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Outcomes and Impacts of North Carolina’s Initiative to Turn Around the Lowest-Achieving Schools

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OUTCOMES AND IMPACTS OF NORTH CAROLINA'S INITIATIVE TO TURN AROUND THE LOWEST-ACHIEVING SCHOOLS

Executive Summary

Through its Race to the Top (RttT)-funded initiative to Turn Around the Lowest-Achieving Schools (TALAS), North Carolina has carried out an effort to transform low-performing schools that is more ambitious than those of all other states that received RttT funding. The District and School Transformation (DST) Division of the North Carolina Department of Public Instruction (NCDPI) continued its work on the transformation of North Carolina's 118 lowest-achieving schools through the 2014-15 school year.¹ DST also worked with 12 of the state's lowest-performing school districts to support and sustain transformation implementation.

DST services began with a Comprehensive Needs Assessment in each TALAS school, which served as the basis for the School Improvement Plan. The implementation of each plan was supported through leadership coaching, instructional coaching, and district-level coaching in the 12 districts that received direct DST services. DST also provided professional development for school leaders, and other educators received professional development offered through other NCDPI interventions and RttT initiatives.

Outcomes

From 2009-10 to 2013-14, 75% of TALAS schools increased their graduation rates more than the average increase in similar comparison schools. In terms of student *proficiency* on achievement tests during the transition to assessments based on the Common Core State Standards, 60% of TALAS schools outperformed the average change in the comparison schools. TALAS schools and comparison schools registered similar gains in school *growth* as measured by value-added scores (provided through the Education Value-Added Assessment System [EVAAS]) during the study period.

This final TALAS evaluation report focuses on the impact of school transformation on students, teachers, and schools. Throughout this summary and the report, we present the effect estimates in standardized units, known as standard deviation units (sdu). This allows for the effect sizes to be directly comparable to each other and to prior studies. For example, in class-size experiments, the effect of reducing classes from 25 or more students to about 15 students was 0.22 sdu.

Overall Impacts

Throughout the three years of full program implementation, TALAS raised school proficiency rates by an average of 0.18 sdu. The estimates of the effects on schools closest to the fifth percentile of performance (the percentile used as the cutoff for identifying TALAS schools) were not significant, which seems to indicate that the positive effects were concentrated on the lower of the lowest-performing schools in the state. TALAS was estimated to have had positive effects on graduation rates as well, but these effects were not statistically significant—most likely due to

¹ Eleven of the original 118 schools have closed since the beginning of the initiative.

the small number of high schools (17) participating in TALAS.² When examining effects by level of schooling, all but one of the effects were positive, and most were substantial, but only the effect on teacher value-added at the middle school level was statistically significant—again, likely due to the small number of schools at each level of analysis.

Immediacy of the Impacts

According to an Institute of Education Sciences report (Herman et al., 2008), one of the keys to successful school turnaround efforts is “quick wins”—visible improvements early in the turnaround process, which result in immediate increases in student outcomes. These initial changes can set the tone for transformation by creating educator buy-in and by establishing a climate for long-term change (p. 22). When compared with other low-performing schools in 2011-12 (the first full year of the implementation of the intervention), TALAS schools increased school-wide achievement growth as measured by EVAAS by a significant 0.34 sdu. When data from the second year were added, this trend continued into 2012-13 at 0.26 sdu. School-value-added increases were positive and sizeable but no longer significant in 2013-14, perhaps due to the fact that the gains for 2013-14 were measured on top of the gains posted during the first two years of TALAS.

Improvement in student proficiency in TALAS schools took slightly longer to achieve but did improve by a significant 0.16 and 0.18 sdu through 2012-13 and 2013-14, respectively. Estimates of the effects of TALAS on graduation rates were uniformly positive and increased as more years of data were added (0.15 to 0.27 to 0.29 sdu), but as in the previous analyses of graduation rates, the effects were not statistically significant, likely due to the limited number of high schools (17) in TALAS.

Subject-Matter Impacts

Averaging across all TALAS schools, proficiency in mathematics and science improved more than in comparison schools (0.21 sdu in both subjects). Consistent with the TALAS emphasis on literacy, English language arts (ELA) gains were positive and significant in elementary schools and middle schools where reading was directly assessed each year; gains on high school English tests also were positive, though not significant. In addition, proficiency gains in elementary science (0.23 sdu) and middle school mathematics (0.37 sdu) were larger in TALAS schools than in the comparison schools.

Teacher Turnover

Throughout the TALAS intervention, teacher turnover was higher in TALAS schools than in the comparison schools, although the difference was not statistically significant. It appears that the lower levels of teacher retention in the TALAS schools may have suppressed some positive effects of transformation.

² In addition to the TALAS schools that were closed, the outcomes for one high school were not reported in each year of the study period and it was omitted from the analysis. Small sample sizes result in reduced power to detect statistically significant effects.

District-Level Transformation

The 12 districts with the lowest proficiency rates received additional support services, which the Evaluation Team evaluated separately. The district-level transformation produced statistically significant effects on school-wide growth in student achievement in TALAS schools (0.44), while the gains were positive but not statistically significant in TALAS schools in districts that did not receive district transformation services. This finding may indicate the value of district coaching for increasing attention to and support for increasing student achievement growth in the lowest-performing districts—perhaps through leadership and teacher recruitment and placement, providing resources focused on student performance, or creating a structure for discipline and safety.

Sustainability

Sustainability of the effects of TALAS is particularly important as RttT funds run out. The Evaluation Team examined the differential effects on schools that participated in the state's first transformation efforts (2006 to 2010) as well as the TALAS transformation. First, the gains in proficiency were larger and statistically significant in the schools that participated in TALAS but not in the state's prior turnaround program (2006-2010), which speaks to the immediacy of positive effects from the TALAS intervention. In addition, gains in both graduation rates (0.69 sdu) and school achievement growth (0.37 sdu) as measured by EVAAS were large and statistically significant in schools that both participated in the prior turnaround initiative and received TALAS services, which may indicate that the turnaround program supports sustained in both initiatives (e.g., coaching and professional development) are needed to maintain positive effects. The finding that graduation rates decreased (-0.60 sdu) in the schools that participated in the prior turnaround program but not TALAS raises concerns about the ability of the lowest-achieving high schools to sustain positive effects without continued support from DST.

Summary and Conclusion

The findings clearly indicate that North Carolina's lowest-achieving schools in 2009-10 improved their performance during the four years of TALAS. In addition, DST efforts to emphasize literacy have paid dividends in increased proficiency on reading and Language Arts tests in elementary and middle schools when compared to other low-performing schools. Further, it does not appear that these gains in literacy came at the expense of other subjects, since both elementary science and middle school mathematics proficiencies also increased in TALAS schools more than in the comparison schools.

Many TALAS high schools made large gains in their graduation rates. Comparisons to other low-performing high schools indicated that gains were larger in TALAS schools, but the effects were seldom statistically significant. While this may be attributable to the limited number of high schools in TALAS (17) and in the comparison schools (18), it also may be that the effects of TALAS are difficult to distinguish from the nearly ten-percentage-point increase in the statewide graduation rate during the RttT period.

It appears that the effects of TALAS are larger when district-level coaching and support are included with school leadership and instructional coaching. The schools that participated in both

the earlier transformation program and TALAS registered the largest gains during the RttT funding period. This may indicate that services sustained over a longer time contribute to greater growth. The fact that TALAS school-wide student growth began to improve in the first year of TALAS and was sustained throughout the duration of the program may indicate that the Comprehensive Needs Assessments and School Improvement Plans that were developed in the first year of TALAS were more effective in producing immediate school-wide student achievement growth and sustaining the growth throughout the study period than in the first round of school transformation in North Carolina. However, if all students are to receive an adequate education, the conditions in North Carolina schools, turnover in the educator workforce, and the variable capacity of school districts to foster and maintain satisfactory levels of student proficiency and achievement may mandate that the state find resources and continue to intervene to transform low-performing schools on an ongoing basis for the foreseeable future.

Introduction

In 2010-11, the District and School Transformation Division (DST) of the North Carolina Department of Public Instruction (NCDPI) was charged with turning around the state's 118 lowest-achieving schools and school districts. Supported by a portion of the funds from North Carolina's four-year, \$400 million Race to the Top (RttT) grant from the U.S. Department of Education, the Turning Around Lowest-Achieving Schools (TALAS) intervention was designed to achieve three major goals:

1. Turn around the lowest 5% of conventional elementary, middle, and high schools based on their 2009-10 performance composites;
2. Turn around graduation rates in conventional high schools with a four-year cohort graduation rate below 60% in both 2009-10 and either 2008-09 or 2007-08; and
3. Turn around the lowest-achieving districts (those with a 2009-10 district performance composite below 65%).

In 2013-14, DST intervened in 107 of the 118 schools that were originally identified as lowest-achieving in the state (11 schools closed since the beginning of the initiative), as well as in 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. TALAS began with a Comprehensive Needs Assessment (CNA) in each of the schools, which served as the basis for a site-specific School Improvement Plan (SIP). Coaching—which included modeling effective practices along with observations of teachers and leaders with feedback to guide improvement—was a primary means for transforming practice in TALAS schools, as noted in previous evaluations (Thompson, Brown, Townsend, Henry, & Fortner, 2011; Thompson, Brown, Townsend, & Campbell, 2013; Henry, Thompson, Campbell, & Townsend, 2014).

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. This report focuses on the impacts of TALAS on students, teachers, and schools through four years (2010-11 through 2013-14).

Purpose of the RttT Evaluation and of this Report

One of four pillars of North Carolina's RttT proposal was 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.

The first three annual evaluation reports were intended to inform DST's efforts to make improvements in low-achieving schools and school districts. In the first report, the Evaluation Team found that DST efforts in the schools that went through transformation in the period from 2006 through 2010 had improved outcomes in those schools more than other, similar schools. In addition, that first report detailed the characteristics of the turnaround efforts in North Carolina prior to RttT that appeared to have contributed to rapid school improvement (Thompson, et al., 2011). The Evaluation Team 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 school improvement plans. In addition to these findings, this study also found that some districts promoted while others undermined school turnaround efforts.

The second evaluation report focused on the role of the districts in school transformation and found that in many cases, the connections 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 that therefore the existing connections and interrelationships were not conducive for producing positive change in these schools (Thompson, et al., 2013).

Across these two evaluations, DST interventions to guide and support the reform of low-achieving schools included efforts to help school leaders: (1) assert accountability for improved student discipline and 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 build 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.

The third evaluation focused 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. Surveys of teachers in the TALAS schools indicated that these teachers increased their use of formative assessments and increased teacher knowledge-sharing more than teachers in comparison schools. Also, DST coaching was rated higher than coaching in other similar schools in terms of

improving shared leadership and order. Finally, the Evaluation Team found that teachers' ratings of teacher-leader respect and team orientation within the school went down in DST schools compared to other schools, which reinforces the difficulties associated with turning around the state's lowest-performing schools.

In this fourth and final evaluation of the RttT school turnaround initiative in North Carolina, the Evaluation Team focused on the outcomes and impact of TALAS—estimating the overall impacts of TALAS on proficiency rates, graduation rates, school value-added (the state's official school-wide student achievement growth measure provided through the Education Value-Added Assessment System [EVAAS]), and teacher value-added (the state's official teacher student achievement growth measure, also provided through EVAAS). In addition, the Evaluation Team estimated these effects by year to examine the immediacy of effects and by school level to see if the effects are different at any of the three levels of schooling (elementary, middle, and high). TALAS focused intensely on literacy in every school, which may have produced effects on reading and language arts, potentially at the expense of mathematics and science; therefore, this report analyzes the effects by subject matter as well.

In qualitative interviews, frustrations with teacher turnover in TALAS schools were raised as an issue in terms of increasing students' achievement in those low-performing schools. In response, the Team analyzed teacher retention and the extent to which teacher turnover may have undermined or suppressed the effects of TALAS. The Team also investigated the possibility of differences in effects in schools that participated in the school turnaround model and those that participated in the district turnaround model. Finally, the Team examined the sustainability of TALAS effects by looking at the effects of TALAS plus the effects of participation in earlier school transformation interventions.

The following section will briefly describe the methods employed in the present study. After describing the study methods, the report presents findings in greater detail, followed by conclusions drawn from across the three study years.

Methods

The data for this study were provided by NCDPI and are housed and managed by EPIC, one of the partners for this evaluation. These data contain student, teacher, and school data from 2008-09 through 2013-14 for all public schools in North Carolina. Data include information on student demographics and test scores, teacher credentials, value-added (EVAAS) and turnover, and schools' proficiency rates (which are often referred to as performance composites) and the state's official student achievement growth measures (EVAAS). Estimating the overall impact of TALAS involves selecting both outcomes to be analyzed and an appropriate comparison that reasonably approximates how the transformation schools would have performed in the absence of the intervention.

Outcomes of Interest

As a primary outcome measure, the Team examined school-wide performance composites—the measure used for performance accountability in the state, as well as for selection into the turnaround program. The performance composite represents the proportion of all state exams taken in a school on which students scored above the test-specific threshold for proficiency. Students take End of Grade (EOG) exams in reading and mathematics in grades three through eight, and science EOG exams in grades five and eight. In high schools, student End of Course (EOC) exams at the end of students' English I (English II in 2014), Algebra I, and Biology courses count toward school performance composites. The measures (referred to here as the proficiency rate) include only the assessments that remained in place throughout the study period. During the study period, the exams included in the performance composite changed in several ways. The number of EOC exams were reduced and teachers began to use other assessments such as final exams. In addition, the EOG exams changed from exams based on the *North Carolina Standard Course of Study* to those based on the Common Core State Standards and North Carolina Essential Standards; data from both are included in this study— 2008-09 through 2011-12 for the former and 2012-13 through 2013-14 for the latter.

Another school-level outcome is the cohort graduation rate, or the proportion of students who entered the school as ninth graders four years earlier who then earn their diploma in the year that the outcome is measured. Since the cohort graduation rate is measured based on ninth through twelfth graders, only high schools have these outcomes.

An issue common to both proficiency and graduation rates is that these binary indicators only capture changes close to a specific cut-off—students close enough to the proficiency threshold or at risk for non-graduation whose status with respect to these outcomes can change. Importantly, these rates cannot reflect improved performance for students who were already above proficiency, were not at-risk of non-completion, or who improved without reaching the proficiency threshold. For more sensitive outcome measures, the Team examined school and teacher value-added as well as student achievement, which not only reflect improvements at any point in the distribution of outcomes, but also control for students' prior academic performance as an attempt to adjust for the non-random sorting of students across schools and teachers.

North Carolina's State Board of Education adopted EVAAS as the measure of student achievement growth for teachers and schools. These measures are included as outcomes for this study.

Finally, the Team examined teacher retention as an intermediate outcome. That is, the evaluation considered whether TALAS appears to have differentially influenced teacher retention rates in the treatment schools—an effect that could have an indirect impact on students' academic outcomes. In a later section, the study examines the possibility that teacher retention rates mediated the effects of the turnaround intervention.

Each outcome measure is standardized by year, putting all effective estimates in standard deviation units (sdu). This allows the measures to be compared to each other and to effect estimates in other studies.

Methods for Selecting Comparison Schools

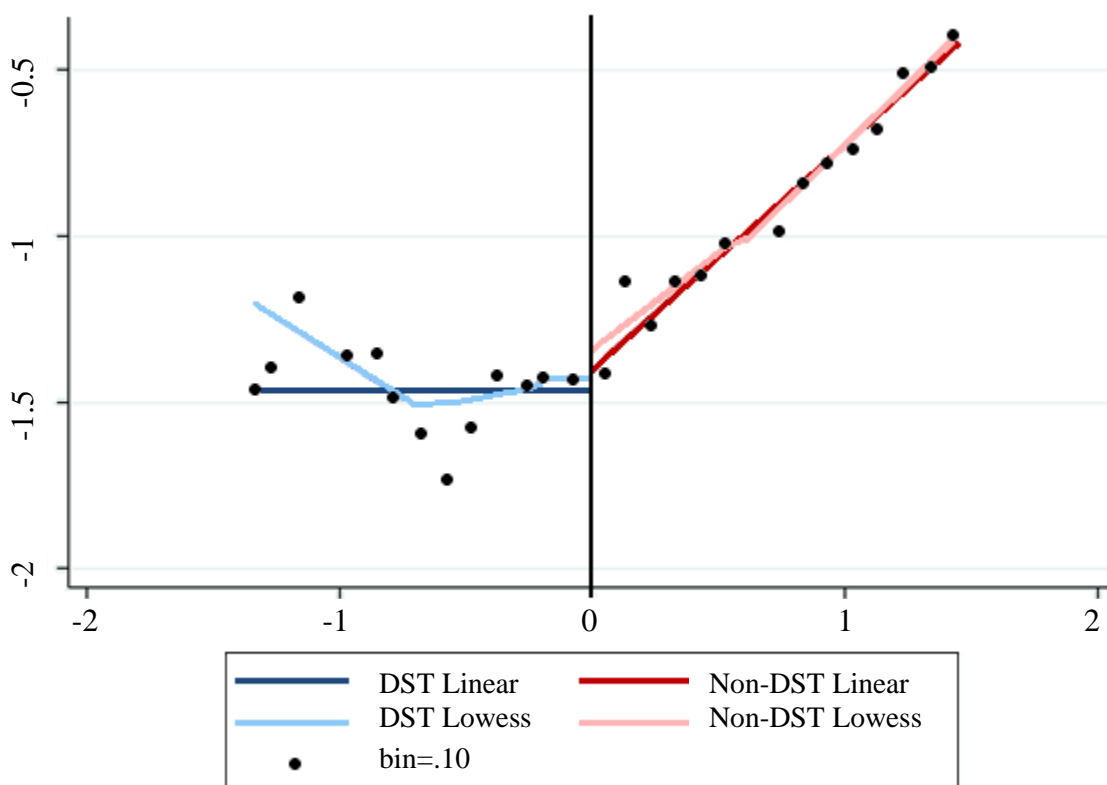
The North Carolina Department of Public Instruction (NCDPI) selected all schools that fell below the fifth percentile on 2009-10 performance composites within their respective grade levels (elementary, middle, secondary) for TALAS intervention. Because of this selection method, comparison schools would of necessity have been higher performing in the 2009-10 school year than TALAS schools. This evaluation used two statistical methods to account for this and any other differences. First, regression discontinuity design (RD) was used based on the fact that the schools just above the cutoff should be very similar to those just below (except for their participation in TALAS). RD requires that a quantitative assignment variable (like the performance composite) be used to assign schools to TALAS. RD estimates a potential break, or discontinuity, in this association at the fifth percentile cutoff. This method is considered second only to a randomized experiment in terms of obtaining an unbiased estimate of a program's effects (Schochet et al., 2010).

A disadvantage of the RD method, however, is that the effect estimate is specific to schools closest to the fifth percentile assignment threshold and may not reflect program effects that occur further from the threshold—in this case, among the lowest of TALAS schools. To more fully reflect the average effects for all TALAS schools, this evaluation also estimated a difference-in-differences (DID) model. Under the DID approach, the Team compared the change in treatment schools from pre-intervention to post-intervention to the change in comparison schools. Both to select a more similar sample of comparison schools and to avoid the growth of the comparison schools being negatively biased by a ceiling effect, the evaluation limited the comparison group to the 110 non-treated schools whose 2009-10 performance composites were closest to the assignment threshold. That is, evaluators compared the 110 schools that continued to receive TALAS throughout the study period to the 110 next-lowest-performing schools.

Figure 1 (following page) provides a visual example of how the two statistical models can yield different treatment effects. In Figure 1, the 2013-14 performance composite for groups of low-performing schools (y-axis) is plotted against the cutoff-centered 2009-10 performance composite (x-axis) that was used to assign schools to TALAS. The vertical black line represents the assignment threshold, with TALAS schools to the left of the line and comparison schools to the right of the threshold. The RD estimate for the 2013-14 school year and outcome is -0.113

($p=0.27$), which represents the gap between the red and blue slopes at the cutoff. However, the scatterplot of TALAS schools suggests that the schools with the lowest 2009-10 performance composites (which are depicted at the far left of the graph) more significantly outperformed expectations based on prior performance, which is not reflected in the RD effect estimate. The DID estimate (+0.285) more closely approximates the distance between TALAS schools (scatterplot points to the left of the threshold) and the slope of the blue line to the left of the threshold when compared to the comparison schools above the cutoff.

Figure 1. Regression Discontinuity: 2013-14 Performance Composite



In addition to reflecting treatment effects throughout the treatment sample, the DID model also allowed models to include three years of pre-TALAS data (2007-08, 2008-09, and 2009-10). These additional years of pre-TALAS data provide a more stable baseline, mitigate the potential positive bias of regression to the mean for the lowest-achieving schools, and create overlap in the performance of TALAS and comparison schools. Similarly, including multiple years of post-intervention outcomes (2010-11, 2011-12, 2012-13, and 2013-14) resulted in more precise and reliable effect estimates.

Though both RD and DID estimates are listed in the first section on impact estimates, the discussion of overall treatment effects, as well as the more detailed quantitative effect estimates, were drawn from the DID models.

In addition to the quantitative analysis of impacts, the Team conducted interviews with principals and teachers in 12 TALAS schools (four elementary, four middle, and four high schools). These

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schools were chosen to represent specific sample characteristics based on four factors: (1) at least one school within each level that met the state's growth expectations, one school that exceeded the state's expectations, and one school did not meet the state's growth expectations; (2) the school contributed to variations in the full sample in principal turnover and teacher turnover; (3) the school either participated in district and school transformation or only school transformation; and (4) inclusion of the school provided regional variation. Interviews focused on five areas: (1) school history; (2) the priority areas for the transformation reforms; (3) coaching and professional development; (4) changes in outcomes; and (5) sustainability.

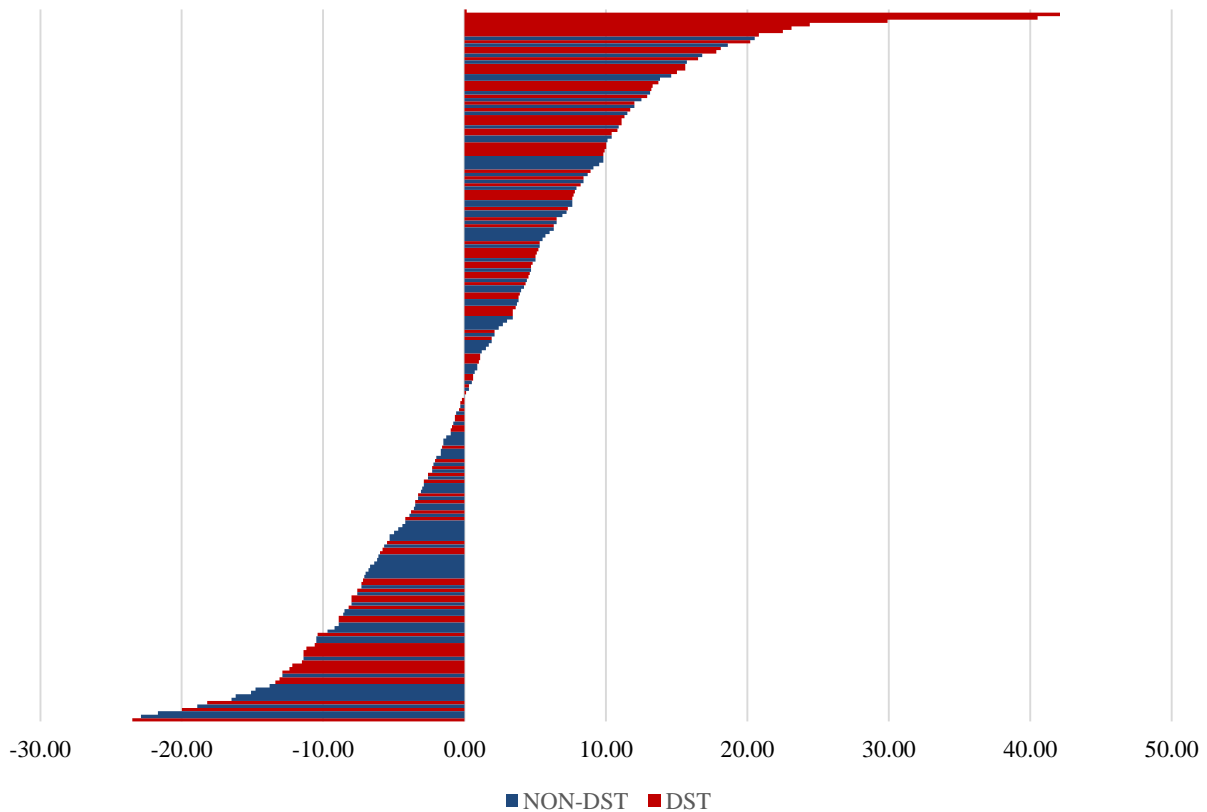
Findings

TALAS School Performance Outcomes

The graphs below demonstrate changes in key outcomes in TALAS schools and similar comparison schools from the baseline 2009-10 school year to the 2013-14 school year. In each case, change is measured relative to the average change in non-TALAS schools. This adjustment helps account for system-wide changes in the performance measures, especially the change to Common Core State Standards and their associated assessments.

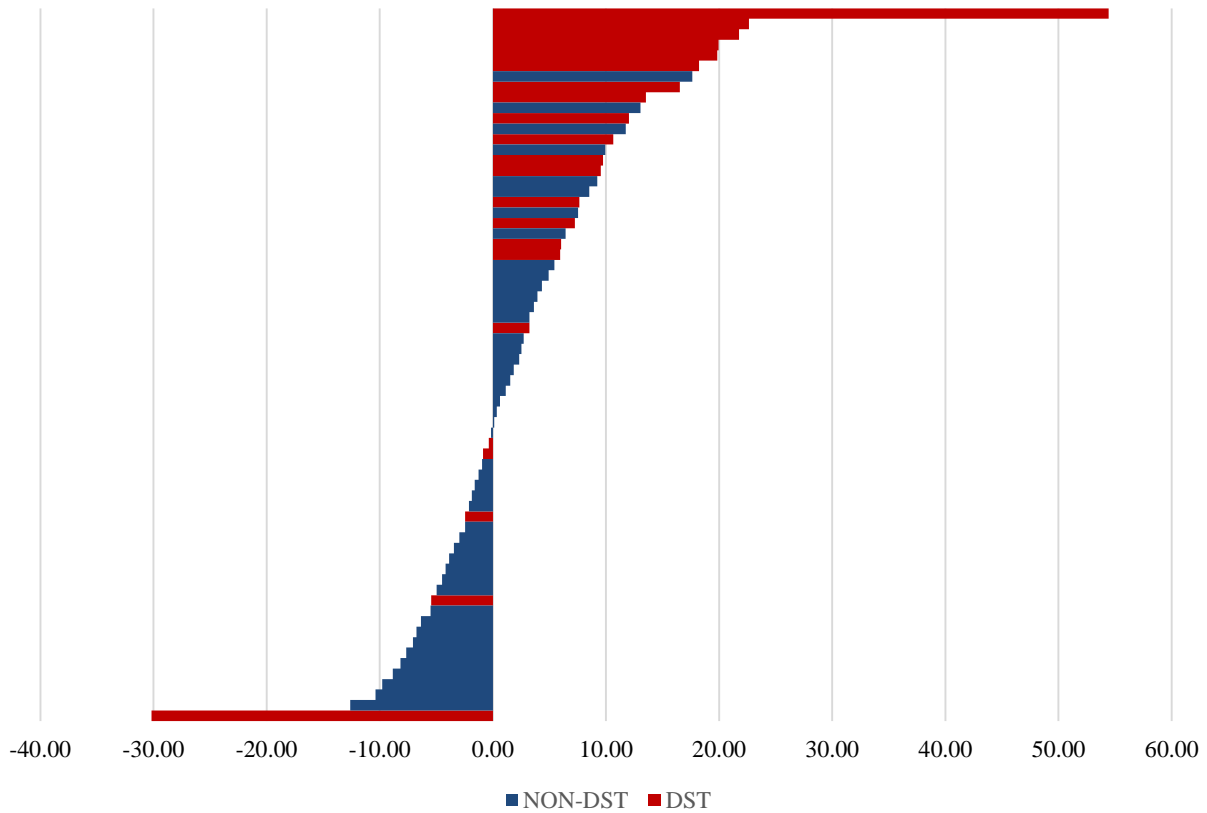
Using average change in non-TALAS schools as a benchmark, 60% of TALAS school performance composites outperformed the comparison schools' average, as shown in Figure 2.

Figure 2. Performance Composite Change, SY2010 to SY2014



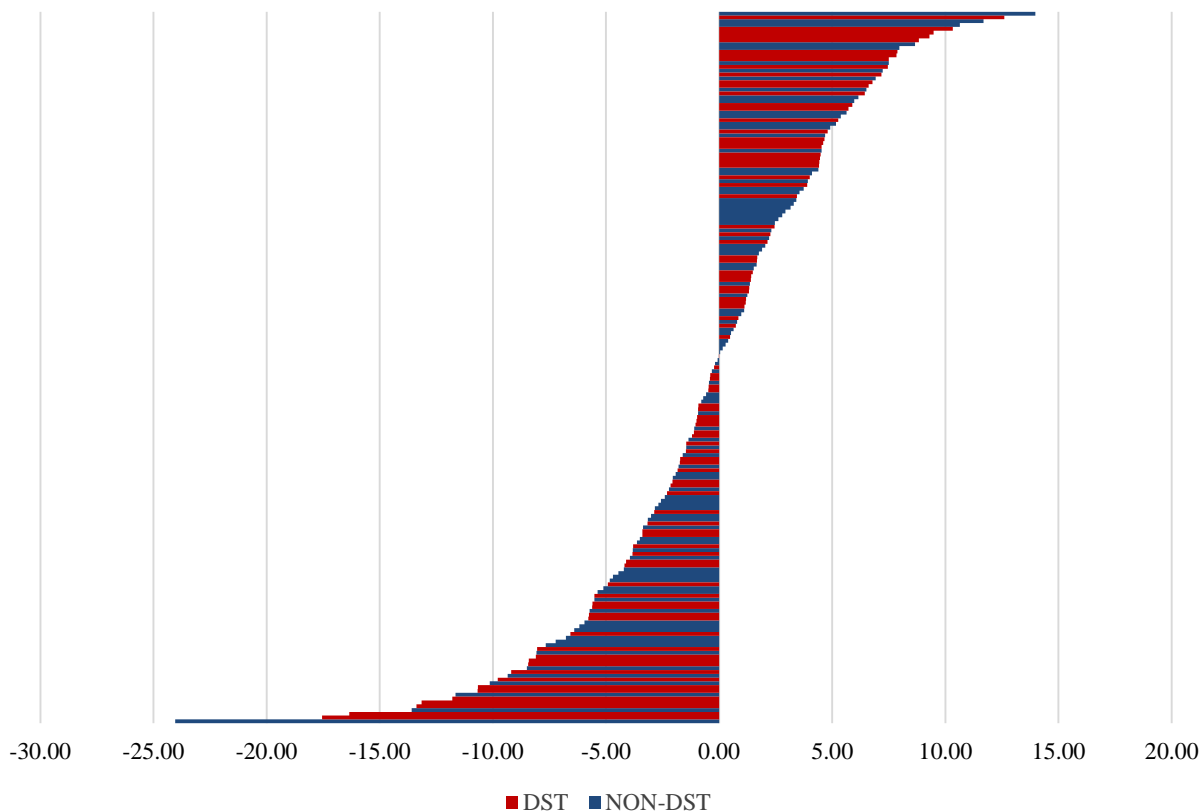
Graduation rates in 75% of TALAS high schools improved more than the average change in comparison schools, as shown in Figure 3. It should be noted that the graduation rate that declined significantly (as shown at the bottom of Figure 3) is a very small high school that during the study period graduated fewer than 50 students per year.

Figure 3. Graduation Rate Change, SY2010 to SY2014



Finally, from 2009-10 to 2013-14, school value-added in 47% of TALAS schools grew more than the average of the comparison schools, as shown in Figure 4.

Figure 4. School Value-Added Change, SY2010 to SY2014



Effects of TALAS

Overall Effects

Throughout the three years of full implementation, TALAS appears to have raised school proficiency rates by an average of 0.18 standard deviation units (sdu) based on the DID analysis (Table 1, following page). The estimates of the effects close to the fifth percentile of performance that were used as the cutoff for identifying TALAS schools (RD) were not significant, which seems to indicate that the positive effects occurred in the lower of the lowest-performing schools in the state. TALAS was estimated to have had positive effects on graduation rates as well, but these effects were not statistically significant—most likely due to the small number of high schools in TALAS (17) and in the comparison sample (18). The changes in average school and teacher value-added were positive in the DID analysis but in spite of the greater sensitivity of these measures to performance improvements, were not statistically significant when assessed over the entire four-year study period.

Table 1. Overall Effects of TALAS

Measures	RD	DID
Proficiency Rates	-0.11	0.18*
Graduation Rates	0.70	0.29
School Value-Added	-0.40	0.21
Teacher Value-Added	0.01	0.05

Notes: * p<0.05, ** p<0.01, *** p<0.001. Results for Proficiency Rates and Graduation Rates are based on performance measures from SY2008 through SY2014; results for School Value-Added are based on performance measures from SY2009 through SY2014; results for Teacher Value-Added are based on performance measures from SY2010 through SY2014.

Immediacy of Effects

According to an Institute of Education Sciences report (Herman, et al., 2008), one of the keys to successful school turnaround efforts is “quick wins”—visible improvements early in the turnaround process with immediate enhancement of student outcomes. For the difference-in-differences approach, outcome years could not be analyzed separately, but began with the effects in 2011-12 and added successive years of outcome data to the model. This approach improved the precision of estimates of effects and allowed the Team to assess when reliable effects began to occur (by sequentially adding years).

When compared with other low-performing schools, TALAS schools increased school-wide achievement growth (EVAAS) in 2011-12 (the first full year of the intervention) by a significant 0.34 sdu and continued in the second year at 0.26 sdu when data for 2012-13 were added (Table 2). Consistent with Table 1, which reports the same findings as the SY2014 column in Table 2, the gains in school value-added were sizable but no longer statistically significant. It is important to note that the value-added gains in later years estimate growth from the test scores in prior years, which, in this case, were affected by the turnaround efforts. Therefore, this cannot be interpreted as an effect that is fading or not sustained but rather that the size of the gains added in 2013-14 were not sufficiently large relative to gains in the earlier years to be statistically significant.

Table 2. TALAS Program Effects by Outcome and Year

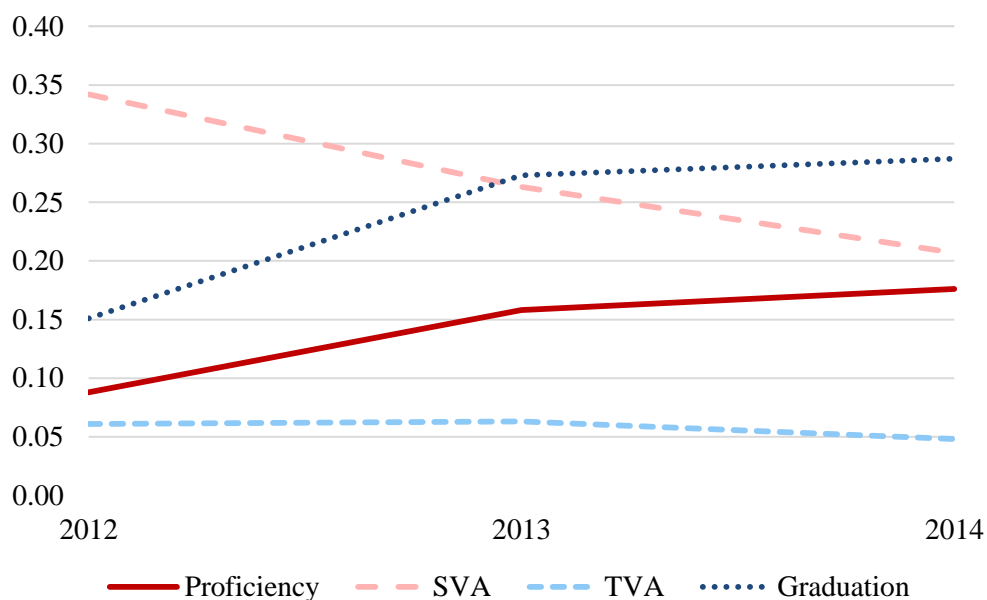
Measures	SY2012	SY2013	SY2014
Student Proficiency	0.088	0.158*	0.176*
School Value-Added	0.342*	0.263*	0.207
Teacher Value-Added	0.061	0.063	0.048
Graduation (HS only)	0.151	0.273	0.287

Notes: * p<0.05, ** p<0.01, *** p<0.001. Results include school performance measures from SY08 through SY14.

Student proficiency gains in TALAS schools took slightly longer to appear but improved by a significant 0.16 and 0.18 sdu in 2012-13 and 2013-14, respectively, when data from those years were added to the data from the first year of TALAS implementation. Estimates of the effects of

TALAS on graduation rates were uniformly positive and increased as more years of data were added (0.15 to 0.27 to 0.29 sdu), but, as in the previous analyses of graduation rates, were not statistically significant—again, likely due to the limited number of high schools in TALAS. Teacher value-added effect estimates (TVA) are minimal in each of the years tested, as shown in Figure 5.

Figure 5. Trends in the Effects of TALAS on Student, Teacher, and School Performance



Effects by Level

Differences in the organization of schools, the curricula for which schools are responsible, and the students' schools serve introduce the possibility that the effects of TALAS may be different across school levels (elementary, middle, and secondary). For example, high schools could be expected to have different effects than elementary and middle schools for a number of reasons: the subject specialization of teachers in high schools (opposed to predominantly self-contained elementary classrooms); organization of academic departments around these subject areas; the larger average size of high schools; the greater diversity of students within high schools resulting from larger catchment areas; the more advanced academic and non-academic skills being instilled in pupils; and assessments based on EOC tests rather than EOG tests. Furthermore, the prior North Carolina DST program was initially developed for high schools only, which adds to the possibility that TALAS may be more effective in high schools.

While it is important to investigate the impacts of TALAS by level to understand at which levels it may be more or less effective, the number of schools in the analysis by level is small and the analysis has less power to detect an effect even if one, in fact, has occurred. Indeed, nine of ten of the estimates were positive, but only one—teacher value-added in middle school—was statistically significant (as shown in Table 3, following page). Therefore, these analyses should be treated as descriptive trends rather than estimates of causal impacts.

For several of the outcomes examined, treatment effects were estimated to be the greatest at the middle and high school levels. TALAS middle and high schools exhibited greater growth in student proficiency, relative to comparison schools, than did TALAS elementary schools. Teacher value-added in TALAS middle schools improved more than either of the other two levels. As shown above in Figure 5 (previous page), graduation rates improved more in TALAS schools than in the comparison schools, but the difference is not statistically significant.

Table 3. Effects of TALAS (DID) by Level of Schooling

Measures	Elementary	Middle	High
Proficiency Rates	0.149	0.256	0.248
Graduation Rates			0.287
School Value-Added	0.194	0.385	0.121
Teacher Value-Added	0.110	0.259***	-0.083

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Results for Proficiency Rates and Graduation Rates are based on performance measures from SY2008 through SY2014; results for School Value-Added are based on performance measures from SY2009 through SY2014; results for Teacher Value-Added are based on performance measures from SY2010 through SY2014.

Intense Literacy Focus and the Analysis of Effects by Subject Matter

DST assisted schools and districts with determining the major areas of concern and identifying potential strategies to employ. Ultimately, school leaders chose priority areas they felt would potentially lead to the best possible chances at academic and organizational growth. Table 4 displays priority areas cited by school level during interviews in 10 TALAS schools.

Table 4. DST Priority Areas for Reform by School Level

Priority Areas	Elementary	Middle	High
Common Core Transition	X		
Curricular Alignment	X		
Data Literacy and Use	X	X	
Discipline and Safety		X	
Family and Community Engagement	X	X	X
Formative Assessment	X	X	X
Instructional Technology	X		X
Literacy	X	X	X
Student Engagement			X
Teacher Instructional Capacity	X	X	X
Recruiting and Retaining High-Quality Staff	X	X	X

Note: The order of priority areas listed does not imply the degree to which schools focused on a particular area.

Across all school and achievement levels, TALAS schools chose literacy as an initial priority area upon which to focus during the RttT period. The elementary and middle schools most frequently cited improving literacy as a major goal; it was often the top priority mentioned. A middle school transformation coach suggested a reason for the choice:

Assuming that if you could read and comprehend better, that it is going to help you across the board in all of your subject areas, so there was a big literacy focus. . . . Their children were coming in a couple of years behind in reading. . . . Common Core says that everybody is a literacy teacher, but trying to convince a science and a social studies teacher of that is a difficult thing. We have been helping social studies [teachers] understand that they can have an impact on ELA through non-fiction text, primary documents, finding main ideas, and cause and effect.

With literacy as a top priority for elementary and middle schools, a number of strategies were used to address this area. Each school chose the set of strategies most suited to meet the needs of their student population; however, several commonly cited strategies included:

- providing reading professional development;
- purchasing interventional reading programs from various publishers;
- implementing Daily Five Café;
- unpacking Common Core Standards;
- offering remediation and tutoring;
- creating pacing guides; and
- using flexible student grouping.

As time progressed, several schools expanded their instructional improvement focus to include content areas not specifically associated with literacy. An elementary instructional coach discussed the shift to concentrating on mathematics:

Math has slowly become a little . . . it was always a focus, but a little more of a focus just because we have spent so much time on reading. We knew math also needed to be addressed and so this past summer we spent time training them and providing professional development utilizing [SPECIFIC CURRICULUM] math lessons to help supplement what they were doing, to help dig deeper into the mathematical practices and gain a better understanding of what the Common Core means by certain standards. . . . We are providing teachers tools they can utilize to help them teach the new standards but have a better understanding of the new standards. We are still heavy on the reading but we are slowly focusing a little more on the math, now that we have the reading down a little better.

Many school personnel felt the choice to focus heavily on literacy appeared to have a detrimental effect on other subject-area growth, particularly mathematics. Those interviewed reported lower-than-expected scores in mathematics when compared to their ELA scores. A middle school principal shared:

We had made such high growth. We were just making growth and high growth. And then, this . . . past year, we did not. We went down. We were in the red. So, it is really disappointing. And it was math scores. And so now we are re-thinking [our strategy].

Similarly, an elementary principal shared:

The literacy piece has been the driver since we have been here. We have noticed, okay, we need to pay attention to math and science because we have honed in on literacy so much.

The emphasis on literacy may have resulted in more gains in reading/language arts achievement among TALAS schools than in mathematics or science. However, if—as some school personnel and DST staff have expressed—literacy gains can improve achievement in other subjects because reading skills are germane across the board, then gains in other subjects may be improved through an emphasis on literacy. In contrast, other school personnel appeared to worry that gains in literacy could actually reduce mathematics achievement if more class time were allocated to literacy. Therefore, the Evaluation Team analyzed gains by subject area.

Across all levels of TALAS schools, proficiency in mathematics and science improved more than in comparison schools (0.21 in both), clearly indicating that gains in ELA did not come at the expense of STEM subjects (Table 5). In fact, ELA gains in proficiency were positive, although they were not statistically significant. However, ELA gains in elementary schools and middle schools were positive and significant, and in each level the ELA gains did not come at the expense of STEM subjects. Proficiency gains in elementary school science and middle school mathematics were larger in TALAS schools than in the comparison schools.

Table 5. Effects of TALAS (DID) by Subject Matter and Level of Schooling

Subject Matter	Proficiency	Achievement
<i>Elementary Schools</i>		
Math	0.15	0.035
English Language Arts	0.07*	0.002
Science	0.23*	0.064
<i>Middle Schools</i>		
Math	0.37*	0.041
English Language Arts	0.18*	0.012
Science	0.20	0.058
<i>Secondary Schools</i>		
Math	0.278	0.062
English Language Arts	0.142	0.054
Science	0.143	0.052
<i>All Schools</i>		
Math	0.21*	0.036
English-Language Arts	0.08	0.010
Science	0.21*	0.032

Notes: * p<0.05, ** p<0.01, *** p<0.001. Results include school performance measures from SY08 through SY14.

The pattern of effects in high schools deserves mention even though none of the effects on proficiency were statistically significant. DST served 29 high schools in TALAS but, as previously discussed, only 17 remained in the analysis sample due to school closings and data missing for another high school. Even though TALAS effects on proficiency in high school were positive and the magnitude of the effects were relatively large, the power to detect a substantively meaningful effect was undermined by the limited sample size.

In terms of student-level value-added achievement, however, TALAS schools did not improve at a markedly different rate than comparison schools. Although these effect estimates were consistently positive across all subjects and grade levels, none were statistically significant.

Teacher Retention

Significant teacher turnover in TALAS schools was cited in many interviews as a factor that undermines schools' ability to provide a high-quality instructional program and has been shown to be much higher in high-poverty and low-performing schools in North Carolina (Henry et al., 2012) and detrimental to student success (Ronfeldt, Loeb, & Wyckoff, 2013). DST staff offered coaching and customized professional development that was intended to be built upon in each successive year. Content was planned and delivered with the idea that the next stage of expertise would be addressed in subsequent years. Teachers leaving during the implementation of TALAS affected the schools' ability to effectively move all teachers further along the professional teaching continuum, from novice to expert.

After the initial year—when teacher turnover in the TALAS schools was part of the turnaround intervention and considered positive—teacher retention was considered important for TALAS schools. Retaining teachers allowed for schools to build their instructional capacity in each year of TALAS. When describing a school in which limited turnover was observed, an elementary instructional coach suggested:

They do not have a high turnover in staff, and that is very much a plus. From what I understand, that does continue—so that means that we can build the capacity within the staff as well as sustain the professional development and the growth that teachers are able to make.

Further, an Assistant Superintendent for Curriculum and Instruction offered:

One of the most positive changes I think we have seen is stability. The staff there, over the course of several years now, has become much more stable, less turnover than what it was a year or two ago. . . . I think that has been a real plus for them. . . . I see more of a sense of urgency, stronger curriculum alignment, with teachers really understanding the curriculum better, understanding some strategies. I think some of that does have to do with being able to have that continuous PD and the teachers building on them.

On the contrary, schools with high levels of teacher turnover were tasked with developing both new and incumbent teachers simultaneously. The addition of new teachers required introductory or novice-level professional development to be repeated. Attempts to differentiate services were made, but in some cases, large-scale turnover suppressed the number individuals ready to move

to the next stage of teacher development. A district official speaking about a moderate-growth high school remarked:

The biggest problem at the high school that we face is . . . teacher turnover, with the budget being as bad as it is, and the pay, and the conditions in North Carolina right now. We have lost staff who have gone to other states, and so it is hard to keep the momentum going when you lose a large amount of staff. For example, we got hit with math this year. It has been different subject areas, so it makes it hard. It is like you are starting over every time that you cannot retain folks.

Similarly, an elementary DST instructional coach indicated:

As long as turnover continues to be high, you are always going to have needs, people to come in and support these teachers. We have incredible turnover. We just had a kindergarten teacher leave at mid-year and an additional kindergarten class was formed close to mid-year, so we have got two brand-new kindergarten teachers. We have a variety of teachers for whom this is their first year. As long as we have so many new teachers as well as so much turnover within a calendar year, there will be a lot of stuff that needs to be learned.

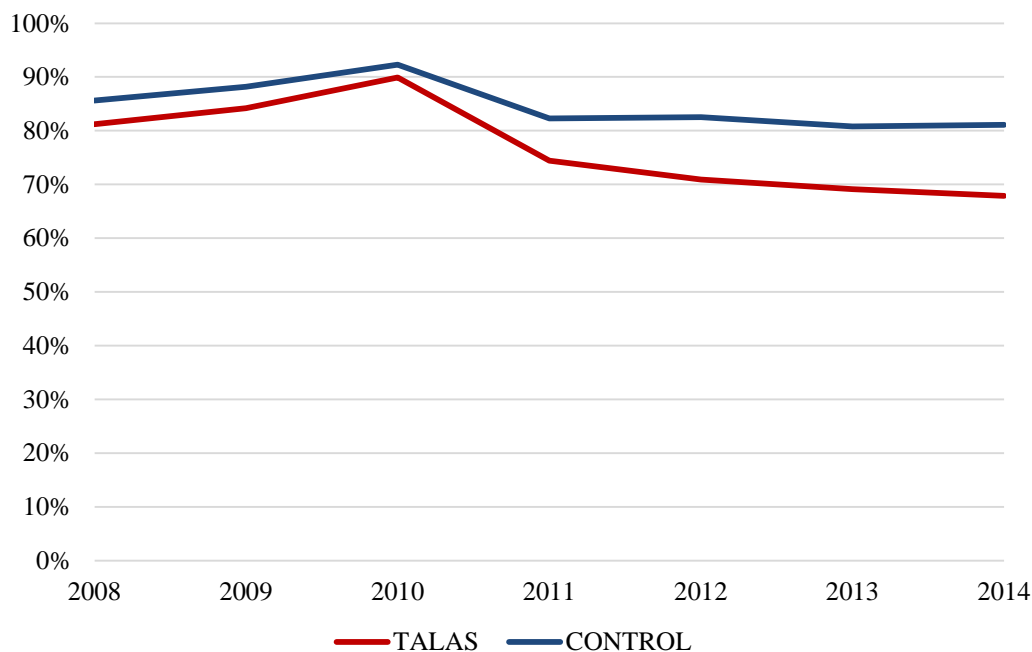
Teachers leave schools for a variety of reasons, but the impact of their departure is felt long after they leave. The teachers who left benefited not only from participating in coaching and professional development activities from DST staff, but also from mentoring and encouragement from fellow teachers. A middle school teacher expressed:

I feel like once the teacher leaves, then everything that we have gone through, that we have taught them, or that all the research that we have given them, I think that that goes with them.

Much to their dismay, teachers who remained at high-turnover schools were left to groom the next batch of teachers joining their ranks each year, thus starting the teacher instructional capacity-building cycle anew.

DST provided some professional development and coaching for TALAS principals to help them retain effective teachers while continuing to remove ineffective ones. To examine the extent to which teacher retention was higher, the evaluation compared teacher retention in TALAS and the comparisons schools (Figure 6, following page).

Figure 6. Teacher Retention Rates in TALAS and Comparison Schools



Initially, intentional teacher turnover in the TALAS schools was part of the intervention, as the federal transformation model (the model most often adopted in North Carolina) included principal and staff replacement. Given that RttT began during the 2010-11 school year, the turnover may have been most likely to occur in 2010-11 and 2011-12. For both the 2010-11 and 2011-12 school years, TALAS schools experienced greater declines in teacher retention than did comparison schools (Figure 6).

While this evaluation did find lower retention rates in TALAS schools than in the comparison schools (as shown in Table 6), the differences are not statistically significant. The Team did find that retention rates were significantly lower in the post-intervention years for both TALAS and comparison schools than in the three years prior to the program. Within TALAS schools, perceptions that turnover increased after the program implementation may be correct, but the trend was not significantly different from the concurrent increase in attrition in other schools, though the levels of retention were lower in the TALAS schools.

Table 6. Teacher Retention Effects in TALAS Schools, Relative to Comparison Schools

Schools	Retention Effects
Elementary	-0.230
Middle	-0.118
Secondary	-0.035
All Schools	-0.157

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Results include school performance measures from SY08 through SY14.

In addition to the analysis of differences in teacher retention in TALAS schools, this evaluation examined the extent to which low levels of teacher retention may have reduced or suppressed the effects of TALAS. Interviews with staff in TALAS schools and DST suggested that they believed that turnover may be undermining the positive effects of professional development and coaching. Accounting for these teacher retention rates in the estimation of the proficiency outcomes made marginal differences in the estimated effect of TALAS, but effects in middle schools became significant—though only marginally larger—as shown in the second column of Table 7. This finding suggests that retention may have suppressed TALAS effects slightly or may account for differences in the effectiveness of TALAS across schools served by the intervention.

Table 7. Proficiency Effects in TALAS Schools Controlling for Teacher Retention

Schools	Original Estimates of TALAS Effects on Proficiency [^]	Estimates of TALAS Effects on Proficiency Testing Mediation of Teacher Retention
<i>All Schools</i>	0.176 *	0.185 *
Elementary	0.149	0.151
Middle	0.256	0.269 *
Secondary	0.248	0.240
Retention Mediator		X

Notes: * p<0.05, ** p<0.01, *** p<0.001. Results include school performance measures from SY08 through SY14. X indicates that teacher retention was included in the model as a potential mediator of TALAS effects.
[^] Estimates in this column are drawn from Table 1 and Table 2.

School and District TALAS Service Models

As mentioned above, the DST division implementing TALAS used two different service approaches—the District Transformation Model and the School Transformation Model. The District Transformation Model used a district coach to support the superintendent. Both models included the provision of a school transformation coach to work directly with the principal and an instructional coach or instructional coaching team to assist teachers. Table 8 outlines the elements of the two service models employed during RttT.

Table 8. DST Service Models

DST Service Models	
School Model	District Model
One or more schools served in district	Multiple schools served in district
School Transformation Coach	District Transformation Coach
serves school-level administrator/principal	serves district-level administrator/superintendent
Instructional Coach	
serves teachers in the following ways:	
Elementary: level-specific	
Middle: subject area-specific (ELA, Math, Science)	
High: course-specific (Biology, ELA II, and Math I)	

School transformation coaches collaborated with principals to enhance various administrative functions—such as formal and informal observation activities, analysis of data (e.g., formative assessment scores), developing school-level policies and procedures, and scheduling. Instructional coaching duties included assisting with professional learning communities (PLCs), aiding with unit- and lesson-planning, facilitating professional development, finding instructional materials, modeling and observing lessons, conducting group tutoring, and providing one-on-one student support. Typically, elementary schools were provided with a single coach who primarily addressed literacy. Middle schools were served by an ELA coach, a mathematics coach, and a science coach. High school coaches focused on tested areas—English II, Common Core Math I, and Biology. The amount of time spent at schools by the school transformation and instructional coaches ranged from one to three days per week, but they also were available by phone or email at other times.

The District Transformation Model sought to *transform* participating districts by creating and executing a comprehensive plan to enhance the capacity of district staff to enable them to support schools more effectively. In this Model, a district transformation coach provided executive leadership coaching to the superintendent for four to five days per week. District Transformation coaches assisted with aligning the efforts of the DST school-based team (school transformation and instructional coaches) with district goals, improving district policies and procedures, working with district staff in key areas such as curriculum and instruction to create district pacing guides and assessments, working with human resources to hire and retain high-quality staff, and repurposing funds to maximize impacts on instruction. When possible, school transformation coaches and instructional coaches were assigned to schools within the same district to ensure continuity of personnel throughout districts in which the District Transformation Model was utilized.

When discussing the implementation of TALAS with district-level staff, there were distinct differences in the levels of involvement and knowledge of the transformation activities among those in the District and the School Transformation Models. District staff operating outside of the District Transformation Model appeared to be less involved and less aware of what was being done in the schools. When asked about the priority areas covered in a TALAS school, a district staff member (speaking of a middle school served by the School Transformation Model) confessed:

To be honest, I would not know without pulling my notes, because I was not there. Generally, it was student achievement, math and science, and that kind of stuff. . . . In terms of specifics, I could not tell you off the top of my head.

Schools served under the School Transformation Model varied in the degree to which their district staff was involved and supportive of their improvement process. In some cases, district staff became advocates for their schools and pushed back in instances when they felt solutions suggested by TALAS staff would not align with or meet the needs of their particular students and community. When asked how they determined what areas would be addressed during TALAS, an Assistant Superintendent for Curriculum and Instruction stated that the school staff largely were responsible for determining what would be addressed, and the goal of the district was to be a support mechanism for them as they developed and executed a plan:

The plan was very heavily driven by the school—at the school level by the principal. You know, I am flashing back to emails and conversations where, once we had the model with the 12 components, we knew what we were working [for] with the transformation model. The superintendent asked the administration of the school—in conjunction with the teachers—to do a lot of reflecting and think about “What are the priorities? What are the areas, and then how do we support you?” So it was not driven by us. I have a whole folder here—actually two or three more in my file cabinet—where the principal turned in plans, two detailed plans to the superintendent saying, “This is what we feel like we need to do, what we want to focus on.” We gave feedback, we went out and met with them, but we were very much . . . we have tried to be the support mechanism for them, not the driver. We did help with data analysis, and helping them to make sure they knew which areas to target and offered support, but I do think DPI and [the school transformation coach] was very instrumental in helping, also.

In contrast to some district administrators of schools in the School Transformation Model, all of the district administrators receiving services via the District Transformation Model in the qualitative sample appeared to be far more knowledgeable of the issues their schools faced and agreed about DST strategies for improvement. Meaningful collaboration between district administrators and DST resulted in the alignment of school and district goals to best practices in order to address priority areas. A district transformation coach shared a coaching strategy he used when working with district officials who were tasked with developing a plan that would require the reallocation of funds to continue instructional coaching support for teachers after RttT concludes:

In my capacity, in my position, I am a support person. I am putting those [options] on the table for a superintendent and a cabinet to contemplate, and make sure that they repurpose [funds]—and if that does not happen, then it is going to be very hard for them to sustain their current level of instructional support. They have to make sure they repurpose funds.

The district transformation coaches in the study became integrated into the school districts in which they served and played a pivotal role in bridging services provided by school-level DST staff (i.e., school transformation coaches and instructional coaches), district-level services, and other services available through other DPI agencies (e.g., Instructional Technology, Exceptional Children, Business and Finance, etc.). An Assistant Superintendent for Curriculum and Instruction shared:

Our district transformation coach is our right hand. . . . He is an insider, but he is an outsider. He is our voice with . . . reason. We can say, “What do you think?” And it is not a judgment. Or we can say, “What do you see that we should be doing? What are we not doing that you have seen done some place else?” He is going to be very candid and have a working relationship [with us in which] he gives honest feedback. He makes viable suggestions: “Have you thought about this?” He is our link between DPI and other resources. He has helped us plan workshops. He has helped us work on budgets. He has helped us secure grants. He has helped us try and modify our procedures so they are more in alignment of what we should be doing. We do not see him as a stranger; we see him as the necessary part of all that we do. He helped us in finance. We even have our

candid meetings and he is in our candid meetings. He gives viable recommendations, suggestions. He is just someone there that we trust, someone who gives honest feedback, and someone who gives us help. He actually goes with me into schools. We talk to principals about data. We trust his recommendations. He just fits in and he is part of the puzzle.

Of the 109 schools in TALAS in 2013-14, 66 were served by the School Transformation Model and 43 were served by the District Transformation Model. Overall, this evaluation found similar effects of turnaround among schools served by the School Transformation and District Transformation Models. In examining proficiency and graduation, the treatment effects for both models were not statistically significant when the schools in each were contrasted with the comparison schools—perhaps due to fewer schools being compared (since both effect estimates are reasonably large and positive). For school value-added, the effect estimate for schools served under the District Transformation Model was much higher (Table 9).

Table 9. Effects on Schools in the District Transformation Model and School Transformation Model

Measures	School Transformation	District Transformation
Proficiency	0.166	0.133
Graduation	0.267	0.152
School Value-Added	0.032	0.435**

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Results include school performance measures from SY08 through SY14.

Given the overall positive effects found for DST treatment, this is perhaps the most promising finding for the comparison of models. Rather than either the district services appearing to be necessary, or the added layer being detrimental, these results can be interpreted to mean that the additional district-level support services are necessary for schools in districts with multiple transformation sites to realize the same results as districts with fewer schools in TALAS.

Sustainability of TALAS Effects

A myriad of factors—including high levels of poverty, high teacher turnover, poor instructional practices, and ineffective leadership—led to the low levels of achievement in schools that placed them into TALAS. DST combatted these factors and the additional ones affecting specific schools by crafting and implementing a plan for improvement that included instructional and leadership coaching, customized professional development, and information provided through a multi-part School Leaders Seminar Series. The ultimate goal of these efforts was to build the enduring, sustainable capacity of school and district staff such that they had the requisite skills to continue an upward trajectory for student achievement growth after the conclusion of TALAS.

Issues of sustainability existed across the TALAS and in the schools. TALAS was a highly human resource-intensive program that relied heavily on the professional judgement of DST staff members who were previously successful in the roles that they supported (i.e., former teachers served as instructional coaches, former principals served as school transformation coaches, and

former district-level administrators served as district transformation coaches). In collaboration with school- and district-level staff, DST coaches determined what areas to address, but the manner in which the coaches carried out their duties was contingent on each coach's personal and professional experiences. This customized approach to supporting school and district personnel ensured individual needs were addressed, but the process varied across TALAS schools and sometimes even within the same school if a DST staff change was made mid-stream.

When coaching turnover occurred within the same school, participants needed to adjust to new coaching styles and strategies. According to one elementary principal, three different school transformation coaches and three different instructional coaches supported her school during Race to the Top. The principal shared that each of her three school transformation coaches had different coaching styles:

Three coaches have been different in their styles and amount and type of contact. All three were helpful, but there have been three different models, so I had to switch as well.

Similarly, the same principal shared her school's experience with multiple instructional coaches supporting her teachers:

We are on our third instructional coach. . . . While the staff has been changing, the coach has been changing as well. I think that has been a little more challenging than me having to adapt to a new coach. That person is just learning the building, and the school, and the teachers. Now her caliber of expertise, I can't question that.

This principal's belief that the coaches who served her school were highly capable was echoed across all the school and district personnel interviewed in the study. Overall, DST coaching contributions were highly valued. Table 10 (following page) includes quotes from school and district personnel that highlight school personnel's perceived value of DST coaching activities.

Table 10. Perceived Value of DST Coaching Activities

Stakeholders	Selected Quotations
Teachers	<ul style="list-style-type: none"> • I have found it very beneficial working with [my instructional coach], actually going in and looking at lessons, breaking them down and learning what I can do to make it better. • I think that we had to do some real groundwork there and so I think that although we have had four years of support, it has changed with us over those four years and it has been very beneficial.
Principals	<ul style="list-style-type: none"> • Happily the DPI [instructional] coaches have been tremendous—the ones we have had the last couple of years. I wish we could have them full-time. The teachers have grown to trust them and accept them. Even teachers they do not work with, so if it is not a math teacher it is a Career and Tech-Ed teacher. They have come to know them and listen to some of the things they offer. • We have had very valuable support, and if we were to lose some of the support that we have within our district... • We can still make progress with the coaches, the school-provided coaches if that is what we, all we have, we can still continue to make progress. To continue to make real progress, the DPI coaches are invaluable to really move forward.
District Administrators	<ul style="list-style-type: none"> • That has been extremely valuable, and the quality of the people that we have had access to has been amazing. • She was very, very much a valuable asset. • He has just been a valuable resource.

Schools were able to make strides in growing the instructional and leadership capacity of administrators and teachers to the point that those skills that were developed could make a positive impact on students and teachers. DST staff and school and district personnel were asked about each school's ability to sustain or exceed existing levels of leadership and instructional capacity attained during the RttT period. The degree to which individuals polled agreed that forward motion could continue varied widely. A school transformation coach shared her concern about the return to low levels of student performance in the absence of TALAS:

I still have concern that there really have not been changes at the district level, so even when we build [our school] capacity with principals and teachers, I just worry that everything will fall back when we are not there.

An Assistant Superintendent for Curriculum and Instruction offered:

Truthfully, if they were to pull out today we would handle it as a district. I am not worried about us having the capacity to support it; however, it is much easier for us at this point in time to have those people involved because [our school transformation coach] can be here for a full day, every day, or every week. I do not have that kind of time and . . . she has had principal experience in different places . . . at the high school level, so she can really help and support that principal.

For most schools, the collective impact of enriched leadership and instructional skills led school improvement in certain key areas (e.g., academic achievement, discipline and safety, school

culture); however, the collective impact was weakened when school staff left their TALAS schools. In the current system, sustained improvement is largely contingent upon maintaining a stable staff that participated in DST growth opportunities. If individuals chose to leave, the enhanced skills left with them and diminished the overall capacity built in a school. Over the course of TALAS, significant principal and teacher turnover has occurred.

Schools with the greatest opportunity to sustain and propel future growth are those that maintain a stable staff. A principal at a school with low staff turnover felt confident that her school can continue to grow due to the services provided by DST staff members and the stability of her instructional staff:

I definitely think [my school] can continue to grow. I think we have some great things in place. I think the resources and the knowledge that [our school transformation coach] and [instructional coach] both brought to the school and have implemented and helped us to implement are things that we can definitely sustain. I think if you look at the staff, we have an experienced staff, but not a ready-to-retire staff. . . . I think a large population of the teachers who are here are not planning to look elsewhere anytime soon, so they will be here to continue to sustain and grow.

To shed some light on the sustainability of effects, the Evaluation Team examined the schools that participated in both TALAS and the prior DST transformation efforts and contrast their performance with those schools that participated in TALAS only or in prior DST transformation only. Twenty-five of the 109 transformation schools were treated previously under the prior DST transformation program (DST). Outcomes for the schools only treated by TALAS (TALAS only) and those treated under both programs (TALAS + DST) are positive (Table 11).

Schools served under the prior program but not TALAS (DST Only) performed worse than schools that never participated in transformation. This comparison suggests that former DST transformation results were not sustained, although these schools had performed well enough to not be in the lowest-achieving and lowest-graduating schools in North Carolina in 2009-10. The results for TALAS + DST (as shown in Table 11) indicate that the schools that continued to receive support services through TALAS made large gains in graduation rates and school value-added during the 2010-11 to 2013-14 period. However, schools treated under the prior DST program that did not continue to receive services under TALAS decreased their graduation rates when compared with similar schools that had never received services. While this reinforces the positive effects of TALAS, it calls into question whether results can be sustained beyond the expiration of a turnaround program.

Table 11. Comparison of Outcomes for Schools Participating in TALAS and Prior DST Transformation Services with Those Participating in TALAS Only or the Prior DST Services Only

Measures	TALAS Only	TALAS + DST	DST Only
Proficiency	0.192*	0.087	-0.061
Graduation	0.353	0.690*	-0.600*
School Value-Added	0.177	0.372**	-0.336

Notes: * p<0.05, ** p<0.01, *** p<0.001. Results include school performance measures from SY08 through SY14.

Summary and Conclusions

The evaluation findings clearly indicate that North Carolina's lowest-achieving schools in 2009-10 have improved their performance, in terms of both school value-added and proficiency rates, during the four years of TALAS. In addition, the TALAS emphasis on literacy paid dividends in increased proficiency on reading and language arts tests in the elementary and middle schools when compared to other low-performing schools. Also, these gains in literacy did not come at the expense of other subjects, since both elementary science and middle school mathematics proficiencies increased in TALAS schools more than in the comparison schools.

Moreover, the positive effects of TALAS on school value-added scores were significant beginning in the first full year of implementation and on proficiency rates beginning in their second year in transformation. This is rapid progress. However, it is doubtful that many of the TALAS schools will be able to sustain these increases without continued support provided by DST. It is important to monitor their outcomes closely in the future to avoid schools churning in and out of the lowest-achieving five percent of schools, depending on whether they are currently receiving the services they need to adequately educate their students. Given the limited resources available for school transformation when the RttT funds are depleted, and given the high levels of staff turnover in the lowest-achieving schools, transformation services—including coaching and professional development—will continue to be needed to meet the state's constitutional obligations to provide adequate education.

The progress in increasing school graduation rates among the TALAS schools is less definitive. Many TALAS schools posted large graduation rate increases and the comparisons suggested these were higher than those in comparison schools, but these effects, although sizeable, were seldom statistically significant. While the lack of statistical significance may be attributable to the limited number of high schools in TALAS (17) and in the comparison schools (18), it was difficult to distinguish the increasing graduation rates in TALAS schools from the increases in graduation rates that were occurring statewide. Overall, graduation rates in North Carolina increased by 9.7 percentage points from 2009-10 to 2013-14 and the increases for economically disadvantaged and minority students have been larger, closing the gaps substantially with more affluent peers and white students, respectively. However, the schools, which were selected for TALAS based on their low graduation rates and not their overall proficiency, have proven to be more difficult to improve. Taken all together, graduation rates should continue to be a focus of North Carolina's transformation efforts. Additionally, monitoring progress in the schools with the lowest graduation rates and intervening—if increases in proficiency and graduation rates do not occur—should be considered.

Also, it appears that the effects of TALAS are larger when district-level coaching and support are included with the school leadership and instructional coaches. The schools that participated in both the earlier DST transformation program and TALAS registered the largest gains in graduation rates and school value-added during the RttT funding period. This may indicate that services sustained over a longer time contribute to greater growth. The fact that TALAS school-wide student growth began to improve in the first year of TALAS and was sustained may indicate that the Comprehensive Needs Assessments and School Improvement Plans that were developed in the first year of TALAS and implemented thereafter were effective in producing

immediate school-wide student achievement growth and sustaining that growth throughout the study period. There is little evidence that this can be sustained without continued state intervention and support, and the performance decline of the schools served by the prior transformation but not TALAS raises concerns about the ability of schools and school districts to sustain higher levels of performance on their own.

Taken together, the results of the four-year evaluation suggest that the transformation process implemented during RttT has been effective and that the process resulted in immediate positive benefits for students. If implemented with the refinements informed by the TALAS experience and evaluations, the transformation process in another set of the lowest-achieving North Carolina schools can benefit students and teachers. However, it may be that the high levels of staff turnover in these schools and the high variability in capacity across school districts will make transformation and turnaround a permanent requirement for NCDPI. Coaching will be needed to improve instruction since novice teachers (those with less than five years of experience) comprise approximately 25% of North Carolina's teacher workforce and a much higher percentage of the teachers and principals in the lowest-performing schools do not remain long in these schools even when they are effective. Professional development will be needed for the same reasons—large percentages of the staff in these schools change annually, thus requiring the simultaneous delivery of basic and advanced training. In other words, the conditions may not exist in the educator workforce and in many school districts in North Carolina for schools serving high proportions of economically disadvantaged and minority students to be adequately educated without direct intervention and support from the state. Rather than a one-time intervention in a set of schools that can then maintain adequate student proficiency on their own, school transformation may become a permanent process for ensuring that these schools can adequately educate their students.

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