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Teaching to the Test in a Minority District

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Introduction

The No Child Left Behind Act [NCLB] mandates testing of all high school students in reading and mathematics by school year 2005-06 and in science by school year 2007-08. Schools are required to make incremental increases in test scores in all students, including minority students, poor children, students with disabilities, and English language learners, setting one hundred percent proficiency as its goal by 2014. Schools that do not make progress in test scores will be subject to punitive and remedial actions.

Schools have responded to the high stakes requirements. One study found that the tests seemed to be encouraging schools to add remedial and other special courses for students who have failed or are at risk of failing the exams (Wise, et al., 2003). Other studies found that content not covered by the tests was not taught. Teachers were encouraged to cover breadth of content rather than teaching fewer topics in more depth (Clarke, et al., 2003; Pedulla, et al., 2003). There is some evidence, however, that indicates that many remedial courses have only limited effectiveness in helping students master the standards. (Wise et al., 2003).

Statement of the Problem

The purpose of this study is to determine if low and middle achieving students in a predominately minority high school of lower socioeconomic status, defined by eligibility for free or reduced-price school lunches, placed in remedial mathematics courses that “teach to the test,” have lower test scores than low and middle achieving students of similar socioeconomic status placed only in academic courses. A secondary
purpose is to determine if successful completion of courses taken by those students correlates to proficiency on corresponding test clusters.

*Review of the Literature*

The National Center for Educational Statistics [NCES] in February 1995 reported that eighth graders taking algebra courses had higher scores on standardized tests than students in pre-algebra, which in turn had higher scores than students taking general eight grade mathematics courses. This can be attributed to the fact that higher achieving students are tracked into more advanced classes (Gayler, Chudowsky, Kober, & Hamilton, 2003). But one study reported that scores for students formerly in the lower tracks did improve when the students were moved to mixed-ability groupings, although the scores of average and higher-achieving students decreased somewhat (Brewer, Rees, & Argys, 1996). Robert Mare estimated that after controlling for prior test scores, race or ethnicity, and socioeconomic status, high school seniors in the college-preparatory track scored approximately eight percent higher on their mathematics exams than seniors in the non-college track (Brewer et al.). Students who took advanced mathematics courses showed greater gains in skill during middle school and during high school. On tests administered nationally, students in academic tracks outperform students in general tracks, who in turn outperform students in vocational tracks (Natriello, Pallas, & Alexander, 1989). Those who did not take advanced courses showed greater gains on test items dealing with computational skills than higher-level skills (Rock & Pollack, 1995).

Twenty-nine states and the District of Columbia require students to complete three or more years of mathematics. However, the major increase from such requirements in mathematics was in courses such as pre-algebra, Algebra I, basic geometry, and
computer literacy, not in Algebra II, trigonometry and calculus (Blank & Engler, 1992; Clune & White, 1992; Chaney, Burgdorf, & Atash, 1997). Few states require any mathematics beyond Algebra I (Achieve Inc.). These requirements affected the quantity of mathematics and science courses taken but not the level; that is, students often take additional course work only at an introductory level. Graduation requirements have an effect on course work generally and encourage low-ability students only to take basic academic course work (Finn, Gerber & Wang, 2001).

Inadequate student motivation and preparation, lack of prerequisite skills and of strong parental support can limit the efficacy of courses. In a report prepared by the Human Resources Research Organization for the California Department of Education, Wise et al. found that in supplemental and remedial courses, more than half the teachers reported that most of their students did not yet have prerequisite skills, while seventy-two percent of teachers in remedial courses targeting special education students. There was no clear evidence that teacher qualification was an important factor. Additionally, high schools with large numbers of low-achieving and economically disadvantaged students are associated with lower student achievement above and beyond the disadvantage individual students experience from low socioeconomic and low achievement status at entry (Rock & Pollack, 1995).

Teachers under pressure to raise scores often teach test-taking strategies and how to respond to practice test items, develop curricula that match the tests, and coach students on items similar to those that will be on the test. Teachers of minority students especially spend more time preparing for tests, reviewing concepts on tests, and were
more likely to use test items from tests administered in previous years to provide students with more practice (Amrein & Berliner, 2002).

But, “teaching to the Test” may not necessarily be depriving students of a curriculum that benefits them. One study found that when students were administered a low-stakes test that did not affect their academic standing, tracking, or possibility for college or graduation, scores had a high correlation to high-stakes test (Green, Winters & Forster, 2003). Using a Pearson’s correlation to measure how similar the results from the high-stakes tests and low-stakes tests were, the study found a 0.96 correlation between the high-stakes Florida Comprehensive Assessment Test (FCAT) and the low-stakes Standford-9. Proficiency on the third grade FCAT was required for students to pass the third grade into the fourth grade, and proficiency on the tenth grade FCAT was required in order to obtain a high school diploma. Teachers and administrators also were held accountable that their students pass the FCAT. The State graded schools from A to F on based on FCAT results that are very widely publicized. It also offered vouchers to all students in schools that have earned an F on their report cards in any two of the previous four years. Although the study had been criticized for not being a predictor of actual student learning or of the performance of teachers or schools, and failed to prove that "teaching to the test” for the high stakes test is compatible with good instruction (Braams, 2003), it indicated that the results on the high stakes test can be a good predictor of success in other assessment settings.

On the other hand, a weak correlation between classroom grades and scores on high stakes test led W. Haney to question the validity of the Texas Assessment of Academic Skills (TAAS). Although Haney found a moderate correlation of 0.45 to 0.60
in a previous study (Haney, 1993, p. 58), he found only a 0.32 correlation between TAAS scale scores and students' end-of-year grades (Haney, 2000). Another study even questioned whether grades in Florida were inflated, not finding as strong a correlation between end of year grades and FCAT scores as was found between low-stakes test and the FCAT (Figlio & Lucas, 2001).

Taking academic courses in higher mathematics are not a prerequisite for proficiency on many high-stake tests. Based on an analysis of graduation test in of six states, Achieve Incorporated, a nonprofit organization advocating standards based reform, reported that fifty-six percent of questions falling under the algebra standard required only pre-algebra skills. Less than one third of the questions related to linear equations and functions, typically associated with Algebra I. The same low level of skill was found to be required on questions falling under the geometry standard. About half the questions dealt with two-dimensional figures, including basic measurements and properties of shapes (Achieve, 2004).

The State of New Jersey began administering the High School Proficiency Assessment (HSPA), a standards-based exit exam that is aligned with the State Core Curriculum Content Standards, in March of 2002. New Jersey also requires eight grade students to take the General Education Proficiency Assessment, which is often used to make decisions in high school course tracking. The State uses the first administration of the HSPA, in eleventh grade, to meet the testing requirements of the No Child Left Behind Act. If students do not pass a section of the exam on the first administration, they are permitted two opportunities to retake it by the end of the 12th grade. Students also have the option to go through the Special Review Assessment (SRA), which allows them
to demonstrate proficiency via Performance Assessment Tasks (PATs). The PATs are not timed assessments, which are administered after targeted instruction in the deficient skill areas.

The achievement levels are advanced proficient 250-300, proficient 200-250, and partially proficient 100-199. Students must achieve at the proficient level in order to pass. Student reports of results include subscores (skills and content) under each major subject area.

New Jersey does not fully fund remediation services for students who do not pass the high school exit exam. School districts are required by the state to provide remediation services for these students and often incur the majority of the remediation cost. Students are expected to participate in remedial classes often held after school. The state provides training for teachers on topics such as how to interpret test results, and in the past has provided training to help teachers become familiar with the content of the HSPA. The state has also developed information guides explaining the test. For students, the state has produced study guides (Amrein & Berliner, 2002b).

Although there is evidence that exit exams are associated with higher dropout rates (Gayler, Kober & Hamilton, 2003), after the HSPA was implemented, the dropout rate decreased, while at the same time New Jersey’s graduation rate increased as compared to the nation. This might be an indication of the success of remedial instruction before the test, or the success of the remedial SRA program after the test.

HSPA passing rates for first time test-takers in 2001-2002 in Math was 69%. Of that number, subgroups were as follows: White 79%, Black 36%, Hispanic 45%, English Language Learners 23%, (Gaylor, Chudowsky, Kober, & Hamilton, 2003).
If low-stakes tests are an indicator achievement, as shown by the correlation between low-stakes test and the State mandated tests in Florida ((Green, Winters & Forster, 2003), and grades and passing rates are only moderately inflated, then passing grades in remedial mathematics courses such as pre-algebra, basic and integrated mathematics should correlate to successful answers on basic mathematics questions on the New Jersey HSPA. Additionally, if a majority of the HSPA questions are indeed basic mathematics as reported (Achieve, Inc., 2004), then students who successfully passed those course should score proficient on the HSPA. A lower track student or a higher track student necessitating supplemental remedial courses, should not be at a disadvantage to those only in higher tracks.

Statement of the Hypothesis

Despite literature to the contrary, students in a high school with a low socioeconomic standing, defined as that in which a majority of students are eligible for free or reduced-price lunches, placed in remedial courses, such integrated mathematics, applied math (MAP), and junior informal geometry, which “teach to the test,” will score higher on the New Jersey High School Proficiency Assessment (HSPA), required for graduation, than students in the same high school with similar eighth grade GEPA scores who are only placed in academic courses such as a regular Geometry and Algebra II.
References


