

BLACK STUDENT IMPROVEMENTS ON THE TAAS EXAM

A REPORT OF THE
TEXAS EDUCATIONAL EXCELLENCE PROJECT

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Between 1992 and 1997 the pass rate for black students on the TAAS exam increased by approximately 30 percentage points. Despite these gains, the pass rate for black students in 1997 was only 55.7 percent trailing the pass rate for white students (84.9 percent) by a substantial margin. The first step in improving black tests scores is to identify school districts that do a better job of educating black students.

The Texas Educational Excellence Project used a statistical technique called multiple regression to identify the 25 best school districts for black students. The approach controls for the number of economically disadvantaged students, black poverty, the education level of black families, school finances, class size, teacher experience, teacher qualifications and other factors that might affect student performance. Comparing school systems requires that some adjustment be made in how difficult the task is that each district faces. The accepted way to do this is with an education production function. The study then compared how well school districts actually did to how well the statistical model predicted that they would do. The difference indicates how well the district does in teaching black students.

An Education Production Function

School districts are organizations; they receive inputs (resources and students) from their environment and produce outputs (educated students among others). A vast literature has

designated a variety of education production functions whereby the outputs of school systems can be evaluated relative to their inputs (Burtless 1996; Smith 1995; Hanushek 1986; 1989; 1996).

Our dependent variable is the school districts pass rate for black students on the TAAS exam. Texas requires all school districts to administer exams to students in several grades on an annual basis.

The independent variables fall into four general types-- environmental constraints, financial resources, teacher qualifications, and district policies. Environmental constraints are factors that restrict agency performance; in the case of education the key constraint is how difficult/easy it is to educate students. The measures of constraint, all correlated with poverty, are the percent of poor students (defined as those eligible for free school lunches), the percentage of blacks over age 25 with a least a high school diploma, and the percentage of black families that live in poverty. The education variable should be positively related to student performance and the other two measures should be negatively related to black pass rates.

Financial resources are the basic raw materials of any organization's attempt to meet its goals. Three measures of financial resources are included--per student instructional funds, average teacher's salary, and percent of funds received via state aid. These represent total resources devoted to

education, the attractiveness of teaching positions in a competitive market place, and state efforts to overcome the unequal distribution of local financial resources. All relationships should be positive.

The two teacher qualification measures (or lack thereof) are the percent of teachers who hold a temporary certification in a subject specialty (as opposed to a permanent certification) and the average number of years of teacher experience. The relationship for noncertification should be negative, but the predicted relationship for experience is ambiguous (see Meier, Gill and Waller 1997).

Finally, the education production function contains three policy measures--the percentage of students taking gifted classes, class size, and student attendance (percent attending on an average day). Performance should be positively related to gifted classes and attendance and negatively related to class size.

Texas has a large number of school districts; many are very small or deal with a homogeneous student body. In an effort to use a set of organizations relatively similar in the task that they perform, we have restricted our analysis to school districts with a least 1000 students and at least 10 percent black students.

The data analysis is a pooled time series with data from the

years 1991 through 1997. In any pooled time series one needs to control for serial correlation resulting from any trend in the variables over time. A series of dummy variables are introduced to achieve this.

The basic production function is shown in table 1. Since many of the individual variables are highly correlated with each other and since we are not concerned with the relationships between these variables and black pass rates, we will not interpret these coefficients. Our objective is merely to use the education production function to predict how well each school should do based on the types of inputs that the school district has. We then compare how well a district should do to how well it actually does. This difference is our measure of overall quality, how much better or worse a district does than would be expected.

As an illustration, the model predicted that the Aldine school district would have an average black pass rate of 38% from 1991-97. Aldine's actual pass rate of 44.3 represents a 6.3% improvement over this standard. Based on this method, the top ranked school district for black students in Texas was Ferris with a rating of +15.2% followed closely by Hooks with 15.1%. The top 25 districts are shown in table 2. The first column is the numerical score on which the districts are ranked. The second column is the average pass rate for black students from

1991 to 1997 in this district, and the third column is the black student pass rate for 1997.

Conclusion

This study identified those school district in Texas that performed better than expected on the pass rate for black students. These districts should serve as role models for other districts in Texas. What is needed is an examination of the programs in these districts to see what they do that other district do not do. If such programs are identified, then they could be transfer to other districts with an overall benefit to black students.

Although this study examined exemplary districts, that should not detract from the relatively low pass rate for black students in Texas. A great deal of additional improvement is needed in these districts as well as other districts to close the test gap between black and Anglo students. Substantial progress has been made since 1991; a great distance remains to be traveled.

The Texas Educational Excellence Project (TEEP) is a joint program of Texas A&M University and the University of Texas-Pan American. TEEP seeks to apply scholarly research to educational policy issues in order to make recommendations for greater

quality and equity in Texas school systems.

Table 1. The Education Production Function

Dependent Variable = % of black students passing the TAAS

| <u>Independent Variable</u> | <u>Coefficient</u> | <u>Standard Error</u> |
|-----------------------------------|--------------------|-----------------------|
| Low Income Students | -.0900 | .0226 |
| Gifted Classes | .0425 | .0731 |
| Attendance | 1.5624 | .2792 |
| Teacher Salaries (000) | .8220 | .2104 |
| Class Size | -.2581 | .2627 |
| NonCertified Teachers | -.0749 | -.0823 |
| Teacher Experience | -.0393 | .1879 |
| State Funding Percent | .0393 | .0143 |
| Instructional Funding Per Student | .0025 | .0012 |
| Black Education (25+) | .1973 | .0425 |
| Black Poverty | -.0936 | .0284 |

R-Square .67

Omitted are coefficients for individual year dummy variables.

Table 2. The Top 25 Texas School Districts for Black Students

| <u>District</u> | <u>Score</u> | <u>Average TAAS</u> | <u>1997 TAAS</u> |
|-------------------------------|--------------|---------------------|------------------|
| 1. Ferris | 15.2 | 48.8 | 74.5 |
| 2. Hooks | 15.1 | 51.3 | 65.0 |
| 3. Sulphur Springs | 13.3 | 50.9 | 69.5 |
| 4. Tatum | 10.3 | 46.6 | 61.1 |
| 5. Sweeny | 10.2 | 50.0 | 74.6 |
| 6. Diboll | 10.0 | 38.5 | 49.1 |
| 7. Pittsburg | 9.8 | 45.1 | 73.6 |
| 8. Garland | 9.8 | 50.8 | 65.0 |
| 9. New Boston | 9.7 | 48.8 | 70.3 |
| 10. Linden-Kildare | 9.5 | 41.1 | 83.5 |
| 11. Daingerfield-Lone Star | 9.3 | 46.1 | 65.3 |
| 12. Connally | 9.1 | 50.0 | 73.4 |
| 13. McGregor | 8.1 | 47.8 | 75.4 |
| 14. Wilmer-Hutchins | 7.3 | 41.7 | 64.0 |
| 15. Hallettsville | 7.1 | 42.9 | 61.7 |
| 16. Liberty Eylau | 7.0 | 43.7 | 64.3 |
| 17. Manor | 6.8 | 40.2 | 61.0 |
| 18. Aldine | 6.3 | 44.3 | 67.4 |
| 19. Del Valle | 6.2 | 41.8 | 63.5 |
| 20. Woodville | 6.2 | 39.7 | 60.8 |
| 21. Hardin-Jefferson | 5.9 | 39.7 | 57.7 |
| 22. Edna | 5.9 | 40.6 | 63.9 |
| 23. Texas City | 5.7 | 42.0 | 65.4 |
| 24. Randolph Field | 5.4 | 59.1 | 79.4 |
| 25. Houston | 5.4 | 41.0 | 59.5 |
| STATE AVERAGE | 0.0 | 36.5 | 54.9 |

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