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Executive Summary of

North Carolina's STEM High Schools:

An Overview of Current Data

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December 2011

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Executive Summary

Introduction and Background

North Carolina's four-year Race to the Top (RttT) grant provides an unprecedented opportunity to further the state's vision for science, technology, engineering, and mathematics (STEM) education and to develop its understanding of what constitutes a successful STEM school. Because the State's RttT-supported STEM initiatives are being introduced into a context in which STEM-focused activity has already been underway for a decade or more, a critical first step for the evaluation of the RttT STEM initiatives is to understand and describe current STEM conditions.

This report describes measures of the STEM high school education landscape for the 2009–10 school year that will serve as a baseline against which the Consortium for Educational Research and Evaluation–North Carolina (CERE–NC) will assess the implementation and impacts of RttT-sponsored STEM activities.

Data and Methods

School-level administrative data for this report (e.g., student demographics, course characteristics, teacher experience and credentials, expenditures, achievement scores, and graduation rates) were obtained from a database maintained by the Carolina Institute for Public Policy (CIPP) and assembled from North Carolina Department of Public Instruction (NCDPI) administrative records.

NCDPI provided evaluators with a list of high schools across the state currently self-identified as STEM schools and associated with three STEM-focused programs: Project Lead the Way Schools, Career and Technical Education Academies, and North Carolina New Schools Project STEM-focused high schools. The sample for this report includes all high schools in North Carolina that serve grades 9 and above and that do not serve lower grades ($n = 477$). Schools in this report are identified as either non-STEM ($n = 358$) or STEM ($n = 119$; Project Lead the Way schools: $n = 53$; Career and Technical Education academies: $n = 69$; New Schools Project high schools: $n = 24$).¹

Findings

Based on data from the 2009–10 school year, along several different axes—demographic, financial, and academic—North Carolina's STEM schools appear to be similar to their non-STEM school peers in most respects, with notable exceptions in the proportion of lower-income students, minority students, and rural areas served, as well as in the performance of students in STEM schools with a high percentage of minority representation.

¹ There were 27 schools associated with more than one STEM program.

I. Equity of Opportunity

- *Engagement of underrepresented groups.* In 2009–10, North Carolina STEM schools served more black students and more students of poverty than did other high schools, hosted the same proportion of female students, and were much more likely to be located in rural areas.
- *Availability of advanced STEM courses.* In 2009–10, STEM schools offered a proportion of advanced STEM courses similar to the proportion offered by non-STEM high schools.
- *Access to highly qualified teachers and supportive school settings.* In 2009–10, faculty credentials and experience were similar across STEM and non-STEM high schools. Per-pupil expenditures for STEM and non-STEM schools were not statistically different, but school sizes often were larger for STEM schools.

II. Academic Outcomes

- *Student achievement.* Student outcomes for STEM and non-STEM schools in 2009–10 were not notably different overall, and by measures such as ABCs accountability designations appear to have been slightly worse, but outcomes for students in high-minority STEM schools appeared to surpass those of students in similar non-STEM schools.
- *Graduation rates.* The difference in four-year cohort graduation rates in 2009–10 for STEM and non-STEM schools was small but statistically significant.

Next Steps

One of the major guiding goals for the evaluation of the RttT STEM Schools initiative is to evaluate whether the RttT STEM anchor and network schools have expanded the academic opportunities and improved academic outcomes for students in the anchor and affiliated network schools. Over the next three years, CERE–NC will continue to track changes in these measures, identify the degree to which any changes are related to efforts connected to RttT, and apply the evidence to determine progress toward the stated goals of the North Carolina RttT STEM initiative.

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