

TEACHER WORKING CONDITIONS AND TURNAROUND EFFORTS IN LOW-ACHIEVING HIGH SCHOOLS: WHAT WORKS

By Angel Banks, Candice Bodkin, and Jennifer Heissel

Project 5.1 / August 2011

POLICY QUESTION: Has the Department of Public Instruction's turnaround program improved teacher working conditions and student outcomes?

EXECUTIVE SUMMARY

This paper examines how the state school turnaround program has affected leadership and other teacher working conditions in low-achieving high schools. A major goal of the turnaround program is to increase leadership and capacity in turnaround schools, and we use the North Carolina Teacher Working Conditions survey to examine how teachers' perception of leadership changed in turnaround schools. We also analyzed changes in students' end-of-course (EOC) test performance and graduation rates. Finally, we examined specific schools that performed exceptionally well in the turnaround program.

Our results demonstrate that the turnaround program is associated with:

- Improved school leadership and support
- Enhanced teacher leadership and culture
- More time for preparation and collaboration
- Increased EOC passing rates

The program does not correspond to a change in graduation rates. These results indicate that the school turnaround program has substantially improved teacher working conditions and student performance in low-achieving schools across North Carolina. Notably, several schools are going above and beyond the average to improve working conditions and student performance, and future research should examine how these specific schools have achieved their success. In particular, research should examine ways to improve graduation rates.

INTRODUCTION

HISTORY AND BACKGROUND

The District and School Transformation (DST) division of the North Carolina Department of Public Instruction (NCDPI) was created to increase student achievement and graduation rates in targeted schools by improving school leadership through capacity building (NC Department of Public Instruction, "District and School Transformation," n.d., para.1) All schools receive some level of instructional support from the division; however, targeted schools receive customized and intensive leadership and instructional support based on specific school needs. The Statewide System of Support targets schools when the student performance composite is below fifty percent; proficiency is below sixty percent and



the school is not meeting growth expectations; or there are gaps in academic performance across AYP student groups (NC Department of Public Instruction, “Statewide System of Support,” n.d., para. 2). District and School Transformation expanded in 2007 by adding thirty high schools to the turnaround program, which provides instructional support and capacity building to persistently low-achieving middle schools and high schools.

IMPLEMENTATION

To determine the potential impact of instructional support on the turnaround school, NCDPI’s Comprehensive Needs Assessment team of reviewers conducts a comprehensive needs assessment for the turnaround school. Afterwards, the school drafts a School Improvement Plan that incorporates the recommendations from the needs assessment and outlines the school’s improvement efforts. To assist with school turnaround, NCDPI and the school’s district select turnaround coaches and instructional facilitators¹ provide instructional and classroom-level support to the school.

School turnaround coaches provide professional development to school principals and personnel. Those participating in professional development activities optimize the assistance they receive from coaching and transfer theoretical knowledge learned through professional development into actionable and timely goals and standards in their classrooms. Coaching and professional development work in tandem to help targeted schools and districts achieve academic proficiency, raise graduation rates, and build leadership capacity.

CAPACITY BUILDING

Nationally, a major tenet of school reform is capacity building; that is, after undergoing transformation, the schools will be equipped with the tools to maintain the practices that have transformed their school culture (Copland, 2002). School leadership is a key indicator of whether leadership capacity to maintain turnaround outcomes has been achieved. School leadership promotes capacity building when responsibilities stretch over multiple people in various roles and all parties collectively focus on well-articulated goals (Copland, 2002). Copland (2002) also writes that a broader group shares the responsibility to maintain school improvement, rather than only formal leaders at the top of the hierarchy.

Attempts at capacity building are more effective in assisting with school reform efforts than traditional means over the past two decades (Copland, 2002). School reform efforts have focused on filling leadership roles with highly qualified practitioners and administrators, but once the leader moves on, the changes disintegrate. Capacity building provides conditions that limit the impact a sole individual has on the school culture,

and focuses on the collaboration of all staff to “re-culture” the school environment. The comprehensive needs assessment, as a component of school turnaround, assists with capacity-building by providing school personnel a clear picture of their school’s strengths, weaknesses, challenges, successes, and areas for improvement, and coaching informs each staff member of ways to contribute to change the culture and maintain those changes.

TEACHER PREPARATION AND COLLABORATION

Research suggests considerable linkages between adequate time for teacher preparation or planning, as well as collaboration with other teachers, and a positive school environment and culture. Adequate time for teacher preparation and collaboration reduces the likelihood of chronic work overload, provides time to hone teaching skills, and increases positive interaction with colleagues (Hargreaves, 1991).

TEACHER WORKING CONDITIONS

The Teacher Working Conditions Initiative began with a Teacher Working Conditions survey originally developed and piloted by the North Carolina Professional Teacher Standards Commission in 2001. The results of the survey have contributed to shaping ideas about necessary adjustments concerning school leadership, school culture, teacher preparation time, and collaboration, as teachers’ experiences heavily influence the experiences of their students (Hargreaves, 1991). The Teacher Working Conditions survey allowed our research team to examine whether the capacity-building efforts of school turnaround resulted in changes in the reported leadership, culture, and other working conditions in turnaround schools. We specifically examined the following areas²:

- *School Leadership and Support*: This area includes the support for teachers, feedback, the effectiveness of the school improvement team, and school leadership’s attention to issues affecting the school environment and culture.
- *Teacher Leadership and Culture*: This area includes teachers’ decision-making and problem-solving, the school vision, the level of trust and mutual respect in the school, and the extent to which teachers are held to high professional standards.
- *Time for Preparation and Collaboration*: This area includes teachers’ reports of time available for collaboration with colleagues and the non-instructional time provided specifically for planning.

“Leadership” does not identify a specific person in these areas; rather, improvements in these areas indicate a general improvement in leadership capacity at a school.

¹ Turnaround coaches assist principals and teachers in school-wide efforts, while instructional facilitators assist teachers with developing course content.

² For more detailed information on the three areas we examine with the Teacher Working Conditions survey data, please see Appendix I.

DATA³

We used data from a variety of sources to evaluate the turnaround program, including the North Carolina School Report Card database and the North Carolina Teacher Working Conditions Survey. We also used data from NCDPI's School Business Division, Accountability Services Division, District and School Transformation Division, and NCDPI's publicly available website. We examined the following variables:

Outcome Measures:

- Performance composite (percent of students deemed proficient on their End-of-Course tests)⁴
- Four-year graduation rate
- Teachers' reported perception of *School Leadership and Support*, *Teacher Leadership and Culture*, and *Time for Preparation and Collaboration*

School Characteristics:

- Whether a school and its district received turnaround support through the DST program
- School enrollment⁵
- Percent of students eligible for free or reduced-price lunch
- School location (city, suburb, town, or rural)

We limited our analysis to traditional public high schools. We excluded charter, alternative, and special education schools, as these schools do not participate in the turnaround program. To allow a comparison before and after turnaround program implementation, we collected data from the 2005-06 through 2009-10 school years.

Several large turnaround schools have broken into smaller schools with specific academic focuses. These smaller schools report data separately, but they remain housed in the same physical location. For the purpose of clarity over time, we recombined⁶ the data for such schools.

SCHOOL CHARACTERISTICS

As shown in Table 1, turnaround schools had lower performance and more at-risk students than typical high schools in 2005-06. The composite scores at turnaround schools averaged 50.7%, compared to 68.7% in all high schools. Similarly, the four-year graduation rate was substantially lower in turnaround schools at 62.8%, compared to 71.2% in all schools.

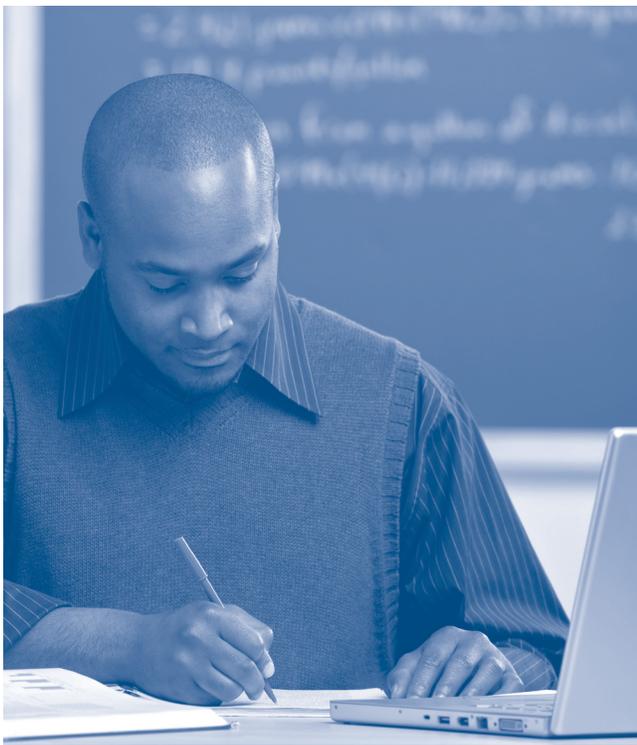
Teachers in turnaround programs rated the *School Leadership and Support* and *Teacher Leadership and Culture* in their schools lower than did teachers across the state. These results

imply that turnaround schools had less effective leadership than other schools before the start of the turnaround program. Teachers in both groups scored time for *Preparation and Collaboration* about the same.

Turnaround schools had more students eligible for free and reduced price lunch, while average school enrollment sizes were about the same. A larger proportion of turnaround schools were located in urban settings, while a smaller proportion was in rural settings. All of these differences could affect a school's ability to implement change, enhance school and teacher leadership, and improve student performance.

The turnaround schools differed from the statewide average, but we needed a comparison group to control for statewide changes during the period. Thus, we selected a subsample of similar schools to use as a control. Table 1 displays the control schools' baseline characteristics. The control group had similar graduation rates as the turnaround schools, and the performance composite and the percent of free and reduced price lunch students was more similar to the turnaround schools than the statewide average in the baseline year.

The control group provides an example of the "next best" option for improving low-achieving schools. They serve as a comparison for what could have happened in the turnaround schools without the turnaround program. We include only turnaround schools and the control group in our analysis.



³ For more detailed information on our data sources, please see Appendix II.

⁴ The school performance composite score is the percentage of students who pass their End-of-Course tests with a score of level 3 or higher. The tests are scored on a scale from 1 through 4.

⁵ Enrollment information comes from the Grade, Race, Sex data file.

⁶ Appendix II contained information on the recombination of schools.

TABLE 1: DESCRIPTIVE STATISTICS OF NORTH CAROLINA HIGH SCHOOLS (2005-06 DATA)

School Outcomes and Characteristics	All Regular Schools	DST Turnaround Schools	Control Group Schools
Performance Composite	68.7%	50.7%	63.0%
Graduation Rate	71.2%	62.8%	62.6%
Teacher Perceptions			
• School Leadership and Support	3.6 (out of 5)	3.3 (out of 5)	3.6 (out of 5)
• Teacher Leadership and Culture	3.7	3.3	3.8
• Preparation and Collaboration	3.0	3.1	3.3
School Characteristics			
• Enrollment	1,099 students	1,034 students	903 students
• % Free/Reduced Lunch Students	32.3%	58.2%	46.9%
• Location – % Rural	54.1	45.5	55.9
• Location – % Town	14.3	13.6	14.7
• Location – % Suburb	10.3	6.1	5.9
• Location – % Urban	21.4	34.8	23.5
Number of Schools in Sample	374 schools	66 schools	35 schools

CHANGES OVER TIME⁷

As seen in Charts 1 and 2, both composite scores and graduation rates have increased across the state since 2005-06. Notably, turnaround schools’ composite scores increased at a greater rate than other groups’ scores. However, we cannot attribute the entire change in turnaround schools to the turnaround program. As seen in Charts 1 and 2, student performance changed across the state, and some academic improvements come from changes that would occur with or without the program. Revisions to EOC test content could increase (or decrease) student performance for all schools in a particular year, or statewide graduation initiatives could assist all schools. Thus, we turn to a statistical analysis to understand the effect of the turnaround program itself.

METHODOLOGY⁸

We use two statistical models to assess the effectiveness of school turnaround: an ordinary least squares (OLS) regression model and a panel data model with school fixed effects. We focus on schools that entered turnaround in 2006-07 and 2007-08.

MODEL 1: ORDINARY LEAST SQUARES REGRESSION

Model 1 uses OLS regression to analyze the relationship between school turnaround programs and changes in performance

⁷ For information on School Leadership and Support, Teacher Leadership and Culture, and Time for Preparation and Collaboration over time, please see Appendix III.

⁸ For more detailed information on methodology, please see Appendix IV.

CHART 1: COMPOSITE SCORES OVER TIME

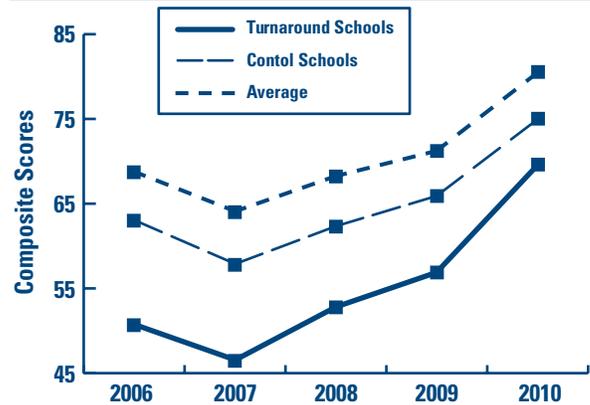


CHART 2: GRADUATION RATES OVER TIME

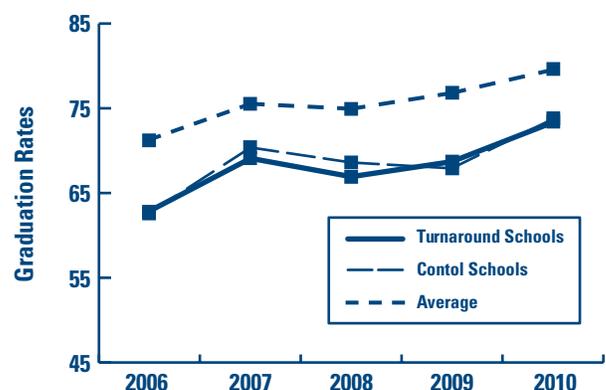


TABLE 2: MODEL 1 ESTIMATES OF RESULTS FOR A TYPICAL HIGH SCHOOL

Outcomes	Estimated Change in Control Schools	Estimated Change in Turnaround Schools	Estimated Effect of the Turnaround Program
Performance Composite	7.78%	16.45%	8.67%
Graduation Rate	11.73%	10.66%	-1.07%
School Leadership and Support	0.09 standard deviations	0.51 standard deviations	0.42 standard deviations
Teacher Leadership and Culture	-0.14 standard deviations	0.42 standard deviations	0.56 standard deviations
Time for Preparation and Collaboration	-0.22 standard deviations	0.11 standard deviations	0.33 standard deviations

Highlighted cells indicate statistically significant results.

TABLE 3: MODEL 2 ESTIMATES OF RESULTS

Outcomes	Estimated Effect of the Turnaround Program
Performance Composite	4.25 percentage points
Graduation Rate	0.62 percentage points
School Leadership and Support	0.40 standard deviations
Teacher Leadership and Culture	0.57 standard deviations
Time for Preparation and Collaboration	0.42 standard deviations

Highlighted cells indicate statistically significant results.

composite, graduation rates, and teacher perceptions between the 2005-06 and 2009-10 school years. The model controls for school-level differences in school enrollment, percent of students eligible for free or reduced-price lunch, and school location. The model does not control for unobservable characteristics that may affect school performance (e.g., student motivation).

MODEL 2: PANEL DATA REGRESSION

Model 2 examines the same outcomes with a slightly different statistical method. The panel data set contains measurements on each variable for each year, which accounts for variables changing from year-to-year (e.g., percent of students on free or reduced price lunch).

This model controls for the same variables as Model 1 as well as year and school-level fixed effects⁹. Year fixed effects account for the statewide trends in variables; for instance, graduation rates increased across the state over the period.

School-level fixed effects account for the differences across schools that are constant over time; for instance, a school's neighborhood may have a positive or negative influence on a school. The school-level differences include intangible and difficult-to-measure school factors, but only if they remain constant over the time period.

Because we can control for intangible school factors, Model 2 provides a more precise estimate of the effect of the turnaround program.

STANDARD DEVIATION AND TEACHER WORKING CONDITIONS¹⁰

Changes in the Teacher Working Conditions survey required us to report changes in *School Leadership and Support*, *Teacher Leadership and Culture*, and *Time for Preparation and Collaboration* in standard deviations due to changes in the survey from year-to-year. Standard deviations provide information on how far from average a school is.

Nearly 70.0% of schools are within 1.0 standard deviation of the mean, and over one-third of schools are within 0.5 standard deviations. Thus, most schools reported scores close to the average, with fewer reporting scores far away. Farther from the average, just a few tenths of a standard deviation can represent substantial improvements in a given working condition.

RESULTS¹¹

We found significant gains in the performance composites from the DST turnaround program in both models, as well as a reported improvement in *Teacher Leadership and Culture*. We found some evidence of improvements in *School Leadership and Support*, as well as *Time for Preparation and Collaboration*. The program appears to have no effect on graduation rates.

⁹ The model controls for school enrollment and percent of students eligible for free or reduced-price lunch. The model does not specifically control for school location, as the school-level fixed effects capture the influence of that variable.

¹⁰ For more detailed information on standard deviations, please see Appendix V.

¹¹ For more detailed information on our results, please see Appendix VI. For information on specific school improvement plans sources, please see the works cited.

Model 1 estimates the change in the measures associated with the turnaround program from 2005-06 to 2009-10. Table 2 displays the estimated differences between the control schools and the turnaround schools for a typical school¹².

While Model 1 controls for a variety of school characteristics, it does not account for unobservable factors that could influence the outcome measures. Statewide trends and school-specific forces could interact with the impact of the transformation program. Thus, Model 2 uses a more comprehensive statistical method to provide a more reliable estimate of the turnaround program's effectiveness, but the output is somewhat more complicated. Table 3 presents the average difference between a school that participated in turnaround and a school that did not. The estimate is not for a specific year; rather, the number represents the average effect for the years the schools participated in the turnaround program.

We discuss results for Models 1 and 2 below. Using a residual analysis from the Model 1 results, we also identified several schools that performed exceptionally well. We include observations about these outstanding schools here.

COMPOSITE SCORES

Model 1 indicates a statistically significant increase in composite scores for turnaround schools from 2005-06 to 2009-10. After controlling for several school characteristics, the model projects a 7.78 percentage point increase in the composite score between 2005-06 and 2009-10 for the control schools. The projected change is 16.45 percentage points for turnaround schools. Thus, the turnaround program is associated with an additional change of 8.67 percentage points.

Model 2 indicates that for any given school in any given year, a school's composite score was 4.25 percentage points higher if the school was in turnaround than if it was not. The specification differences between Models 1 and 2 account for the variation in the estimates. Again, the results imply that the school turnaround program substantially increased passing rates in low-achieving schools.

Four schools have successfully raised composite scores beyond what the model would predict: Middle College at Bennett, Middle College at NC A&T, Hoke County High, and West Charlotte High. All four schools began near the bottom of the composite score rankings in 2005-06, but their improvements far outpaced those of other schools.

Middle College at Bennett and Middle College at NC A&T are both located in Guilford County and provide students with a unique learning environment. Like several other schools, they are housed on a college campus and offer students the opportunity to earn college credit while still in high school. Unlike those schools, they operate as single gender schools. Researchers hypothesize that

single gender classrooms may improve students achievement by providing students with a greater sense of self-esteem and improving participation in the classroom (Singh, et. al, 1998). In five years Middle College at Bennett improved composite scores from 18.7% to 86.5%, an improvement of 67.8 percentage points. Middle College at NC A&T had similar improvements.

Hoke County High School saw poor literacy skills as a major impediment to improving composite scores across all academic areas. As a result, they sought to improve reading comprehension skills across the curriculum through implementation of their literacy program in all classes. Teachers received professional development on building literacy in specific content areas as well as how to use thinking maps, a strategy designed to assist comprehension for all learners. Teachers benchmark students every 4 weeks to be sure these interventions improve students' performance. If not, teachers can address deficiencies through supplemental lessons. Each teacher also makes tutoring available to students before or after at least one day a week. As a result of these efforts, Hoke County High School improved composite scores 37 percentage points.

GRADUATION RATES

Both Models 1 and 2 estimate that no statistically significant relationship exists between the turnaround programs and graduation rates. Graduation rates may be a longer-term outcome than the other measures. Most of the EOC tests that count for the performance composite scores occur in the first years of high school, while affecting graduation rates may require intervention from grades nine through twelve. About half of the schools had been in turnaround three years, while the other half had been in turnaround four years. However, the effect on graduation rates remains insignificant when limiting the analysis to only those schools with four years of turnaround support.¹³ Thus, it appears no statistically significant relationship exists between the turnaround program and graduation rates.

The problem of low graduation rates for students is not a new problem, but it is one of the most challenging problems for schools. In their seminal work, Barker and Gump (1964) found that students who are engaged in school through sports, extracurricular activities, specialized programs or peer groups are more likely to graduate than their unengaged peers. Schools across the state have attempted to raise rates using innovative ideas like specialized academic and career academies, small school design, partnerships with local universities and community colleges, and 21st century skills advancement to increase student interest in attending and completing high school.

Models 1 and 2 show no relationship between the turnaround program and graduation rates, but several specific schools did achieve outstanding results.

¹² In this example, a "typical school" is a rural school with 1,000 students and 60% FRL students in 2009-10.

¹³ The estimated effect in this limited analysis attributes a 2.4 percentage point decrease to the turnaround program, but the standard error is 2.09 and the results are statistically insignificant.

So how does a school with a graduation rate of 47.6% percent go about engaging students in school? In 2009, Weldon City Schools converted the district's only high school into a STEM school, raising the level of academic expectations for all students. The plan seems to have worked because the school has managed to raise their graduation rate 52.4 percentage points since the 2005-2006 school year. In 2009-2010, Weldon STEM High School graduated 100% of their seniors.

Other successful schools have tried similar program changes. Ben L. Smith High School now offers students specialized academies for Business and Information Technology, Engineering and Public Service, as well as an International Baccalaureate (IB) program. North Brunswick High School offers the AVID program (Advancement Via Individual Determination) which seeks to help students in the "middle" with a desire to go to college reach their academic goals. These students, with GPAs between 2.0 and 3.5, take classes to learn note taking, study skills and test taking strategies to help them succeed in advanced classes. Purnell Swett High School offers students a variety of career and technical education programs and partnered with Robeson Community College to offer students the opportunity to earn college credits while still in high school. Middle College at NC A&T offers college course work in an all male setting. Statewide graduation rates have been on the rise across the state. Though turnaround schools in general have not substantially differed from the control group, several schools have had outstanding results. From our review, it appears that schools with substantially improved graduation rates have all set high very high standards for their students.

SCHOOL LEADERSHIP AND SUPPORT

Model 1 showed no statistical relationship between the turnaround program and teacher's reports of *School Leadership and Support* on the Teacher Working Conditions survey. However, the more robust Model 2 demonstrates a statistically significant improvement in *School Leadership and Support* associated with the turnaround program. The model indicates that for any given school, the teachers reported scores 0.40 standard deviations higher in turnaround schools than in schools without the program. Thus, it appears that turnaround support does improve school leadership and their support of teachers, which may enhance student learning (Marks and Printy, 2004).

Four schools in particular improved school leadership significantly during their time in school turnaround. At North Brunswick High School in 2005-2006 teachers reported below average support from school leadership, ranking their school in the bottom 15% of schools. In 2010, they reported well above the mean, ranking in the top 15% of schools. Some of these changes can be credited to the work of school leaders and teachers to implement effective professional learning communities at North Brunswick. Here teachers meet once a week to discuss student performance and interventions. Teachers report that these interventions have led to increases in composite scores and grad rates as well as an improvement in *Teacher Leadership and Support*.

In 2005-2006, teachers at Hugh M. Cummings High School reported far below average marks on the Teacher Working Conditions Survey in the area of School Leadership and Support. By 2010, teachers reported feeling greater support from school leadership, especially in the areas of new teacher support and feedback to improve instruction. Using targeted professional development, administration sought to support teachers in the classroom with SIOP (Sheltered Instruction Observation Protocol) a program designed to support instruction for English language learners.

Hoke County addressed the area of *School Leadership and Support* by implementing school wide professional development more closely aligned to the needs of teachers in the classroom. School leadership at Hoke County High School believed that one way to support teachers involved including them in the decision-making process at the school. Administrators also created common planning time for teacher in EOC tested subjects, allowing greater collaboration and support for newer teachers. By 2009-10, teachers rated their school higher in these areas, making them about average for the state.

James Kenan High School likewise received low marks in areas of School Leadership and Support. Here, the school administration supported teachers in learning new ways of monitoring student progress towards mastery of objectives, including use of ClassScape, a student data program. Leadership also supported new teachers by assigning them formal mentors within the school and creating professional learning communities which address the specific needs of new teachers. Leadership support is essential in helping teachers to become more effective in their classroom which, in turn, increases student academic success.

TEACHER LEADERSHIP AND CULTURE

Based on Model 1, it appears that *Teacher Leadership and Culture* decreased in the control schools, while it increased in the turnaround schools. The turnaround program is associated with a 0.56 standard deviation increase in this measure. Model 2 also shows a statistically significant improvement in *Teacher Leadership and Culture* associated with the turnaround program. For any given school, the teachers reported scores 0.57 standard deviations higher in turnaround schools than in schools without the program. Thus, it appears that turnaround support does improve teacher leadership and the school's culture.

On average, turnaround correlated with an increase in *Teacher Leadership and Culture*. Five schools in particular had a much larger improvement than the other schools.

Compared to teachers at other schools in our data, teachers at Hugh M. Cummings High School reported substantial improvement in *Teacher Leadership and School Culture*. Cummings' School Improvement Plan specifically uses the Teacher Working Conditions survey as a means to discuss the school's strengths, opportunities for improvement, and priorities. Teachers and school administrators have jointly pledged to maintain a safe

and orderly school environment and reduce the number of school suspensions. Teachers also lead Cummings High School's academic goals through the development of professional learning communities, with the explicit support of school administrators and professional learning community coaches.

Teacher satisfaction with *Teacher Leadership and Culture* at North Brunswick and James Kenan high schools has also improved. In North Brunswick's School Improvement Plan, the high school's teachers spearhead efforts to develop and sustain professional learning communities, conduct formative assessments, and to provide interventions for at-risk students. School administrators have listed full teacher involvement in each of these areas as a means to improve student achievement. James Kenan High School's institution of professional learning communities appears to drive teacher involvement and leadership, as the school's leadership team expects teachers to participate in professional learning communities to improve student achievement, and ultimately reach high growth status.

Hoke County High School has made considerable improvements in *Teacher Leadership and Culture* from 2006 as well. Using Teacher Working Conditions survey results, Hoke County High School identified school improvement goals, which appear to have impacted teacher satisfaction with *Teacher Leadership and Culture*. Hoke County High has formed Focus Teams, which are teams divided by initiative areas. Teachers are the team's knowledge expert, and lead the group as the school attempts to achieve turnaround. Additionally, teachers at Hoke County High have formed Small Learning Communities in which teachers share knowledge with other teachers. This enhanced knowledge leads to a more robust curriculum for all students.

TIME FOR PREPARATION AND COLLABORATION

Model 1 showed no statistical relationship between the turnaround program and teacher's reported *Time for Preparation and Collaboration*. However, the more comprehensive Model 2 indicated that teachers reported more preparation and collaboration satisfaction in schools with turnaround support. For any given school, the teachers in turnaround schools reported scores 0.42 standard deviations above those in the control schools. It appears that teachers in turnaround schools do receive more time to prepare for classes and collaborate with colleagues.

Again, several schools performed much better than the model would predict. At North Brunswick High School, teachers meet weekly in professional learning communities to discuss student performance, interventions, and best practices. Teachers worked together to create a pyramid of interventions for struggling students and worked collaboratively to make adjustments as needed to better meet the needs of their students. North Brunswick High School's efforts are notable due to the full participation of all members of the teaching staff and full implementation across the school. These PLC's have led to more teachers feeling that they have more non-instructional and collaboration time than they did in 2005-06.

AREAS FOR IMPROVEMENT IN THE TURNAROUND PROGRAM

While some turnaround schools excelled in the areas we have pinpointed, several schools have struggled to overcome challenges. In some cases schools encountered circumstances such as gang activity or rapid changes in the population of the school which other schools did not face. Many of these schools performed well below what our models would predict. This could indicate that the turnaround model is not entirely appropriate for all schools. Some schools may face profound problems beyond the scope of the current turnaround program. This may indicate that turnaround efforts may need to expand to include efforts to improve school safety and stability in order to improve teacher working conditions and student academic outcomes in some schools.

During West Charlotte High School's time as an African-American institution, it prepared students for a world much different than that of their parents. The school turned out many leaders who would take part in the civil rights movement and served as a point of pride within the community. After Charlotte-Mecklenburg Schools began busing students in order to create more integrated schools, the new diverse student body continued to flourish. When the busing program stopped, much of the diversity enjoyed through the 1980's and 1990's ended, leaving the school with an 89% African-American population. By 2005-2006, West Charlotte High School had some of the lowest composite scores in the state, with only 40.4% of students proficient in EOC tests. Their graduation rate also began to plummet, dropping from 81% in 2005-2006 to just over 51% in 2009-2010. A school which provided so much pride for the community now failed to produce the academic success it once had. Unwilling to let their school face closure, members of the community volunteered to act as mentors to all the incoming freshmen in an attempt to ease their transition to high school and improve their chances of graduating. Despite the efforts of turnaround and a large outpouring of community support, West Charlotte has failed to improve graduation rates. Instead, the 30 percentage point drop in graduation rates makes it the lowest of all turnaround schools.

Overhills High School has performed more poorly than our model would predict in the areas of *Teacher Leadership and Culture* and *Teacher Preparation and Collaboration*. Overhills High School's stated goal for developing professional learning communities is to ultimately achieve eighty-percent teacher participation. This is a lower level of teacher involvement compared to Cummings, North Brunswick, and James Kenan high schools, and even for Overhills High School, which saw a higher level of teacher leadership in 2006-2007. This decrease might indicate that comparatively low teacher involvement in professional learning communities has continuously yielded a low level of teacher satisfaction with teacher leadership and teacher collaboration.

North Rowan High School has experienced severe gang activity within and around the school building, which has significantly impacted student performance and teacher working conditions within the school. North Rowan has performed more poorly than other turnaround schools, despite targeted efforts to raise

composite scores and reduce violent incidents. North Rowan has also attempted to improve teacher collaboration within the school by increasing internal communication. The school has plans to use the Teacher Working Conditions survey as a tool to improve internal communication, but the school has not outlined specifically how staff members intend to achieve this goal. Based on our statistical analysis, the school has fallen in all areas of our analysis, particularly *Time for Preparation and Collaboration*, *Teacher Leadership and Culture*, and student composite scores.

Based on our analysis, not all schools succeeded in the turnaround program. Certain schools performed better than average, while certain school preformed worse than average. It is important to understand the diversity of outcomes and the underlying reasons for the differences as we expand turnaround to additional schools through the Race to the Top grant.

CONCLUSION

The turnaround program corresponds to an increase in *School Leadership and Support*, *Teacher Leadership and Culture*, *Time for Preparation and Collaboration*, and schools' performance composites. The turnaround program in general does not appear to affect graduation rates.

Notably, several schools are going above and beyond the average in all of these areas, and future research should examine how these specific schools have achieved their success. In particular, research should also examine ways to improve graduation rates. On the other hand, certain schools performed substantially worse than average turnaround schools, and research should examine how to improve the leadership capacity and student performance at these particularly challenging schools.

Overall, our findings indicate that despite remaining challenges, the expanded leadership capacity at the original sixty-six turnaround programs will lead to continued improvement in these schools. Further, schools identified for turnaround through the Race to the Top program will likely expand their leadership capacity and improve student performance.

APPENDIX I: TEACHER WORKING CONDITIONS SURVEY MEASURES

Teacher Working Conditions survey content changed from year to year, and we focused on fifteen questions that appeared in all three surveys. We grouped the questions into three constructs: *School Leadership and Support*, *Teacher Leadership and Culture*, and *Time for Preparation and Collaboration*. To be grouped into a construct, the questions had to have a logical connection, and all questions had to have a correlation greater than 0.70 in all three years. We confirmed the construct groupings using a factor analysis. For each construct, we averaged the individual z-scores for each question

to develop construct z-scores. We formed the constructs from the following questions:¹⁴

SCHOOL LEADERSHIP AND SUPPORT

- Q7.1d: The school leadership consistently supports teachers.
- Q7.1h: Teachers receive feedback that can help them improve teaching.
- Q7.1j: The school improvement team provides effective leadership at this school.
- Q7.3a: The school leadership makes a sustained effort to address teachers concerns about leadership issues.
- Q7.3c: The school leadership makes a sustained effort to address teachers concerns about the use of time in my school.
- Q7.3d: The school leadership makes a sustained effort to address teachers concerns about professional development.
- Q7.3i: The school leadership makes a sustained effort to address teachers concerns about new teacher support.

TEACHER LEADERSHIP AND CULTURE

- Q6.1b: Teachers are trusted to make sound professional decisions about instruction.
- Q6.1e: The faculty has an effective process for making group decisions and solving problems.
- Q6.1f: In this school we take steps to solve problems.
- Q7.1a: The faculty and staff have a shared vision.
- Q7.1b: There is an atmosphere of trust and mutual respect in this school.
- Q7.1e: Teachers are held to high professional standards for delivering instruction.

TIME FOR PREPARATION AND COLLABORATION

- Q2.1b: Teachers have time available to collaborate with colleagues.
- Q2.1d: The non-instructional time provided for teachers in my school is sufficient.

APPENDIX II: DATA

We obtained school location and percent of students eligible for free or reduced-price lunch (FRL) data from the North Carolina School Report Cards database. For the schools not reporting FRL through the School Report Card, we obtained the information from the Child Nutrition Services report on the NCDPI website. The School Business Division provided enrollment data, and the Accountability Services Division provided performance composite and graduation rate information. The District and School

¹⁴ Language comes from the 2010 survey wording at this point.

Transformation Division provided information on when each school received turnaround support. Data on teachers' perception of *School Leadership and Support*, *Teacher Leadership and Culture*, and *Time for Preparation and Collaboration* came from the North Carolina Teacher Working Conditions survey.

We used a subsample of low-achieving high schools as a comparison group in our analysis. We followed a methodology similar to that used in the RttT grant to select this group. The control group includes schools with 2005-06 performance composites in the bottom 5% of the non-turnaround schools and/or graduation rates below 60%.

Thirty-five schools began the turnaround program in 2006-07, while thirty-one began the program in 2007-08, for a total of sixty-six schools. Schools in the earlier cohort had four years to implement change, while the later cohort had three years. The later cohort also had different challenges to overcome than the earlier cohort. The first cohort had a performance composite score of 45.8 in 2005-06, compared to 56.2 for the later cohort. Conversely, the first cohort had graduation rate of 64.5%, compared to 60.9% for the second cohort. Thus, on average the first cohort had a larger problem with composite scores, while the second cohort had a larger problem with graduation rates.

Though differences could exist between these two groups, we combined them to simplify the analysis. Further, the three-year program allows ample time to implement change.

RECOMBINED SCHOOLS

Several schools broke into smaller schools in the data set. For consistency over time, we recombined these schools into one. We created a weighted average using the student enrollment for the majority of variables; for the Teacher Working Conditions values, we averaged the responses of all teachers in a school grouping.

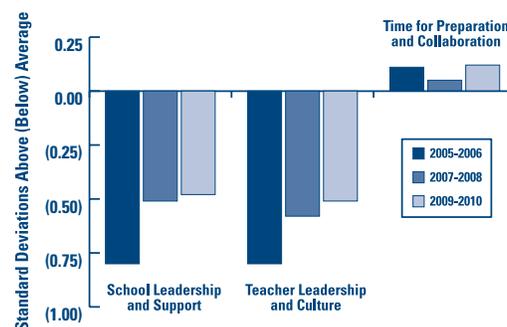
APPENDIX III: CHANGES IN TURNAROUND SCHOOLS' WORKING CONDITIONS OVER TIME

Appendix Chart 1 displays averages for our working condition constructs for 2006, 2008, and 2010.

School Leadership and Support and *Teacher Leadership and Culture* both increased relative to the mean in turnaround schools since 2005-06, though these schools remain well below the statewide average. Turnaround schools remained slightly above average in *Time for Preparation and Collaboration*.

Note that zero represents the statewide average for North Carolina schools. The distance above (or below) zero represents how far above (or below) the turnaround schools averaged in each area in each year. A later appendix provides information on standard deviations.

APPENDIX CHART 1: TURNAROUND SCHOOL TEACHER WORKING CONDITIONS OVER TIME



APPENDIX IV: METHODOLOGY

MODEL 1: ORDINARY LEAST SQUARES REGRESSION

$$\Delta \text{score}_i = \beta_0 + \beta_1 ST_i + \beta_2 POP_i + \beta_3 FRL_i + \lambda_i + \epsilon_i$$

where i is the individual school, ST is an indicator variable denoting participation in the turnaround program (0,1), POP is the school's 2009-10 enrollment, FRL is the percent of students on free and reduced price lunch in 2009-10, λ is an indicator variable for the school's location, and ϵ is the error term.

The Δscore variable is the change in performance composite, graduation rate, or teacher perception in school i from 2005-06 to 2009-10. Performance composite and graduation rates are straightforward: the 2005-06 rates are subtracted from the 2009-10 rates. A positive number indicates an improvement in the rate, while a negative number indicates a decline.

The teacher perception constructs are somewhat more complicated. The 2006 z-scores are subtracted from the 2010 z-scores. A positive number indicates an improvement *relative to the mean*, while a negative number indicates a decline *relative to the mean*. Imagine a school that reported overall scores 1 standard deviation above the mean in 2006. The school's raw scores were exactly the same in 2010, while the statewide average increased to match it. The school would move from a z-score of 1 in 2006 to a z-score of 0 in 2010, and the reported change would be -1. This indicates that the school fell from its previous standing relative to the mean. In other words, the school "lost its advantage."

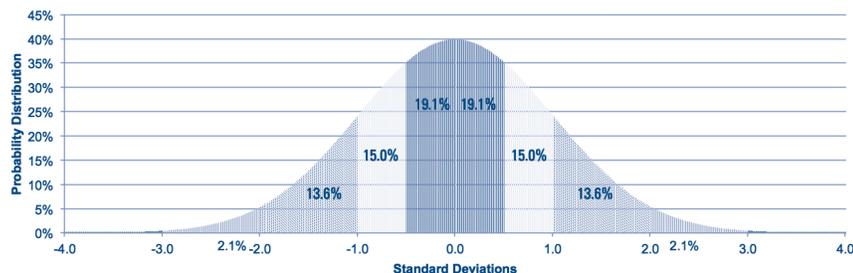
MODEL 2: PANEL DATA REGRESSION

$$\text{score}_{it} = \beta_0 + \beta_1 ST_{it} + \beta_2 POP_{it} + \beta_3 FRL_{it} + \alpha_i + \gamma_t + \epsilon_{it}$$

where i is the individual school, t is the year ($t = 2005-06, \dots, 2009-10$), α represents school-level fixed effects, γ represents year fixed effects, and the other controls are the same as noted above for school i in year t . Thus, β_1 is an indicator of the impact of the transformation program on the schools' z-scores, holding school-level, time-specific, and control factors constant.

The model controls for any changes that stayed constant in a school over time, that occurred across all sample schools in a given

APPENDIX CHART 2: DISTRIBUTION OF STANDARD DEVIATIONS



- 38.2% of the sample falls +/-0.5 standard deviation from the mean
- 30.0% of the sample falls between +/- 0.5 and 1.0 standard deviations from the mean
- 27.2% of the sample falls between +/- 1.0 and 2.0 standard deviations from the mean
- 4.2% of the sample falls between +/- 2.0 and 3.0 standard deviations from the mean
- 0.4% of the sample lies +/- 3.0 or more standard deviations from the mean

year, or that changed with the control variables. It does not control for changes that occurred only in certain schools if the changes were outside school population or FRL control variables.

APPENDIX V: TEACHER WORKING CONDITIONS AND STANDARD DEVIATIONS

The Teacher Working Conditions survey provided somewhat complicated information. Because the survey occurs biannually, data is only available for the 2005-06, 2007-08, and 2009-10 school years. Due to a change in the survey structure, the possible answers available to teachers changed from 1 to 5 in 2006 and 2008¹⁵ to 1 to 4 in 2010¹⁶. To compare across years, we “normalized” the results across schools in each year. This resulted in a “z-score” with an average of 0 and a standard deviation of 1 for each measure in each year for each school.

All z-scores are relative to the mean in a particular year. A positive score indicates an above-average result, while negative score indicates a below average result. Moving to a more positive (or less negative) score from one year to the next indicates an improvement relative to the statewide mean, while moving to a less positive (or more negative) score indicates a decline relative to the mean. If a school’s scores stayed the same while the statewide scores increased, the school would appear to fall relative to the statewide mean.

¹⁵ Answers included (1) Strongly Disagree, (2) Somewhat Disagree, (3) Neither Disagree nor Agree, (4) Somewhat Agree, and (5) Strongly Agree.

¹⁶ Answers included (1) Strongly Disagree, (2) Disagree, (3) Agree, and (4) Strongly Agree.

The distribution of the standard deviations can be seen in Appendix Chart 2. 38.2% of the schools’ scores on the Teacher Working Conditions survey fell between -0.5 and +0.5 standard deviations (or -0.5 and +0.5 z-scores). 68.2% of schools’ scores fell between -1.0 and +1.0 standard deviations. Thus, most schools fall close to the mean.

The standard deviations can be interpreted as the percent of schools above and below a given school. As an example, a school that started at a z-score of -1.0 in our data sample would have been better than 15.4% of the schools and worse than 84.3% of the schools. If the school improved by half of a standard deviation in a subsequent survey year to a z-score of -0.5, the school would be better than 30.7% of the schools and worse than 69.3% of the schools. A z-score of 0.0 indicates that a school has a higher score than 50.0% of schools and a lower score than 50.0% of the schools.

APPENDIX VI: RESULTS

Full results for all models can be found below and on the back page.

APPENDIX TABLE 1: MODEL 1 – OLS REGRESSION RESULTS

	Perf. Comp.	Grad. Rate	Teacher Working Conditions		
			School Lead. & Supp. Gain	Teacher Lead. & Cult. Gain	Prep. & Collab. Gain
	Coefficient (Std. Err.)	Coefficient (Std. Err.)	Coefficient (Std. Err.)	Coefficient (Std. Err.)	Coefficient (Std. Err.)
School turnaround (0,1)	8.667** (2.809)	-1.067 (2.594)	0.418 (0.254)	0.564* (0.238)	0.334 (0.211)
Enrollment (in 100's of students)	-0.640* (0.003)	-0.449* (0.003)	-0.011 (0.000)	-0.006 (0.000)	0.003 (0.000)
% FRL eligible (0-100)	-0.216** (0.078)	0.121 (0.077)	-0.003 (0.007)	0.004 (0.007)	0.000 (0.006)
School in town (0,1)	2.209 (3.715)	5.711* (3.351)	-0.249 (0.331)	-0.125 (0.310)	-0.256 (0.275)
School in suburb (0,1)	-2.591 (5.331)	-1.881 (4.798)	-0.217 (0.476)	-0.205 (0.446)	-0.094 (0.394)
School in city (0,1)	8.007** (3.001)	-5.342* (2.844)	-0.172 (0.268)	-0.299 (0.251)	-0.057 (0.222)
Transformation district (0,1)	5.747 (4.731)	1.161 (4.266)	-0.543 (0.422)	-0.476 (0.395)	-0.228 (0.350)
Constant	27.136** (5.249)	8.961 (5.410)	0.384 (0.485)	-0.315 (0.454)	-0.253 (0.402)
R-Squared	0.227	0.189	0.047	0.090	0.041
School fixed effects?	NO	NO	NO	NO	NO
Year fixed effect?	NO	NO	NO	NO	NO

* p-value <0.05, ** p-value <0.01

APPENDIX TABLE 2: MODEL 2 – PANEL REGRESSION RESULTS

	Teacher Working Conditions				
	Perf. Comp.	Grad. Rate	School Lead. and Supp.	Teacher Lead. and Cult.	Prep. and Collab.
	Coefficient (Std. Err.)	Coefficient (Std. Err.)	Coefficient (Std. Err.)	Coefficient (Std. Err.)	Coefficient (Std. Err.)
School turnaround (0,1)	4.249** (1.147)	0.624 (1.287)	0.395* (0.165)	0.572** (0.161)	0.402** (0.148)
Enrollment (in 100's of students)	0.059 (0.186)	-0.169 (0.207)	-0.065 (0.005)	-0.054 (0.054)	-0.009 (0.049)
% FRL eligible (0-100)	0.067 (1.147)	-0.01 (0.047)	-0.004 (0.000)	-0.002 (0.005)	-0.010** (0.005)
Transformation district (0,1)	2.511 (2.117)	1.466 (2.344)	-0.615* (0.000)	-0.496 (0.277)	-0.257 (0.255)
R-Squared	0.804	0.638	0.620	0.634	0.650
School fixed effects?	YES	YES	YES	YES	YES
Year fixed effect?	YES	YES	YES	YES	YES

* p-value <0.05, ** p-value <0.01

Works Cited

- Barker, R. G., & Gump, P. V. (1964). *Big school, small school: High school size and student behavior*. Stanford, CA: Stanford University Press.
- Copland, Michael. (2004). Leadership of Inquiry: Building and Sustaining Capacity for School Improvement. *Educational Evaluation and Policy Analysis*. Vol 4. 4:375-395.
- Hargreaves, Andy. (1991). Prepare to Meet Thy Mood? Teacher Preparation and Intensification. U.S. Department of Education. Educational Resources Information Center. Retrieved from <http://www.eric.ed.gov/PDFS/ED336362.pdf>.
- Marks, H., & Printy, S. (January 01, 2004). Principal leadership and school performance: an integration of transformational and instructional leadership. *Educational Administration Abstracts*, 39, 1.
- North Carolina Department of Public Instruction. (n.d.) District and School Transformation: Statewide System of Support. Retrieved from www.ncpublicschools.org/schooltransformation/support.



By Angel Banks, Candice Bodkin, and Jennifer Heissel

The Financial and Business Services Area is in its fifth year of the Research Intern Program. The Program is designed to help build a quality research program within NCDPI to supplement and supply data for discussions related to procedural, process, and policy changes. This year's program included students from Duke University's Master of Public Policy program, University of North Carolina at Chapel Hill's Master of Public Administration program, and North Carolina State University's Master and Doctorate of Public Administration programs. The intern program is managed by Eric Moore (919-807-3273) and Kayla Siler (919-807-3824) | intern_research@dpi.nc.gov.

NC DEPARTMENT OF PUBLIC INSTRUCTION :: June St. Clair Atkinson, Ed.D., State Superintendent :: 301 N. Wilmington Street :: Raleigh, NC 27601-2825

In compliance with federal law, NC Public Schools administers all state-operated educational programs, employment activities and admissions without discrimination because of race, religion, national or ethnic origin, color, age, military service, disability, or gender, except where exemption is appropriate and allowed by law.

Inquiries or complaints regarding discrimination issues should be directed to: Dr. Rebecca Garland, Chief Academic Officer

Academic Services and Instructional Support :: 6368 Mail Service Center, Raleigh, NC 27699-6368 :: Telephone: (919) 807-3200 :: Fax: (919) 807-4065