

Wake County Biology Study

Mike Talley & Glenda Haynie

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The research project described below was conducted by Wake County Public Schools during the 2002-03 and 2003-04 school years to identify successful strategies of teachers with above average EOC scores. The results will be useful to school districts as they develop strategies for improving test scores.



Project Goals:

- Pilot a Value-Added Instructional Improvement Analysis Model
- Identify the Most Successful WCPSS Biology Teachers based on EOC results.
- Collaborate with Curriculum and Instruction to Identify and Share Best Classroom Practices.

Why start with Biology?

- Currently a Graduation Requirement
- Soon all students must pass EOC (entering class 06-07)
- Largest White-Black Achievement Gap of Required EOCs
40 percentage points (87.4% White Students at Level III or IV compared to 47.2% Black students at Level III or IV)
- 2ND largest in enrollment among courses with EOC tests
- District made expected, but not high growth on the Biology EOC test
 - 6 High Schools did not make expected growth
 - 6 High Schools made expected growth
 - 5 High Schools made high growth

METHODOLOGY:

Subjects:

- 43 teachers who had taught Biology in 2001-02, 2002-03, 2003-04, and were teaching in 2004-05.

Instruments:

- Classroom observations
- Teacher surveys
- Department Interviews
- Students EOC scores

Analysis:

- Identified the 10 most and 10 least effective teachers based on average student residuals. Student residuals are comparisons of student performance based on their pretest scores, special program services, and free or reduced lunch status (see Attachment 1 and 2 for details).
- Compared survey, observation, student scores and interview results of top and bottom teachers.

RESULTS:

Comparing Top Teachers to Bottom Teachers:

- is difficult and multifaceted
- involves much variance between teachers

- shows some generalizations ; yet there is an exception to every generalization
- is just a beginning

Top Effective Teachers were in 7 schools, bottom teachers in 7 schools, and 2 schools had top and bottom teachers.

High student performance is not always high student growth.

There were teachers in top, bottom, or middle of average student residuals (student growth) who had high or low student performance. For example, a teacher who had 99% of the students at level III or IV was ranked 20th in student effectiveness.

There were 19 teachers showing higher average scores for comparable students than this teacher.

Top Teachers averaged 83.4% of their assigned instructional time teaching Biology; while Bottom Teachers average 64.7% of their assigned instructional time teaching Biology. This was a measure of how much of their teaching day was spent in EOC Biology over 3 years.

Most Top Teachers focus class time in lecture and lab. Most Bottom Teachers use little lecture, more projects, and partner activities.

Most Top Teachers plan their own lessons (i.e. write them instead of using already written ones from the pacing guide) collaboratively with other teachers.

All top teachers report using data

- 3 bottom teachers have **no** time for data
- 9 top teachers use data they collect
- 9 top teachers use data from administration

Top Teachers cite **Time** as main barrier to effectiveness.

- 6 cited lack of class time with students
- 2 cited lack of time to plan and meet with students (too many other duties)
- 1 thought there was too much in curriculum
- 1 thought students don't study

No Consensus among Bottom Teachers as to barriers to effectiveness.

- 7 different answers

There was no difference between years of experience found between top and bottom teachers. Both groups had teachers from 6 to 30 years of experience. Both groups had teachers teaching honors and academic sections.

MAJOR Teacher concerns from group interviews:

- Lack of Class Time and possible need for a 2 semester course.
- Class Size
- Lack of Planning Time
 - Too many other duties
- Lack of Science instruction in Middle School
- Need for System Wide Training and Support for EOC teachers before and throughout year.

CONCLUSIONS:

- We can identify teachers who consistently enable students to achieve high growth. (2005 results are the same in Biology. Top teachers still top, bottom still bottom.
- Based on Teacher Survey, TOP effective teachers are:
 - focused on Biology,
 - study and plan with SCS and each other,
 - use data,
 - resist distractions from classroom efforts,
 - maximize student class time,
 - focus all student time on SCS goals.

Observations of Successful Biology Teachers showed that they:

- plan together as a group,
- work on common pacing guide,
- have EOC review sessions by selected content,
- make Data driven decisions about which goals and objectives to stress or review,
- conducted frequent assessments,
- communicated to the students their progress on state standards,
- were in schools that had strong departmental leadership,
- designed a year at a glance document,.
- were well dressed.

POSSIBLE NEXT STEPS:

System Level:

- Organize System-Wide mandatory EOC support groups and provide structure for meetings.
- Focus EOC teacher time.
- Report teacher performance to principal and teacher in WCPSS context.
- Study top performing teachers.
- Disaggregate average residuals.

School Level:

- Organize School-Wide mandatory EOC support groups and provide structure for meetings.
- Focus EOC teacher time.
- Use School Effectiveness and Student Residual rosters in planning.
- Study top performing teachers, use them as leaders(yet do not pull them away from class time).
- Share with other schools
- Engage in discussions of Biology Study Results.
- Have Common Planning Times for EOC teachers.
- Agree on a Research-Based Instructional Strategy as a Focus.

Teacher Level:

- Attend system, school, and department meetings. Share in discussions.
- Focus your time on EOC.
- Study your student residual rosters.
- Use Teacher Data by Student.
- Study the Standard Course of Study (SCS) with other teachers.
- Focus all class time on SCS.

For more information contact Glenda Haynie (ghaynie@wcpss.net or 850-1903) or Michael Tally (mtally@wcpss.net or 850-1950).

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[Elizabeth Snoke Harris](#), Editor