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# IMPACT OF FISCAL RESOURCES ALLOCATION TO SCHOOLS BASED ON A DIFFERENTIATED SUPERVISION MODEL

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## ABSTRACT

*This study examines the ability of a differentiated supervision model to initiate quality improvements in school systems by classifying schools according to several identified factors and modifying the resources allocated to all schools based on their supervision classification. Conceptual development and an archival post-hoc analysis approach were used to analyze the effects of the supervision model on the improvement of schools in a large urban school district. The researcher developed the supervision model and collected data regarding school characteristics, classification, and performance for individual schools during the first and sixth years of implementation.*

*The researcher found that the grade level of schools, the years of experience of school principals, the socioeconomic status of schools, and monetary funding significantly impact the ability of the differentiated supervision model to impact school improvement. Additionally, the results of the study indicate that schools with the lowest performance at the initiation of the classification model had significantly higher levels of improvement than schools with higher initial performance. The conclusions drawn from the findings suggest that utilizing a customized approach to the supervision of individual schools and the resources allocated to those schools can lead to performance improvements.*

## INTRODUCTION

As accountability for student performance increases, local education agencies are confronted with the challenging task of providing maximum support to schools that have the greatest needs while simultaneously maintaining the success of and continually improving high performing schools. Accountability for kindergarten through twelfth grade (K-12) school performance has recently received increased attention from school systems, municipalities, state governments, and federal agencies. The reauthorization of the Elementary and Secondary Education Act, also known as No Child Left Behind (NCLB), incorporates testing and accountability requirements that increase student testing and holds all schools accountable for student performance. This legislation marked a major departure from the federal government's traditional monitoring and guidance role regarding elementary and secondary education. The NCLB legislation utilizes progress and performance indicators as a judge of a school's success. It requires that states administer reading and mathematics tests annually in grades three through eight and during one

year in high school beginning in school year 2005-2006. These requirements affect almost 25 million students each school year (National Center for Education Statistics, 2002).

While the No Child Left Behind legislation incorporated increased testing for the purposes of recognizing high performing schools, providing incentives of improvement and punishing those schools that failed to either meet established standards or make adequate progress, there are no provisions in the legislation for providing additional resources for those schools that have greater needs. Additionally, there are few incentives for school districts to customize the supervision of schools and the resources allocated to individual schools based on the characteristics and assessed needs of the schools.

In 2000, prior to the enactment of the No Child Left Behind legislation, a major urban school district located in the southern region of the United States implemented a differentiated supervision classification model. The intent of the model was not to rank or grade schools on their performance. Instead, the intent was to provide a mechanism by which administrative support structures could direct additional resources to schools with greater need and provide more autonomy to schools that are performing and progressing at higher levels. This innovative approach customizes the supervision of schools and the resources allocated to schools based on both performance indicators and progress indicators.

The purpose of this study is to investigate if a differentiated supervision classification model (DSCM) can assist in guiding the improvement of the quality of education for schools by allocating fiscal resources based on a schools needs. For the purpose of this research a schools need is defined as the lack of progress toward predefined benchmarks and performance on various academic measures. The results of this study provides school district level administrators, local school boards of education, and state and national education agencies with a methodology to strategically direct resource allocation in order to improve student achievement by supporting schools that demonstrate greater needs.

## **LITERATURE REVIEW AND RESEARCH QUESTIONS**

As education reformers have sought to improve the academic performance of public schools in the United States, they have employed widely varying monitoring and/or accountability strategies. These monitoring and accountability strategies are not only employed in K-12 public schools, but also in higher education and the business community. In 2001, 45 states required public schools or school districts to issue "school report cards" that included a wide range of information. Twenty-seven states also provide comparative ratings of schools (Boser, 2001). The most recent round of high-stakes testing grew out of the standards-based reform movement that began in the early 1990s (Abrahams, 2003).

A key characteristic of accountability strategies centers on performance indicators or targets that identify criteria used to determine whether schools and students have reached the desired level of achievement. Performance indicators related to education are measurable characteristics of educational processes and procedures used by the district to deliver services according to the Baldrige Award for Education (Arcaro, 1996). Several states have combined two of these strategies to improve the academic

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performance of schools: performance indicators and accountability (Ogawa, 2000). In an effort to be proactive in meeting the needs of students, school districts across the nation are devising and implementing strategic processes for monitoring school progress in various ways identifying specific performance indicators to measure and provide the proper support structure is important to leading and guiding schools. Implementation of customized support systems amount to what the Baldrige Award for Education refers to as ‘managing by fact’ (Arcaro, 1996).

Alejandre (2009) concluded that collaborating on school budgets is key with fewer and fewer resources available to school districts, funding is not available for all priorities. He stated that the public and key stakeholders know that the Board of Education, which approves the final budget, is aware of their input before it makes any final decisions. Facts such as student performance and the analysis of that data support a variety of educational purposes, including planning, reviewing performance, improving procedures, and benchmarking educational quality performance against other schools. Arcaro (1996) suggests that “a system of indicators tied to student and district performance factors represent a clear and objective basis for aligning all activities of the district toward common goals.” Rothman notes that not all schools are equipped well enough to move at the same pace, and it is likely that the schools that have traditionally lagged behind would be the ones that would continue to do so if each school were left to change on its own (1995).

Berne and Stiefel (1997) suggest "a well-defined set of student resource variables would improve equity studies at the school level including studies that use administrative data, particularly if those variables are capable of serving as models for other data sets." Picus (2000) rationalized that school finance research has a long history of analyzing funding equity. He concluded that most of the research related to school finance has looked at spending differences across school district--not within a school district. Very few studies have considered school-level resource equity either within districts or across districts in an individual state. Prior research related to the supervision and support of individual schools emphasizes the need for both customized support and the testing of such of support system in terms of school improvement.

Picus (2000) determined that although no studies to date have looked systematically at student-level resource allocation patterns, it is clear that much of the school finance community would benefit from such knowledge. However, collection of student-level data is complex and difficult. He urges the research community to develop strategies to collect this information accurately and without undue burden on local school officials is critical. Picus (2000) concluded that while school-level data are attractive for a number of reasons, student-level data collections have the potential to be more cost-effective and more useful in improving our understanding of student learning.

The Southwest Educational Development Laboratory (SEDL) study examined district level patterns of resource allocation, district and school resource practices implemented to improve student performance, and barriers and challenges faced by districts and schools to efficient resource allocation (Pan, 2003). SEDL researchers examined data on student performance as well as fiscal and human resource allocation from all independent school districts within each of four study states: Arkansas,

Louisiana, New Mexico, and Texas. SEDL also selected twelve improvement school districts from the larger sample that showed consistent gains in student performance to more closely examine the resource allocation patterns and practices of successful school districts.

Aarons (2009) provided a synopsis of the Performance Measurement and Benchmarking Project, led by the Washington-based Council of the Great City Schools which aims to help districts create benchmarks for operational performance and learn from other districts that are delivering services in the most efficient and effective way. Through the work of the member districts and the council's staff, more than 3,000 data points were collected to examine districts' performance in four areas: business operations, finance, human resources, and information technology. School district executives are doing the work on a volunteer basis, with no outside funding. Participating district leaders have been using it for comparison purposes. The project also produced four initial case studies, which looked at a handful of measures in procurement, maintenance, operations, financial management, and food services. Known as the "essential few," the measures were picked from a set of "key performance indicators," considered important for superintendents and school board members to have for a quick understanding of the operational health of their districts.

The findings from SEDL's research demonstrated a strong relationship between resources and student success. Furthermore, the results indicated that allocating resources within select areas and for certain practices might make a significant impact on student performance. In short, both the level of resources and their explicit allocation seem to affect educational outcomes. Specifically, this study found that: high-performing districts showed different resource allocation patterns in specific fiscal and staffing categories than low-performing districts. A general pattern emerged where higher performance was associated with higher spending for instruction, core expenditures, and number of teachers, with lower spending for general administration and number of administrative staff. In all four states, high-performing districts spent more on instruction as a share of current expenditures; while in three states, high-performing districts spent more on instruction per pupil and employed more teachers per 1,000 students. The differences in resource allocation between the low-performing and high-performing groups were reduced in two of the four states when the comparisons controlled for demographic factors and socioeconomic status. Improvement districts showed different resource allocation patterns in specific fiscal and staffing categories than districts of similar size. A majority of the twelve improvement districts spent more per pupil in instruction and instruction-related areas, and also increased allocations for these areas faster than comparison districts over the five-year period examined. At the same time, the twelve districts were found to re-allocate resources away from administrative and other non-instructional areas.

Jones (2004) argues where there are clear cases of faulty local accountability systems — those lacking any of the four elements (appropriate assessment systems; adequate opportunities to learn; responsiveness to students, parents, and community; or organizational capacity) — supportive efforts from the state and federal levels should be undertaken. Jones envisioned at least three cases in which the state would take on a more assertive role: 1) to investigate claims or appeals from students, parents, or the community that the local accountability system is not meeting the standards set for such systems; 2) to

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require local schools and districts to respond to findings in the data that show significant student learning deficiencies, inequity in the opportunities to learn for all students, or lack of responsiveness to students, parents, or communities; and 3) to provide additional resources and guidance to improve the organizational capacity of the local school or district. Greg Orlofsky (2002) found that high poverty, high minority schools received significantly less state and local money than did other schools.

*Research Question: Is there a statistically significant difference in the improvement of schools based on monetary resources allocated to schools as the result of implementing the DSCM model?*

## METHODOLOGY

The differentiated supervision model was designed by the researcher at the request of district leadership and implemented in the subject district in the fall of 2000. The differentiated supervision classification model is a proactive approach to improve the quality of education for all students. Prior to the implementation of the model in the subject school system, multiple measures of performance and progress were utilized to assess school improvement and school quality. These measures were not utilized consistently between schools or across grade levels. The motivation for this study is to determine the impact of utilizing performance and progress indicators as a predictor of an elementary or secondary school's needs in order to provide guidance to improve its overall success based on multiple indicators.

A school's differentiated supervision classification is determined by the utilization of a weighted formula, with 50% assigned to progress data and the other 50% distributed across performance data. Progress data is defined as the individual school targets that contribute to the achievement of school system targets in the areas of student achievement on standardized tests, attendance, and enrollment in higher-level courses. Performance data is defined as the results of student performance on state-mandated standardized tests.

The weighted algorithm varies based on the grade level being appraised. For elementary schools, the total score for each school is a weighted average of the percentage of targets met, the performance of students in grade 4 on the state Criterion-Referenced Tests in Reading, Language Arts, and Mathematics, and the fifth grade writing results. In the middle schools, the total score for each school is a weighted average of the percentage of targets met, performance of students in grades 6 and 8 on the state Criterion-Referenced Tests in Reading and Mathematics, and the performance of the eighth graders on the Middle Grades Writing Assessment. In high schools, the total score for each school is a weighted average of the percentage of targets met and the performance of students on the English/Language Arts, Mathematics, Writing, Social Studies, and Science components of the Georgia High School Graduation Tests (GHS GT). Schools are reclassified annually based on the weighted formula. There are three classifications that a school can be placed into based on the total score from the weighted formula. The total DSCM score categorized schools as follows:

- ◆ Nondirective 100 – 84%
- ◆ Collaborative 83 – 69%
- ◆ Directive below 69%

A designation of nondirective is described as a school that has the autonomy to plan and implement the school's instructional program with a low level of central office oversight and supervision. Schools designated as collaborative are allowed to negotiate the level of autonomy to plan and implement its instructional program with a moderate level of supervision from central office support structures. All directive schools plan and implement the instructional program with a high level of supervision and resource support from central office.

The rationale for implementing the differentiated supervision classification model is two-fold: 1) to identify schools with the greatest need for assistance in achieving the optimal goal of improving student achievement; and 2) to provide more support to schools that demonstrate greater need. For the subject school system, this represents a fundamental revision to the manner in which schools are assessed and supported. The DSCM model was recalculated every year based on progress and performance data. Many key district level decisions regarding schools were made based on a schools DSCM classification.

The hypothesis related to resource (Title I funds) allocation is tested using an independent samples t-test. The comparison of means was classified into two group's ranging of \$0 to \$700 per student which represented 33 schools and \$800 to \$821 per student representing 45 schools. None of the subject schools were in the \$701 to \$799 per student. The hypothesis related to school improvement for original ranked lowest performing schools is tested using an independent samples t-test. There are 34 target group schools and 44 originally ranked higher performing schools.

### **Description of Study Population and Target Schools**

The focus of this study centers on whether using a weighted algorithm that includes progress and performance data can be used as a means to effectively monitor a schools improvement by implementing a strategy for supporting schools based on predicted need. The study takes place a major urban school district located in the southern region of the United States. The subject school district has a student population of approximately 47,000 schools in 89 schools. The present school district superintendent has been in place since 1999, which is essentially unheard of in the present educational environment for urban superintendents. The upper administration for instruction of the district also includes a deputy superintendent of instruction, five geographic regions led by an executive director who is responsible for a number of schools. Other central administration instructional functions include professional development, curriculum, student programs and services, and research planning.

The 78 schools included in this study represent those schools that existed in the same configuration in both years one and six of DSCM implementation. Schools that consolidated, were closed, or newly opened during the implementation were excluded from the study. Thirty-four schools were identified as

the lowest performing schools based on the initial assignment of the DSCM score and categorization. These 34 schools received the lowest original scores at both the elementary and secondary level and are compared with the remaining 44 schools in the quantitative analysis.

**Table 1: Sample Description of 34 Originally Low-Performing Schools**

School	Grade Level	DSCM 2000 Score	DSCM 2000 Category	DSCM 2006 Score	DSCM 2006 Category	School Improvement (Change in DSCM Score)
PS102	Elementary	22.15	Directed	57.34	Directed	35.19
PS103	Elementary	26.81	Directed	60.53	Directed	33.72
PS106	Elementary	31.10	Directed	72.32	Collaborative	41.22
PS164	Middle	34.10	Directed	82.19	Collaborative	48.09
PS109	Elementary	40.57	Directed	84.06	NonDirective	43.49
PS132	Elementary	22.55	Directed	83.55	NonDirective	61.00
PS170	Middle	43.00	Directed	60.08	Collaborative	17.08
PS133	Elementary	42.56	Directed	91.75	NonDirective	49.19
PS171	Middle	25.82	Directed	73.63	Collaborative	47.81
PS136	Elementary	37.56	Directed	88.95	Collaborative	51.39

**Table 2: Sample Description of 44 Originally High-Performing Schools**

School	Grade Level	DSCM 2000 Score	DSCM 2000 Category	DSCM 2006 Score	DSCM 2006 Category	School Improvement (Change in DSCM Score)
PS101	Elementary	57.88	Directed	64.17	Directed	6.29
PS108	Elementary	63.09	Directed	70.97	Collaborative	7.88
PS165	Middle	46.33	Directed	79.26	Collaborative	32.93
PS155	High	57.00	Directed	51.54	Directed	-5.46
PS110	Elementary	62.78	Directed	76.32	Collaborative	13.54
PS111	Elementary	78.25	Collaborative	87.71	NonDirective	9.46
PS112	Elementary	71.34	Collaborative	82.71	Collaborative	11.37
PS166	Middle	50.34	Directed	58.08	Collaborative	7.74
PS117	Elementary	60.34	Directed	56.83	Directed	-3.51
PS156	High	67.40	Directed	55.26	Directed	-12.14

School Classification	Average DSCM 2000 Score	DSCM 2000 Category	Average DSCM 2006 Score	DSCM 2006 Category	School Improvement (Change in DSCM Score)
Original Low-Performing Schools	33.80	34 Directed	70.97	16 Directed 13 Collaborative, & 5 Non-Directive	37.16
Original High-Performing Schools	62.26	29 Directed 13 Collaborative, & 2 Non-Directive	68.51	20 Directed 19 Collaborative, & 5 Non-Directive	6.25

## RESULTS

In allocating fiscal resources the school district had pre-determined formulas to decide fiscal resources equitably. This included human resources, materials, supplies, and equipment for both academic and school-operation purposes. The one area that there was some flexibility on allocation of fiscal resources related to the use of Federal Title I resources. Federal and State guidelines required that minimum amounts be spent on a school based on certain factors. Beyond that minimum amount school districts had the autonomy to use some of the funds for district-wide purposes or add additional allotments to a school's predetermined minimum amount.

The hypothesis related to Title I allocation is tested using an independent samples t-test. The comparison of means was classified into two group's ranging of \$0 to \$700 per student which represented 33 schools and \$800 to \$821 per student representing 44 schools. None of the subject schools were in the \$701 to \$799 per student.

The hypothesis related to school improvement for original ranked lowest performing schools is tested using an independent samples t-test. There are 34 target group schools and 44 originally ranked higher performing schools.

There were 45 schools that receive \$800 to \$821 per student of federal Title I funding compared to 33 that receive \$0 to \$700 per student. As shown in Table 4, schools that received higher levels of this monetary allocation registered greater improvements in DSCM score (25.33) versus schools that received lower levels of funding (13.02).

Title I allocation	N	School Improvement
\$0 to \$700 per student	33	13.02
\$800 to \$821 per student	45	25.33

The hypothesis predicted that there is no statistically significant difference in the improvement of schools based on monetary resources allocated to schools as the result of implementing the DSCM model. As shown in Table 5, an independent samples t-test shows that monetary funding is a significant factor in the improvement of schools ( $p = .013$ ). The monetary resources allocated to schools significantly impact the ability of schools to improve within the DSCM framework. H5 is rejected by this analysis.

	Levene's Test for Equality of Variances		t-test for Equality of Means			
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Equal variances assumed	.270	.605	-2.550	75	.013	-12.31
Equal variances not assumed			-2.487	61.909	.016	-12.31

## DISCUSSION

Prior to the model design that is being evaluated in this study, the subject school district attempted several approaches or designs aimed at improving the achievement of individual schools. Some designs took into account singular performance indicators across individual grade bands. One of the designs classified schools differently on each individual grade in the school. For example, one elementary school was targeted for three different levels of oversight based on the performance of students in three different grades. Upon further scrutiny by key instructional leaders in the subject school district, these initial designs were determined to be unacceptable. At the request of district leadership, the researcher of this study proposed the differentiated supervision classification model being evaluated in this study to the district officials. The premise of the proposal presented to the district was based on those factors that the subject district and existing research considered to be important: school progress indicators and performance indicators. The use of a software-based statistical analysis program was utilized to conduct the analysis of variance and the independent samples t-test.

Monetary resources allocated to schools significantly impact the ability of schools to improve within the DSCM framework. The findings of H5 imply that as school funding which leads to additional resources increase that schools significantly improve on their progress and performance indicators. The significance of the analysis of the impact of the DSCM will benefit the educational research and educational practitioner communities in the following ways:

- ◆ Provide system level administrators a viable method of support and supervising schools based on demonstrated need.

- ◆ Provide school level administrators a viable methodology in supporting and supervising classroom teachers based on teacher targets and student performance levels.
- ◆ Address a research area that focuses on supervising schools that demonstrate a greater need for support.
- ◆ Increase the understanding of whether implementing school targets and benchmarks improve the overall quality of teaching and learning in the school environment.

While this study developed a viable supervision and resource allocation model that resulted in significant levels of school improvement, the results of the study may not be generalizable to school districts that serve different student body populations. For example, it is unknown whether similar levels of improvement would be found in suburban or rural districts, districts that serve few minority students, and or districts that are smaller in size. However, the utilization of single school district allowed for the prevention of district effects and the control of other factors that may have influenced the results, such as teacher training and central office administrative structure.

Additionally, the factors that were found to significantly impact the ability of schools to improve under the DSCM framework may vary based on the aforementioned district characteristics. It is important to examine such a framework in various district settings and to potentially further customize the model itself based on the identified improvement needs of school districts.

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