

Cumulative Effect: Teacher Incentive Program

Guilford County School District (GCS), located in north-central North Carolina, is the third largest district in the state with more than 71,000 students, 120 schools, and 10,300 employees. GCS qualifies as a high-need local education authority based on the number of children who live in poverty and the number of teachers with emergency and provisional teaching licenses. For the 2004–05 school year, only forty-nine of its schools made Adequate Yearly Progress (AYP), and teacher turnover rates were between 23 and 25 percent at all school levels.

In an effort to attract effective educators to low-performing schools in Guilford County, the district established Mission Possible, a comprehensive teacher incentive program. This initiative provides recruitment and retention incentives based on school level and subject matter taught, including professional development, recruitment, retention, and performance bonuses. The program is designed to improve school performance, raise student achievement, and decrease teacher turnover. After working with Guilford County’s local teacher organization to garner educator support for the initiative, GCS identified twenty schools for participation in the three-year Mission Possible pilot based on student poverty, teacher turnover, and school performance. Since the program launch in 2006, Mission Possible has received additional funding and has grown to include thirty schools within the district: thirteen elementary schools, seven middle schools, and ten high schools.

At the same time that Mission Possible was being developed, members of the local university and business communities were voicing the concern that—while strong math skills are critical to students’ college and work success, especially in the science and technical fields—it was difficult for the district to attract and retain highly effective math teachers. In 2006, in response to this need and with support from the university and business communities, GCS launched the Cumulative Effect (CE) program, a focus project under the umbrella of Mission Possible. CE is a math pilot program that focuses on developing the content knowledge and pedagogical skills of high school math teachers through professional development, intensive mentoring, and incentive pay. Eight of the thirty Mission Possible schools participate in the Cumulative Effect program, as well as two additional high schools that have been identified as underperforming. For the 2008–09 school year, ten high schools and eighty math teachers are participating in the Cumulative Effect program. Schools chosen to participate are the lowest-performing of the county’s high schools, and all math teachers at CE schools, from newly recruited to veteran teachers, are participating in the program.

Funding

In 2007, the U.S. Department of Education awarded GCS an \$8 million grant from its Teacher Incentive Fund to support the implementation of Mission Possible. The CE program is jointly funded through federal, local, and foundation dollars. Action Greensboro, a local coalition of businesses, community leaders, and members of the local government, committed \$2 million over three years in partnership with the sixteen-campus University of North Carolina (UNC) system, specifically working with UNC-Greensboro and North Carolina A&T State University campuses. This partnership has made a significant impact on the CE program and has been a fundamental resource for its operations.

Evaluation and Results

Results from evaluations of the Cumulative Effect program are very positive. Researchers at UNC-Greensboro—using student end-of-course test data and CE participant surveys—have found that the CE program’s teachers are closing the gap between CE and non-CE schools.

- The Algebra I gap was reduced by 7.8 percent, which means the CE schools scored 2.3 percent *higher* than non-CE schools.¹
- The gap in Algebra II was reduced by 8.2 percent, leaving CE schools 5.1 percent behind non-CE schools.
- In geometry, the gap reduction was 7.1 percent, leaving CE schools 9.4 percent behind non-CE schools.

Value-added data for teacher performance was also very strong.² There was a 20 percent increase in Algebra I teachers who earned high value-added scores, a 78 percent increase in geometry teachers who earned high value-added scores, and a 25 percent increase in math teachers who earned high scores overall. Most impressively, teacher attrition dropped 23 percent for CE schools.

Financial Incentives

Performance-based and recruitment incentives are coupled with rigorous professional development and intensive mentoring in an effort to recruit and retain highly effective math teachers. Typically, math graduates in the private sector can earn a starting annual salary in North Carolina of as much as \$50,000. The starting annual salary for a GCS math teacher, however, is \$35,000. To make teaching a competitive option, CE is designed to allow teachers to earn up to \$18,000 in additional pay, including a \$10,000 recruitment incentive and a potential bonus for high student achievement. Therefore, CE teachers can make up to \$53,000 in their first year teaching. This alignment of salaries to the private sector market value makes recruiting highly qualified math teachers much easier. In the first year of the CE program, applications for math positions dramatically increased from seven the previous year to 174.

¹ Percent scores refer to percent proficiency in math scores.

² Value-added is a complex statistical method for determining the impact a teacher—versus other factors, including income level, prior achievement, and school characteristics—makes on student achievement. Taking such factors into account, value-added analysis estimates the academic growth a student is expected to make for the year and compares it to how the student actually performs on standardized assessments.



Performance incentives are awarded to teachers based on value-added data. If a CE teacher has a mean growth of 1.0 or 1.5 standard errors above the mean of the district's mean growth for the same course, the CE teacher can earn \$2,500 or \$4,000, respectively. In the last year of the program, 74 percent of CE math teachers were awarded performance incentives for high value-added scores.

Professional Development

Professional development is one of the core strategies of the Cumulative Effect program. Each summer, CE math teachers are required to attend a rigorous, two-week professional development program called the Summer Math Success Institute. The summer institute consists of forty hours of math content training in advanced Algebra I, Algebra II, and geometry. The institute is co-taught by three university professors and three master mathematics teachers. Teachers receive a \$4,000 stipend for attending the summer institute and passing a proficiency test at the end of the two-week period. Cumulative Effect teachers are also required to participate in an ongoing seminar series throughout the school year. These evening seminars are held eight times a year.

For the first two years, CE brought in experts to help teachers incorporate cooperative learning strategies, graphic organizing tactics, technology, and brain-based learning theories into their lesson plans. Participation in various other seminars, such as Undoing Racism, Cooperative Learning, Teacher Expectations and Student Achievement (TESA), and Differentiated Instruction, was also required for teachers participating in the program. For the 2008–09 school year, CE teachers hosted their own seminar series using in-house expertise rather than relying on outside support. The teachers and program administrators first met as a group to discuss their specific professional development needs. Then, the CE teachers at each of the ten schools, with the support of the CE Teacher Advisory Committee, chose one of the seminars in the series to design and present to their colleagues. Throughout the year, the CE teachers took turns traveling to the other schools for this professional development experience, giving teachers not only the chance to gain new knowledge, but it allowed them to see examples of other schools and other classrooms. The new “each one teach one” seminar series has proved extremely successful in developing site-based expertise and capacity as well as establishing a district wide professional learning community among the CE teachers.

Program funders and the Guilford County school district have facilitated the introduction and updating of technology for math classrooms. For example, all Cumulative Effect math teachers are provided with a classroom set of TI-84 Plus graphing calculators pre-programmed with applications for algebra, geometry, statistics, and pre-calculus. The teachers receive additional training in technology as part of their ongoing professional development to facilitate the incorporation of new technology into their instruction.

Intensive Mentoring

Intensive mentoring for new math teachers is an important component of CE. Intensive, one-on-one mentorship is provided through a partnership between GCS, the University of North Carolina system, and Action Greensboro. The \$2 million committed by Action Greensboro over



three years for the CE program supports the mentoring program, a UNC coordinator, evaluation of the project, and the salary incentives for the two CE high schools that are not a part of the larger Mission Possible program. All CE math teachers are paired with mentors based on the specific needs of the mentee including content development, enhanced classroom management skills, or other pedagogical support. There are five full-time mentors who are former principals, professors, or master math teachers; they are chosen based on their expertise in math content knowledge, pedagogy, leadership, and technology. Each spends the equivalent of one hour per week with each of their mentees, often combining classroom observations with one-on-one consultations during teachers' planning periods. Mentors and mentees are given laptop computers to facilitate the mentoring relationship.

Future of the Program

Cumulative Effect and Mission Possible represent the introduction of market- and performance-based incentive pay into the education sector. GCS is the first district in the state of North Carolina to introduce a differentiated pay scale on this level. Due to the success of the program, the Mission Possible board recently met to discuss further expansion of the program.

