Academic Accountability In Texas Public Schools: 2003-2007

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ABSTRACT

This study examines factors affecting test scores in a sample of thirty-seven Texas public high schools from 2003 to 2007 since the implementation of the No Child Left Behind (NCLB) Act of 2001. The schools were chosen based upon similar tax rates and district sizes. The Texas Assessment of Knowledge and Skills (TAKS) test was implemented in 2003 to measure the performance of Texas public high school students. Schools are rewarded for high performance based upon the student scores on the TAKS test, which is administered once per year. Much of the debate on student and school accountability has centered on the importance of student performance on the standardized TAKS test. Those who oppose testing say that teachers and administrators may simply narrow the curriculum and teach the test. Proponents of testing feel that accountability will give administrators and teachers incentives to help students learn. As a result, many school districts in Texas have increasingly put pressure on teachers to improve test scores.

Keywords: No Child Left Behind (NCLB), Education Performance, Average Yearly Performance (AYP), Educational Accountability, standardized testing, Texas Assessment of Knowledge and Skills (TAKS)

INTRODUCTION

Definition of NCLB and AYP

Developing assessment-based accountability programs was one of the most important features of education reform in the Bush administration. By the year 2002, over 30 states offered rewards or reprimands to schools based upon student scores on standardized test. Passing and enacting of the 2001 No Child Left Behind Act (NCLB) included extensive testing requirements, making it likely that accountability policies play an important role in public education (Sims, 2005).

The No Child Left Behind Act of 2001 (NCLB) is designed to identify schools that are consistently failing to serve poor and minority students and to investigate school-based and systematic remedies so that all students are provided with access to a high-quality, standards-based education. At the high school level, the intent of NCLB is to identify high schools where students are not achieving proficient levels of academic skills and/or graduating with a regular high school diploma in the standard number of years.

Each state was given the choice for starting the NCLB program, either in the 2002 or 2003 school year. After implementation, each school was to measure its yearly academic progress. Eventually schools hope to fulfill the goal of proficiency in math and reading for all students by 2014. If schools fail to make adequate yearly progress (AYP) toward proficiency and graduation goals within the framework established by their states, the NCLB program will require schools and districts to take action to improve the school's academic status and provide students with access to enhanced or alternative educational options (Balfanz, 2007).

LITERATURE REVIEW

One school of thought argues that the NCLB policy will lead to a narrowing of the curriculum, or teaching to the test, which decreases overall learning and is unfair to underprivileged students. Another school of thought argues that teaching to the test content is appropriate if tests are properly constructed to measure achievement. They claim that a measure for student achievement provides teachers and administrators with incentives to help students learn (Sims, 2005, McLaren and Farahmandpur, 2006).

Also, a sanction policy is in place for those schools that do not meet AYP. Gallagher (2004) claims that input from schools account for only 25% of the variance contributing to student achievement. The other 75% is largely depending on the contribution of the individual student's family and environment. Any extra effort made by the schools to meet AYP may be very difficult (Gallagher, 2004). Also, according to Primont and Domzlicky (2006), failing schools (those not meeting AYP) might become more managerially inefficient by obeying the sanctions set forth by the state and federal government, as it would add an extra financial burden to schools. Thus, it will become more difficult for those schools to reach the required educational goals.

SIGNIFICANCE OF STUDY

As previously mentioned, according to NCLB, a school will face sanctions if it cannot make adequate yearly progress (APY). More specifically, if a school doesn't meet the AYP requirement for 2 consecutive years, a student may transfer to another school in the same district that meets the AYP requirement. For schools that do not meet the AYP requirement for 3 consecutive years, additional tutoring services have to be provided to those low-performing students (Education Trust, 2004).

From a school's operating perspective, it is important to identify which operating factor(s) has a significant influence on education achievement. In Texas, the TAKS (Texas Assessment of Knowledge and Skills) test is the testing method for complying with NCLB standardized test requirements. In this paper we will attempt to identify which factors may help improve TAKS test scores. Identification of input factors that have the most significant influence on the TAKS score will provide valuable information to schools to formulate a strategic response for those schools struggling to meet their AYP.

DATA ANALYSIS AND METHODOLOGY

Data Collection

Data was collected from the Texas Education Agency website; a public data set that not only provides extensive information on staff, programs, and demographic information, but also a wide range of student performance scores for each school and district as well. Thirty-six independent school districts were selected with similar tax rate and district size in the Central Texas area. In order to examine the possible changes brought about by NCLB, we collected data over a five year span, starting in 2003 and ending in 2007.

Methodology used to analyze data

An Analysis of Student Achievement

In an effort to further develop the field of research in this area, the authors developed a model to describe the determinants of student achievement on the Texas TAKS test. Toward this end, a regression model was developed to identify independent variables that have been observed to influence student achievement. These include attendance rate, economically disadvantaged students, number of students per teacher, teacher turnover rate and, total instructional expenditure per student.

These variables are consistent with other studies found in the literature discussing school operating efficiency and education productivity (Hanushek, 1986, Groskoff and Moutray, 2001). The dependent variable, as mentioned above, is the passing rate of TAKS exam. The TAKS (Texas Assessment of Knowledge and Skills), is a

standardized test used in Texas primary and secondary schools to assess students' attainment of reading, writing, math, science, and social studies skills required under Texas education standards.

Independent Variables

Attendance Rate (ATTEND). The literature in this area suggests that students who attend class regularly should score higher than students with a history of truancy. Regular attendance imparts more knowledge of the school's core body of knowledge, and allows more time to practice the skill-sets necessary to demonstrate mastery of grade appropriate material. The attendance rate variable was measured by the proportion of total class days attended by each student. The effect of this variable was expected to be positive on the dependent variable, student achievement. As the attendance rate improves for a class, the student achievement scores are expected to increase.

Economically Disadvantaged Students (ECON-DIS). It is postulated that the greater the number of economically disadvantaged students in the class taking the test, the lower the student achievement scores will be on the TAKS tests. The status of economically disadvantaged student is determined by federal guidelines, and the variable was measured by the number of students who met the guidelines. The effect of this variable was expected to be negative on the dependent variable, student achievement. As the number of economically disadvantaged students increase in a class, the student achievement scores are expected to decrease.

Number of Students Per Teacher (STUD/TEACH). In the case of larger class sizes, the students may have less opportunity for intensive one-on-one interaction with the teacher, thus creating the possibility for the lack of understanding of key learning concepts. This could lead to lower scores on the achievement tests. The number of students per teacher variable was measured by the ratio of students to teacher in the tested classes, and its effect was expected to be negative upon the dependent variable, student achievement. As the number of students per teacher increases for a class, the student achievement scores are expected to decrease

Teacher Turnover Rate (TEACH_TURN). Teacher turnover is predicted to be a significant factor in student achievement. The higher the turnover rate, the shorter the time period that a teacher spends with a class of students. Therefore, the lower the turnover rate, the greater the probability that a teacher is able to establish a relationship with the class of students and contribute to their success on the achievement test. The teacher turnover rate variable was measured by the ratio of teacher turnover. The effect of this variable was expected to be negative on the dependent variable, student achievement. As the teacher turnover rate increases for a class, the student achievement score is expected to decrease.

Total Instructional Expenditure Per Student (EXP/STUD). The literature chronicles the efforts of many school districts to increase student achievement by spending large sums of money to hire consultants and obtain training systems for faculty and students alike. The authors postulate that increases in student achievement scores should accrue to the schools that are able to hire and train the best and brightest faculty to teach their students. Total instructional expenditure per student was measured by the dollar amount, per student, spent on instruction by the school. The effect of this variable was expected to be positive on the dependent variable, student achievement. As the total instructional expenditure per student increases for a class, the student achievement score is expected to increase.

Table 1 summarizes the independent (measurement) variables and the expected propositions related to their effect on the TAKS test score.

Table 1. Independent Variable Measurements

PROPOSITIONS (Effect On TAKS Score)	MEASUREMENT VARIABLE	VARIABLE NAME	TYPE OF MEASUREMENT VARIABLE
P_1 (+)	The attendance rate	ATTEND	Continuous
P_2 (-)	Economically Disadvantaged Students	ECON-DIS	Continuous
P_3 (-)	Number of Students per Teacher	STUD/TEACH	Continuous
P_4 (-)	Teacher Turnover Rate	TEACH/TURN	Continuous:
P_5 (+)	Total Instructional Expenditure per Student	EXP/STUD	Continuous

The theoretical model is displayed in Figure 1. The model illustrates the assumed relationships between student achievement and the independent (measurement) variables.

THEORETICAL MODEL

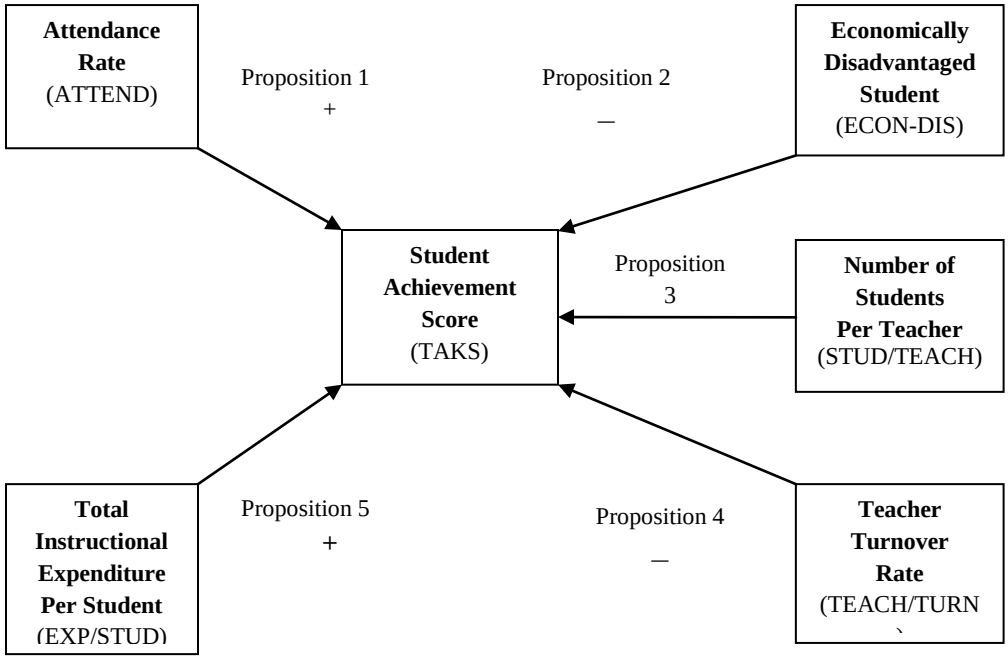

Figure 1. Theoretical Model

SPSS software was used to evaluate the independent variables and determine those variables that have the most significant influence on the dependent variable. The results of regression analysis indicate that consistently, three independent variables were significant at least a 0.1 level, for predicting the TAKS test scores. The independent variables of significance were economically disadvantaged students, attendance rate, and total instructional expenditures per student.

The statistical revised model can be illustrated as:

TAKS = -0.695(ECON-DIS) + 0.222(ATTEND) – 0.192(EXP/STUD) – 222.110

The number of economically disadvantaged students was negatively related to the TAKS score. In other words, the higher percentage of disadvantaged students in a school district the lower the TAKS scores. This was intuitively expected.

Attendance rate was positively correlated to the TAKS score. The higher the attendance rate of students, the higher the TAKS score. This is also intuitively expected.

The astounding result was that the total expenditure per student was negatively related to TAKS score. The higher the expenditure is on instruction, the lower the score. This was not intuitive.

The revised model is displayed in Figure 2. It shows that the teacher turnover rate and the number of students per teacher are not significant at a .01 level.

REVISED MODEL

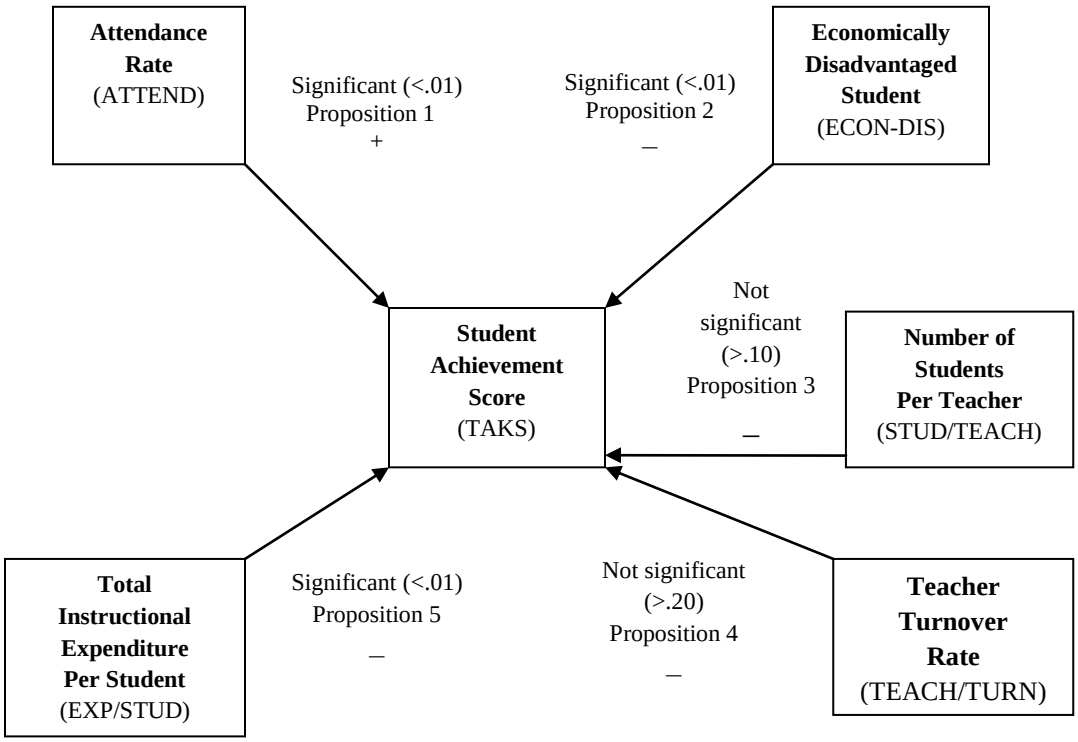

Figure 2. Revised Model

DISCUSSION AND CONCLUSIONS

The results of the regression analysis found that the most appropriate variables for predicting success at meeting the AYP for the school district would be to decrease the number of economically disadvantaged students, increase attendance rate, and do not throw money at the problem.

This study reviewed the influence of a number of variables upon student scores on the TAKS test in these thirty-seven high schools over the five year period (2003 to 2007). The variables studied included indicators of financial resources spent by the districts, teacher training and experience, as well as individual student factors.

The results of this study reduce some of the uncertainty surrounding factors that might influence student test score results on the TAKS test. This study suggests three areas of influence that school districts can investigate to possibly improve their student test score results.

- School district expenditures per student are negatively related to student performance on the TAKS test. This seems to indicate that school districts cannot spend their way to success on this test.
- The percentage of economically disadvantaged students in the school is also negatively related to student success on the TAKS exam. This seems to indicate that there are economic influences outside of the school districts' direct control that negatively influence test score results.
- Attendance rates of students are positively related to student performance on the TAKS test. This result is intuitive, and suggests that programs to reduce truancy and dropout rates in high schools are critical to raising student test scores.

RECOMMENDATIONS FOR FUTURE RESEARCH

Future research into improving TAKS scores should be done by considering a larger sample of schools. Also, other methods of data analysis could be used, such as Data Envelopment Analysis (DEA). DEA has been used in previous studies to look at the productive efficiency of school districts to compare districts based upon input/output criteria.

Further research in this area is important because of the competitive nature of the global economy. In order for the US to compete internationally, it must improve its educational system.

AUTHOR INFORMATION

Patrick Jaska (Ph.D. in Business Administration) is the Chair of the Department of Business Information Technology and Systems at the University of Mary Hardin-Baylor. Dr. Jaska has authored and co-authored many articles in the business disciplines.

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