

**School Superintendents and School Performance:
Quality Matters**

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Kenneth J. Meier
Laurence J. O'Toole, Jr.
Holly T. Goerdel

For further information, contact:
<http://www-bushschool.tamu.edu/kmeier/teep>

The Texas Educational Excellence Project (TEEP) is a joint program of the George Bush School of Public Service and the Department of Political Science at Texas A&M University. The project also has research associates at the University of Texas Pan American and Oakland University. TEEP seeks to apply scholarly research to educational policy issues in order to make recommendations for greater quality and equity in Texas school systems.

School Superintendents and School Performance: Quality Matters

The Texas Education Excellence Project is concerned with improving academic performance in school districts across Texas. This report focuses on the ability of school superintendents to improve academic performance in their schools. There is presently a growing emphasis on finding, recruiting, and retaining quality superintendents across school districts in Texas. In fact, school board members, as knowledgeable observers, have utilized information about superintendent behavior, organizational morale, environmental demands, and school performance in order to come to conclusions about former, current, and future superintendents. These efforts are made primarily because school board members believe that superintendents can affect change in districts in a variety of ways, especially with respect to student performance.

First, superintendent's can recruit, train, and reward talented mid-level administrator's (principals) and in some cases teachers. Second, superintendent's can motivate employees to invest greater effort in the organization by providing and communicating a vision for the organization. Third, superintendent's can further affect the student learning environment by mandating the adoption and implementation of specific educational reforms. Forth, superintendent's can contribute to the predictability and reliability of the system by providing stable processes. Finally, superintendent's can acquire more resources, both tangible and intangible, for the organization.

This study first develops a measure of superintendent quality. We then use this measure to predict several performance measures in a district, controlling for other factors that are known to affect performance. This analysis finds that superintendent quality does affect several measures of performance.

Measuring Superintendent Quality

How do school districts ascertain the quality of current, past, or future superintendents? This TEEP study reveals that the quality of a superintendent can be measured as *the additional salary paid to school superintendents over and above the normal determinants of salary*. Rather than seeking solely attitudinal judgements by school board members on superintendent quality, it can be assumed that members' actions reveal preferences. Put simply, school boards make annual assessments of superintendent performance and set salaries for the coming year

accordingly. The decision on compensation, for current or new superintendents, contains inherent quality assessment.

Strategy of Analysis

The analytic technique used by TEEP to identify quality superintendents and their influence on school performance is multiple regression analysis. Generally speaking, this technique allows for impact assessment of certain organization and environmental related variables while controlling for various other variables. In applying this method, TEEP can develop a means of assessing the quality of school superintendents and their relative influence on school performance. This, in turn, allows for more valid comparisons across individual school districts.

The first model used in the analysis is based on what the literature identifies as a “*common salary model*” (Ehrenberg, Chaykowski, and Ehrenberg, 1988). This model aims at measuring the quality of a superintendent by fully unpacking the determinates of their annual compensation. In this model, superintendent annual compensation is a function of various inputs. These inputs include: 1) district characteristics – budget, tax rate, and revenue per pupil, 2) human-capital characteristics – past experience, current job tenure, age, and education level (specifically if they hold a doctorate), and 3) personal characteristics - the gender and race of the superintendent.

The second model used in the analysis is based on what the literature identifies as an “*education production function*.” A very large literature has been developed which designates various education production functions to evaluate the outputs of schools to their inputs (Burtless 1996; Smith 1995; Hanushek, 1986; 1989; 1996). In this function, performance (here identified primarily as overall TAAS pass rates) is a function of various inputs into the process of educating students. While the critical *input of interest is management (superintendent) quality*, additional inputs include the district’s level of operating expenditures, teacher experience, amount of noncertified teachers, class size, and percent of low-income, black, and Latino students in the district.

Common Salary Model

The market for superintendents is information-rich and highly competitive. For example, a district in the process of hiring a superintendent will have extensive information about how a candidate's current district has performed. Furthermore, due to the established network of school board members across and within districts, information on an individual superintendent candidate's management ability is relatively easy to acquire.

In the present study, the sheer range of salaries for superintendents in Texas in 1999 was \$35,000 to \$205,228 (mean = \$74,400; standard deviation = \$24,087). Due to the fact that there are no regulatory floors or ceilings regarding superintendent compensation, it is clear that the range of existing salaries support the notion that market dynamics are at work.

The goal of this TEEP study is to unpack these market dynamics and assess the quality of superintendents across the state, in an effort to demonstrate that *salaries matter in determining manager quality* and, more importantly, school performance. Thus, with the results of estimation, *we can measure quality as the additional salary paid to school superintendents over and above the normal determinants of salary (i.e. salary premiums)*. From this we can compare what the model *predicts* superintendents should make, using normal determinates of salary, to what a superintendent *actually* makes. In other words, superintendents with *actual* salaries higher than were *predicted*, can be characterized as having higher managerial quality, all else being equal.

The dependent variable in the common salary model is the logged annual compensation for superintendents in Texas school districts. This salary figure only includes the official base salary. It omits the perks some districts offer, such as club memberships, cell phones, and transportation benefits that are not necessarily reported.

The independent, determinant variables in the model are of three district types: school district characteristics, human-capital characteristics, and personal characteristics. First, the school district characteristics include the district's total budget, tax rate, and average revenue per student. Superintendent salary is expected to be positively related to each of the three district characteristics. Second, the human-capital characteristics include experience as a superintendent, tenure in current job, age, and the possession of a doctorate. Salaries should increase both with total experience as a superintendent (most of this experience will have been in other districts) and time in the current job. Also, salaries will be positively related to those managers in

possession of a doctorate. Third, the personal characteristics include whether the superintendent is female, black, or Latino. The predicted signs for these variables (positive or negative) in relationship to compensation are ambiguous, depending on whether a district might see it as an advantage to hire a superintendent with a given demographic. Finally, due to the fact that a reciprocal relationship exists between managerial quality and prior/future performance, a control for past performance is incorporated into the model.

The Education Production Function

The aforementioned measure of management (superintendent) quality can now be related to educational performance. As mentioned earlier, performance measures are highly salient in educational policy circles these days. This study incorporates eleven different performance indicators (dependent variables) in an effort to determine if *management quality* affects a variety of organizational outputs. While each of the different performance indicators is salient to some portion of the educational environment, the first among equals is the student pass rate on the Texas Assessment of Academic Skills (TAAS). Four other TAAS measures are also useful as performance indicators. TAAS scores for Anglo, black, Latino, and low-income students are included as measures of performance.

In addition to these, four measures of college-bound student performance are used – the average ACT score, the average SAT score, the percentage of students who score above 1110 on the SAT) or its ACT equivalent, and the percentage of students who take either test. The percentage of students taking either college entrance exam is meant to capture districts' ability to motivate and prepare students for college. The final two measures of performance might be termed bottom-end indicators—attendance rates and dropout rates for the district.

The independent, determinant variables in the model include three measures of task difficulty and five measures of resources. These are used strictly as controls to make sure that any findings we have relative to management quality are robust to the inclusion of factors normally linked to educational performance. Task difficulty reflects the truism that, across varying districts, some students are more difficult to educate than others. Therefore, our three measures of task difficulty are the percentages of students who are black, Latino, and poor. All three measures are expected to be negatively related to performance.

Finally, five measures of resources are included. The average teacher salary, average instructional expenditures per student, and class size are directly tied to monetary resources. The average years of teaching experience and the percentage of teachers who are not certified are related to the human resources of the school district. Class size and noncertified teachers are expected to be negatively related to student performance; teacher experience, teacher salaries, and average instruction expenditures are expected to be positively related to performance.

Data and Findings

Using five years of data from over 1000 Texas school districts, superintendent quality is measured and its impact on performance is assessed. Analytically, all data with a time series component needs to control for serial correlation that results from trends in the data. We introduce a series of dummy variables to control for serial correlation.

Common Salary Model

The common salary model is shown in Table 1. The results demonstrate that all of the independent variables are powerful predictors of a superintendent's annual compensation. Generally speaking, these coefficients indicate the amount of change in the dependent variable, annual compensation, that is related to a one-unit change in the independent variable. With the exception of the tax rate, all variables are in the predicted direction. This exception indicates that superintendents are not systematically rewarded for keeping taxes low.

While the additional relationships in the model are interesting in terms of both personnel management and educational policy, discussion of them is beyond the scope of the present study. The objective of this model is merely to remove as many "non-quality" factors from the superintendent's salary as possible. *The remaining residual from this transaction reveals the quality measurement of the superintendent.* As mentioned earlier, the results of this estimation leaves us with a measure of managerial quality as indicated by the additional salary paid to school superintendents over and above the normal determinants of salary (i.e. salary premiums). This measure of management (superintendent) quality can now be related to the education production function.

Education Production Function

The education production function is shown in Table 2. This table focuses on the overall TAAS pass rate as a performance indicator (dependent variable). Recall that the independent variable of interest is *managerial (superintendent) quality*, as determined by the common salary model. Here we find that the proposed measure of managerial quality is positively and significantly related to school district performance. In other words, as superintendent quality goes up, so does performance on the TAAS. In addition to this finding, when continuing to control for all of the same factors, Table 3 reveals that managerial quality remains positively and significantly related to ten additional performance indicators. We find that increases in managerial quality is related to improvement in TAAS performance for Blacks, Latinos, Anglos, and low income students, increases in performance on both the SAT and ACT, increases in attendance rates, and decreases in dropout rates. These findings present clear evidence that salaries and managerial quality matter to school performance.

Conclusion

This report is one of the continuing studies of Texas school districts by the Texas Educational Excellence Project (TEEP). A major focus of the project is to identify means of measuring managerial quality and, in turn, determine its effects on school district performance.

This research offers the fullest rigorous test to date of the proposition *that management quality contributes positively to performance*. Whether the focus is on pass rates, dropout rates, or the performance of specialized groups of students, like those from low-income families or those aiming to attend college, management matters. Likewise, in Texas, at a minimum, *public management quality itself*, not simply influences like district spending or students' home circumstances, *makes a difference*. Equally evident is the fact that *salaries matter* when it comes to determining the quality of a superintendent in a district.

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Table 1. Determinants of Superintendent Salaries

Dependent Variable = Logged Annual Compensation			
Independent Variable	Slope	Error	t-score
District Characteristics			
Logged Budget	.1614	.0017	95.07
Logged Tax Rate	.0272	.0161	1.69
Logged Revenue/Pupil	.0683	.0092	7.45
Human Capital			
Past Experience	.0022	.0003	7.94
Current Job Tenure	.0009	.0002	3.63
Doctorate	.0532	.0045	11.79
Age	.0004	.0002	1.95
Personal Characteristics			
Female	.0025	.0009	2.85
Black	.0941	.0183	5.16
Latino	-.0165	.0081	2.03
Past Performance			
	.0009	.0003	3.16
R-Square	.78		
Standard Error	.1251		
F	1193.92		
N	5127		

Coefficients for individual years not reported

Table 3. Management Quality and Other Measures of Performance

Performance Measure	Slope	t-score	R ²	N
Latino Pass %	.4832	2.53	.38	4243
Black Pass %	.7014	2.68	.38	2965
Anglo Pass %	.8700	7.60	.41	5053
Low Income Pass %	.8998	6.17	.50	5093
Average ACT Score	.0817	3.94	.36	4248
Average SAT Score	3.1534	2.85	.50	3516
Percent Above 1100	.6535	4.23	.29	4682
Percent Tested	.0113	.05*	.12	4601
Dropout %	-.1241	8.21	.16	5026
Class Attendance	.0866	7.49	.24	5126

All equations control for teacher's salaries, instructional expenditures per student, class size, teacher experience, percent of teachers not certified, percentage of black, Latino, and low income students and yearly dummy variables.

*not significant, $p < .05$

