Local Education Agency Race to the Top Expenditures

Final Analysis of Expenditure Patterns and Related Outcomes

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LOCAL EDUCATION AGENCY RACE TO THE TOP EXPENDITURES: FINAL ANALYSIS OF EXPENDITURE PATTERNS AND RELATED OUTCOMES

Executive Summary

In 2010, North Carolina was awarded $399,465,769 from the federal Race to the Top (RttT) competition to fund state and local education reform. States receiving RttT funds were required to allocate half of the funds to participating local school districts and eligible charter schools, which we collectively refer to as local education agencies (LEAs). North Carolina pooled $34,639,376 in locally-allocated funds to provide a computing infrastructure—the North Carolina Education Cloud (NCEdCloud)—to serve local needs statewide. LEAs were required to contribute funds from their local allocations on a prorated basis to this project, after which the amount allocated directly to LEAs was $165,360,624.

The purpose of the direct allocation of funds to LEAs was to provide them with resources to support statewide RttT initiatives locally and to allow LEAs flexibility in crafting their own plans to achieve RttT objectives. LEAs pursued multiple strategies for spending their RttT funds. In 2010-11, LEA RttT expenditures totaled $13,008,043, or approximately $8.96 per pupil. In 2011-12, LEA RttT expenditures totaled $51,462,447, or approximately $35.19 per pupil.[1] In 2012-13, LEA RttT expenditures totaled $50,804,698, or approximately $34.41 per pupil. In 2013-14, LEA RttT expenditures totaled $38,325,516, or approximately $25.69 per pupil.

The first LEA RttT expenditures report provided information on the amount of RttT funds allocated to LEAs, as well as a historical analysis of the equitable distribution of funds across schools and LEAs.[2] The second report updated those findings with an additional year of data and more sophisticated coding and expenditure-tracking techniques, investigated patterns of local RttT fund expenditures across time and by purpose, and reported on progress on establishment of the NCEdCloud.[3] This final report has three purposes: 1) To describe LEA RttT fund expenditure; 2) To determine whether local-level RttT expenditures are associated with outcome measures; and 3) To describe the progress and cost-savings associated with the NCEdCloud.

Key Findings

1. By the end of the 2013-14 school year, 94.1% of the allocated LEA RttT funds had been spent, leaving 5.9% of LEA RttT allocations outstanding. According to updated LEA Detailed Scopes of Work (DSWs), 5.7% of funds were designated for spending during the 2014-15 school year, accounting for nearly all remaining LEA RttT funds.

2. Once planned 2014-15 allocations are taken into account, RttT-related spending for most traditional districts (96.5%) and participating charter schools (63.0%) was between 95% and 105% of planned spending levels, according to updated DSWs.[4]

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[1] All expenditures for 2010-11 and 2011-12 have been updated since the release of the previous expenditures report.
[2] *Local Education Agency Race to the Top Expenditures: An Initial Analysis* (September 2012), http://cerenc.org/wp-content/uploads/2011/11/NC-RttT_Local-spending-baseline_9-4-12.pdf.
[3] *Local Education Agency Race to the Top Expenditures: An Analysis of Fund Use and Expenditure Patterns* (June 2013), http://cerenc.org/wp-content/uploads/2011/11/Local-Spending_Y2_05-29-13_Full-Report.pdf.
[4] No LEA was allowed to spend more than its allotted federal funds; the state initially covered LEA-level spending that exceeded RttT allocations and then collected reimbursements for that coverage from the over-charging LEAs.

3. From 2010-11 to 2013-14, 97.3% of total traditional district RttT expenditures fell into five key categories: Classroom Instruction (55.1%), Support for Instruction (26.4%), Professional Development (9.2%), LEA Administration (5.0%), and School Leadership (1.6%).

4. From 2010-11 to 2013-14, 97.6% of total charter school RttT expenditures fell into five key categories: Classroom Instruction (69.6%), Professional Development (16.6%), Support for Students (5.2%), School Leadership (4.2%), and Special Instruction (2.1%).

5. 82.0% of traditional district RttT expenditures fell into four key goods and services subcategories: Technology (42.1%), Instructional Personnel (15.4%), Bonus/Supplement/ Extra Duty Pay (12.7%), and Contracted Services (12.3%). The two largest expenditure categories for charter schools were Instructional Personnel and Contracted Services, which each accounted for 31.4% of spending.

6. Three RttT objectives accounted for roughly 83% of LEAs' total RttT expenditures during this time: Data Systems to Support Infrastructure (47.5%), Great Teachers and Leaders (22.5%), and Standards and Assessment (13.0%).

7. Controlling for school demographics and prior school-level performance, RttT spending at the LEA level seems to have a limited relationship with student outcomes. The relationships should be interpreted with caution, however, because the analyses used for this report cannot definitively isolate the causal effects of the patterns of local expenditures from the effects of several other changes in the educational system during the time of the RttT grant. The analyses of student outcomes through 2014 suggest that increased per-pupil spending of RttT funds on Data Systems to Support Infrastructure may be associated with small *decreases* in End-of-Course (EOC) performance composite, while increased per-pupil expenditures on Turning Around the Lowest-Achieving Schools is associated with small *increases* in the EOC performance composite.

8. An analysis of student outcomes suggests that LEAs that spent more of the RttT funding earlier and LEAs that focused on a smaller number of sub-objectives saw greater increases in their high school graduation rates, compared to LEAs that spent more of their funding later in the grant and spread funding across more objectives. The graduation rate also appeared to increase more in LEAs where more funding was spent on activities related to the State Success Factors and the Great Teachers and Leaders objective.

9. Based on the experiences of four sample LEAs, all services of the NCEdCloud have not yet been implemented across all LEAs. While some LEAs report having experienced cost savings already, others do not yet report experiencing any cost savings. The varied experience appears to have been driven by how technologically advanced each LEA was prior to the commencement of the NCEdCloud initiative.

10. Cost savings related to the NCEdCloud cannot be confirmed using current expenditure data. In order to facilitate future evaluation, the state should direct LEAs to improve their application of existing Chart of Accounts' codes to provide a more detailed and consistent accounting of technology spending.

Introduction

This report is the final in a series of reports on Race to the Top (RttT) expenditures by Local Education Agencies (LEAs)[5] that chose to participate in RttT. The first report presented basic information about the amount, distribution, and general use of LEA RttT funds by LEAs, as well as historical information on state and local expenditures for public schools to establish the funding context prior to RttT. In addition, the first report[6] extrapolated LEA priorities for RttT funds, as expressed in their formal Detailed Scopes of Work, and compared those to their actual initial RttT expenditures. The second report[7] expanded the analysis by incorporating a second year of expenditure data and by beginning to assess the progress of the North Carolina Education Cloud (NCEdCloud) initiative.

This final report has three primary purposes:

- To describe the expenditure of RttT funds by traditional districts and participating charter schools;

- To determine whether local-level RttT expenditures were associated with relevant outcome measures; and

- To describe the efforts to evaluate cost savings associated with the NCEdCloud.

The report is divided into four sections. The first section describes the data sources used to answer each question. The second section provides descriptive summaries of how LEAs spent RttT funds. RttT expenditures are sorted into three overlapping classifications—functional expenditure categories, subcategories detailing purchased goods and services, and RttT objectives. Using these three complementary classifications provides a more complete picture of LEA RttT expenditures. The third section uses regression analysis to explore the relationship between LEA RttT spending and student performance outcomes. The final section describes the implementation of the NCEdCloud initiative and explores potential cost-savings related to the NCEdCloud.

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[5] LEA is North Carolina's term for traditional school districts and charter schools.
[6] *Local Education Agency Race to the Top Expenditures: An Initial Analysis* (September 2012), http://cerenc.org/wp-content/uploads/2011/11/NC-RttT_Local-spending-baseline_9-4-12.pdf.
[7] *Local Education Agency Race to the Top Expenditures: An Analysis of Fund Use and Expenditure Patterns* (June 2013), http://cerenc.org/wp-content/uploads/2011/11/Local-Spending_Y2_05-29-13_Full-Report.pdf. All expenditures for 2010-11 and 2011-12 throughout the current report have been updated since the release of the 2013 expenditure report.

Data Sources and Analysis

The primary data sources for this report are LEA annual expenditure reports and Detailed Scopes of Work (DSWs) for each traditional district and participating charter school. These two data sources provide information about how RttT funds were spent by LEAs. North Carolina school report cards also were used as a data source for student performance outcomes and school demographics. In addition, telephone interviews were conducted with technology directors of four LEAs to gather information about use of the NCEdCloud and related cost-savings.

Annual Financial Reports

Data on LEA expenditures are provided to the Education Policy Initiative at Carolina (EPIC) by the North Carolina Department of Public Instruction (NDCPI) on a yearly basis. These data are coded by EPIC staff into major expenditure categories using NCDPI's Chart of Accounts. All expenditures are categorized by purpose, object, level, and program report code, as well as by revenue source. Expenditures are sorted into 14 functional expenditure categories developed by EPIC in 2009 (see Appendix). These expenditure categories were used in previous RttT reports as well as other evaluations. In addition, expenditures also are categorized into eight spending sub-categories developed by the RttT evaluation team. These sub-categories are grouped based on expenditure object codes (see Appendix). The eight sub-categories are administration/ administrative support, benefits, supplemental/bonus/extra-duty pay, contracted services, instructional personnel, supplies and materials, technology, and a miscellaneous category. The combination of these two methods of coding expenditure data is intended to provide a more complete picture of local spending of RttT funds.

Data on annual expenditures are used in this report for two primary purposes. The first purpose is to describe traditional district and charter school expenditures related to RttT. These expenditures are broken down by year as well as by functional expenditure category. The second purpose for which the expenditure data is used is to verify the accuracy of spending as reported in the DSWs. Expenditure data reported in annual financial reports to NCDPI is believed to be highly accurate but is not closely tied to the objectives of RttT. The DSWs report planned expenditures categorized by major RttT objectives, but the DSWs may be out of date and may not fully report the actual expenditures that took place during the course of the RttT years. By verifying the DSWs against actual expenditures, this report is able to describe actual spending by RttT objective.

Detailed Scopes of Work

The second primary source of data was the most recent Detailed Scope of Work for RttT for each LEA. The DSWs were developed by each LEA, then submitted to and approved by NCDPI. The updated DSW for each LEA included in this report was updated in 2014 following the completion of the 2013-14 school year. The DSWs were downloaded from the public NCDPI website on December 3, 2014, and were current as of that date. Each LEA that elected to participate in RttT was required to submit a DSW indicating planned expenditures of RttT funds over time by RttT objective, as well as the use of additional funds from other federal, state, and local sources to support the same reform efforts. The DSWs were updated repeatedly during the

course of RttT, such that the updated DSW reflects changes in expenditures that occurred due to delays in implementation or changes in estimated expenditures. The updated DSWs also include projected spending in the 2014-15 school year for LEAs that received an extension for use of their RttT funding.

Since DSWs reflect planned expenditures and not actual expenditures, it is important to verify that the spending as measured by this data source is accurate. Comparing DSWs to the expenditures data indicates that between the 2010-11 and 2013-14 school years, 111 of the 115 traditional districts actually spent between 95 and 105% of their planned expenditures. This leaves just four traditional districts whose actual expenditures differed from planned expenditures by more than 5%. These five remaining traditional districts differed from their planned expenditures by an average of 12.9%. It is important to note that all LEA-level spending beyond the total RttT allocation was covered initially by the state; over-spending LEAs were required to reimburse the state for these overages. By the end of the grant period, no LEA was allowed to spend more federal funds than it was initially allotted.

Using total expenditures across the four school years, the data suggest that the DSWs are a highly accurate reflection of actual spending. However, if individual school years are considered, the accuracy is somewhat lower. Only 85 traditional districts spent within 5% of their planned expenditures during all four school years.[8] Twenty-three districts deviated by more than 5% just once during the four school years, while seven districts deviated more than 5% during at least two school years. The 2013-14 school year had the largest number of traditional districts outside the 5% range, which could reflect that all expenditure data were not available at the time that the DSWs were updated. In many cases, the differences in planned and actual expenditures were due to shifting expenditures between years (that is, rolling over unspent annualized funds from the previous year to the following year, or spending less in a subsequent year to balance higher spending in an earlier year). Given the overall accuracy of the DSW data and the fact that most inaccuracies were due to shifts in timing, not shifts in expenditure category, this study makes use of these data to understand how traditional district expenditures were related to RttT objectives.

The match between charter school DSWs and actual expenditures was lower. Of the 28 charter schools that expended RttT funds, one charter school withdrew from RttT and subsequently closed; as a result, it did not have an updated DSW available. Of the 27 charter schools that did have DSWs available, 17 schools spent between 95% and 105% of their planned expenditures. That leaves 10 schools that were not within 5% of the planned expenditure. Those 10 schools differed from their planned expenditures by an average of 15%. Given the higher rate of inaccuracy in the charter school DSWs compared to actual spending, DSW data were analyzed only for traditional districts.

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[8] In 2010-11, four districts spent less than 95% or more than 105% of their planned expenditures. In 2011-12, five districts spent less than 95% or more than 105% of their planned expenditures. In 2012-13, five districts spent less than 95% or more than 105% of their planned expenditures. In 2013-14, 25 districts spent less than 95% or more than 105% of their planned expenditures.

Interviews

The evaluation team scheduled telephone interviews with technology directors from four LEAs—Mooresville Graded, Thomasville City, Edgecombe County, and Rutherford County. The aim was twofold. First, the evaluation team wanted to learn about each LEA's implementation status and usage of the NCEdCloud services and licensed products. Second, the evaluation team wanted to learn about the cost savings associated with implementing and using the NCEdCloud services and licensed products. Interviewees also were asked about how cost savings could be identified in the expenditure data.

Although these interviews were not structured, the broad discussion points included the following:

- The NCEdCloud licensed products currently implemented in the LEA and their usage;

- Whether NCEdCloud services replaced existing technology services; and

- Cost savings, if any, realized due to adoption of NCEdCloud licensed products, and how to identify them in the expenditure data.

The telephone interviews were held between February 9, 2015, and February 12, 2015. Each interview lasted approximately 30 minutes. The details of the conversation varied by LEA based on the implementation status of the NCEdCloud.

The findings from these interviews are discussed in greater detail below in the section on NCEdCloud implementation and cost savings.

How were Race to the Top Funds Spent?

This section of the report describes how local allocations of RttT funds were spent by LEAs. For the purposes of this report, only RttT funds that were allocated to LEAs as part of the LEA RttT allocation are included. Allocations made to LEAs as part of other programs administered at the state level are not included. In addition, local funds for the NCEdCloud that were returned to the state are not included in expenditure categorizations. The NCEdCloud is examined separately later in this report. LEA RttT spending is broken down into three different categorization schemes. The first two categorizations are based on data from annual spending reports and first break spending down into functional spending categories, then into sub-categories based on the goods and services that were purchased. The third categorization scheme uses data from the updated DSWs to divide spending according to the RttT objective that each expenditure was intended to support.

Overall Spending

A total of $200 million was allocated to LEAs in North Carolina as part of the RttT grant. By the end of the 2013-14 school year only 94.1% of the allocated LEA RttT funds had been spent, leaving 5.9% of LEA RttT allocations outstanding. However, 80 traditional districts and five charter schools had plans in their updated DSWs to spend remaining funds during the course of the no-cost extension 2014-15 school year. Once planned 2014-15 allocations are taken into account, annual financial reports indicate that most LEAS (111 out of 115 traditional districts [96.5%] and 17 out of 27 participating charter schools [63%]) spent between 95% and 105% of their planned RttT allocations (as projected in their updated DSWs)—overall, a high level of accuracy.[9] If all expenditures in the 2014-15 school year are made according to the plans outlined in the DSWs, $375,593 will remain in unspent LEA RttT funds.

Table 1 (following page) shows how funds were spent across years during the course of the RttT grant. A fixed portion of each LEA allocation was returned to the state for the NCEdCloud. This portion represents 17.3% of all RttT local funding and is considered separately from funds spent locally in accordance with traditional district and charter school DSWs. Expenditures made during the 2010-11 school year made up only 6.5% of the total LEA RttT funding. This low level of spending in the first year of implementation is due to the fact that many LEAs encountered delays in implementation and did not expend any funds during the first year of the grant. The 2011-12 and 2012-13 school years were very similar in their expenditure levels, both with just over 25% of total spending. The amount of grant funds spent began to decrease during the 2013-14 school year, with 19.2% of the LEA RttT funding being spent in 2013-14. A small amount, representing 5.9% of the grant, remained at the end of the 2013-14 school year; however, the vast majority of those funds were designated to be spent during the 2014-15 school year in LEAs that received extensions on their grant funding.

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[9] As noted above, by the close of the grant, no LEA was allowed to spend more than 100% of its allotted federal funds; the state initially covered LEA-level spending that exceeded the total RttT allocation and then collected reimbursements for that coverage from the over-charging LEAs.

Table 1. RttT Expenditures by Year

	Total Spending	**Percent of LEA RttT Funds**
NC Education Cloud	$34,639,376	17.3%
2010-11	$13,008,043	6.5%
2011-12	$51,462,447	25.7%
2012-13	$50,804,698	25.4%
2013-14	$38,325,516	19.2%
Spending 2010-11 to 2013-14	**$188,240,080**	**94.1%**
Remaining Funds	$11,759,920	5.9%
Projected 2014-15 Spending	$11,384,327	5.7%

Spending by Functional Category

Table 2 (following page) gives a breakdown of LEA RttT expenditures by school year and functional category. From 2009-10 to 2013-14, 97.3% of total expenditures fell into five key categories: Classroom Instruction (55.3%); Support for Instruction (26.2%); Professional Development (9.2%); LEA Administration (4.9%); and School Leadership (1.6%). As a proportion of the total annual expenditures, Classroom Instruction gradually dropped from 63.8% in the 2010-11 school year to 50.2% and 51.8% in the 2012-13 and 2013-14 school years. As a proportion of total expenditures, Support for Instruction and School Leadership expenditures remained relatively flat over the four-year span. Support for Instruction, which includes curriculum support and technology services, varied from 22.9% in the 2011-12 school year to 30.1% in the 2012-13 school year, while School Leadership varied from 1.1% in the 2010-11 school year to 1.9% in the 2012-13 school year. Professional Development accounted for 3.9% of total expenditures in the 2010-11 school year, increasing to 9.7% of total expenditures for the remaining three school years. LEA Administration expenditures (as a proportion of annual totals) increased each year during the four-year span.

Table 2. LEA RttT Expenditures by School Year and Functional Category

	2010-11 RttT Expenditure	2011-12 RttT Expenditure	2012-13 RttT Expenditure	2013-14 RttT Expenditure	2010-2014 RttT Expenditure	Percent of Total RttT Expenditure
Classroom Instruction	$8,342,613	$31,078,807	$25,622,681	$19,815,070	$84,859,171	55.3%
Support for Instruction	$3,604,238	$11,680,805	$15,201,593	$9,683,553	$40,170,189	26.2%
Professional Development	$553,232	$5,075,082	$4,690,469	$3,872,726	$14,191,509	9.2%
LEA Administration	$232,225	$1,452,320	$2,771,474	$3,132,328	$7,588,347	4.9%
School Leadership	$152,963	$795,683	$969,701	$588,861	$2,507,208	1.6%
Supplementary Classroom Instruction	$17,833	$432,011	$490,944	$436,090	$1,376,878	0.9%
Government Transfers	$86,958	$423,422	$366,159	$241,056	$1,117,595	0.7%
Support for Students	$0	$288,984	$252,067	$313,200	$854,251	0.6%
Special Instruction	$9,729	$133,500	$241,976	$146,669	$531,874	0.4%
Transportation	$1,020	$72,441	$129,808	$76,094	$279,363	0.2%
Maintenance	$0	$1,726	$33,295	$6,795	$41,816	0.0%
Food Services	$0	$5,642	$25,634	$6,816	$38,092	0.0%
Totals	$13,000,811	$51,440,423	$50,795,801	$38,319,258	$153,556,293	100%

While trends for traditional districts closely mirrored the overall trends for all LEAs, there were some notable differences in the trends for participating charter schools. For charter schools, RttT expenditures varied greatly across school years. During each school year, only a subset of the 28 participating charter schools spent RttT funds. The number of schools expending RttT funds increased from 15 charter schools in the 2010-11 school year to 21 charter schools in the 2011-12 school year. After the 2011-12 school year, the number of participating charter schools making RttT expenditures began to decline, with 15 charter schools expending funds in the 2012-13 school year and only nine expending funds in the 2013-14 school year.

Overall, from 2010 to 2014, 97.6% of total participating charter school RttT expenditures fell into five key categories: Classroom Instruction (69.6%); Professional Development (16.6%); Support for Students (5.2%); School Leadership (4.2%); and Special Instruction (2.1%). Both traditional districts and charter schools spent significant proportions of LEA RttT funds on Classroom Instruction, Professional Development, and School Leadership, but traditional districts invested more heavily in Support for Instruction and LEA Administration, while charters invested more in Support for Students and Special Instruction. As with the traditional districts, a majority of participating charter school RttT expenditures were made on Classroom instruction, but in the case of charter schools this category accounted for a somewhat higher percentage (69.6% versus 55.1%) of total expenditures.

There was a great deal of year-to-year volatility in participating charter school expenditures in many categories due to the small number of schools and the concentration of spending in certain categories. Nearly all participating charter schools invested RttT funding in either Classroom Instruction or Professional Development or both, while some other categories of spending (such as Support for Students) were only chosen by a single school.

Spending by Subcategory

The breakdown of expenditures by functional category gives a clear picture of the intended purpose of the expenditures relative to school operations but provides limited information on the actual purchases. For example, the functional category of Classroom Instruction could include expenditures for teacher salaries and benefits, textbooks, or classroom technology. The classification of expenditures into sub-categories is intended to provide details on how RttT expenditures were translated into actual products and services that would improve the classroom experience for students.

Table 3 gives a breakdown of total RttT expenditures by sub-category for both traditional districts and charter schools. Overall, 82.0% of RttT local expenditures fell into four key sub-categories: Technology (42.1%); Instructional Personnel (15.4%); Bonus/Supplement/Extra Duty Pay (12.7%); and Contracted Services (12.3%). These four sub-categories represent the top sub-categories for both traditional districts and charter schools. Traditional districts spent by far the largest percent of their total expenditures (42.2%) on Technology. Participating charter schools also invested heavily in Technology, accounting for 22.3% of expenditures by charter schools. The two largest expenditure categories for charter schools were Instructional Personnel and Contracted Services, which each accounted for 31.4% of spending. Traditional districts only spent 15.2% and 12.1% on these sub-categories, respectively. Traditional districts spent 12.7% of their total expenditures on Bonus/Supplement/Extra Duty Pay, while this only accounted for 7.7% of expenditures by participating charter schools. Of the remaining four sub-categories (accounting for 18% of total expenditures), two show notable disparities between traditional districts and charter schools. Traditional districts spent 9% of their total expenditures on Benefits, while this only accounted for 3.7% of the expenditures made by charter schools. Similarly, traditional districts spent 3.4% of their total expenditures on Supplies and Materials, while this only accounted for 1.7% of the expenditures made by charter schools.

Table 3. Total Traditional District and Charter School Spending by Expenditure Sub-category

	Traditional District		Charter School		Overall	
	Total	*Percent*	*Total*	*Percent*	*Total*	*Percent*
Technology	$64,323,378	42.2%	$285,317	22.3%	$64,608,695	42.1%
Instructional Personnel	$23,216,334	15.2%	$402,607	31.4%	$23,618,941	15.4%
Bonus/Supplement/Extra Duty Pay	$19,333,234	12.7%	$99,011	7.7%	$19,432,244	12.7%
Contracted Services	$18,452,754	12.1%	$402,811	31.4%	$18,855,565	12.3%
Benefits	$13,698,157	9.0%	$46,862	3.7%	$13,745,019	9.0%
Administration/ Administrative Support	$8,329,322	5.5%	$53,121	4.1%	$8,382,443	5.5%
Supplies and Materials	$5,229,978	3.4%	$21,745	1.7%	$5,251,723	3.4%
Miscellaneous	$393,519	0.3%	$1,089	0.1%	$394,608	0.3%

Spending by Race to the Top Objectives[10]

LEA RttT funding was spread over six different objectives. The first objective was State Success Factors, which included spending on technology infrastructure and evaluation. Since this section does not include mandatory funding for the NCEdCloud, most spending in this category was related to program evaluation. The second objective was Standards and Assessment, which funded activities related to transitioning to new standards and assessments. The third objective was Data Systems to Support Instruction, which focused on using data to support decision-making and the implementation of instructional improvement systems. The fourth objective was Great Teachers and Leaders, which funded a wide range of activities, including teacher and principal evaluations, performance incentives, teacher recruitment and licensure, and professional development. The fifth objective was Turning Around the Lowest-Achieving Schools. The fifth objective is specifically relevant to traditional districts with schools that were identified as among the lowest-achieving schools in the state. The sixth objective is the priority STEM objective, which includes activities intended to assist in the implementation of the new curriculum and standards, as well as activities that placed students in challenging mathematics and science courses.

Table 4 (following page) gives a breakdown of RttT expenditures by objective for traditional districts, from the 2010-11 school year to the 2014-15 school year. Three objectives accounted for roughly 83% of the total RttT expenditures made by traditional districts during this time: Data Systems to Support Infrastructure (47.5%); Great Teachers and Leaders (22.5%); and Standards and Assessment (13%). Out of 115 total traditional districts, 108 spent money on Data Systems to Support Infrastructure, with the average traditional district spending a majority (52%) of its total RttT expenditures on this objective and six traditional districts spending 100% of their RttT money on this objective. Similarly, 100 traditional districts spent money on Standards and Assessment, with the average traditional district spending 20.6% of its total RttT expenditures on this objective and three traditional districts spending 100% of their RttT money on this objective. The Great Teachers and Leaders' objective saw spending by 83 traditional districts, with the average traditional district spending 17% of its total RttT expenditures on this objective; none of the traditional districts spent all of their RttT money on this objective, but one of the traditional districts spent as much as 85.7% of its total RttT money on this objective.

The remaining 17% of the total RttT expenditures were allocated to support the other three objectives: Turning Around the Lowest-Achieving Schools (8.9%); State Success Factors (5.1%); and STEM (3%). These three objectives were each funded by less than half of the traditional districts, with the State Success Factors objective only being funded by 11 traditional districts, and with no district spending more than half of its total RttT money (49.5% maximum) on this objective. The Turning Around the Lowest-Achieving Schools' objective was only funded by 21 traditional districts, but one of them spent 100% of its RttT money on this objective. The STEM objective received the least RttT expenditures, despite being funded by slightly less than half (50) of the traditional districts; however, one of the traditional districts spent as much as 84% of its total RttT money on this objective.

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[10] Expenditures by RttT objective are drawn from DSW data and, therefore, do not include charter schools.

Table 4. Overall Traditional District Spending by Race to the Top Objective

| RttT Objective | Total RttT Objective Expenditure | % of Total RttT Expenditure | Number of Traditional Districts Spending on Objective | % of District Total RttT Spending on Objective | | |
				Median LEA	*Average LEA*	*High LEA*
State Success Factors	$8,342,481	5.1%	11	0%	1.7%	49.5%
Standards and Assessment	$21,231,335	13%	100	11.6%	20.6%	100%
Data Systems to Support Infrastructure	$77,853,811	47.5%	108	56.4%	52%	100%
Great Teachers and Leaders	$36,918,717	22.5%	83	6.5%	17%	85.7%
Turning Around the Lowest-Achieving Schools	$14,511,880	8.9%	21	0%	3.9%	100%
STEM	$4,951,105	3%	50	0%	4.8%	84%

How are School-Level Outcomes Related to LEA RttT Expenditure Patterns?

This section of the report examines how variations in patterns of local RttT spending on different RttT objectives may be related to improvements in student outcomes. Because LEAs had a fixed amount of local RttT funding to spend, the differences in spending in these analyses are differences in LEA's choices about how to allocate their RttT funds, not differences in their spending overall.

Limitations

Before presenting the findings, it is important to note several limitations to the analysis of the relationship between local RttT expenditures and student outcomes. First, local RttT money was a small amount of total per-pupil expenditures during the 2010-11 to 2013-14 school years (between 0.1% and 0.4%), so any change in outcomes associated just with the presence or absence of RttT funding (regardless of how spent) likely would be small. Also, many other changes have taken place in North Carolina's education system during the years of the RttT implementation. These changes could lead to differences in outcomes between LEAs that are not related to local decisions about RttT spending. In addition, the analyses in this report are only able to distinguish between different *patterns* of local RttT spending, not differences in the overall amount of expenditures. Therefore, a change in outcomes related to spending on a particular RttT goal should be viewed as potentially related to a decision to invest funds in that RttT goal over a different RttT goal, not as a decision to invest or not invest additional funds. Finally, many of the investments made by LEAs using local RttT funding were intended to build systems of resources, such as technology infrastructure or training for teachers. These investments in building systems may not be related to immediate changes in student outcomes but may improve outcomes in the longer term once the new systems of resources have had time to be fully implemented.

Analysis and Measures

Regression analysis is used to determine whether different patterns of local-level RttT expenditures are associated with changes in student performance outcomes. The analysis considers three different outcome measures: End of Grade (EOG) performance composite; End of Course (EOC) performance composite; and cohort graduation rate. For this section, DSWs are used as the data source for traditional district spending. Participating charter schools are not included in this section of the report because there are too few charter schools to draw valid conclusions.

The EOG performance composite is a school-level measure that indicates the total percentage of proficient EOG scores out of all EOGs taken at the school.[11] For this analysis, the EOG performance composite for the 2013-14 school year is used as the outcome measure, while the EOG performance composite for the 2009-10 school year is used to control for differences

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[11] End of Grade tests are taken in three subject areas: mathematics, reading, and science. The mathematics and reading EOGs are administered annually to students in grades three through eight. The science EOG is administered annually to students in the fifth and eighth grades. Alternate assessments are used for some students with disabilities and are also included in the performance composite.

between schools prior to receipt of the RttT grant. The EOC performance composite is a school-level measure that indicates the total percentage of proficient EOC scores out of all EOCs taken at the school.[12] For this analysis, the EOC performance composite for the 2013-14 school year is used as the outcome measure, while the EOC performance composite for the 2009-10 school year is used as a control. The cohort graduation rate is a school-level measure that indicates the percent of high school students in a given cohort who graduated on time. For this analysis, the graduation rate for the 2013-14 school year is used as the outcome measure, while the graduation rate for the 2009-10 school year is used as a control.

Several measures of local-level RttT spending are included as independent variables in this regression analysis. First, the analyses include measures of when RttT spending occurred. The timing of spending is measured using two indicator variables: one indicator identifies the traditional district as an early-spending district if more than 60% of RttT spending occurred in the first two years of implementation (2010-11 and 2011-12); the second indicator identifies a traditional district as a late-spending district if less than 40% of spending occurred in the first two years of implementation. Traditional districts that spent between 40% and 60% of funding during the first two years were considered to spend evenly across time and serve as a comparison group. The analysis also includes a measure of the extent to which the spending was spread across different activities. This variable is a measure of the number of different sub-objectives that were funded in the district. This measure allows the analysis to compare traditional districts that focused on a few primary objectives to traditional districts that spent broadly across many different objectives and activities. Finally, the analysis includes variables measuring the per-pupil spending for each of the six RttT objectives: State Success Factors; Standards and Assessment; Data Systems to Support Infrastructure; Great Teachers and Leaders; Turning Around the Lowest-Achieving Schools; and STEM.

In addition to controlling for differences in school performance on the outcome measure prior to the introduction of RttT grant funding, the regressions in this analysis control for demographic measures that may influence school performance. These measures include the proportion of students in each racial and ethnic group, the proportion of students at the school receiving free or reduced-price lunch, and the log of average daily membership. All demographic control variables were measured in the 2013-14 school year.

Elementary and Middle School Standardized Test Performance

Table 5 (following page) shows the relationship between RttT spending at the LEA level and student outcomes in the 2013-14 school year. The first column looks at the effects of RttT spending on the EOG performance composite. This regression shows no significant effect of early or late spending on the EOG performance composite. There is also no significant impact of the spread of spending across different activities on the EOG performance composite of elementary and middle schools. Per-pupil spending by RttT objective also shows no significant effects in this analysis.

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[12] End of Course tests are associated with specific high school courses and are taken by students enrolled in those courses. As of the 2013-14 school year, EOC tests are required in Mathematics I, Biology, and English II. In prior years included in this report, EOCs also were required in English I, Algebra II, US History, Physical Science, Civics and Economics, Chemistry, Physics, and Geometry.

Table 5. Impact of RttT Expenditures on End-of-Grade Performance Composite, End-of-Course Performance Composite, and Cohort Graduation Rate

	EOG Performance Composite	EOC Performance Composite	Cohort Graduation Rate
Early Spending Traditional District	0.001 (0.009)	-0.014 (0.018)	0.016* (0.009)
Late Spending Traditional District	0.007 (0.008)	-0.006 (0.017)	0.004 (0.009)
Number of Expenditures	-0.000 (0.001)	-0.003 (0.002)	-0.003** (0.001)
State Success Factors	0.006 (0.025)	0.018 (0.034)	0.044* (0.024)
Standards and Assessment	0.013 (0.009)	-0.007 (0.019)	-0.015 (0.014)
Data Systems to Support Infrastructure	-0.001 (0.003)	-0.008** (0.004)	0.003 (0.003)
Great Teachers and Leaders	0.000 (0.002)	0.004 (0.005)	0.005** (0.003)
Turning Around the Lowest-Achieving Schools	-0.001 (0.001)	0.005** (0.002)	-0.000 (0.002)
Priority - STEM	-0.009 (0.009)	0.007 (0.017)	0.013 (0.009)
Constant	0.412*** (0.036)	0.011 (0.064)	0.711*** (0.065)
Observations	1,830	945	394
R-squared	0.804	0.702	0.509

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$; all regressions also include appropriate control variables; standard errors are calculated based on schools clustered within LEAs.

The lack of significant effects in this regression analysis does not necessarily indicate that local-level RttT expenditures had no impact on student performance on EOG tests. One possible explanation is that the recent change in assessments masks the effect of RttT expenditures on elementary and middle school test performance. A new version of the EOG assessment that had more rigorous performance standards than the prior version was introduced in the 2012-13 school year, and the introduction of a new examination often leads to a period of adjustment as students and teachers become familiar with the style of the new examination. Another possible explanation is that it may take several years for the influence of local-level RttT expenditures to become evident in the performance composite. Most RttT investments are investments in *capacity*, which may increase student performance over time but may not influence test scores immediately; this is particularly true for expenditures that occurred during the last years of the RttT grant and, therefore, have had limited time in which to impact student learning. Finally, these analyses look at the effects of different patterns of local RttT spending *across* districts, not at the effects of spending patterns on a *single* district; if a given pattern of spending impacted districts in different ways, there likely would be no significant *overall* effect of that particular spending pattern.

High School Standardized Test Performance

The second column of Table 5 shows the relationship between RttT spending at the traditional district level and EOC performance composite in the 2013-14 school year. Again, there is no significant effect of the timing of spending on the EOC performance composite and no significant effect of the number of expenditures. The analysis of per-pupil spending by RttT objective shows that increased per-pupil spending of RttT funds on Data Systems to Support Infrastructure is associated with lower EOC performance composites, while increased per-pupil expenditures on Turning Around the Lowest-Achieving Schools is associated with an increase in the EOC performance composite. In both cases, the effect sizes were very small, reflecting a change of less than 1% in the number of EOC tests with scores at the proficient level. In the distribution of schools, these changes would move the average school from the 50th percentile to only just below the 52nd percentile.

The increase in the EOC performance composite associated with traditional districts with higher per-pupil RttT expenditure on the Turning Around the Lowest-Achieving Schools objective suggests that these types of investments may be helpful in improving performance in high school classes. However, we cannot conclude with certainty that investing in this objective caused any improvements in high school test scores—traditional districts with higher investments in this objective may be different in other ways that also contribute to the higher score. Likewise, we cannot conclude with certainty that the negative relationship between investments in Data Systems to Support Infrastructure and EOC performance composite is meaningful; because RttT funds were limited, larger investments in Data Systems to Support Instruction may have limited the ability of traditional districts to invest in other RttT objectives that might have been more beneficial to high school test performance. It is also possible that other changes in the testing regime are responsible for changes in high school test performance between different types of schools.

High School Graduation Rate

The third column of Table 5 (previous page) shows the relationship between RttT spending at the LEA level and cohort graduation rate in the 2013-14 school year. The analysis indicates that early-spending traditional districts had a significant increase in graduation rates of about 1.7 percentage points compared to late-spending traditional districts and traditional districts that spent evenly across years. In addition, more diffuse spending of traditional-district RttT funds is associated with lower cohort graduation rates. The analysis of per-pupil spending by RttT objective results in significant relationships between spending on State Success Factors, Great Teachers and Leaders, and cohort graduation rate.

This analysis suggests that traditional districts that spent more of their RttT funding earlier and concentrated expenditures on a smaller number of objectives saw greater increases in their high school graduation rates than did traditional districts that spent the majority of their funding evenly during the grant and spread funding across more objectives. The effects of earlier spending could suggest that traditional districts that were prepared to implement new programs earlier saw greater increases, but it also could suggest that it takes several years for the effects of RttT expenditures to be reflected in changes in graduation rates. The graduation rate also appears to increase in traditional districts in which more funding was spent on the State Success Factors

and the Great Teachers and Leaders objectives. The spending for State Success Factors in this analysis reflects additional spending beyond the amount required for the NCEdCloud. These positive relationships could indicate that increased investment in these categories of activities led to improved graduation rates, but this analysis cannot establish that the RttT expenditures in these categories were causally associated with the improvement in graduation rate.

North Carolina Education Cloud Implementation and Cost Savings

North Carolina pooled $34.6 million of locally-allocated RttT funds to develop a computing infrastructure to serve local technology needs on a statewide basis. Each LEA that received RttT funds was required to contribute a portion of these funds to the North Carolina Education Cloud (NCEdCloud) project. NCEdCloud is a statewide initiative to leverage cloud technology in order to consolidate costs and provide a central location for data and learning materials. Cloud technology is a secure central infrastructure that can be accessed remotely for software, data, and other computing needs. This technology is intended to address the limited capacity in many of North Carolina's 115 traditional districts and over 100 charter schools to safely share infrastructure, platforms, software, documents, and data. By consolidating costs, the NCEdCloud provides support to LEAs that have struggled with the high costs of maintaining server infrastructure in the past.

The NCEdCloud has four primary goals:

1. Increase Information Technology (IT) reliability,

2. Increase IT efficiency,

3. Decrease cost, and

4. Increase the number of LEA technical staff available to support instruction.

The evaluation of the NCEdCloud in this report is intended to assess the third goal by estimating LEA cost savings associated with use of the NCEdCloud. This section of the report summarizes the evaluation process for the cost savings associated with the NCEdCloud program. As part of the planning process for NCEdCloud services, cost-savings estimates were generated to project potential savings if available services were fully implemented. The purpose of this section of the report is to assess actual cost savings based on current levels of implementation in LEAs.

In order for the NCEdCloud to realize cost savings for LEAs, services must be made available to LEAs through the NCEdCloud and LEAs must adopt these services. The evaluation proceeded in three steps. First, NCEdCloud staff provided information on the status of the implementation and the services that currently were available to LEAs. Second, the Evaluation Team interviewed LEA technology directors in order to develop an understanding of how NCEdCloud services were being deployed in LEAs and to identify any potential areas for savings associated with those services. Finally, school expenditure data were used to identify changes in technology expenditures over time, with special attention to spending categories related to potential cost savings identified during the LEA interviews.

NCEdCloud Services and Implementation

Services provided by the NCEdCloud fall into three categories: learning and instructional systems; IT enterprise; and business operations. Within each of these categories, the NCEdCloud provides or plans to provide multiple services. The services to be provided were selected based on three criteria: potential benefit to LEAs, the availability of appropriate providers for the service, and the feasibility of migrating these services to the NCEdCloud. In addition to

providing infrastructure previously hosted at the LEA level, the NCEdCloud supports the state's RttT-funded Instructional Improvement System (Home Base) and professional development system.

Implementation of the NCEdCloud was envisioned as unfolding over a series of stages. During the initial planning stage, information was gathered from LEAs to assess areas of infrastructure in which NCEdCloud services could benefit LEAs. The planning stage was to be followed by a deployment stage during which a competitive procurement process would be used to select appropriate vendors for each service. Once appropriate vendors were selected, the migration phase would begin with pilot migrations, followed by a mostly voluntary statewide migration of LEA services to the NCEdCloud. In practice, procurement for some services has been delayed, with some services moving to the migration phase and becoming available to LEAs quickly and other services being delayed or still in the process of deployment.

Although implementation of the NCEdCloud originally was planned to take place over the four years of the RttT grant, delays in contracts and procurement have slowed implementation significantly. At the time of the writing of this report, some intended services were still in the deployment stage and not available to LEAs. LEA services that currently are provided by the NCEdCloud or are in the process of being implemented are:

- *Currently available*:
  - Email Hosting Guidance: Supports voluntary LEA movement of email services from local servers to free Cloud-hosted email solutions.

  - Voice Over Internet Protocol: Helps LEAs use the Internet to reduce dependence on separate telephone network services.

  - Firewall and Filtering Services: Protects school networks from Internet attacks and filters objectionable content per the Children's Internet Protection Act (CIPA).

  - AS400/i-series—Financial Services: Hosts common business applications used in almost every LEA, greatly reducing local dependence on multiple outdated systems.

- *In process of implementation*:
  - Identity and Access Management: Allows teachers, students, and parents to access all of their applications with a single, secure log-in.

  - Canvas Learning Management System: Provides an easy-to-use website integrated with other NCEdCloud services on which teachers can post content and assignments for students.

  - Human Resources Application Tracking System: Supports a common website for jobseekers to find and apply for any K-12 job in North Carolina, and for LEAs to manage postings, recruitment, and candidate interviews.

  - WiFi Infrastructure Program: Expands uniform high-quality WiFi access to students in LEAs across the state at a reduced cost.

LEA Implementation of the NCEdCloud

Once services are available from the NCEdCloud, LEAs have the opportunity to opt in to the services. However, with a few exceptions, LEAs are not required to make use of services available through the NCEdCloud. As a result, cost savings depend not only on the availability of services but also on how the services are used by LEAs to replace services they have been procuring elsewhere. In order to gain an understanding of how services were being used and the potential for cost savings, the Evaluation Team conducted interviews with technology directors in four LEAs.

NCEdCloud Services Used by LEAs

Several LEAs are using the firewall and filtering services provided by NCEdCloud. Two LEA technology directors acknowledged cost savings due to the filter and firewall services in the range of $25,000 to $40,000 annually. However, one technology director mentioned significant issues with implementing the filter and noted that the filter, in his opinion, is not ideal for an educational institution yet. Multiple LEAs also are using the NCEdCloud email services. One of these LEAs mentioned substantial savings in terms of man-hours associated with NCEdCloud management of email services. At least one LEA is using the AS400/i-series services, although that LEA did not identify any specific savings associated with the service.

Some LEAs mentioned NCEdCloud services that they expect to use in the future. Multiple LEAs intend to opt in to the Identity and Access Management (IAM) system. One of the technology directors explained how the IAM system will contribute to reducing man-hours spent on creating, updating, and maintaining student and educator accounts. Since these accounts change every year, an LEA typically uses one full-time employee for account management. Potential savings from not requiring an IT administrative assistant to manage this process is approximately $40,000 per year. Several LEAs also mentioned the possibility of making use of the Learning Management System when it becomes available through the NCEdCloud.

NCEdCloud Services Not Being Used by LEAs

In addition to identifying NCEdCloud services currently in use by their LEAs, some of the technology directors mentioned NCEdCloud services that their LEAs had chosen not to use. One technology director explained that his LEA was not currently using the AS400/i-series service because the rollout of the service overlapped his LEA's contract with its current service provider, which was renewed the year before AS400/i-series availability. Another technology director mentioned that his LEA would not opt into the Identity and Access Management system because the system currently in use by his LEA is more sophisticated than the system provided by the NCEdCloud. This same LEA does not currently intend to use the Learning Management System that will be available from the NCEdCloud, again preferring existing services. Two of the interviewees indicated that the current level of sophistication in their LEAs' technology infrastructure determines the usefulness of NCEdCloud services for their LEAs. These responses suggest that the actual cost savings may be less than the potential cost savings that were projected previously.

Limitations to Evaluating Cost Savings

LEA technology directors were asked how cost savings related to the NCEdCloud were used in their LEA. In one LEA, funds from savings related to the NCEdCloud were used to maintain technical staff positions that otherwise would have been eliminated due to reductions in the overall technology budget. Another LEA stated that savings in terms of man-hours related to NCEdCloud services allowed technical staff to devote time to other technology services for the LEA.

One technology director stated that many LEAs are unable to provide services as sophisticated as those provided by the NCEdCloud. This observation—in combination with the dedication of staff time to other technology services—illustrates the existence of a tension between identifying cost savings and meeting the fourth goal of the NCEdCloud (to increase LEA technical staff supporting instruction); cost savings may be shifted to other purposes within the same funding categories, which would result in an expansion in services but no change in net spending.

Trends in Technology Expenditures

In order to identify cost savings related to the NCEdCloud, this report analyzes local expenditure data for all 115 traditional districts from 2007-08 to 2013-14 to identify trends in technology expenditures potentially related to the NCEdCloud.

Guided by the understanding acquired through the interviews with LEA technology directors, the Evaluation Team identified several purpose codes and object codes from the Chart of Accounts that seemed to capture the NCEdCloud's aims for technological improvement and advancement.[13] Purpose codes represent activities or actions undertaken to attain the objectives of an LEA. Object codes represent the service or commodity obtained by incurring a specific expenditure.[14] These codes are used to identify expenditure trends in:

1. All Technology Spending,

2. Technology Support Services,

3. Instructional Technology Support Services,

4. Connectivity Support Services,

5. Information Management Systems Services,

6. Computer Software and Supplies, and

7. Purchase of Computer Hardware—Capitalized.

Table 6 and Figure 1 (following page) show the trends in traditional districts' per-pupil technology expenditures across different categories of technical support, hardware and software, and services.[15] Overall technology spending increased from 2007-08 to 2013-14, and this

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[13] See: http://www.ncpublicschools.org/fbs/finance/reporting/

[14] *Ibid*.

[15] Spending was also examined in real dollars and as a percentage of total spending but substantive conclusions were unchanged.

increase appears to have been driven primarily by a substantial increase in spending for Technology Support Services. Expenditures for Computer Software and Supplies also increased over this time period. Spending on Computer Hardware and Connectivity Support Services remained relatively stable. Instructional Technology Support Services showed a pattern of increasing spending until the 2010-11 school year and then declined for the remaining school years.

Table 6. Per-Pupil Expenditures on Technology, 2007-08 to 2013-14

	2007-08	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**
Technology Spending	$133.09	$146.54	$148.72	$145.23	$156.43	$161.18	$166.11
Technology Support Services	$58.47	$91.11	$85.55	$84.80	$91.42	$104.11	$103.30
Instructional Technology Support Services	$1.62	$2.27	$3.11	$3.36	$1.76	$1.98	$1.60
Connectivity Support Services	$0.25	$0.37	$0.10	$0.10	$0.47	$2.01	$0.87
Computer Software & Supplies	$30.69	$32.16	$38.36	$39.01	$39.05	$42.02	$44.83
Purchase of Computer Hardware – Capitalized	$33.48	$34.36	$32.38	$29.04	$38.59	$32.22	$29.91

Figure 1. Trends in Per-Pupil Expenditures on Technology, 2007-08 to 2013-14
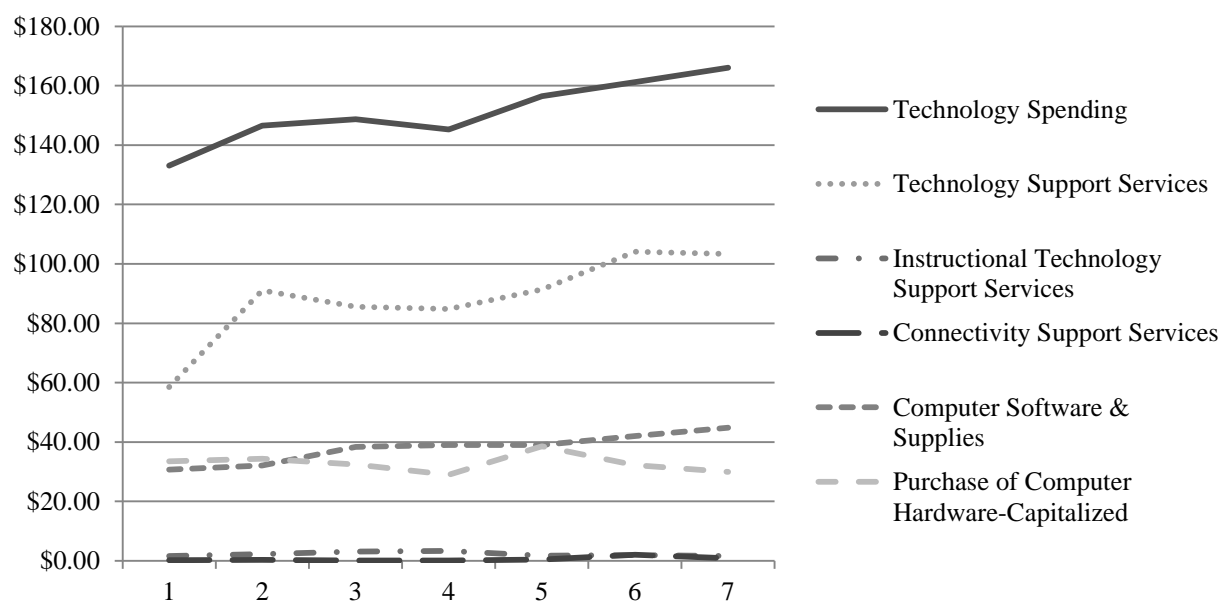
The only category of spending that exhibited a decrease that could be related to savings due to NCEdCloud services was Instructional Technology Support Services. However, there are several

limitations that make it impossible to draw conclusions about the cost-effectiveness of NCEdCloud services using this data. First, the technological services used by traditional districts may have changed over time. Many traditional districts have been increasing their use of technology in instruction, including those implementing 1:1 initiatives across the state. These changes may alter the patterns of expenditures in the LEAs.

In addition, the expenditure data as currently collected do not provide sufficient detail to allow for conclusions about savings related to the NCEdCloud. Categories of technology spending in the current Chart of Accounts are broad and cover many different activities. As a result, savings resulting from NCEdCloud services in one area frequently may be shifted to provide services within the same expenditure category. To enable future evaluation of the cost savings associated with technology innovations, NCDPI should consider requiring LEAs to use consistently the technology-specific codes in the state's existing official Chart of Accounts[16] when recording and reporting technology expenditures.

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[16] http://www.ncpublicschools.org/docs/fbs/finance/reporting/coa/2015/coaexcel.xls

Conclusions

The purpose of this report was to describe how LEA RttT allocations were spent by LEAs, to explore the relationship between RttT expenditures and student outcomes, and to describe the implementation of the NCEdCloud.

Local expenditures are broken down in multiple ways in order to provide the most complete understanding of traditional district and participating charter school expenditures. By the end of the 2013-14 school year, 94.1% of LEA RttT funding had been expended, but a small amount of funding (5.7%) had been extended into the 2014-15 school year. The 2011-12 and 2012-13 school years saw the highest levels of spending, followed by the 2013-14 school year. The lowest level of spending occurred during the initial year of implementation (2010-11) due to delays in implementation. Regardless of the categorization scheme used, spending was focused largely on certain priority areas. Among functional expenditure categories, Classroom Instruction and Support for Instruction had by far the highest expenditures, followed by Professional Development and LEA Administration. When spending is categorized by sub-category based on goods and services, Technology is the largest single area of expenditure. Other significant areas of spending were Instructional Personnel, Bonus/Supplement/Extra Duty Pay, and Contracted Services. In terms of RttT objectives, Data Systems to Support Infrastructure received the largest focus, comprising nearly half of LEA RttT funding. Other objectives with large investments were Great Teachers and Leaders and Standards and Assessment.

This report also examines the relationship between different patterns of LEA RttT expenditures and student performance outcomes. Controlling for school demographics and prior school-level performance, RttT spending at the LEA level seems to have a limited relationship with student outcomes. The amount spent on Turning Around the Lowest-Achieving Schools seems to be related to statistically significant improvements in EOC performance, while investments in Data Systems to Support Instruction appear to be related to small decreases in EOC performance composites. In addition, cohort graduation rates are higher in LEAs that focused their LEA RttT investments on a small number of key priorities and spent their funds earlier in the grant period. Also, schools that spent more LEA RttT funds on State Success Factors and Great Teachers and Leaders had relatively higher cohort graduation rates. These findings should be interpreted with caution because many other changes in the educational system occurred during the time of the RttT grant. However, more significant findings also may become clearer in the future when more implementation time has passed for many of the reforms supported by LEA RttT funding.

This report also examined the implementation of the NCEdCloud and explored cost savings related to the NCEdCloud. LEA technology directors identified several key areas in which the NCEdCloud is providing savings to LEAs (e.g., the use of NCEdCloud filters and email services). However, some NCEdCloud initiatives still are being implemented, and implementation has been uneven across LEAs. Evaluation in future years may be better able to assess the full cost-savings potential of the NCEdCloud. However, current financial data do not contain sufficient detail to draw conclusions about cost savings related to the NCEdCloud. Therefore, future evaluation will benefit from directing LEAs to improve their application of existing Chart of Accounts codes to provide more fine-grained detail related to technology expenditures. The Evaluation Team also recommends that more detailed data collection related to technology be included as part of the rollout of the forthcoming North Carolina Digital Learning Plan.

Appendix: Expenditure Category Codes and Sub-Category Codes

Broad, Policy-Relevant Expenditure Categories Developed by the Evaluation Team

Expenditure Category	Assignment of Expenditures	
	Purpose Code(s)	*Object Code(s)*
Regular Instruction: Annual teacher salary, benefits, local salary supplements, bonuses, classroom materials for instruction of regular students	5100s Regular Instructional Programs 5111 JROTC Curricular Services 5112 Cultural Arts Curricular Services 5113 Physical Education Curricular Services 5114 Foreign Language Curricular Services 5115 Technology Curricular Services 5116 Homebound/Hospitalized Curricular Services 5120 CTE Curricular Services 5310s Alternative Instructional Services K-12 5330s Remedial and Supplemental K-12 Services	All (except 193, 196, 312)
Special Instruction: Annual teacher salary, benefits, local salary supplements, bonuses, classroom materials for instruction of students with special needs	5200s Special Instructional Programs 5210 Children with Disabilities Curricular Services 5211 Homebound Curricular Services 5220s Special Populations CTE Curricular Services 5230s Pre-K Children with Disabilities Curricular Services 5260s Academically/Intellectually Gifted Curricular Services 5270s Limited English Proficiency Services	All (except 193, 196, 312)
Supplementary Instruction: Salaries, benefits, and materials related to instructional programs outside the regular school day.	5340s Pre-K Readiness/Remedial and Supplemental Services 5350s Extended Day/Year Instructional Services 5351 Before/After School Instructional Services 5352 Intersession Instructional Services 5353 Summer School Instructional Services 5354 Saturday School Instructional Services 6304 Pre-K Readiness/Remedial and Supplemental Support Services 6305 Extended Day/Year Instructional Support Services	All
Professional Development for Instruction: Expenditures related to staff development and new teacher orientation. These include expenditures for workshops and mentor salaries and benefits.	5100s Regular Instructional Programs 5200s Special Instructional Programs ***Any purpose code (once others are classified) 5870 Staff Development Unallocated	196 Workshop Participant 193 Mentor Pay 312 Workshop Expenses All

Expenditure Category	Assignment of Expenditures	
	Purpose Code(s)	*Object Code(s)*
Student Services: Salaries, benefits, and materials for guidance services, psychological services, speech, language pathology, media services, and some health services related to instruction.	5320s Attendance-Social Work Services 5830s Guidance Services 5840s Health Services 5850s Safety and Security Support Services 5240s Speech, Language Pathology 5250s Audiology Services 6800s System-wide Pupil Support Services 6810s Educational Media Support Services 6830s Guidance Support Services 6840s Health Support Services 6850s Safety and Security Support Services 6204 Speech and Language Pathology Support and Development Services 6205 Audiology Support and Development Services 6302 Attendance and Social Work Support Services	All

Expenditure Category	Assignment of Expenditures	
	Purpose Code(s)	*Object Code(s)*
Instructional Support Services: Expenditures related to media services, technical support for teachers, salaries and benefits for technology support personnel not coded for school and LEA administration.	***Any purpose code ***Any purpose code (After all other classifications) 5800s School-Based Support Services 5810s Educational Media Services 5860s Instructional Technology Services 5880s Parent Involvement Services 5890s Volunteer Services 6000s System-Wide Supporting Services 6100s Support and Development Services 6110s Regular Curricular Support and Development Services 6111 JROTC Curricular Support and Development Services 6112 Cultural Arts Curricular Support and Development Services 6113 Physical Education Curricular Support and Development Services 6114 Foreign Language Curricular Support and Development Services 6115 Technology and Curricular Support and Development Services 6116 Homebound/Hospitalized Curricular Support and Development Services 6120s CTE Curricular Support and Development Services 6200s Special Populations Support and Development Services 6201 Children with Disabilities Support and Development Services 6202 CTE Children with Disabilities Curricula Support and Development Services 6203 Pre-K Children with Disabilities Support and Development Services 6206 Academically/Intellectually Gifted Support and Development Services 6207 Limited English Proficiency Support and Development Services 6300s Alternative Programs and Services Support and Development Services 6301 Alternative Instructional Programs K-12 Support Services 6303 Remedial and Supplemental Services K-12 Support Services 6400s Technology Support Services 6401 Technology Services	414 Library Books 418 Computer Software and Supplies 462 Non-Capitalized Computer Equipment All

Expenditure Category	Assignment of Expenditures	
	Purpose Code(s)	*Object Code(s)*
Extra-Curricular Activities: Expenditures related to school-sponsored activities for purposes such as motivation, enjoyment or improvement of skills. Participation is usually not required and credit is not give.	5500s Co-Curricular Instructional Programs 5501 Athletics 5502 Cultural Arts 5503 School Clubs and Other Student Organizations	All
Transportation: Salaries and benefits for transportation personnel and other expenditures related to the daily transportation of pupils.	6550s Transportation of Pupils	All
School Maintenance & Utilities: Salaries, benefits, and supplies for activities related to cleaning, repairing, and maintaining school premises and the utility charges.	6500s Operational Support Services 6530s Public Utility and Energy Services 6540s Custodial/Housekeeping Services 6580s Maintenance Services	All
Food Services: Salaries, materials, and food supplies for student nutrition activities.	7200s Nutrition Services	All
School Leadership: Salaries, benefits, and supplies related to the principal's office.	5400s School Leadership Services 5401 School Principal 5402 School Assistant Principal 5403 School Treasurer 5404 School Clerical Support 5820s Student Accounting 6820s Student Accounting Support Services ***Purpose codes from LEA Administration that are assigned to a school***	All

	Assignment of Expenditures	
Expenditure Category	*Purpose Code(s)*	*Object Code(s)*
LEA Administration: Salaries, benefits, supplies and other expenditures that support LEA level activities including the board of education, superintendents, business services, personnel services, statistical services, planning, research, evaluation services, etc.	6510s Communication Services 6520s Printing and Copying Services 6560s Warehouse and Delivery Services 6570s Facilities, Acquisitions and Construction Services 6600s Financial and Human Resource Services 6610s Financial Services 6611 Financial Management Services 6612 Purchasing Services 6613 Risk-Management Services 6614 Resource Development Services 6620s Human Resource Services 6621 Human Resource Management 6622 Recruitment Services 6623 Staff Development Services 6624 Salary and Benefits Services 6700s Accountability Services 6710s Student Testing Services 6720s Planning, Research Development and Program Evaluation 6900s Policy, Leadership, and Public Relations Services 6910s Board of Education 6920s Legal Services 6930s Audit Services 6931 Internal Audit 6932 External Audit 6940s Leadership Services 6941 Office of the Superintendent 6942 Deputy, Associate, and Assistants 6950s Public Relations, and Marketing Services	All
Miscellaneous: All other expenditures allocated to schools that could not be classified into one of the above categories. Includes miscoded accounting codes.	All purpose codes that are undefined in the Chart of Accounts or are broad overview categories that could not be cleanly classified	All

| | Assignment of Expenditures | |
Expenditure Category	*Purpose Code(s)*	*Object Code(s)*
Community Services: Activities that are not directly related to the provision of education for pupils in a local school administrative unit. These include services such as community recreation or civic programs and salaries for personnel related to these activities.	7000s Ancillary Services 7100s Community Services 7300 Adult Services	All
Capital Outlay: Acquisition of property, renovations, replacement of furnishings and acquisition of buses, etc.	9000s Capital Outlay ****Any purpose code ****Any purpose code	All Fund=4 All object codes 571 Depreciation
Benefits	****Any purpose code	Object codes in the 200s
Non-programmed Charges (Previously Omitted)	8000s Non-Programmed Charges 8100s Payments to Other Governmental Units 8200s Unbudgeted Funds 8300s Debt Services 8400s Interfund Transfers 8500s Contingency 8600s Educational Foundations 8700s Scholarships	All

Object Codes by Sub-Category

Instructional Personnel

121: Teacher; **126**: Extended Contracts; **131:** Instructional Support I—Regular Teacher Pay Scale; **134**: Teacher Mentor; **135**: Instructional Facilitators; **142**: Teacher Assistant—NCLB; **143**: Tutor (Within the instructional day); **146**: School-Based Specialist; **148**: Non-Certified Instructor; **162**: Substitute Teacher—Regular Teacher Absence; **163**: Substitute Teacher—Staff Development Absence; **165**: Substitute—Non-Teaching; **166**: Teacher Assistant Salary When Substituting (Staff Development Absence); **167**: Teacher Assistant Salary When Substituting (Regular Teacher Absence); **198**: Tutorial Pay

Bonus/Extra Duty Pay

181: Supplement/Supplementary Pay; **183**: Bonus Pay; **184**: Longevity Pay; **187**: Salary Differential; **191**: Curriculum Development Pay; **192**: Additional Responsibility Stipend; **193**: Mentor Pay Stipend; **194**: State-Designated Stipend; **196**: Staff Development Participant Pay; **197**: Staff Development Instructor; **199**: Overtime Pay

Benefits

188: Annual Leave Payoff; **189**: Short-Term Disability Payments—First Six Months; **211**: Employer's Social Security Cost—Regular; **221**: Employer's Retirement Cost—Regular; **231**: Employer's Hospitalization Insurance Cost; **232**: Employer's Workers' Compensation Insurance Cost; **233**: Employer's Unemployment Insurance Cost; **234**: Employer's Dental Insurance Cost; **235**: Employer's Life Insurance Cost; **351**: Tuition Reimbursements; **352**: Employee Education Reimbursements; **361**: Membership Dues and Fees

Technology

343: Telecommunications Services; **418**: Computer Software and Supplies; **461**: Furniture and Equipment—Inventoried; **462**: Computer Equipment—Inventoried; **541**: Purchase of Furniture and Equipment—Capitalized; **542**: Purchase of Computer Hardware—Capitalized

Administration/Administrative Support

113: Director and/or Supervisor; **114**: Principal/Headmaster; **116**: Assistant Principal (Non-teaching); **117**: Other Assistant Principal Assignment; **151**: Office Support; **152**: Technician; **153**: Administrative Specialist (Central Support)

Contracted Services

311: Contracted Services; **312**: Workshop Expenses; **313**: Advertising Cost; **314**: Printing and Binding Fees; **315**: Reproduction Costs; **319**: Other Professional and Technical Services

Supplies and Materials

411: Supplies and Materials; **413**: Other Textbooks; **414**: Library Books (Regular and Replacement)

Miscellaneous (Operational)

171: Driver; **327**: Rentals/Leases; **332**: Travel Reimbursement; **333**: Field Trips; **341**: Telephone; **342**: Postage; **344**: Mobile Communication Costs; **349**: Other Communication Services; **422**: Repair Parts, Materials, and Related Labor, Grease, and Anti-Freeze; **423**: Gas/Diesel Fuel; **451**: Food

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