RESEARCH BRIEF

ACHIEVEMENT GAPS:

AN EXAMINATION of DIFFERENCES in STUDENT ACHIEVEMENT and GROWTH

Northwest Evaluation Association

Martha S. McCall | Carl Hauser | John Cronin | G. Gage Kingsbury | Ronald Houser

NOVEMBER 2006

THE DIFFERENCE BETWEEN the academic performance of poor students and wealthy students and between minority and non-minority students is commonly known as the achievement gap. This report compares the reading and mathematics results of African-American and European-American students, Hispanic and European-American students and students from poorer schools to those in wealthier schools. The study sample covered grades 3 through 8 and included 569,564 students in reading and 542,057 in mathematics from 24 states.

Summary

At the end of each grade European-American students perform better than African-American and Hispanic students and students from wealthier schools outperformed students from poorer schools. When groups of students were followed across time, they appeared to be growing at comparable rates. However when the growth of students who begin the school year at the same skill level is compared, a different pattern emerges. For each score level at each grade in each subject minority students grew less than European-Americans and students from poor schools grew less than those from wealthier ones. The study also looked at changes that occur during the summer when most students are not receiving instruction. Although some students made some progress over the summer, others, especially those with higher skills, lost ground academically. When students with comparable skills at the end of the school year were measured the following fall, African-American and Hispanic students grew less or lost more ground than their European-American peers and students from poor schools grew less or lost more ground than comparable students from wealthier schools.

Methodology

Study data were supplied through Northwest Evaluation Association's (NWEA) Growth Research Database (GRD) one of the most expansive repositories of longitudinal data on student growth in the country. The database comprises data of interest to education researchers, including assessment data gathered from NWEA member districts. These data provide a detailed look at academic growth, and aggregated proficiency levels. In addition, the tests from which the data are derived are more sensitive for low-and high-performing students, giving a more accurate picture of achievement.

The overall study contains three component studies. The first study looks at group differences between average scores taken at one point in time and between average student growth over the course of one school year. The second study uses a more complex model to evaluate aggregate growth over two years. In the third study both status and growth are examined in more detail with results displayed for each score point. This reveals patterns that are obscured in summary data.

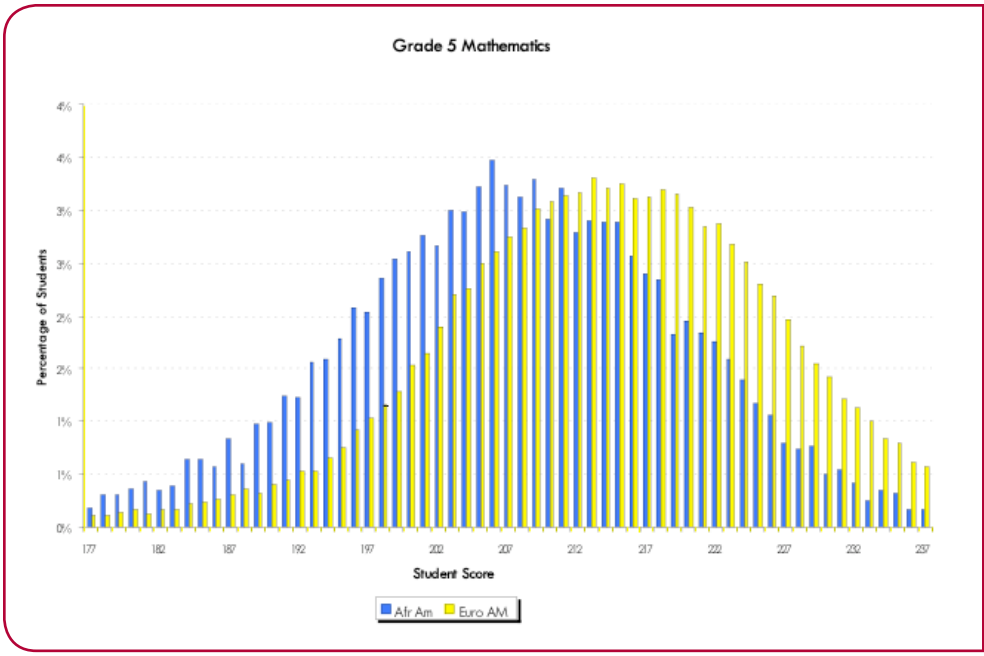
The first and third studies use data from a set of students in grades 3 through 8 who took Northwest Evaluation Association tests in fall of 2004 and spring of 2005. The second study used student test records from the beginning of grades 4 and 7 for both reading and mathematics for students beginning in fall, 2003 and continuing through spring, 2005. In addition each student's ethnic group membership and their school's percentage of free and reduced price lunch (FRL) were considered. The FRL percentages were obtained from the National Center for Education Statistics (NCES) Common Core of Data for 2002-2003.

Study Limitations

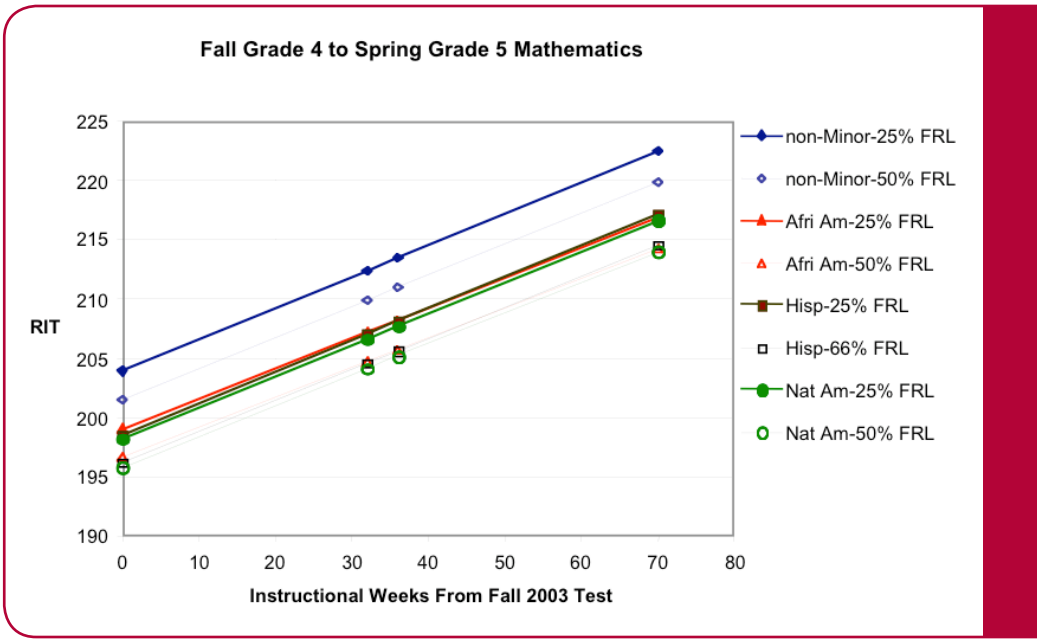
There are a number of limitations of the study. Other demographic attributes of students and schools could be included in the analysis. Including information about instruction and curricula may improve multilevel growth estimates and suggest methods for closing the gap. Limitations are discussed in more detail in the body of the study. *http://www.nwea.org/research/gap.asp*.

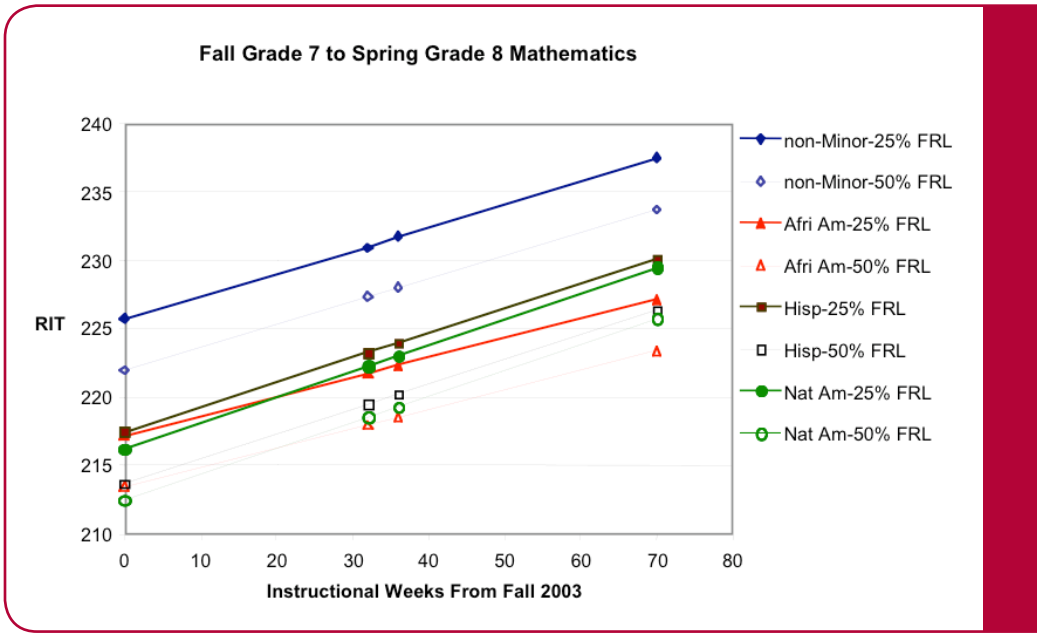
Outcome

The chart below shows the distribution of African-American and European-American 5th grade mathematics scores taken at a single point in time (status). This pattern of overlapping normal distributions is typical of those for both subjects at all grades for each paired comparison. Note that most students from both groups fall in the middle of the distribution. In discussing the gap, it is important to remember that, while poor and minority students are on average lower than their peers, most students have normal skills regardless of their demographic characteristics. This chart also shows that students throughout the range of scores, not just those at the bottom will need accelerated growth if the gap is to be closed.



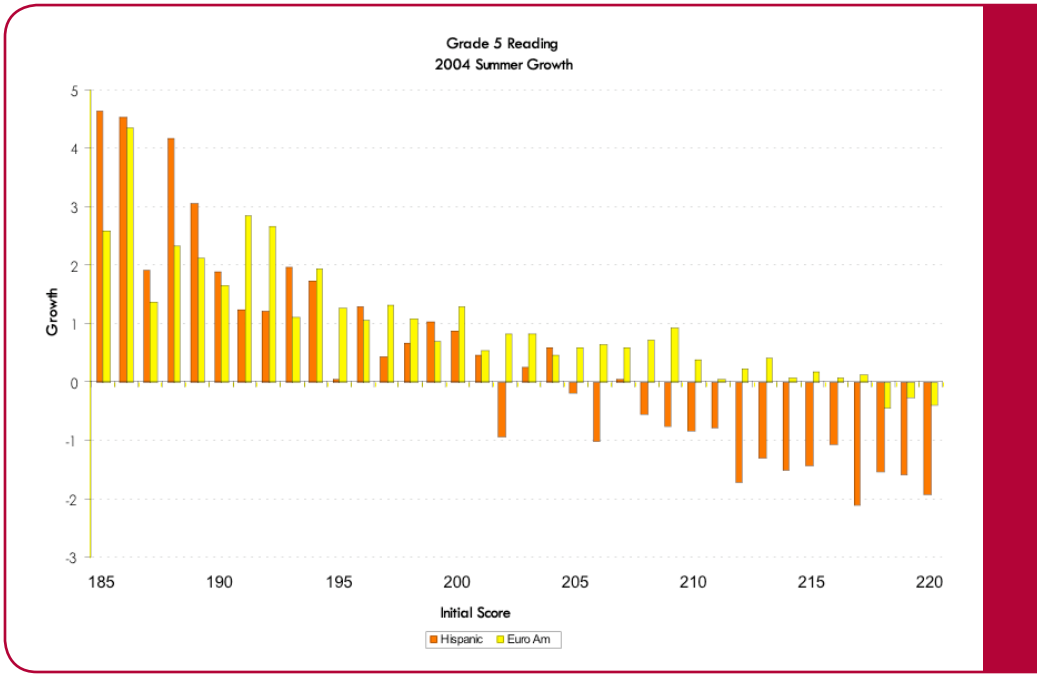
When aggregate growth and status are displayed it looks as if growth is comparable for groups that begin at different skill levels.





However, when growth is broken out by initial skill, it is evident that students in minority groups and those in high-poverty schools are not making as much progress during the school year as their peers. The graph below is typical of observed growth.

During the summer months African-American and Hispanic students and students in poorer schools do not fare as well academically as their peers. The chart below illustrates the pattern that is repeated at each grade level in both reading and mathematics for all of the groups studied.



Key Findings

The studies confirm earlier findings concerning student achievement status (looking at student achievement at one point in time) and extend our knowledge by looking at student growth across time. Key findings of the study are that:

- an achievement gap exists between European-American students and African-American students in each grade and subject studied.
- an achievement gap exists between European-American students and Hispanic students in each grade and subject studied.
- an achievement gap exists between students in low-poverty schools and those in high-poverty schools.
- achievement gaps exist among European-American students, Hispanic students, and African-American students in schools with similar levels of poverty.
- in mathematics, students enrolled in high-poverty schools tend to grow less academically during the school year than students enrolled in low-poverty schools.
- African-American students grow less academically during the school year than students in other groups. This difference is more noticeable in mathematics than in reading.
- African-American students and Hispanic students at all achievement levels lose more achievement during the summer than similar European-American students.
- students enrolled in high poverty schools lose more achievement during the summer than similar students who are enrolled in low-poverty schools.

In general, students enrolled in high poverty schools, African-American students and Hispanic students begin school with lower skills, grow less academically during the school year and lose more skills over the summer than their wealthier and European-American peers. This phenomenon is observed at each grade in the educational system. In the case of the African-American students in these samples, the concern carries added emphasis. Their rate of change over the two-year projection was the lowest of all groups.

The study found that no rate of change/growth in any minority group was sufficiently strong to close or reduce the observed achievement gap between groups of students in any substantive way before the end of their K-12 career.

Impact

The studies in this report replicated the findings of many previous studies that have looked at the achievement gap by investigating group status differences at a single point in time. They have expanded these earlier studies by including the growth of individual students and have taken the analysis even further by looking at individual student growth across more than just two points in time. Finally, they have focused more precisely on the growth of students with a particular starting point. These studies do not completely define the achievement gap, but they substantially expand our knowledge base.

From the three studies, it is clear that the achievement gap is not as straightforward as it is commonly portrayed. When viewed in the aggregate, the effects of minority and poverty status on growth are not as great as those on status. That is, both observed raw growth and true rates of change estimated by the hierarchical linear modeling (HLM) procedure show little differences in aggregate growth among ethnic groups or between students from poor or wealthy schools. This indicates that schools and teachers are giving equal attention to and are equally effective with these groups. However, the rate of growth is not sufficient to close the gap in scores. What we see as a gap in student performance in different groups is made up of thousands of individual students engaging academic content in thousands of unique ways. This study does not make policy recommendations, but it is hoped that it will illuminate the problem for policymakers and for the public as a whole.

Closing Remarks

Although research into causal factors or solutions are not part of this study, there have been several promising programs for students in economically deprived areas as well as for Hispanic and African-American students. Krueger and Whitmore (2001) showed that small class sizes had persistent academic and social benefits for African-American students. Kannapel, Clements, Taylor & Hibpshman (2005) find that high-performing high-poverty schools share characteristics of high expectations, academic focus, continuous assessment feedback and a caring, nurturing environment. Wenglinsky found that African-American and Hispanic students benefited by more classroom time spent on mathematics. In general, increased school time, including pre-school, extended school days and longer school years has been effective in narrowing the gap (Chaplin & Capizzano, 2006; Aronson, Zimmerman, and Carlos, 2005; Gordon, Bridglall & Meroe, 2005; Borman, Dowling, Fairchild, Boulay, & Kaplan, 2002). Education Trust has also identified successful schools.

Americans are deeply concerned about the achievement gap and have both the will to close it and the belief that it can be eliminated. We are optimistic that further studies can use the information presented here to suggest a course of action for closing the gap and make academic excellence for all students a reality.

NWEA
Northwest Evaluation Association
Partnering to help all kids learn

Northwest Evaluation Association (NWEA) is a national non-profit organization dedicated to helping all children learn. NWEA provides formative assessment, research-based educational growth measures, and professional training to improve teaching and learning. Partnering with school districts, states and other education organizations, NWEA delivers computer-adapted assessment services to more than 2,400 education agencies and two million students nationwide. Additionally, its Growth Research Database, the most extensive collection of student growth data in the country, provides a rich opportunity for the study of academic achievement. More information is available at http://www.nwea.org.

The full report is available at http://www.nwea.org/research/gap.asp.

5885 SW Meadows Rd, Ste 200; Lake Oswego, Oregon 97035;
503-624-1951, www.nwea.org

THE FULL REPORT

ACHIEVEMENT GAPS:

AN EXAMINATION of DIFFERENCES in STUDENT ACHIEVEMENT and GROWTH

Northwest Evaluation Association

Martha S. McCall | Carl Hauser | John Cronin | G. Gage Kingsbury | Ronald Houser

NOVEMBER 2006