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Using Correlates of Achievement to Close Achievement Gaps

“Achievement differences in school among subgroups of the population have deep roots. They arrive early and stay late—beginning before the cradle and continuing through to graduation, if that happy outcome is obtained.”

—Paul Barton, *Parsing the Achievement Gap*¹

In 1954, the United States Supreme Court held in the *Brown*² decision that separate and unequal education in public schools was unconstitutional. Policy makers hoped integrated public schools would level the playing field for all students and close racial and socioeconomic achievement gaps. But a half century later, significant achievement gaps remain, nationally and in Delaware.³ Many students continue to face systematic inequities in school and life experiences that contribute to achievement gaps.⁴ To make sustained progress in closing racial and socioeconomic achievement gaps, policy makers and educators need to focus on school and social factors associated with achievement differences. This *Education Policy Brief* describes a national study of research-based correlates of achievement, and explains how this information is being used in Delaware to help public schools close achievement gaps.

If you would like more information or if you have questions regarding this Education Policy Brief, contact

Dariel Janerette, J.D.

UNIVERSITY OF DELAWARE EDUCATION RESEARCH & DEVELOPMENT CENTER

Phone: 302-831-0259

E-mail: djan@udel.edu

Prepared by Dariel Janerette, J.D., and Steve Fifield, Ph.D., Delaware Education Research & Development Center. The *Education Policy Brief* series is available online at <http://www.rdc.udel.edu>.

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CORRELATES OF ACHIEVEMENT IN SCHOOL

Across the country, schools are exploring strategies to close achievement gaps. A recent report by the North Central Regional Educational Laboratory, *Perspectives on the Gaps: Fostering the Academic Success of Minority and Low-Income Students*, highlights the promising results of initiatives at several racially and economically diverse schools.⁵ These accounts of how to address achievement gaps suggest successful strategies include paying attention to factors in students' lives inside and outside of school that are associated with persistent learning differences among groups of students with different socioeconomic and ethnic backgrounds.

Parsing the Achievement Gap: Baselines for Tracking Progress, a 2003 report from the Educational Testing Service (ETS), distills a vast array of research to identify fourteen correlates of achievement, factors closely related to how well students perform in school. The report argues that the correlates of achievement “shed light on the sources of the gaps that show up in schools among students of differing race and ethnicity, and of different levels of family income or socioeconomic status.”⁶ Gaps in standardized test scores, graduation rates, and other academic indicators “mirror inequalities in those aspects of schooling, early life, and home circumstances that research has linked to school achievement.”⁷ Systematic monitoring of trends in these school and social factors can suggest how to best target efforts to close achievement gaps. In school districts and schools, information about correlates of achievement can inform decisions about instructional strategies that address achievement gaps. At state and national levels, policy makers can use the same information to target and monitor initiatives aimed at school and social factors most closely associated with student achievement.

In *Parsing the Achievement Gap*, fourteen correlates of achievement are organized in six categories related to learning:

Categories	Correlates of Achievement
Teaching and learning	1. Rigor of the curriculum 2. Teacher preparation 3. Teacher experience and attendance 4. Class size 5. Availability of appropriate technology-assisted instruction
The learning environment	6. School safety
The development environment	7. Weight at birth 8. Lead in the environment 9. Hunger and nutrition
The home learning connection	10. Reading to young children 11. Amount of television watching 12. Parent availability
The community	13. Student mobility
The home-school connection	14. Parent participation

These correlates of achievement are highlighted in the ETS report because their association with student achievement is well documented in the research literature. Furthermore, for most of the correlates there is evidence of gaps between racial minority and majority student populations, and between students from higher and lower-income families. The report argues that the correlates of achievement are “the best researched representatives of a group of related or similar factors” associated with student achievement and with racial and economic achievement gaps.⁸

A CORRELATES OF ACHIEVEMENT INDICATOR SYSTEM FOR DELAWARE SCHOOLS

The framework in *Parsing the Achievement Gap* is being used in an initiative to help Delaware public schools collect, organize, and use data to close achievement gaps. The Correlates of Achievement Data-Based Indicator System for Delaware Schools is a collaborative project of the University of Delaware Education Research & Development Center, the State Board of Education, the Delaware Department of Education (DOE), the Delaware Academy for School Leadership, and the Southern Regional Education Board. This initiative is developing a web-based data system to give school administrators easy access to the kinds of information about their students’ educational experiences that are most closely associated with achievement and achievement gaps.

The contents of the web-based indicator system are focused on the school-related correlates of achievement from *Parsing the Achievement Gap* (correlates 1-6 in the table on page 2). These correlates are being studied first because they are similar to information already collected by schools and the state. The following are brief descriptions of the nature and significance of the in-school correlates of achievement.

Rigor of the curriculum. Rigor of the curriculum, often referred to as ‘curriculum challenge,’ describes the level of student instruction (e.g., remedial, general, college prep, honors/gifted courses, and advanced placement courses). Research indicates that academic achievement is closely related to the rigor of the curriculum, and that minority student enrollment in rigorous courses is below that of white students.⁹

Teacher preparation. Teachers’ academic skills and knowledge affect students’ academic achievement. A 2002 study by the Education Trust found “the rate of out-of-field teaching in high-poverty schools is double that in low-poverty schools, and the rate for high minority schools is substantially above that for low-minority schools.”¹⁰

Teacher experience and attendance. Inexperienced teachers are more likely to be in schools with high minority enrollment, and minority children are more likely to be in schools with high teacher turnover and absentee rates. These teacher-related factors are all associated with lower student achievement. A National Center for Educational Statistics study states, “Children taught by a teacher with five years of experience make three to four months more progress in reading skills during a school year than do children taught by a first year teacher.”¹¹

Class size. Studies of class size demonstrate the benefits of smaller classes for minority and low-income students. Class sizes in schools with high minority populations and large numbers of students with limited English proficiency (LEP) are larger than class sizes in schools with lower minority and LEP populations.¹²

Technology-assisted instruction. Appropriately designed computer instruction has positive achievement effects on lower income students. However, minority and lower income students do

not have the same access to computer resources as their counterparts. A survey of teachers, conducted by the National Center for Education Statistics in 1999, revealed that students in high minority and lower income schools had less access to computer and Internet-based instruction than students in schools with lower minority enrollment and higher family incomes.¹³

School safety. Higher student achievement is linked to safe and orderly school environments. But a variety of studies show that minority students and those from low income families are more likely to be exposed to disruptive student behavior, to have to contend with gangs in school, and to fear attack in school or on the way there.¹⁴

Parsing the Achievement Gap defines the following additional correlates of achievement as ‘before and beyond school’ factors. These correlates are not currently included in Delaware’s Correlates of Achievement Indicator System, but the system might later be expanded to address some or all of them.

Birth Weight. There is a connection between low birth weight and low academic performance. According to Child Trends Data Bank, “children aged 4-17 who were born at low birth weight were more likely to be enrolled in special classes, to repeat a grade or fail in school than children who were born at normal birth weight.”¹⁵

Lead Poisoning. Lead poisoning adversely affects children’s academic achievement. A 1999 US General Accounting Office (GAO) report, *Lead Poisoning: Federal Health Care Programs Are Not Effectively Reaching At-risk Children*, found lead poisoning levels that exceed the Centers for Disease Control’s standard cause “reductions in IQ and attention span, reading and learning disabilities and behavior problems.”¹⁶ Minority and low-income children are more likely to be exposed to lead paint than other children because they are more likely to live in older homes that still have lead paint.

Hunger and Nutrition. Proper nutrition is necessary for healthy development of the mind and body. A study of urban kindergarten students concluded that students who were underweight had lower test scores.¹⁷ Another study found that students from lower income families who received a free breakfast at school gained about three percentile points on standardized test scores compared to lower income students who did not have breakfast at school.¹⁸

Reading to Young Children. Reading to young children is associated with improved academic performance in school. Minority children are read to less than white children, and children from lower income families are read to less than children from higher income families.¹⁹

Television Watching. Data from the National Center for Educational Statistics show that a substantially higher percentage of minority than white fourth-graders watch six or more hours of television every day.²⁰ While the impact of television watching on school performance is unclear, there may be reasons for concern. According to Child Trends Data Bank, “when students are watching television excessively, they are less likely to be spending time doing homework, reading, after-school activities, or other intellectually stimulating activities in which they are active participants...”²¹

Parent Availability. The 1988 National Educational Longitudinal Survey found that students in single mother households performed lower on standardized tests than students in two-parent households.²² Minority children are more likely than white children to live in single-parent households, and single-parent households are more likely to be in poverty. The impact of parent

availability is likely related to the effects of both parental involvement and family income on student achievement.

Parent Participation. According to a Child Trends Data Bank research summary, “Students with parents who are involved in their school tend to have fewer behavioral problems and better academic performance, and are more likely to complete secondary school than students whose parents are not involved in their schools.”²³ There is a connection between a welcoming school environment for parents and high parental involvement. A 2003 New Jersey poll found “urban and minority parents are far more likely to feel unwelcome in their children’s schools; 20 percent of suburban parents feel unwelcome, compared to 44 percent of urban parents.”²⁴

Student Mobility. Changing schools frequently slows students’ academic progress. A US GAO report concluded that minority students and those from lower income families change schools at two-three times the rate of white students and those from higher income families.²⁵

Development of the Correlates of Achievement Indicator System in Delaware began with a pilot study in one middle school. The study confirmed that much of the information needed for the correlates of achievement database was already being collected by schools and the state, but needed to be efficiently organized so that it could be used by decision-makers. Available school and classroom data included course offerings by content area, enrollment patterns, class size, course rigor, and disciplinary actions.

The Education R&D Center and Delaware DOE have since developed a prototype indicator database that integrates information from Delaware’s Data Warehouse system. The indicator system will be implemented in Delaware middle schools during this school year. Plans are to implement the system in high schools in 2005-2006 and in elementary schools in 2006-2007. Once in place in grades K-12, the indicator system may be expanded to include ‘before and beyond school’ correlates (correlates 7-14 in the table on page 2), post-secondary data, and early childhood data.

TRACKING ACHIEVEMENT GAPS IN DELAWARE

In a complementary initiative sponsored by the Delaware State Board of Education, the Education R&D Center is developing a reporting system to help policy-makers and the public understand how well schools are doing in closing achievement gaps. When this project is fully implemented, the Education R&D Center will annually create a report for every school district and public school in the state. These reports will illustrate how different student groups perform on the Delaware Student Testing Program. The reports will simplify data currently presented by the state in its No Child Left Behind reports and provide a user-friendly source of information. Achievement data will be disaggregated by racial, income, English language proficiency, and special education status. Graphic presentations will include longitudinal trends of achievement differences among student groups. The first report will be posted on the Education R&D Center website later this spring (see <http://www.rdc.udel.edu>).

POLICY QUESTIONS FOR CONSIDERATION

1. What program evaluation and decision-making practices need to be in place in districts and schools for them to make best use of data from the Correlates of Achievement Data-Based Indicator System?

2. What can policy-makers do to encourage integrated and systemic efforts to address in-school and out-of-school factors that are associated with achievement gaps?

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