HIGH SCHOOL ALGEBRA I STUDY: 2002-2006

A Wake County Public School System (WCPSS) Joint Study by:
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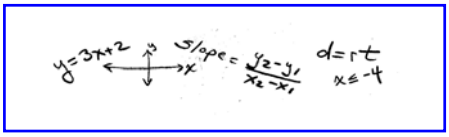
Why Algebra Study



Algebra 1 is a high school graduation course requirement and the entering high school class of 2006-07 must pass the state exam. In 2005-06, 87.3% of the 7,211 WCPSS students who took the high school Algebra 1 End-of-Course (EOC) test scored proficient. In WCPSS, most students score in Level III (proficient) or bottom Level IV (above grade level). Few students score in the top half of Level IV.

Project Goals

- collect WCPSS specific data to help teachers and district leadership understand current Algebra 1 practices,
- identify and share best practices in Algebra 1,
- build a series of studies that identify the role of teachers, and other system staff/departments in the school improvement process, and identify the practices of effective improvement.

Methods & Analysis

Forty-one of 157 (26%) of the 2005–2006 high school Algebra I teachers were identified for the study because they were the only teachers who had also taught Algebra I for each of the prior three years. The analysis identified the nine most and nine least effective teachers based on average student residuals. Residuals are the difference between a student's EOC scale score and the expected scale score of similar WCPSS students. The full report on this study will include a detailed explanation of residuals.

Results/Teacher Effect

There was little difference between top teachers and bottom teachers experience levels as Algebra I teachers.

Top Teachers

- averaged more time on new material (68%) of instructional time (bottom teachers 36%),
- set their own pace, remediated within new material (instead of stand alone), spent more time in technology and small groups, and planned with other teachers,
- stressed linear regression and problem solving more than bottom teachers,
- sought to learn of others' programs, and shared ideas for improvement while bottom teachers were more concerned with personal and management problems.

Some Top Teachers' Behaviors

- students knew what to expect on tests and assignments, and felt free to ask questions,
- teachers gave purpose to homework, and emphasized effort in assignment completion,
- teachers exhibited a sense of humor; there was mutual respect in class.

Results/School Effect

Some Behaviors in Top Schools

Top schools had a strong experienced course leader and support structures were in place for all teachers, with special considerations for new teachers. The schools had a school-wide plan that was aligned to the standard course of study. Materials were ready for the entire school year, and materials and class time were used thoughtfully.

Conclusions

We are able to identify teachers who are successful with students at all levels:

Top Teachers:

- planned with other teachers, actively developed and used an instructional plan aligned to the standard course of study, and were concerned about pacing,
- used spiraled curriculum with new material, and emphasized problem solving,
- had a positive attitude toward student performance, and created a structured/positive classroom culture.

School Leaderships' Possible Next Steps

- develop a school plan aligned to the standard course of study with an emphasis on problem solving,
- promote an open discourse culture, support new teachers, and have meaningful common planning for all teachers,
- share all data results with teachers including effectiveness rosters,
- develop a scheduling plan that maintains stability in Algebra I while adjusting to changes over time, with opportunities for teachers to grow.

Teachers' Possible Next Steps

- study the standard course of study, EOC testing program, goal summaries, and residual rosters,
- reflect on performance data and instructional practices, and plan with other teachers,
- use or develop a school plan, study math to deepen knowledge, understand and implement Marzano strategies.

District Leadership's Possible Next Steps

- study most effective schools and teachers and share findings district-wide,
- support school-wide improvement efforts based on top school models,
- provide data to teachers and schools on their effectiveness and support teacher improvement efforts,
- provide workshops on implementing Marzano strategies.

A report on the full study will be published shortly