School Start Times Found to Affect Student Achievement

North Carolina study suggests a one-hour later start time in middle school would reduce achievement gaps

CAMBRIDGE, MA – In recent years, many parents have called for later start times in middle- and high-school, yet there has been little rigorous evidence to date directly linking school start times and academic performance. A new study finds that delaying middle-school start times by one hour, from roughly 7:30 to 8:30 a.m., would increase standardized math and reading scores by 2 to 3 percentile points. The effects are more than twice as large for students in the bottom third of test-scorers than for those in the top third, suggesting that later start times may be an especially relevant policy change for districts striving to close achievement gaps.

The study of middle school students in the Wake County, North Carolina public school system (WCPSS), the 16th-largest public school district in the United States (146,687 current students), was conducted by economist Finley Edwards. His report, “Do Schools Begin Too Early? The effect of start times on student achievement,” will appear in the May issue of Education Next and is available online at www.educationnext.org.

The effects of changes in start times “are large enough to be substantively important,” Edwards states. For example, the effect of a one-hour later start time on math scores is roughly 14 percent of the black-white test-score gap, 40 percent of the gap between those eligible and those not eligible for free or reduced-price lunch, and 85 percent of the gain associated with an additional year of parents’ education.

“Results from Wake County also suggest that later start times have the potential to be a more cost-effective method of increasing student achievement than other common educational interventions such as reducing class size,” notes Edwards. If all schools started at the same later time, for example, the cost in Wake County for moving each student in the two earlier bus times to a single, later bus schedule would be roughly $150 per student each year. By comparison, a Tennessee study of class sizes finds that reducing class size by one-third increases per pupil expenditures by $2,151 per student each year (1996 dollars).

The study also finds that later middle school start times are associated with reduced television viewing, increased time spent on homework, and about 25 percent fewer absences. The benefits of a later start time are seen particularly among students ages 13-14 and appear to persist through at least the 10th grade. Students whose middle schools started one hour later when they were in 8th grade continue to score 2 percentile points higher in both math and reading when tested in grade 10.
The study’s finding that the start-time effects are pronounced beginning at age 13 is consistent with the theory that hormonal changes in adolescence (typically beginning at 13 or 14) make it difficult for students to get enough sleep when school starts early, leading to sleep deficiencies that many studies have found to be associated with a decrease in cognitive performance.

Three methods were used in the research: 1) comparing the reading and math scores of students with similar characteristics (such as race, years of parents’ education, and free or reduced-price lunch status) who attend schools that are similar, except for differing start times; 2) examining the district’s 14 middle schools that changed their start times by 30 minutes or more during the study period (2000-2006), and comparing test scores at the same school for respective grade levels when start times changed; and 3) analyzing individual student achievement before and after start times changed (e.g., comparing the scores of 7th graders at a school with a 7:30 start time in 2003 to the scores of the same students as 8th graders in 2004, when start time was 8:00).

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