendix D, for a full list of covariates). In addition, we checked to see if differences in teachers’ responses to the Omnibus Survey items were statistically similar between the DST and comparison schools in spring 2011. As shown in the **Findings** section, the covariates and our analysis techniques eliminated all statistically significant differences in leadership and organizational conditions between DST and comparison schools in the first year of the analysis, enabling us to more confidently attribute any changes in these leadership and organizational conditions over the three-year period to DST. In the analysis section, we explain how we attempted to isolate the effects of coaching from the other effects of DST and from the effects of RttT initiatives that target DST schools.

Data Sources for DST Professional Development (Question 6)

Three main data sources were used to address evaluation question 6: (1) professional development session artifacts; (2) the Race to the Top Professional Development Observation Protocol; and (3) the Race to the Top professional development survey. DST staff provided access to an online repository of artifacts including agendas, presentations, and items for activities.² The Professional Development Observation Protocol was used to observe three professional development sessions held during the 2012-13 school year. The tool is used to gather information on the quality of the professional development being observed. Finally, we developed a survey to assess the usefulness, relevance, and participant perceptions of the DST professional development sessions for school leaders. The professional development and this survey were structured around the United States Department of Education’s (USED’s) Transformation Model Components as well as specific aspects of the DST Framework for Action. The response rate for the survey was 47 percent and respondents were mainly school executives but also included teachers, school support staff, and central office staff. Details of the data sources, respondents, and response rates are included in Appendix C.

Data Analysis

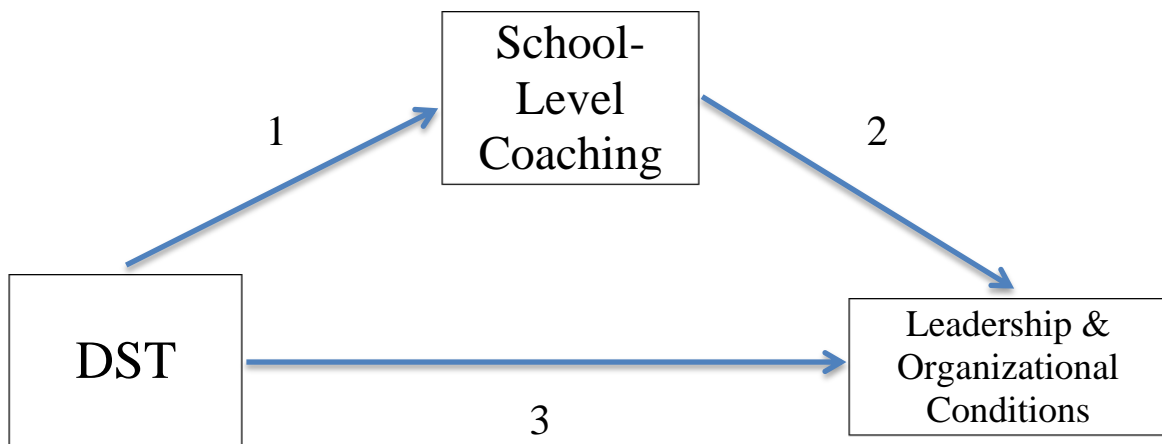
To address evaluation questions 1, 2, and 6, we used descriptive techniques to estimate means and percentages. For the remaining evaluation questions—3 through 5—we used sophisticated

² See <http://dst.ncdpi.wikispaces.net/> for more details

modeling techniques known as hierarchical linear models, in which we modeled changes over time in the leadership and organizational characteristics listed above.

To explain the analytic procedures used to address questions 3 through 5, concerning the overall impact of DST interventions in general and of coaching in particular upon leadership and organizational conditions in the schools, it will be useful to represent the questions diagrammatically (Figure 1).

Figure 1. The Effects of DST upon Leadership and Organizational Conditions in Target Schools via School-Level Coaching and via Other Components of the DST Intervention



Question 3—comparing principals’ assessments of the school-level coaching they received in DST to assessments of principals in comparison schools—is depicted by arrow 1 in Figure 1. Using the data from the 2012-13 Omnibus survey, we conducted a regression analysis to estimate the differences between DST and comparison schools in terms of their principals’ ratings of their coaches’ effectiveness while controlling for the covariates. Three dimensions of coaching effectiveness were analyzed: (1) Coaching for Teaching and Assessment Practices; (2) Coaching for Teacher Responsibility and Efficacy; and (3) Coaching for Shared Leadership and Order. Each of the three coaching factors listed in the section on Question 3 was hypothesized to affect only the subset of the leadership and organizational conditions listed in Table 2 (following page).

In Appendix D, we describe the modeling techniques and present the equations that we implemented.

Question 4—comparing the differences in organizational and leadership conditions that may be attributed to school-level coaching—is depicted by arrow 2 in Figure 1. For this analysis, we included the responses of both DST school principals and their peers in the comparison schools concerning the effectiveness of the coaching they received and estimated the relationships between coaching and leadership and organizational characteristics while controlling for the covariates. We estimated the differences in the third year of the program, 2012-13, using hierarchical linear modeling.

Table 2. Coaching Factors and the Leadership and Organizational Conditions Each Is Hypothesized to Affect

Factor	Leadership and Organizational Conditions (Omnibus Dimensions)
Coaching for Teaching and Assessment Practices (Factor 1)	<ul style="list-style-type: none"> • Principal Instructional Leadership • Alignment of Professional Development • Principal Effectiveness • Common Core • Program Coherence • Evaluation of Teachers • Teacher-Teacher Trust • Teacher Knowledge Sharing • Formative Assessment • Data-Driven Instruction • Level of Test-Preparedness
Coaching for Teacher Responsibility & Efficacy (Factor 2)	<ul style="list-style-type: none"> • Common Purpose • Collective Responsibility • Teacher Self-Efficacy • Academic Rigor/Press
Coaching for Shared Leadership and Order (Factor 3)	<ul style="list-style-type: none"> • Distributed Leadership • Teacher-Leadership Respect • Team Orientation • Safe, Orderly, & Caring Environment

Question 5—comparing the differences in organizational and leadership conditions that could be associated with participating in the DST interventions—is depicted by arrow 3 in Figure 1. For this analysis, we estimated the differences between responses from teachers in DST target schools and their peers in the comparison schools about leadership and organizational characteristics while controlling for the covariates. We estimated the differences in the baseline year (2010-11), the third year of the program (2012-13), and the trends from 2010-11 to 2012-13 using hierarchical linear modeling in which changes in these conditions over the study period are examined. In the findings section we present the adjusted means of each of the two sets of schools on the leadership and organizational conditions at the baseline, end of the period under study, and for the changes between 2010-11 and 2012-13. By “adjusted”, we refer to the average values of these variables after accounting for the effects of the baseline school characteristics (covariates) in our models. We present estimates of the direct effects of DST on leadership and organizational characteristics and the combined indirect effects through school coaching and remaining direct effects that were adjusted for any effects through school coaching.

Findings

Before presenting our findings, we provide a brief description of the RttT interventions that have taken place in the lowest achieving schools. Then we describe DST school-level coaches, coaching, and how school-level coaching fits into DST's overall program of intervention to improve the performance of low-achieving schools. We then present estimates of the overall effect of DST on leadership and organizational conditions in the target schools, after which we turn to the assessment of the effects of school-level coaching on the same variables. Finally, we describe the DST leadership professional development activities and their quality.

Race to the Top Assistance to the Lowest Achieving Schools

In 2010-11, North Carolina identified 118 of the lowest achieving schools in the state for a turnaround intervention. The U.S. Department of Education policies governing RttT funds required low-achieving schools in these districts to implement one of the four USED models (Turnaround, Transformation, Restart, or Closure). In 2012-13, 107 schools were served through DST, 93 of which had chosen the transformation model and the remainder the turnaround model. By 2012-13, eleven schools had chosen closure, and three more closed in 2013-14.

The transformation model requires that the school “Implement each of the following strategies: (1) replace the principal and take steps to increase teacher and school leader effectiveness, (2) institute comprehensive instructional reforms, (3) increase learning time and create community-oriented schools, and (4) provide operational flexibility and sustained support” (USED 2014). The turnaround model requires the school to “Replace the principal and rehire no more than 50 percent of the current staff as well as grant the principal sufficient operational flexibility (including in staffing, calendars/time and budgeting) to fully implement a comprehensive approach to substantially improve student outcomes” (USED 2014).

As indicated earlier, school-level coaching is one of the main, if not the main component of the turnaround process that is used in combination with other components in the broader program of assistance to low-achieving schools and districts offered by DST and through other RttT initiatives. The schools supported through DST have been implementing the following 12 components of the intervention model:

1. Determine whether the principal should be replaced;
2. Implement a new evaluation system;
3. Identify and reward staff who are increasing student outcomes; support and then remove those who are not;
4. Implement strategies to recruit, place, and retain staff;
5. Select and implement an instructional model based on student needs;
6. Provide job-embedded professional development designed to build capacity and support staff;
7. Ensure continuous use of data to inform and differentiate instruction;

8. Provide increased learning time;
9. Provide an ongoing mechanism for community and family engagement;
10. Partner to provide social-emotional and community-oriented services and supports;
11. Provide sufficient operating flexibility to implement reform; and
12. Ensure ongoing technical assistance.

When North Carolina's RttT proposal was submitted, several of the schools already had replaced their principals as part of the earlier North Carolina-initiated turnaround program, and by the time the grant was awarded and implementation began, some of these schools had made sufficient progress—a 10-point gain in the school's Performance Composite—to assure DST that the principal was capable of leading a major positive change in the school.

Since RttT grant activity began in 2010-11, the remaining eleven components have been addressed through a variety of specifically targeted initiatives, some of which are administered by other units within NCDPI and each of which have been and will continue to be evaluated in separate studies. For example, NCDPI put in place the North Carolina Educator Evaluation System that includes the use of student achievement growth as an additional standard for both teacher and principal evaluations and incentives to reward effective staff in low-achieving schools have been instituted. Further, professional development on strategic recruitment, retention, and placement have been provided; three regional leadership academies have been established to prepare leaders for schools with challenging student populations; the North Carolina New Teacher Support Program provides induction services for beginning teachers who have been targeted at schools also served by DST; a recruitment incentive program was established; efforts have been made to increase the number of Teach For America corps members serving in low-achieving LEAs; and a new North Carolina Teacher Corps modeled on Teach For America was established.

In 2012-13, the state changed the North Carolina Standard Course of Study to incorporate standards that were based on the Common Core State Standards for English and Mathematics and North Carolina Essential Standards for other subjects. The new standards raised the rigor of the assessments used to gauge students' knowledge and skills; accordingly, students' performance on the more rigorous assessments was lower than on the prior assessments. Schools across the state had lower Performance Composites as a result. Even so, comparing changes in Performance Composites from the pre-DST baseline year (2009-10) to 2012-13, the DST schools experienced smaller declines than did other schools at their grade level. On average, under the more rigorous standards, DST elementary schools declined 7.9 points less than did other elementary schools; DST middle schools declined 4.4 points less than did other middle schools; and DST high schools changed about the same as other high schools in North Carolina (Table 3, following page).

Table 3: Comparative Three-year Change in School Performance Composites during First Three Years of the Race to the Top Grant Period (2009-10 to 2012-13)

Group of Schools	Average 3-Year Change
Three-Year Change for Schools Statewide	HS: -36.6% pts. MS: -34.3% pts. ES: -34.3% pts.
Three-Year Change for DST Schools	HS: -36.8% pts. MS: -29.9% pts. ES: -26.4% pts.
Difference (smaller declines in middle and elementary DST schools than in middle and elementary schools statewide)	HS: +0.20% pts. MS: -4.40% pts. ES: -7.90% pts.

DST School-level Coaching

DST directly provides district-, school-, and classroom-level coaching and school-level professional development to help assure that all transformation model components are addressed. In the next two sections, we describe only the coaching efforts, leaving the school-level professional development to be described in a later section of the report.

A substantial portion of 2010-11 was required to recruit, select, orient, and organize the large staff of coaches required to serve the state’s 118 lowest-achieving schools and 12 lowest-performing districts. From the outset, DST leaders insisted that school-level coaches supported by the program be individuals who had themselves turned around low-achieving schools, either as principals (a position held by virtually all of the coaches eventually hired), as district administrators (a position held by some of the coaches), or as both. Recruiting and retaining such people has been a challenge in itself, but of nearly equal importance has been matching the coaches to the schools themselves. Low-achieving schools generally share some features, but each has distinct problems and distinct professional personalities and communities to deal with. So placing school leadership coaches appropriately has proven to be nearly as important as recruiting and retaining them.

In Part B of the state’s monthly RtT report to USED from August 2013 (NCDPI, 2013)—which focused in part on DST implementation—DST leaders reported that 100% of the program’s school, district, and instructional coaches had been hired and placed, and that they had successfully filled vacancies arising from resignations on an ongoing basis. Currently, DST employs approximately 70 coaches of all types to support RtT turnaround (USED 2014). As the August 2013 report also noted, however, it had become increasingly difficult to maintain a full complement of highly-skilled coaches. A number of DST staff have been hired by districts in district leadership roles, which the August 2013 report characterized as “. . . both a positive and a negative.” The report went on to point out that,

While it is great for the long term to have effective DST staff become embedded in district leadership positions, it is currently more difficult to replace them with equally

qualified personnel as the positions are of short duration and time limited. When we lose a coach and it takes us months to replace the coach, it has a negative impact on our being able to offer the quality support principals and teachers need. We are beginning to rely more on retired personnel and out-of-state candidates. This also creates a new, increased internal training need.

In addition, the report noted that changes in the state's personnel hiring process had slowed that process for DST further (sometimes increasing the amount of time to hire a candidate by multiple months). The report concluded that such delays had impacted negatively DST's ability "to offer the quality support principals and teachers need."

Monthly staff meetings for the School Transformation Coaches (STC) provide occasions for orientation and ongoing discussions designed to promote common understanding of the coaching role. In these discussions, the challenges and techniques faced by coaches have been important mechanisms for developing the repertoire of coaching strategies in part because rather than specifying a single, programmed approach for coaches to implement in each school, DST leaders have encouraged coaches to focus their work on the particular problems and strengths of the schools with which they work and adjust their strategies to fit the local personnel in each school.

STCs generally work with more than one school, and often as many as four. In prior phases of the present study, we found that in the small sample of schools we studied closely, coaches commonly spent a day per week or more on site in the school. A typical day might begin with a meeting to review problems and progress with the principal and sometimes with assistant principals, sometimes focusing on particular teachers or on how to fill vacancies occasioned by the personnel turnover that increasingly afflicts many DST schools; visits to several classrooms to get a sense of whether and how instruction is changing, sometimes jointly with the principal or assistant principals; meetings with team leaders, department heads, or others assigned to address particular problems; a review of data on student and teacher attendance, parent responses to a survey, or other key data; participation in a School Improvement Council meeting; and a quick de-briefing with the principal. School coaches also touch base from time to time with classroom-level instructional coaches and, in districts that have them, district-level coaches. The coaches from each level report separately to DST supervisors.

On the basis of the interviews, observations, and reviews of coaches' own reports on their work we conducted in prior phases of this evaluation, we were able to gain a sense of the range of strategies or approaches coaches employed as they addressed the problems and challenges within each school. These ranged from the relatively non-intrusive (e.g., posing questions, listening to principals as they discussed their concerns and dilemmas, and attending School Improvement Council meetings to get a sense of how practices and climate are changing in a school) to much more forceful and direct interventions (e.g., demonstrating how to use a formal instrument to guide classroom observation and give teachers feedback afterwards, and pressing principals to address persistent problems that they seem to be evading).

As a group, school-level coaches have a rich repertoire of strategies to call upon in their work. This range of strategies is important in part because DST does not prescribe a certain set of "treatments of choice" to deal with each type of problem that coaches confront. DST did not use a detailed "theory of action" to guide coaches as they seek to improve low-achieving schools.

Rather, as DST leaders told us, they “bet on people rather than prescriptions.” A main role of DST leadership is to focus on getting the right people with the right experience, attitudes, and values into place and then supporting them through regular meetings to examine common problems and solutions. Thus, getting the right people into place and supporting them through regular interchange in order to have the components listed above implemented with fidelity is DST’s theory of action on how to improve these schools.

Given the key role of the school-level coaches that work directly with school leaders to support them in carrying out the school specific improvement components, we collected survey data from principals to quantify what coaches actually do—what strategies or techniques they employ as they try to help principals and other local educators improve school performance—and the extent to which they employ each of these strategies. We also wanted to get principals’ own account of how often and for how long a period they were getting coaching. As noted earlier, we asked principals of comparison schools as well as DST target schools about the same matters. Table 4 displays a summary of each group’s responses.

Table 4. Principals’ Responses to Survey Items on Extent and Type of Coaching Received (Means)

Survey Question	DST & Non-DST Schools Combined	DST Schools	Non-DST Schools
Coaching Frequency			
My coach has a meaningful face-to-face meeting with me every day (7) to every two weeks (5) to not at all (1) ³	4.747 (1.449)	5.049* (1.400)	4.411 (1.442)
How long have you worked with your coach? ⁴	3.272 (0.757)	3.304 (0.704)	3.236 (0.813)
Coaching Strategies			
Asks questions that make me think in new ways about how to improve my school	4.037 (0.827)	4.105 (0.817)	3.962 (0.839)
Suggests actionable approaches or solutions to the challenges and problems I face	4.037 (0.827)	4.193* (0.718)	3.865 (0.908)
Persuades me to try new things even when I am reluctant to do so	3.738 (0.894)	3.818 (0.925)	3.654 (0.861)
Models the behaviors that s/he’s encouraging me to adopt	3.881 (0.879)	3.982 (0.834)	3.769 (0.921)
Gives me feedback that helps me put new behaviors into practice	3.937 (0.814)	4.014 (0.712)	3.842 (0.922)
Takes real pleasure in my school’s successes and celebrates them with us	4.244 (0.776)	4.300 (0.729)	4.175 (0.810)

Note: Bold with * indicates statistical significance at the p<0.05 level

³ Responses categories for this item are: (1) not at all; (2) almost never; (3) every semester; (4) every month; (5) every two weeks; (6) every week; (7) every day.

⁴ Response categories for this item are: (1) less than once a month; (2) one to four months; (3) four to ten months; (4) more than a school year.

As indicated in Table 4, on average, principals of DST schools reported statistically significantly more frequent and meaningful face-to-face meetings with their coaches than did principals of comparison schools. Principals of DST schools also reported meeting with their coaches a little more often than once every two weeks, while principals of comparison schools reported meeting slightly less than every two weeks. Both sets of principals reported that they had been working with their current coaches for between four and ten months.

DST principals reported that their coaches also were statistically significantly more likely to suggest actionable approaches or solutions to the challenges and problems that they faced than principals in comparison schools reported. Otherwise, principals from the two sets of schools reported similarly on the coaching they received. Both sets of principals tended to agree that their coaches used specific strategies such as modeling behaviors and providing feedback, with responses averaging about four on a five point scale. Overall, these results suggest that the two sets of principals generally received similar amounts and types of coaching.

Ratings of Leadership Coaching

We found that principals of comparison schools rated the coaching that they received almost as highly as principals of DST schools rated the coaching that they had received (Table 5). Principals in DST schools were more likely to report that their coaches helped them do a better job on shared leadership and order within their schools than principals in the comparison schools. The two sets of principals reported no differences in the effectiveness of their coaches for improving teaching and assessment practices or for improving teacher efficacy and responsibility.

Table 5. Differences in Levels of Agreement by Principals of DST Target Schools and non-DST Comparison Schools that Coaching Helped Them Do a Better Job

	Factor	DST Difference⁵
Factor 1:	Coaching for Teaching and Assessment Practices	0.119
Factor 2:	Coaching for Teacher Responsibility and Efficacy	0.080
Factor 3:	Coaching for Shared Leadership and Order	0.241*

Note: Bold with * indicates statistical significance at the $p < 0.05$ level

Before turning to the examination of the effects of coaching and DST on leadership and organizational conditions, we describe the changes in these conditions.

Changes in Leadership and Organizational Conditions

Between spring 2011 and spring 2013, teachers reported few changes in the leadership and organizational conditions of all North Carolina public schools (Table 6, following page). The

⁵ The differences reported here are differences between the means for two groups of principals on the factor scores that were generated as described in Appendix B, and for which the factor loadings are reported in Table B.1.

largest changes, which amounted to about 1/10th of a point on a seven-point scale and were not statistically significant, indicated very slight declines in classroom management, ratings of principals’ instructional leadership, and teachers’ use of higher-level instructional practices. These differences indicate stability over time in teachers’ views of these conditions in their schools. This relative stability in teachers’ views of the leadership and organizational conditions in their schools reduces but does not eliminate the possibility that differences will occur in individual schools or in groups of schools. Changes in individual schools or in groups of schools could be masked in the overall averages. We now investigate this possibility by examining any differences in the adjusted means for DST and comparison schools during RttT.

Table 6. Leadership and Organizational Characteristics: 2010-11 through 2012-13

Variable	All Schools			Difference 2010-11 to 2012-13
	2010-11 Mean	2011-12 Mean	2012-13 Mean	
Academic Rigor	6.578	6.552	6.521	-0.06
Alignment of PD	5.362	5.361	5.341	-0.02
Classroom Management	6.248	6.184	6.152	-0.10
Collective Responsibility	3.930	3.928	3.933	0.00
Common Core	5.746	5.795	5.713	-0.03
Common Purpose	5.771	5.757	5.732	-0.04
Data Driven Instruction	5.762	5.768	5.745	-0.02
Distributed Leadership	5.387	5.439	5.436	0.05
Evaluation of Teachers	5.209	5.238	5.187	-0.02
Formative Assessment	3.494	3.510	3.541	0.05
Leadership Respect	5.575	5.618	5.646	0.07
Principal Effectiveness	5.393	5.445	5.436	0.04
Principal Instructional Leadership	4.373	4.338	4.283	-0.09
Program Coherence	5.847	5.870	5.845	0.00
Safe, Orderly, Caring Environment	5.416	5.435	5.349	-0.07
Teacher Knowledge Sharing	5.209	5.238	5.187	-0.02
Teacher Self Efficacy	3.494	3.510	3.541	0.05
Teacher Student Relations	5.575	5.618	5.646	0.07
Teacher Trust	5.393	5.445	5.436	0.04
Teaching Practice	4.373	4.338	4.283	-0.09
Team Orientation	5.847	5.870	5.845	0.00
Level of Test Preparedness	5.416	5.435	5.349	-0.07
<i>Average of the Difference</i>				-0.01

Note: Bold indicates statistical significance at the p<0.05 level

When RttT began in North Carolina in spring 2011, there were no differences in the adjusted averages between DST and comparison school in the organizational and leadership conditions as viewed by teachers. By spring of 2013, teachers in DST target schools registered higher levels of teacher knowledge-sharing and use of formative assessment—two of nineteen dimensions of leadership and organizational conditions—than did the teachers in comparison schools that were

similar on these measures in 2011. DST schools improved less than the comparison schools on team orientation and declined relative to comparison schools on leadership respect (Table 7).

Table 7. Differences between DST and Comparison School Averages on Leadership and Organizational Conditions

Dimensions of Leadership and Organizational Conditions	Differences at Baseline	Differences in 3 Year Change	Differences at End of Period
Alignment of PD	0.036 (0.096)	0.043 (0.052)	0.121 (0.083)
Principal Effectiveness	0.139 (0.117)	-0.092 (0.070)	-0.044 (0.107)
Common Core	0.063 (0.072)	-0.011 (0.039)	0.042 (0.063)
Program Coherence	-0.030 (0.100)	-0.038 (0.052)	-0.106 (0.092)
Evaluation of Teachers	0.107 (0.110)	-0.014 (0.065)	0.078 (0.104)
Teacher-Teacher Trust	-0.056 (0.097)	-0.032 (0.054)	-0.119 (0.084)
Teacher Knowledge Sharing	0.093 (0.061)	0.031 (0.037)	0.154* (0.053)
Formative Assessment	0.048 (0.049)	0.024 (0.029)	0.245* (0.115)
Data Driven Instruction	0.152 (0.081)	-0.020 (0.043)	0.112 (0.071)
Prepared students for test	-0.021 (0.040)	0.025 (0.026)	0.028 (0.039)
Common Purpose	0.054 (0.101)	-0.037 (0.058)	-0.020 (0.094)
Collective Responsibility	0.057 (0.069)	-0.036 (0.037)	-0.016 (0.062)
Principal Instructional Leadership	0.124 (0.112)	-0.085 (0.066)	-0.045 (0.104)
Academic Rigor	0.023 (0.029)	-0.005 (0.020)	0.012 (0.027)
Leadership Respect	0.297 (0.154)	-0.230* (0.091)	-0.164 (0.143)
Distributed Leadership	0.118 (0.119)	-0.070 (0.074)	-0.022 (0.105)
Team Orientation	0.159 (0.121)	-0.152* (0.064)	-0.146 (0.107)
Safe and Orderly Environment	0.020 (0.103)	0.013 (0.048)	0.102 (-0.153)
Teacher Self Efficacy	0.059 (0.050)	0.015 (0.030)	0.088 (0.046)

Note: Bold with * indicates statistical significance at the $p < 0.05$ level. Positive numbers reflect DST schools better than comparison schools and vice versa for the negative numbers.

Effects Associated with Coaching during the Study Period

In our examination of school-level coaching, we first estimated the association between principals' ratings of their coaches and the organizational and leadership conditions of their schools for both DST and comparison schools during the study period. Across DST and comparison schools, principals' perception of more effective coaching for teaching and instruction was associated with a positive and significant difference in four of the dimensions of leadership and organizational conditions: alignment of professional development, program coherence, teacher-teacher trust, and data-driven instruction (see last column in Table 8, following page). This finding suggests that good coaching for principals makes a difference in some important dimensions of teachers' work environments, particularly dimensions that are directly related to instruction and assessment.

Coaching for a safe and orderly environment—where DST principals rated their coaches more effective than did the principals of comparison schools—did not exert a statistically significant effect on the four leadership and organizational conditions that they were hypothesized to affect (distributed leadership, teachers' respect for school leader, team orientation, and safe, orderly, and caring environment). This may imply that more effective coaching in DST schools did not lead to greater improvement in leadership and organizational conditions in those schools than in the comparison schools; however, it is not clear if that is because it is more difficult to improve these conditions in schools undergoing turnaround.

At the request of DST leadership, we also estimated the effects of different combinations of principals' prior experience and skill levels on their ratings of the coaching they received. For this analysis, DST leaders assigned each principal of a DST target school to one of four categories, based on their experiences with the principals: (1) more experienced and more skilled, (2) more experienced but less skilled, (3) inexperienced but relatively skilled, and (4) inexperienced and less skilled.

Across all three coaching factors the more experienced and skilled principals' responses indicated that coaching had helped them the least. By margins that were highly significant statistically, principals in all three of the other categories gave the coaching they received more favorable "ratings" on all three coaching factors (To review the precise coefficients and standard errors for this analysis, see Table B.3 in Appendix B.) Compared to the other three groups of principals, inexperienced but more skilled principals gave the coaching they received the highest ratings—about 1.4 points on a five-point scale higher than more skilled and experienced principals. Principals in the experienced but less skilled and inexperienced and less skills groups gave their coaches ratings that ranged from about .6 of a point to 1 point higher than more skilled and experienced principals. It seems logical that principals who were less skilled and/or less experienced would have profited more from the coaching they received. Thus, these results tend to confirm that principals' ratings of how much the coaching they received helped them improve their leadership performance are at least roughly accurate. They may also provide some guidance for DST in allocating school-level coaching resources to principals most in need of and most likely to profit from coaching when resources become scarcer.

Table 8. Effects of DST and School-Level Coaching on Leadership and Organizational Conditions in Schools

Dimensions of Leadership and Organizational Conditions	Effect of DST on Leadership and Organizational Conditions, Net of Effect of Coaching	Effect of Coaching on Leadership and Organizational Conditions, Net of Effect of DST
Alignment of PD	-0.011 (0.077)	0.095* (0.037)
Principal Effectiveness	-0.036 (0.115)	0.001 (0.056)
Common Core	-0.030 (0.060)	0.038 (0.029)
Program Coherence	-0.076 (0.087)	0.090* (0.042)
Evaluation of Teachers	0.080 (0.115)	-0.003 (0.056)
Teacher-Teacher Trust	-0.203* (0.089)	0.095* (0.044)
Teacher Knowledge Sharing	0.091 (0.062)	-0.006 (0.029)
Formative Assessment	0.088* (0.043)	0.009 (0.021)
Data Driven Instruction	-0.053 (0.068)	0.069* (0.033)
Level of Test Prep	0.039 (0.048)	-0.010 (0.023)
Principal Instructional Leadership	-0.067 (0.120)	0.041 (0.058)
Common Purpose	-0.042 (0.089)	0.048 (0.042)
Collective Responsibility	-0.123* (0.058)	0.011 (0.028)
Academic Rigor	-0.010 (0.036)	0.005 (0.017)
Teacher Self-Efficacy	0.038 (0.045)	0.028 (0.022)
Teacher Leader Respect	-0.228 (0.158)	0.005 (0.086)
Distributed Leadership	-0.115 (0.123)	0.076 (0.069)
Team Orientation	-0.311* (0.105)	0.115 (0.058)
Safe and Orderly Environment	0.108 (0.074)	0.015 (0.040)

Notes: Results presented as HLM regression coefficients, with standard errors in parentheses; bold and * indicates statistical significance at the p<0.05 level

Effects Associated with DST on Leadership and Organizational Conditions

Although during the study period the changes in leadership and organizational conditions of all schools, as measured by teachers' responses, were stable (Table 6), we described that changes in these conditions in just the DST schools were mixed, with two positive, two negative, and the remainder unchanged (Table 7). In addition to showing the effects of coaching net of DST in Table 8, Column 1, the differences between DST and comparison schools after removing the effects associated with coaching are displayed in Table 8, Column 2. Recalling Figure 1, the effects of coaching net of DST were depicted by Arrow 2. Also drawing on Figure 1, the effects of DST net of coaching were depicted by Arrow 3. The findings appear to indicate that coaching partially offset a decline in team orientation in DST schools. In other words, coaching for shared leadership and order was rated as more effective in DST schools, and after controlling for or removing the effect of coaching, team orientation in these schools declined by 0.311 standard deviation units. However, the overall effect (Table 7) is smaller, indicating that coaching ameliorated the decline.

After controlling for coaching, teachers' acceptance of collective responsibility for the performance of students decreased in DST schools when compared to other schools (Table 8). However, accepting collective responsibility in DST schools did not change when compared with other schools (Table 7). Taking these two sets of findings together, the effects of coaching appeared to be sufficient to keep teachers' acceptance of collective responsibility stable in DST schools. Finally, the evidence suggests that the positive effects of coaching for teaching and assessment practice on teacher-teacher trust was sufficient to offset an overall decline in trust between teachers in DST schools. While coaching in DST schools was not associated with improvements in collective responsibility or teachers' trust of their colleagues, it may have been sufficient to counter declines if the coaching had been less effective. It is possible that it is particularly challenging for schools in turnaround to improve teachers' acceptance of collective responsibility for their students' success at school or to improve trust of their colleagues.

Our findings concerning DST school-level coaching and changes in schools' leadership and organizational conditions may be summarized as follows:

- The overall effects of DST on leadership and organizational conditions were mixed. In DST schools, teachers' respect for their school's leader did not improve as much as in other schools and their perception that all members of the staff work together as a team declined. Improving these two conditions may be particularly challenging in schools in turnaround. On the other hand, DST schools improved more than comparison schools in knowledge-sharing among teachers and in the use of formative assessment. The gains in the use of formative assessments by teachers in DST schools appear to have resulted from aspects of the DST intervention other than leadership coaching.
- Principals of both DST schools and comparison schools reported receiving coaching, and both groups rated the coaching positively.
- Principals of DST schools rated the coaching they received more highly than did principals of comparison schools on one of the three types of school-level coaching we measured: coaching for shared leadership and order. There was no significant difference between DST

and comparison school principals' ratings of coaching for teaching and assessment and for teacher responsibility and efficacy.

- Across DST and comparison schools taken together, however, coaching for teaching and assessment practices led to more improvement in teachers' beliefs about the alignment of professional development with teachers' needs, coherence in schools' instructional programs, trust among teachers, and in the use of data to guide instruction. Neither of the other two types of school-level coaching was associated with higher rates of improvement in the leadership and organizational conditions in schools. However, since collective responsibility did not decline significantly, nor did it appear to be lower in DST schools than in the comparison school at the end of the study period, coaching in DST schools did appear to offset declines in this measure of organizational conditions and to partially offset the decline in team orientation.
- The hypothesis that DST would lead to higher rates of improvement or greater levels of improvement through the mechanism of coaching was supported in four of 19 comparisons.

DST Professional Development

In addition to coaching at the school, district, and teacher levels, DST provided professional development for school leaders. In a Progress Update submitted to the federal government in August of 2013, the end of the period covered by the present study (2010-11 through 2012-13), DST leaders reported that they had delivered all planned “Professional Development for School Leaders” sessions on successfully implementing the USED reform models. During 2012-13 DST provided five professional development sessions for leaders in DST schools and school districts. The session topics, which are listed in Table 9, included: 1) how to identify and retain “irreplaceable” teachers, changing school culture, strategies to develop family and community engagement, and analyzing teacher evaluation ratings, performance composite data, and Education Value-Added Assessment System (EVAAS) student growth data.

Table 9. RttT DST School Leader Professional Development Sessions 2012-13

Session	Topics	Date	Number of Participants
VII	<ul style="list-style-type: none"> • Use strategic and cultural leadership practices to examine evidence and impact • Strategies for intentionally changing school culture • Conduct student-centered observations • Develop questions to improve professional practice • Examine student work to identify instructional trends 	September 2012	153
VIII	<ul style="list-style-type: none"> • Visit a school engaged in the transformation process • Choices included: <ul style="list-style-type: none"> ○ Rock Rest Elementary ○ Oak Hill Elementary ○ Spring Valley Elementary ○ YE Smith Elementary ○ Red Springs Middle ○ Fairgrove Middle ○ Greene County Middle ○ EE Smith High ○ Jones Senior High 	December 2012	96
IX	<ul style="list-style-type: none"> • Distinguished Leadership in Practice Presentation • The “Irreplaceables” • Defining, identifying, and determining strategies to keep them 	February 2013	147
X	<ul style="list-style-type: none"> • Explore Family and Community Engagement (F.A.C.E.) • Strategies to meet the needs of students and their families • Transition from a Fortress School to a Partnership School • Ways to incorporate F.A.C.E. into professional learning communities 	April 2013	185
XI	<ul style="list-style-type: none"> • Examine teacher effectiveness as measured by teacher evaluations • Analyze performance data and discuss the implications for and impact on student learning 	June 2013	198

Each session was geared to the specific needs of turnaround schools and aligned to the various USED components. When combined with sessions from previous years, all USED component areas were covered through professional development activities. Participants were asked to rate the utility of session content as related to each component through a series of four questions. Overall, all sessions were highly rated by participants. The participants’ responses did not tend to vary across the four questions, so in Table 10, we report the percentage of respondents who indicated that the professional development helped them to understand the component (the full report for all four questions is in Appendix C). The lowest agreement percentages were for two dimensions of component 5—maintain student engagement and plan transitions to ensure on-time graduates and implement a strategic literacy plan and component 1—determine whether the principal should be replaced and component ten—partner to provide social-emotional and community-oriented services and supports. While component 7—ensure continuous use of data to inform and differentiate instruction—received the highest agreement, three others were above 90 percent agreement. It is however, interesting to note that component seven was rated lowest in terms of importance, with only 63 percent in agreement that it was important, while the importance of all others ranged from 86 to 98 percent.

Table 10. Participant Assessment of Utility of the Professional Development Session for Understanding the USED Transformation Components

Component	% Agreed/ Strongly Agreed
1. Determine whether the principal should be replaced.	76%
2. Implement a new evaluation system that uses student growth as a significant factor.	91%
3. Identify and reward staff who are increasing student outcomes; support and then remove those who are not.	87%
4. Implement strategies to recruit, place, and retain staff.	89%
5. Select and implement an instructional model based on student needs:*	
<i>Develop goals and priorities with an effective plan for implementation.</i>	86%
<i>Implement quality Professional Learning Communities (PLCs).</i>	86%
<i>Implement strategies for ensuring that all students are learning.</i>	89%
<i>Implement a strategic literacy plan.</i>	78%
<i>Maintain student engagement and plan transitions to ensure on-time graduates.</i>	75%
<i>Re-evaluate practices’ and procedures’ impact on learning.</i>	92%
6. Provide job-embedded professional development designed to build capacity and support staff.	90%
7. Ensure continuous use of data to inform and differentiate instruction.	95%
8. Provide increased learning time.	80%
9. Provide ongoing mechanism for community and family engagement.	83%
10. Partner to provide social-emotional and community-oriented services and supports.	78%

Note: *Component 5 is measured by a series of items tied to the DST Framework for action.

We also collected open-ended comments about the participants’ views of the most helpful aspects of each session. We display illustrative quotes concerning the sessions on teacher evaluation procedures, evidence and impact, and retaining effective teachers (Table 11). When asked about the least helpful aspects of the sessions there were few responses except for the family and community engagement session and concerning the choice of facilitators where participants raised concerns about the lack of experience some of the speakers had with turning around schools. The participants offered the most positive comments about three sessions in terms of impact on their schools’ culture and morale—retaining effective teachers, effective teacher evaluation procedures, and family and community engagement.

Table 11. Summary of Participants’ Open-ended Comments about the Most Helpful Aspects of DST Professional Development to your School’s Improvement Efforts

Common Themes (Listed in Order of Popularity)	Illustrative Quotes
Teacher Evaluation Procedures	<ul style="list-style-type: none"> • I gained a better understanding of the teacher evaluation tool and how to appropriately determine where to score the tool • Analysis of teacher effectiveness and student learning outcomes using McRel evaluation tool • What was helpful was the discussion on teacher evaluation ratings and why they shouldn't be inflated. • The group activities to discuss teacher evaluation ratings. • Looking more closely at the teacher evaluation standards
Evidence and Impact	<ul style="list-style-type: none"> • The impact on teaching and learning • Student impact and teacher effectiveness training • The "so what" model looking at teacher impact on student learning • Looking at student impact and teacher actions • Looking at how our instructional methods are impacting student learning • The focus towards instruction and what good instruction looks like
Retaining Effective Teachers	<ul style="list-style-type: none"> • Retaining quality teachers • I especially appreciated the presentation on “The Irreplaceables” and its emphasis on smart teacher retention • Staff retention • Retaining and recruiting high-quality teachers • Use of dates, retaining qualified teachers, use of technical assistance

Source: RttT DST Professional Development Survey

In addition to the surveys, 15 segments of three professional development sessions covering the components of the United States Department of Education’s Transformation Model were observed for the variety of activities they offered and the quality of those sessions. Participants engaged in a variety of activities, observing presentations and videos as well as taking part in small-group and whole-group discussions and activities. All of the professional development segments included more than one type of activity. Of the eight distinct professional development activities utilized over the course of the two-day session, the most frequently used activities were the presentation of information by the facilitator and engagement in a small group discussion as shown in Table 12.

Table 12. Professional Development Session Activities

Professional Development Activities	Percentage of Occurrence (n=15)
Listened to a presentation by facilitator	93%
Listened to a presentation by participant(s)	13%
Engaged in whole group discussion initiated by facilitator	47%
Engaged in whole group discussion initiated by participant(s)	27%
Engaged in small group discussion	60%
Engaged in small group activity, distinct from discussion (e.g., game, role play)	40%
Engaged in individual activity	33%
Watched a video	7%

Source: RttT Professional Development Observation Instrument

In addition, of the 15 segments of the professional development sessions observed by the evaluation team, the eight characteristics of quality profession development occurred in between 67 and 100 percent of the professional development segments. All occurrences of the eight characteristics of quality were rated “good,” and between 64 and 100 percent of the professional development segments had “a lot” of each high-quality characteristic.

In addition to these sessions, DST staff provided an orientation session to those who became new leaders in DST schools. New leaders received an overview of the TALAS initiative and other RttT initiatives that may overlap (Regional Leadership Academies, Strategic Staffing, High Growth and Recruitment Incentives, New Teacher Support Program, Teach For America Expansion, and North Carolina Teacher Corps [NCTC]). They also received a condensed version of the previous sessions in the School Leader Professional Development Series.

Conclusion

In this report, we described findings focused on two aspects of DST activities for 2012-13—school-level coaching and professional development for DST school leaders. With respect to coaching, we found that from 2010-11 through 2012-13, DST target schools improved more than the comparison schools on two of nineteen dimensions of leadership and organizational conditions (teacher knowledge-sharing and use of formative assessment), but DST target schools improved at a slower rate than comparison schools on two other dimensions (respect for school leaders and team orientation). It seems reasonable to speculate that teachers' respect for their school leaders and team orientation may be challenging to improve in schools that are undergoing turnaround.

As suggested earlier, the small number and mixed nature of statistically significant program effects is not surprising in light of the very small changes from 2010-11 through 2012-13 in the leadership and organizational conditions in all sampled schools taken together, or in DST schools considered separately.

In addition, principals of comparison schools reported receiving about as much coaching assistance as did principals in DST schools, and they rated their coaching almost as highly as principals of DST schools rated the coaching that they had received from the program. With small changes in perceived leadership and organizational conditions in both DST and comparison schools, and with comparison schools receiving coaching assistance that they viewed as favorably as the coaching that STCs provided to the target schools, we did not find that DST school-level coaching accounted for the differences in changes in leadership and organizational conditions noted above. Of note, while both groups received support that they viewed favorably, coaching for shared leadership and order was rated higher by DST school principals.

Across both sets of schools taken together, more effective coaching as perceived by principals was associated with a positive and significant difference in four of the dimensions of leadership and organizational conditions as perceived by teachers. So there is evidence that good coaching for principals makes a difference in important dimensions of teachers' work environments—a finding that supports continuation of the school-level coaches provided by DST. These four dimensions were all in one type of coaching—coaching for teacher and assessment practices. However, there was no effect of either coaching for shared leadership and order or of coaching for responsibility and effectiveness on any of the conditions that they were expected to affect, such as respect of teachers for their leadership or collective responsibility. It seems reasonable to suggest that, going forward, school-level coaches focus more attention on these two types of coaching.

The coaching for shared leadership was rated better by DST principals than it was by the principals of comparison schools, which indicates that it is a relative strength of the DST school-level coaches. However, two of the conditions in this domain—respect for leadership and team orientation—declined in DST schools relative to the comparison schools. This may indicate that these conditions are especially difficult in schools in the process of change after having been labeled the lowest-achieving in the state and placed in turnaround. Coaching school leaders to build teams and earn the respect of their teachers may be difficult for schools in turnaround and

therefore require highly effective coaching strategies or other interventions, such as targeted professional development.

In addition to the four conditions that were positively affected by coaching for teaching and assessment practices, the two conditions that improved in DST schools relative to the comparison schools were in the coaching domain of teacher knowledge-sharing and formative assessment. Since the school principals in DST schools were asked to refer to the DST school-level coaches when responding to questions about coaches, the evidence strongly suggests that the increase in the use of formative assessments by teachers in DST schools was brought about by DST activities other than school-level coaching—perhaps, for example, by instructional coaches. The evidence suggests that teacher knowledge-sharing was not affected by school-level coaching. Developing professional learning communities was a focal point of both the professional development and coaching provided by DST. DST may consider encouraging school-level coaches to share and refine strategies to use to improve principals' skills in providing instructional leadership and evaluating teacher. The fact that other conditions in this domain have been positively affected by coaching may indicate that these conditions may be improved over time as well.

As noted earlier, over the first two years of the RttT period (from 2009-10 and 2011-12), on average DST schools' Performance Composites improved substantially more than those in all schools statewide. In 2013-14, Performance Composites of virtually all schools statewide dropped substantially as a result of the adoption of the more challenging curriculum based on Common Core State Standards and North Carolina Essential Standards and a new generation of assessments designed to measure student achievement against these elevated curricular standards. At the high school level, DST target schools' performance fell to about the same degree as those for other high schools statewide, but at the middle and elementary school levels, DST schools maintained their performance better than did other middle and elementary schools around the state, falling 4.4 points less at the middle school level and 7.9 points less at the elementary school level.

Discussion

Given the findings from this study, namely that perceptions of leadership and organizational conditions have not improved substantially more in DST schools than in comparison schools, further evaluation is needed to determine how the program has brought about the demonstrated improvements in student achievement. There may also be additional considerations when interpreting these findings as suggested by the qualitative findings from the previous two DST evaluation reports.⁶ Specifically, teachers reported that improvements in their perceptions were often the result of improved student achievement, rather than the converse. If this holds true, one explanation for these findings is that more time is needed to see if the improvements in student performance change teachers' perceptions about their school's leadership and organizational conditions for the better.

⁶ <http://cerenc.org/rttt-evaluation/district-and-school-transformation/>

Additional consideration is also warranted around the finding that non-DST comparison schools report receiving coaching that their principals perceived to be almost as effective as that provided by DST. In addition, the amount of coaching (in terms of interactions between the principals and coaches) was similar in DST and non-DST schools, though the nature of the coaching may have been qualitatively different. While this should be viewed positively in relation to the widespread exposure to effective coaching, it may also suggest that existing resources available from districts or other sources may need to be inventoried. Perhaps these other resources for coaching could be coordinated in ways that support, intensify, or expand the reach of DST's efforts to turn around low-achieving schools. These findings also support continued focus on district-level interventions to strengthen this infrastructure for sustainable change.

Next Steps

The data on student achievement for the 2012-13 school year will be used to ascertain whether DST's interventions—school-level coaching as well as other DST interventions and supports—have improved student achievement in the target schools to a greater extent than student achievement has improved in comparison schools. In addition, another year of Omnibus Survey data will allow further investigation into the relationship between any changes in student achievement with changes in teachers' perceptions of leadership and organizational conditions in their schools. The final evaluation report will also examine whether over time, the impact of coaching broadens and leads to similar improvements in student achievement.

The primary outcome measures in the final DST evaluation report will include student achievement, teacher effectiveness, teacher retention, and other measures of teacher and school effectiveness. To the extent possible, we will continue to explore the mechanisms by which DST improves performance, such as by increasing the effectiveness of teachers who stay at these schools or by hiring more effective teachers, in order to guide future turnaround efforts.

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Appendix A. Race to the Top Omnibus Survey

Administration

The Omnibus Survey is an online questionnaire that was developed in 2011 with input from each RttT evaluation team lead within the Consortium for Education Research and Evaluation in North Carolina (CERE-NC), a collaboration between the Education Policy Initiative at Carolina (EPIC) based at UNC-Chapel Hill, the Friday Institute for Educational Innovation at North Carolina State University (FI), and the SERVE Center at UNC-Greensboro (SERVE). The team used a logic model developed by EPIC to identify and organize a broad range of dimensions associated with school effectiveness. A dimension was defined as a latent but measurable construct that research has shown to affect schools' ability to produce student learning and/or other important outcomes of schooling. A subset of the team formed a workgroup tasked with finding existing valid and reliable measures of the selected dimensions that could be combined into a comprehensive survey instrument for teachers and principals. Each dimension was to be measured by a set of 3-15 items. Team members reconvened with several dozen dimensions comprising several hundred items. The investigation of these items and dimensions included efforts to identify peer-reviewed evidence of validity and reliability.

A second expert panel was then convened to trim the instrument to a manageable set of dimensions containing no more than 200 items requiring no more than 30 minutes to complete. Permission and attribution statements were obtained from intellectual property rights holders. A handful of questions were developed specifically for the survey because no existing valid and reliable measures could be found (items in distributed leadership, classroom management, and test prep). Some items were reworded to fit the respondent. With a handful of exceptions, items were reconfigured to have 7-point Likert agreement responses. Several items were then reworded or discarded on the basis of cognitive pretests—trials to determine whether a group of former North Carolina teachers could understand and respond readily to the items. The survey was then taken by members of the evaluation teams in order to test performance of the online survey system, and errors and inconsistencies were corrected.

A final step before launching the survey was to conduct a pilot in selected schools in one North Carolina district in order to further streamline the survey, test the data collection protocols, and assess the reliability and validity of the dimensions. The pilot data, which included 131 respondents from 5 schools, showed that the dimensions generally had very high reliability (over .90 on Cronbach alpha on nearly every measure) and validity (items loaded at a minimum of .40 on a common factor). A handful of dimensions were revised due to lower reliability and evidence that some items were redundant or demonstrated low factor loadings and could thus be removed without harm to the psychometric properties of the scale.

Schools were randomly sampled within five strata intended to ensure that targeted groups of schools were well represented in the sample. The stratified random sample for the survey originally included 366 schools. The strata consisted of (in order of priority, in case a school could be classified in multiple categories): schools targeted for assistance by DST; STEM schools; rural and low-performing schools not served by DST; and a fifth "general" stratum. All strata except STEM (HS only) included schools at the high, middle, and elementary levels of

schooling. A random selection from within each stratum was then conducted. Charter schools were not included in the sample.

The baseline (school year 2010-11) survey was fielded in early May. Due to lower than expected response rates and a late start time, the survey was left open for response throughout summer 2011 and was closed prior to teachers returning for the 2011-12 school year. In the subsequent two years, the survey was fielded in February and closed in May. The earlier launch plus strenuous follow-up efforts with individual schools brought about much better response rates.

To minimize response burden and response time, a matrix sampling procedure was employed so that each respondent completed only a random sample of 80% of the dimensions in the final survey. The matrix sampling design relies on the theory of missing at random (MAR) or conditionally random missing data, which holds that if the researcher administers the survey to only a random subset of respondents, and the remaining respondents' values are imputed using multiple imputation, the resulting parameter estimates will be unbiased. (For a discussion of this technique, see Schafer (1997), *Analysis of Incomplete Multivariate Data*, pp. 22-23).⁷ This technique was applied to different mixes of the dimensions that were randomly sorted and administered to the respondents relying on the Qualtrics survey software. For example, any one teacher may have received dimension 3 but not 5, while other teachers received 5 and not 3. The benefit of MAR data is that the non-response is assumed not to be conditional upon the value of the missing item itself. This is a safe assumption under the random assignment of items to respondents as described by Schafer because the respondent whose responses are missing never received the question. Multiple imputation in these situations is assumed to completely eliminate any biases from missing data. The process of multiple imputation employed for this study is described in the subsection on Data Analysis, below.

The survey was re-administered during the second semester of the 2011-12 and 2012-13 school years, opening in February of each year and closing before the end of the school year. With these earlier launch dates and with a much more active effort to assure responses, including follow-up telephone calls to principals of schools with no responses or low response rates, we were able to improve response rates sharply for these latter two years.

For the present study, we added to the third wave of Omnibus Survey administration (2012-13) a set of items asking principals about the coaching they had received—whether from DST school-level coaches in the schools targeted by that unit or in comparison schools from a “person who has provided you with deliberate, sustained assistance designed to help you learn or figure out how to improve your school” whether they bore the title of “coach” or not. The items, developed by the CERE-NC team responsible for evaluating DST’s Race to the Top-supported interventions, cognitively tested by a group of former school and district administrators who had also served as school coaches in DST’s predecessor, the School Turnaround Program, and refined on the basis of their recommendations, addressed three main dimensions of the coaching that principals had received: (1) the amount of coaching (frequency and duration), (2) the particular approaches or strategies used by their coach (for example, posing questions designed

⁷ Schafer, J. L. (1997). *Analysis of incomplete multivariate data*. CRC press.

to promote reflection or demonstrating specific administrative techniques designed to improve school performance), and (3) the degree to which their coach had helped them improve the specific school functions or variables identified as crucial by our earlier qualitative research (as reflected in Figure 1 in the main text). The latter two types of items asked principals to respond on a five-point Likert scale (Disagree Strongly, Disagree, Neither Agree nor Disagree, Agree, Agree Strongly).

Table A.1 Sample Sizes, Response Rates, and Dates of Omnibus Survey Administration

	Wave 1 5/23/2011 - 9/30/2011		Wave 2 2/6/2012 - 6/25/2012		Wave 3 2/11/2013 - 4/26/2013	
	<i>n</i>	<i>Response Rate</i>	<i>n</i>	<i>Response Rate</i>	<i>n</i>	<i>Response Rate</i>
Principals	235	68.3%	288	72.7%	325	88.5%
DST Schools	63	67.7%	75	68.8%	91	84.2%
Other Schools	172	68.5%	213	74.2%	234	90.3%
Teachers	6847	49.2%	10008	65.9%	11616	84.0%
DST Schools	1000	51.5%	2407	62.8%	3077	82.6%
Other Schools	5047	48.5%	7601	66.9%	8539	84.5%

Source: Omnibus Survey

Dimensions and Items

Table A.2. Omnibus Survey Dimensions and Items Employed to Assess Change in Elements of the School Turnaround Process

Elements of the School Turnaround Process	Omnibus Survey Dimensions and Items
	<i>Commitment, Climate, & Culture</i>
Establishing Goals, Standards, & Accountability: Asserting responsibility for high student achievement	<p><u>Principal Instructional Leadership</u></p> <ul style="list-style-type: none"> • Makes clear to the staff his/her expectations for meeting instructional goals • Communicates a clear vision for our school • Sets high standards for teaching • Understands how student learn • Sets high standards for student learning • Presses teachers to implement what they have learned in PD • Carefully tracks student overall academic progress • Actively monitors quality of teaching
Forging Bonds & Mobilizing Engagement: developing trust & bonds	<p><u>Respect for Leadership</u></p> <ul style="list-style-type: none"> • I really respect my principal as an educator • I have confidence in my principal’s ability to do the job • OK in this school to discuss feelings, worries, & frustrations with the principal • I trust the principal at his or her word <p><u>Evaluation of Teachers</u></p> <ul style="list-style-type: none"> • Evaluation process encourages teachers to reflect on practice • Teachers use feedback from teacher evaluation system to improvement their teaching • Teacher evaluation is fair • Criteria on which I am evaluated are clear • Teacher evaluation process encourages professional growth • This year overall, I am satisfied with the teacher evaluation process
Forging Bonds & Mobilizing Engagement: engaging teachers in planning, policy making, and problem solving	<p><u>Distributed Leadership</u></p> <ul style="list-style-type: none"> • At my school there is/are . . . specific strategies to develop shared leadership between administrators and teachers • . . . opportunities for educators to take on new leadership roles • . . . structure, time, and resources for administrators & teachers to participate in joint decision-making • . . . principal gives a leadership role to teaches who have special knowledge & skills in key areas • . . . people who have special knowledge or skills are allowed to take the initiative • . . . principal encourages teachers to take on informal leadership roles • . . . principal has defined clear roles & responsibilities for dept chairs/team leaders • . . . department chairs/team leaders are effective in their roles • . . . principal likes it when teachers take initiative to deal with problem we face

Elements of the School Turnaround Process	Omnibus Survey Dimensions and Items
<i>Commitment, Climate, & Culture</i>	
<p>Forging Bonds & Mobilizing Engagement: engaging teachers in planning, policy making, and problem solving</p>	<p><u>Team Orientation</u></p> <ul style="list-style-type: none"> • At my school . . . the faculty has an effective process for making group decisions • . . . teachers take an active role in school-wide decision making • . . . useful information for solving problems is readily available to teachers • . . . we work together as a team • . . . we turn to each other for consultation & advice • . . . we meet together to address challenges and solve problems • . . . the faculty has an effective process for solving problems
<p>Commitment to New Goals, Standards, and Policies (Overall)</p>	<p><u>Common Purpose</u></p> <ul style="list-style-type: none"> • NOTE: these items assess the extent of common purpose and commitment, which are hypothesized to be results of the elements above—Establishing Goals, Standards and Accountability; and Forging Bonds & Mobilizing Engagement • Faculty & leadership have shared vision • School improvement team provides effective leadership • Share a high level of investment in what we are here to do • Feel a strong sense of meaning & purpose in our work • Share a common belief in the importance of our work <p><u>Safe, Orderly, & Caring Environment</u></p> <ul style="list-style-type: none"> • How safe do you feel. . . in the school building during school hours • . . . in the school building after school hours • . . . on school grounds/campus • . . . in the neighborhood of the school • To what extent have following been a problem this school year . . . physical conflict among students • . . . vandalism of school property • . . . student alcohol use • . . . student tobacco use • . . . student possession of weapons • . . . verbal abuse of teachers • . . . physical abuse of teachers • . . . racial tensions <p><u>Teacher-Student Relationships</u></p> <ul style="list-style-type: none"> • I share an affectionate, warm relationship with most of the students in my classroom • Most of the students in my classroom . . . will seek comfort from me if they are upset • . . . value their relationships with me • . . . spontaneously share information about themselves with me • . . . have a relationship with me that extends beyond academics • . . . Openly share their feelings and experiences with me

Elements of the School Turnaround Process	Omnibus Survey Dimensions and Items
<i>Commitment, Climate, & Culture</i>	
Commitment to New Goals, Standards, and Policies (Overall)	<p><u>Classroom Management</u></p> <ul style="list-style-type: none"> • I am effective at . . . calming a student who is disruptive or noisy • . . . controlling disruptive behavior in the classroom • . . . getting students to follow classroom rules • . . . establishing a classroom management system with my students • In my classroom . . . I structure instruction to encourage good behavior • . . . desks and tables are arranged in a manner that encourages good behavior • . . . I have clearly posted rules of good behavior • . . . there are clear consequences for misbehavior • . . . I am consistent at expecting good behavior, enforcing rules, and disciplining bad behavior
More Orderly & Caring Environment	<p><u>Safe, Orderly, & Caring Environment</u></p> <ul style="list-style-type: none"> • How safe do you feel. . . in the school building during school hours • . . . in the school building after school hours • . . . on school grounds/campus • . . . in the neighborhood of the school • To what extent have following been a problem this school year . . . physical conflict among students • . . . vandalism of school property • . . . student alcohol use • . . . student tobacco use • . . . student possession of weapons • . . . verbal abuse of teachers • . . . physical abuse of teachers • . . . racial tensions <p><u>Teacher-Student Relationships</u></p> <ul style="list-style-type: none"> • I share an affectionate, warm relationship with most of the students in my classroom • Most of the students in my classroom . . . will seek comfort from me if they are upset • . . . value their relationships with me • . . . spontaneously share information about themselves with me • . . . have a relationship with me that extends beyond academics • Openly share their feelings and experiences with me <p><u>Classroom Management</u></p> <ul style="list-style-type: none"> • I am effective at . . . calming a student who is disruptive or noisy • . . . controlling disruptive behavior in the classroom • . . . getting students to follow classroom rules • . . . establishing a classroom management system with my students • In my classroom . . . I structure instruction to encourage good behavior

Elements of the School Turnaround Process	Omnibus Survey Dimensions and Items
<i>Commitment, Climate, & Culture</i>	
More Orderly & Caring Environment	<p><u>Classroom Management</u></p> <ul style="list-style-type: none"> • . . . I have clearly posted rules of good behavior • . . . there are clear consequences for misbehavior • . . . I am consistent at expecting good behavior, enforcing rules, and disciplining bad behavior
Stronger Pressures & Rising Expectations for Student Learning	<p><u>Academic Rigor</u></p> <ul style="list-style-type: none"> • At my school . . . I stress to students the importance of trying hard and persisting through academic challenges • . . . I expect students to give their best effort • . . . I set high standards for students' classroom performance • . . . I have high expectations of my students • . . . I assign work that is intellectually stimulating • . . . I let students know when they are doing less than their best work • . . . I encourage students to think they can do better in their school work • . . . I ask questions that are intellectually stimulating • . . . I assign work that challenges my students • . . . I let students know how they can improve their classroom performance • . . . I let students know when they are doing their best work
<i>Knowledge & Skills</i>	
Developing Human Capital: Selectively replacing personnel	<p><u>Not addressed thru survey</u>—can be addressed with administrative data</p>
Developing Human Capital: focusing PD on Problems	<p><u>Quality of PD</u></p> <ul style="list-style-type: none"> • At my school . . . teachers are left completely on their own to seek out PD (reverse scored, agree strongly = very negative, etc.) • . . . most PD Topics offered once & not followed up (also reverse scored) • Overall, my PD experiences this year . . . have been sustained rather than short term • . . . coherently focused rather than unrelated • . . . included enough time to think carefully about, try, and evaluate new ideas • PD at my school has prepared teachers to . . . implement the Standard Course of Study • . . . integrate computers & technology into lessons • . . . develop warm relationships with students • . . . implement good behavior management • . . . use data to tailor instruction to students' needs <p><u>Alignment of PD</u></p> <ul style="list-style-type: none"> • At my school, most of what I learned in PD addresses the needs of the students in my classroom

Elements of the School Turnaround Process	Omnibus Survey Dimensions and Items
Knowledge & Skills	
Developing Human Capital: focusing PD on Problems	<ul style="list-style-type: none"> • . . . Overall, my PD experiences this year have . . . been closely connected to my school’s improvement plan school • . . . included opportunities to work productively with colleagues in my school • . . . included opportunities to work productively with teachers from other schools
Developing Human Capital: Following through with coaching	See Table B.2, Appendix B.
Structures & Support for Instruction	
Organizing and Managing Instruction: coordinating curriculum	<p><u>Principal Effectiveness</u></p> <ul style="list-style-type: none"> • Principal at my school . . . has helped strengthen teachers’ understanding of the Standard Course of Study (SCOS) • . . . actively encourages teachers to use a pacing guide • . . . makes sure curriculum is clearly defined from grade to grade • . . . actively encourages teachers to review curricular materials in light of SCOS • . . . meets individually with teachers to discuss student progress <p><u>Common Core</u></p> <ul style="list-style-type: none"> • I fully understand the content knowledge & skills needed to master the subject(s) I teach • I have the knowledge & skills I need to help my students accomplish what is expected of them in the state standards • I feel well prepared to help students accomplish what is expected of them in the state standards • Leaders in my school . . . discuss the state standards with teachers • . . . provide opportunities for teachers to discuss understandings of the state standards across grades and content areas • Teachers in my school . . . coordinate curriculum across grade levels according to the state standards • . . . are clear about learning goals based on the state standards • . . . have a clear understanding of how the state standards fit together across grade levels • . . . focus more on teaching the state standards than “teaching to the test” • . . . work together on developing/revising instructional units around state standards • . . . are prepared to help students meet the state standards <p><u>Program Coherence</u></p> <ul style="list-style-type: none"> • At my school . . . once we start a new program, we follow up to make sure that it’s working • . . . we have so many different programs . . . that I can’t keep track of them all (reverse scored: agree strongly = very negative)

Elements of the School Turnaround Process	Omnibus Survey Dimensions and Items
<i>Structures & Support for Instruction</i>	
Organizing and Managing Instruction: coordinating curriculum	<ul style="list-style-type: none"> • many special programs come and go • . . . you can see real continuity from one program to another. • . . . curriculum, instruction, and learning materials are well coordinated across the different grade levels. • . . . there is consistency in curriculum, instruction, and learning materials in the same grade level.
Organizing & Managing Instruction: supervising instruction	<p><u>Principal Instructional Leadership</u></p> <ul style="list-style-type: none"> • Principal at this school . . . makes clear to the staff his or her expectations for meeting instructional goals • . . . communicates a clear vision for our school • . . . sets high standards for teaching • . . . presses teachers to implement what they have learned in professional development • . . . carefully tracks student overall academic progress • . . . actively monitors the quality of teaching in this school <p><u>Evaluation of Teachers</u></p> <ul style="list-style-type: none"> • At my school . . . the evaluation process encourages teachers to reflect on their instructional practice • . . . teachers use feedback from the teacher evaluation system to improve their teaching • . . . teacher evaluation is fair • . . . the criteria on which I am evaluated are clear • . . . the teacher evaluation process encourages professional growth
Organizing & Managing Instruction: building professional community	<p><u>Teacher-Teacher Trust</u></p> <ul style="list-style-type: none"> • At my school . . . teachers feel respected by other teachers • . . . teachers trust each other • . . . it's okay for teachers to discuss feelings, worries, & frustrations with other teachers • . . . teachers respect other teachers who take the lead in school improvement efforts • . . . teachers respect those colleagues who are expert at their craft <p><u>Teacher Knowledge Sharing</u></p> <ul style="list-style-type: none"> • How frequently do teachers in your school . . . share ideas on teaching • . . . share and discuss student work • . . . discuss particular lessons that were not very successful • . . . share and discuss research on effective teaching methods • . . . share and discuss research on effective instructional practices for English language learners • . . . explore new teaching approaches for under-performing students

Elements of the School Turnaround Process	Omnibus Survey Dimensions and Items <i>Structures & Support for Instruction</i>
Organizing & Managing Instruction: building professional community	<p><u>Collective Responsibility</u></p> <ul style="list-style-type: none"> • How many teachers in your school . . . share a vision of good teaching • . . . engage in systematic analysis of their teaching practices • . . . feel responsible to help each other do their best • . . . feel responsible for helping students develop self-control • . . . feel responsible when students in this school fail
Organizing & Managing Instruction: using assessment & organizing assistance for academically struggling students	<p><u>Data-driven Instruction</u></p> <ul style="list-style-type: none"> • At my school . . . teachers collect and use data to improve their teaching • . . . we have made changes designed to better meet the needs of its diverse student body • . . . teachers are engaged in systematic analysis of student performance data • . . . assessment of student performance leads to changes in our school’s curriculum that are consistent with state standards • . . . useful information to make informed decisions is readily available to teachers (e.g., about student performance, resources, community satisfaction) • . . . we use assessment data to evaluate teachers’ instructional practices • . . . the whole school examines gaps in the achievement of students by grade level • . . . teachers meet regularly to review student performance in order to adjust their practices • . . . we use a variety of assessment strategies to measure student progress
Solid Teaching & Re-teaching of the Standard Course of Study	<p><u>Level of Preparation for Tests</u></p> <ul style="list-style-type: none"> • This school year . . . I covered the material required by the State Standard Course of Study • . . . prepared my students for their EOG/EOC exams • . . . prepared my students to move to the next level of schooling <p><u>Teacher Self-Efficacy</u></p> <ul style="list-style-type: none"> • If I try really hard, I can get through to even the most difficult students • I am good at helping all the students in my classes make significant improvement • I am certain that I am making a difference in the lives of my students • I can deal with almost any learning problem <p><u>Teaching Practice</u></p> <ul style="list-style-type: none"> • Students in my classroom frequently . . . review and discuss the work of other students • . . . explain their reasoning to the class • . . . discuss ideas for a sustained period • . . . work on a group project that extends for several days

Elements of the School Turnaround Process	Omnibus Survey Dimensions and Items
<i>Structures & Support for Instruction</i>	
Solid Teaching & Re-teaching of the Standard Course of Study	<p><u>Teaching Practice</u></p> <ul style="list-style-type: none"> • . . . reflect on their work and set future learning goals • . . . ask probing questions about subject matter • . . . reflect apply what they have learned to new questions, situations, and subjects • . . . Reflect on their own progress • . . .express their own ideas about subject matter • . . . provide constructive feedback to other students
External Support	Not addressed through survey

Appendix B. Factor Analyses

The psychometric analyses for this report were conducted in two stages. In the first stage, an exploratory factor analysis (EFA) was conducted to identify a factor structure based on the 19 coaching items on the Omnibus Survey. A principal component factor extraction procedure was chosen. An orthogonal rotation was used assuming that factors were uncorrelated. The three primary criteria used to determine the number of factors were based on recommendations in the literature. First, the eigenvalues must be greater than one. Second, factors that are above the “elbow” of scree plot graphs are retained. Third, the factor structure must be “clean”, meaning that for each factor, item loadings are greater than 0.40, there are no or few cross loadings between factors, and at least three items are retained for each factor.

Exploratory factor analysis was conducted by using Stata software and the results are presented in Table B.1. Because multiple imputed datasets were used, the EFA was performed for each imputed dataset then averaged. A total of three constructs are extracted with cumulative explanatory variance of approximately 69%. There were some cross loadings, however, at least three items are retained with factor loadings greater than 0.40.

Table B.1. Factor Loadings from Exploratory Factor Analysis on Items from Table B.2

Variable	Coaching for Teaching and Assessment Practices (Average)	Coaching for Teacher Responsibility and Efficacy (Average)	Coaching for Shared Leadership and Order (Average)
Focus on Student Learning	0.538	0.538	0.235
Observe & Evaluate Teachers	0.402	0.350	0.570
Teachers' Sense of Urgency	0.319	0.770	0.292
Teachers' Self-efficacy	0.352	0.712	0.347
Collective Responsibility	0.283	0.771	0.276
Distributed Leadership	0.370	0.403	0.611
Administrator-Teacher Relationship	0.278	0.340	0.694
Safe & Orderly	-0.050	0.353	0.797
Standard Course of Study	0.685	0.340	0.191
Pacing Guide	0.628	0.242	0.385
Feedback	0.430	0.650	0.155
Assessment	0.797	0.311	0.076
Data Use	0.727	0.383	0.159
Tracking Process	0.749	0.325	0.210
Professional Learning Communities	0.585	0.459	0.052
Quality Professional Development	0.572	0.500	0.172
Differential Teaching	0.553	0.230	0.366
Delegation to APs	0.267	0.139	0.698

Notes: Highlighted cells indicate factor loading >0.40; n=432

In the second stage, a confirmatory factor analysis (CFA) was conducted to test the factor structure derived from the EFA. Based on the literature⁸, several indices were used to evaluate model fit: the Tucker–Lewis index (TLI > 0.90), the comparative fit index (CFI > 0.90), and the root mean square error of approximation (RMSEA >0.08). The initial model resulted in a poor fit. Based on the modification indices, several paths of covariance were added between the error terms and items to improve the model fit. The final model shows an adequate fit for the data where TLI= 0.92, CFI=0.97, and RMSEA = 0.08.

Table B.2. Coaching-Related Factors and Main Items Constituting Each Factor

Factor	Associated Survey Items
Coaching for Teaching and Assessment Practices (Factor 1)	<ul style="list-style-type: none"> • Q40.1: better job of assuring teachers really teaching SCOS • Q40.2: better job of assuring teachers using effective pacing guide keyed to SCOS • Q40.3: better job of giving teachers guidance and/or feedback about instruction • Q41.1: better job of assuring teachers using benchmark & formative assessment effectively • Q41.2: better job of using data to improve student achievement • Q41.3: better job of tracking individual students’ academic progress • Q42.1: assure that PLCs are working to improve student learning • Q42.3: better job of arranging coaching/PD aligned to needs
Coaching for Teacher Responsibility & Efficacy (Factor 2)	<ul style="list-style-type: none"> • Q34: keep a steady focus on improving student learning • Q38.2: increase teachers’ sense of urgency about improving student learning • Q38.3: strengthen teachers’ sense that they <u>can</u> improve student learning • Q38.4: do a better job of holding individual teachers responsible for improving student learning
Coaching for Shared Leadership and Order (Factor 3)	<ul style="list-style-type: none"> • Q37: learn how to observe and evaluate teachers more effectively • Q39.1: better job of involving teachers in setting policies & problem solving • Q39.2: improve my relationship with teachers • better job of using APs & counselors to improve student learning • Q39.3: helped me create safer & more orderly environment

⁸ Hu & Bentler (1999). Cutoff criteria for fit indexes in covariance structure analysis: Coventional criteria versus new alternatives, *Structural Equation Modeling*, 6(1), 1-55.

Kline, R. B. (2004) Beyond significance testing: Reforming data analysis methods in behavioral research. APA Books: Washington, DC.

Browne, M. W. & Cudeck, R. (1993). Alternative ways of assessing model fit. In: Bollen, K. A. & Long, J. S. (Eds.) *Testing Structural Equation Models*. pp. 136–162. Beverly Hills, CA: Sage.

Table B.3: Degree to Which DST Principals with Different Combinations of Experience and Skills Gave Different Responses about How Much Coaching Helped Them Do a Better Job (n=91)

Experience & Skill Category	Responses re: Coaching for Teaching & Assessment Practices	Responses re: Coaching for Responsibility & Efficacy	Responses re: Coaching for Shared Leadership & Order
More Experienced, More Skilled	Lowest “Ratings” (Reference category, no coefficient)	Lowest “Ratings” (Reference category, no coefficient)	Lowest “Ratings” (Reference category, no coefficient)
More Experienced, Less Skilled	Higher by about .6 pt. (0.639, SE 0.207)	Higher by about .6 pt. (0.638, SE 0.216)	Higher by about .7 pt. (0.693, SE 0.247)
Inexperienced, More Skilled	Higher by about 1.4 pts. (1.367, SE 0.198)	Higher by about 1.4 pts. (1.425, SE 0.209)	Higher by about 1.3 pts. (1.273, SE 0.208)
Inexperienced, Less Skilled	Higher by about 1 pt. (0.980, SE 0.265)	Higher by about .9 pt. (0.900, SE 0.270)	Higher by about 1 pt. (1.010, SE 0.275)

Source: Authors’ analysis of DST principal categories provided by DST leadership and the EPIC data

Appendix C. DST Professional Development Data Sources

Session Artifacts

DST staff provided access to all professional development session materials. Agendas, presentations, and activity items were provided, as well as access to an online repository (<http://dst.ncdpi.wikispaces.net/>). The Evaluation Team used these artifacts to guide evaluation activities.

Race to the Top Professional Development Observation Instrument

The Professional Development Observation Protocol was used to observe three professional development sessions held during the 2012-13 school year. The protocol was developed by the Evaluation Team and was adapted from a professional development tool developed by Horizon Research, Inc.⁹ The tool is used to gather information on the quality of the professional development being observed. Evaluators indicate whether key aspects of design (e.g., *The session provided opportunities for participants' to share knowledge of content, teaching, learning, and/or the reform process.*), implementation (e.g., *The facilitator(s)' management style enhanced the quality of the session.*), instructional practice (e.g., *Attention was paid to classroom strategies.*), and culture (e.g., *There was a climate of respect for participants' experiences, ideas, and contributions.*) are present. If identified, evaluators then assess the quality and quantity of the key aspects that they observe. The protocol includes both closed-form and Likert-scale items related to general characteristics of high-quality professional development. A member of the Evaluation Team recorded observations about and rated the quality of the primary intended purpose and major participant activities of each session.

RttT DST Professional Development Survey

The Evaluation Team developed a survey to assess the usefulness, relevance, and participant perceptions of the DST School Leaders professional development sessions. This survey was structured around USED's Transformation Model Components as well as specific aspects of the DST Framework for Action. Specifically, the survey was designed to ascertain the degree to which professional development participants felt the DST-provided sessions delivered enough information about model components to implement various elements/practices in their LEAs or individual schools. The survey also seeks to determine the importance transformation school personnel attributed to each of USED's Transformation Model Components. In addition, the survey solicits information as to what participants deem to be the most and least beneficial portions of the professional development sessions offered over the last year. The survey is composed of four distinct sections:

- Participant background information (e.g., session attendance, school/district role, grade level specialization, and experience level)
- Impact of Professional Development about USED's Transformation Model Components

⁹ <http://www.horizon-research.com/instruments/lsc/pdop.pdf>

- Importance of USED’s Components to School Transformation
- Open-ended questions about the least and most helpful aspects of the professional development series

Responses to the impact of professional development and the importance of USED’s Components to school transformation were on a 5-point Likert scale (1=“Strongly Disagree”, 2=“Disagree”; 3=“Neutral”, 4=“Agree”, 5=“Strongly Disagree”).

Individuals who attended one of the DST Summer 2013 professional development sessions were invited to take the survey. A link to the survey was provided to participants at the close of each professional development session, and remained open through July. NCDPI DST staff were responsible for participant outreach and reminders to obtain a sufficient response rate (Tables C.1 through C.3), which they did by sending email reminders and telephoning participants. Survey responses were collected and stored through Qualtrics, an online data collection tool.

Table C.1. RttT DST Professional Development Survey Response Rates

	Number	Percentage
Invited to take the survey ^a	198	
Logged in to take the survey	106	53.5%
Did not respond to the request for consent	0	
Declined to consent	1	
Consented to take the survey	105	53.0%
Consented, but did not take the survey	12	
Partially completed the survey	3	
Fully completed the survey (e.g., answered enough questions to be included in analysis)	93	47.0%

^a DST staff provided the number of participants attending the Summer 2013 session
Source: RttT DST Professional Development Survey

Table C.2. RttT DST Professional Development Survey Percentage of Respondents by Role

Role	Percentage of Survey Respondents (n=93)
Teacher	10.8%
School Executive (e.g., Principal, Assistant Principal)	75.3%
Central Office Staff (e.g., Superintendents, Technology Director, Curriculum Director, RttT Coordinator)	1.1%
School Support Staff (e.g., Guidance Counselor, Testing Coordinator, Instructional Technology Facilitator)	9.7%
Other	3.2%

Source: RttT DST Professional Development Survey

Table C.3. Percentage of Survey Respondents Attending Professional Development Sessions by Location

September 2012 (n=93)		December 2012 (n=93)		February 2013 (n=93)		March 2013 (n=93)		Summer 2013 (n=93)	
Raleigh	60%	EE Smith High School, Cumberland	6%	Morrisville	60%	Chapel Hill	62%	Rocky Mount (Nash Community Coll.), Day 1	29%
		Jones Senior High School, Jones County	3%					Rocky Mount (Nash Community Coll.), Day 2	30%
		Red Springs Middle, Robeson County	1%					Asheboro (Randolph Community College)	38%
		Fairgrove Middle, Robeson County	2%						
		Greene County Middle, Greene County	6%						
		Rock Rest Elementary, Union County	4%						
		Oak Hill Elementary, Guilford County	16%						
		Spring Valley Elementary, Durham County	10%						
		YE Smith Elementary, Durham	13%						
Did Not Attend	40%	Did Not Attend	38%	Did Not Attend	40%	Did Not Attend	38%	Did Not Attend	3%

Source: RttT DST Professional Development Survey

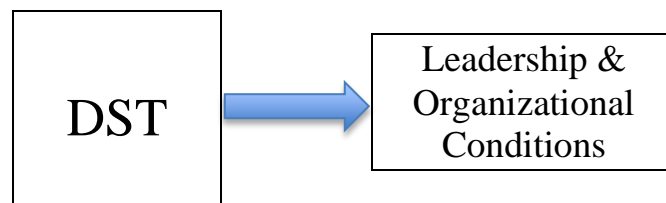
Appendix D. Data Analyses

The principal independent variables of interest in the present study are Time, the DST intervention overall, and one aspect of school-level coaching. By Time, we refer to the “wave” or year of the Omnibus Survey. For our initial analysis, designed to estimate the *change* in DST versus comparison schools, we coded the baseline year 2010-11 as 0, 2011-12 as 1, and 2012-13 as 2. In a second round of analysis, designed to compare the final *levels* of the Omnibus dimensions in the two sets of schools, we coded the baseline year (2010-11) as -2, 2011-12 as -1, and 2012-13 as 0. In the latter coding, the intercepts—the values of the dimensions at Time 0 (in this case the final rather than the first year of the three-year period)—represented the final *level or status of the Omnibus dimensions at the end of the three-year period*. Inclusion of the Time variable enabled us to estimate the effect of secular trends—that is, a broad range of changes that may have taken place in the schools in our sample quite apart from DST broadly or school-level coaching in particular—and thus to set aside or control for these changes, allowing us to isolate the changes associated with the two focal independent variables, DST broadly and coaching in particular.

DST is simply an indicator variable, with DST target schools coded 1 and non-DST schools coded 0.

To explain the analytic procedures we used to address the second and third questions, concerning the overall impact of DST interventions and of coaching in particular upon leadership and organizational conditions in the schools, it will be useful to represent the questions diagrammatically. The diagram of the second question is very simple. It is when we get to the third question that the utility of diagramming will become apparent. The second question may be represented as follows:

Figure D.1. The Impact of DST upon Leadership and Organizational Conditions in Target Low-Achieving Schools



To estimate the overall effect of DST upon leadership and organizational conditions in the target schools, we conducted two separate analyses, the first comparing the *rate of change* in the leadership and organizational variables in DST versus non-DST schools over the three-year period of interest and the second focused on the difference between the *level* or status of each dimension in each set of schools at the beginning and the end of the period. For clarity and simplicity of presentation, we will focus first on the analysis designed to estimate the effects of DST on the rate of change in leadership and organizational variables, then discuss the effects of DST on the difference between the initial and final levels of the leadership and organizational

conditions separately. To estimate the difference between the rates of change in DST schools and the comparison schools, we coded the three years 0, 1, and 2 and employed the following model:

Level 1:

$$Y_{ij} = \beta_{0j} + \beta_{1j}T + r_{ij}$$

Level 2:

$$\beta_{0j} = \pi_{00} + \pi_{01}DST_j + \pi_{02}S_j + u_{0j}$$

$$\beta_{1j} = \pi_{10} + \pi_{11}DST_j + \pi_{12}S_j + u_{1j}$$

Where

Y_{ij} is one of the key leadership or organizational conditions at time i in school j ,

β_{0j} is the intercept of the Level 1 equation

T is Time—2010-11, 2011-12, or 2012-13, coded respectively as 0, 1, and 2 (or -2, -1, 0)

β_{1j} is the effect of Time upon Y_{ij}

r_{ij} is the error term, which captures the remaining variation in Y_{ij} after accounting for T

π_{00} is the intercept of the first Level 2 equation

DST_j indicates whether a school is a target school for the DST intervention (1 for DST school, 0 for non-DST school)

π_{01} is the effect of the DST intervention upon the intercept of the Level 1 equation

S_j is a vector of school-level control variables (Table D.1, following page) measured in 2010-11, the first year of the DST intervention

π_{02} is the effect of the school-level control variables upon the intercept of the Level 1 equation

u_{0j} is the error term in the first Level 2 equation,

π_{10} is the intercept of the second Level 2 equation

π_{11} is the effect of DST intervention upon the effect of Time in the Level 1 equation, and

π_{12} is the effect of the school-level control variables upon the effects of Time in the

Level 1 equation

u_{1j} is the error term in the second Level 2 equation.

Table D.1. School-level Control Variables

Covariates
<i>School-Level Variables</i>
1) School size (ADM)
2) Violent acts per 1,000 students
3) Suspension rates per 100 students
4) Total per-pupil expenditures
5) Average district principal supplement
6) Average district AP supplement
7) Average district teacher supplement
8) Racial/ethnic composition*
9) Economic disadvantage**
10) Performance composite
<i>Variables Derived from Teacher-Level Variables</i>
11) Teacher out-of-field status (percent)
12) National Board Certified (percent)
13) Teaching experience (mean)
14) Fully-licensed teachers (percent)
<i>Variables Derived from Student-Level Variables</i>
15) Structural mobility (percent)
16) Prior-year mobility (percent)
17) Within-year mobility (percent)
18) Gifted status (percent)
19) Disability status (percent)
20) Currently receives English as a second language services (percent)
21) Previously received English as a second language services (percent)
22) Over-age for grade (percent)
23) Under-age for grade (percent)
24) Advanced curriculum (percent)
25) Remedial curriculum (percent)
26) Gender composition (percent)

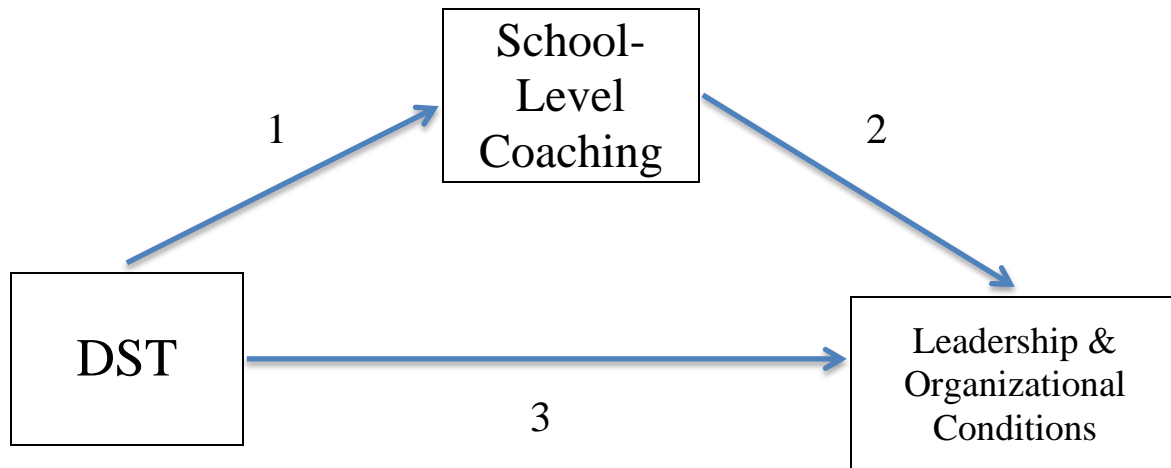
Notes: *Racial and ethnic student groups include Asian, Black, Hispanic, White, Native American, Pacific Islander, and multi-ethnic or racial; **Economic disadvantage measured by eligibility for free or reduced-priced lunch program

To estimate the effects of DST on the differences between leadership and organizational conditions between the beginning and the end of the period (2013), we coded the years -2, -1, and 0 and employed the same model. With this coding, the intercepts—that is, the levels of the leadership and organizational conditions variables at Year 0—represent the adjusted means of each of the two sets of schools on the leadership and organizational conditions at the end of the period under study (2010-11 through 2012-13). By “adjusted” means, we refer to the average values of these variables after accounting for the effects of the school characteristics (covariates) in our models. If the initial levels of the leadership and organizational condition variables were

the same in the first year, then any differences in the final year could be attributed to the effects of DST during the three-year period.

Turning now to the diagram of the third question—regarding the effects of school-level coaching upon the key leadership and organizational variables in the target schools over the first three years of the RttT grant (Figure D.2)—we see a more complex set of paths than the single path in Figure D.1

Figure D.2. The Effects of DST upon Leadership and Organizational Conditions in Target Schools via School-Level Coaching and via Other Components of the DST Intervention



Here we are asking: What part of the effect of DST upon leadership and organizational conditions in the target low-achieving schools is contributed by the school-level coaching component of the intervention, and what part is attributable to other, unspecified aspects of the intervention? To estimate the impact of the school-level coaching component upon leadership and organizational conditions, we need to estimate both (1) the effect of DST upon school-level coaching and then (2) the effect of that school-level coaching upon the key leadership and organizational conditions. By the first, “the effect of DST on school-level coaching,” we mean the degree to which DST school principals rated the coaching they received from DST differently from the way the principals in comparison schools rated the coaching they received from other sources. By the second, “the effect of that school-level coaching upon the key leadership and organizational conditions,” we mean whether more effective coaching as reported by the principals in both sets of schools was then associated with greater improvement in leadership and organizational conditions as reported by the teachers in the same schools. The combination of these two effects—the path represented by the combination of arrows 1 and 2—reflects the degree to which DST affected leadership and organizational conditions via school-level coaching. The third arrow then represents the remainder of the effect of DST upon leadership and organizational conditions in the target schools, which might include such factors as the attention focused on the schools by DST with the associated pressure to improve, the mandated planning process guided by the Framework for Action, the program of professional development provided to leadership teams from each school, the classroom-level instructional coaching, and other, unidentified factors including the effects of other initiatives or interventions in these schools.

To estimate the effect of DST upon coaching (arrow 1 in Figure D.2)—that is, to learn whether DST schools had more effective coaching as perceived by principals of the two sets of schools—we employed the following Ordinary Least Squares regression model:

$$C_j = \delta_0 + \delta_1 DST_j + \gamma_2 S_j + e_1$$

Where

C_j is a variable that measures the extent to which the principal's coach in school j helped him or her do a better job of performing one of the key functions we identified from our earlier qualitative research (see Figure 1 in the **Methods** section of the main text)

δ_0 is the intercept, or level of the coaching variable in non-DST schools

DST_j is the variable that indicates whether a school is a DST target school

δ_1 is the effect of DST on coaching in school j , which reflects the degree to which school-level coaching in DST schools was judged more effective in improving one of the key functions than was school-level coaching in non-DST schools,

S_j is a vector of school-level control variables measured in the first year of the DST intervention (2010-11)

γ_2 is the effect of the school-level control variables upon school-level coaching, a term included to help separate out the effects of characteristics of the school (in 2010-11) from the effect of the DST intervention, and

e_1 is the error term, which reflects variation in C (school-level coaching) that is left unexplained by DST and S (school control) variables.

To estimate the separate effects of school-level coaching and the remaining components of the DST intervention after accounting for the general effects of the passage of Time (the three years under study), we employed a two-level model with Time as the first level and with both DST (whether the school is a DST target school or is not) and C (the effectiveness of school-level coaching from the principals' point of view) in the model at the same time. Including both DST and C (coaching) in the model at the same time isolates the effects of each from the other. The model was the following:

Level 1:

$$Y_{ij} = \beta_{0j} + \beta_{1j} T + r_{ij}$$

Level 2:

$$\beta_{0j} = \pi_{00} + \pi_{01} DST_j + \pi_{02} C_j + \pi_{03} S_j + u_{0j}$$

$$\beta_{1j} = \pi_{10} + \pi_{11} DST_j + \pi_{12} C_j + \pi_{13} S_j + u_{1j}$$

Where

Y_{ij} is one of the key leadership or organizational conditions at time i in school j ,

β_{0j} is the intercept of the Level 1 equation

T is Time--2010-11, 2011-12, or 2012-13, coded respectively as 0, 1, and 2 (or -2, -1, 0)

β_{1j} is the effect of Time—upon Y_{ij}

r_{ij} is the error term, which captures the remaining variation in Y_{ij} after accounting for $\beta_{1j}T$

π_{00} is the intercept of the first Level 2 equation

DST_j is the variable that indicates whether a school is a DST target school

π_{01} is the effect of DST in school j upon the intercept of the Level 1 equation

C_j is a variable that measures the extent to which the principal's coach in school j helped him or her do a better job of performing one of the key functions we identified from our earlier qualitative research

π_{01} is the effect of school-level coaching in school j upon the intercept of the Level 1 equation

S_j is a vector of school-level control variables measured in the first year of the DST intervention (2010-11)

π_{02} is the effect of the school-level control variables upon the intercept of the Level 1 equation

u_{0j} is the error term in the first Level 2 equation,

π_{10} is the intercept of the second Level 2 equation

π_{11} is the effect of DST in school j upon the effect of Time in the Level 1 equation

π_{12} is the effect of school-level coaching in school j upon the effect of Time in the Level 1 equation,

π_{13} is the effect of school-level control variables upon the effect of Time in the Level 1 equation, and

u_{1j} is the error term in the second Level 2 equation.

To estimate the effects of Coaching and the non-coaching-related effects of DST upon the rate of change in the leadership and organizational conditions variables, we coded the years 0, 1, 2 and focused on differences between the two sets of slopes. We implemented that alternative coding scheme to estimate the effects of Coaching and the non-coaching-related effects of DST on the level of leadership and organizational conditions by spring 2013.

We should note here that each of the three Coaching factors described earlier—(1) Coaching for Teaching and Assessment Practices, (2) Coaching for Teacher Responsibility and Efficacy, and (3) Coaching for Shared Leadership and Order—was hypothesized to affect only a subset of the leadership and organizational conditions measured by the Omnibus Survey. Table 2 in the main text displays the factors and the leadership and organizational conditions each was hypothesized to affect.

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