The Search for Smart Schools: Identifying Texas School Districts' Best Practices

Supervised by

Catherine Cole, PhD

Capstone Team

Shannon Coyle, Amanda Dick, Marlisa Griffin, Joseph Hood, and Daniel Tihanyi

The Bush School
OF GOVERNMENT & PUBLIC SERVICE
TEXAS A&M UNIVERSITY

May 2017

Date: April 20, 2017

To: Lori L. Taylor, PhD, Principal Investigator for Texas Smart Schools Initiative

From: Shannon Coyle, student
Amanda Dick, student
Marlisa Griffin, student
Joseph Hood, student
Daniel Tihanyi, student
Catherine Cole, PhD, Capstone Faculty Advisor

Attached is the final report for our study, "The Search for Smart Schools: Identifying Texas School Districts' Best Practices." We completed the tasks agreed upon in our scope of work dated October 14, 2016. These included five draft briefs, written reports, and oral presentations.

To perform these tasks, we conducted a mixed methodology study. After we reviewed the scholarly literature, we examined the effect of various school district expenditures on academic performance and cost efficiency through quantitative methods. Supplementing this, we then conducted semi-structured interviews with select district staff to better understand the practices employed in school districts.

Our findings include (but are not limited to): the amount of money invested in practices are not indicative of the quality of the programs, administrative cost ratio caps do not improve cost efficiency, and investments in bilingual education are associated with improved academic performance. The findings from interviews with chief business officers and superintendents capture the importance of culture in district practices and operations.

Based on the quantitative and qualitative findings, we make recommendations that can be implemented at the district and state level. Further research is needed that will allow educators and researchers to better identify the best practices that will improve Texas districts' student academic achievement and fiscal efficiency. This includes further analysis of the relationship between extracurricular activities and academic performance, identifying the reasons behind low parental involvement within lower performing districts, and longitudinal studies of districts' performance and policy decisions.

We deeply appreciate the opportunity to work with you, Comptroller Susan Combs, and TXSmartSchools.org. We are sincerely thankful for the chance to work toward improving the lives of Texas school children and for the guidance and encouragement you gave us to ensure we produced the best possible deliverable.

Sincerely,
Catherine Cole, PhD
Capstone Faculty Advisor
The Bush School of Government and Public Service

TABLE OF CONTENTS

List of Illustrations

Acknowledgement

Abstract

This report outlines findings from the TXSmartSchools.org (TSS) Capstone Team's mixed methodology study identifying best practices in high performing and cost-efficient school districts. TSS was particularly interested in finding best practices transferable from high performing school districts to low performing districts. The Capstone Team accomplished this using the TSS concept of "fiscal peers." After completing a narrative literature review on the best practices in public education, the Capstone Team examined the effect of various school district expenditures on academic performance and cost efficiency through quantitative methods. The Capstone Team's findings suggest the amount of money invested in practices are not indicative of the quality of the programs. Additional findings demonstrate the administrative cost ratio caps do not improve cost efficiency, and investments in bilingual education are associated with improved academic performance. To better describe the practices employed in school districts, semi-structured interviews were conducted with school district officials. The findings from interviews with chief business officers and superintendents capture the importance of culture in district practices and operations. Based on the quantitative and qualitative findings, the Capstone Team makes recommendations that can be implemented at the district and state level. Further research is needed that will allow educators and researchers to better identify the best practices that will improve Texas schools' and districts' student academic achievement and fiscal efficiency.

Executive Summary

The **TXSmartSchools.org (TSS)**[*1] Capstone Team sought to analyze the best practices used by high performing and fiscally efficient districts in Texas, as defined by TSS metrics. Public education in Texas accounts for 39 percent of the annual Texas budget.[2] The practices employed by the 1,219 school districts in Texas impact nearly 5.3 million students.[3] Since education is, ultimately, financed using taxpayer dollars, it is important to understand what practices school districts are employing to maximize student outcomes while minimizing costs. Discovering these practices ensures taxpayer dollars are spent wisely.

To accomplish this task, the TSS Capstone team explored the descriptive and exploratory research question: "What are the best practices of both high educationally performing and fiscally efficient districts in Texas?" The purpose of this question was to determine whether the high performing districts' practices differed from low performing districts' practices. Guided by the literature review, the TSS Capstone Team used a mixed methodology to examine the best practices. The Capstone Team interviewed a small sample of superintendents and chief business officers (CBOs) from randomly selected districts. Additionally, the TSS Capstone Team analyzed financial data from the Texas Education Agency (TEA) and TSS to measure academic progress and cost efficiency. This methodology allowed for a more in-depth examination of what districts were/are doing.

Quantitative Findings

To examine the relationship between academic progress or cost efficiency and expenditures, TEA data from the 2014-2015 academic year was used. Variables available for analysis included expenditures on curriculum/staff development, instructional leadership, instruction, extracurricular activities, and bilingual education. By contrast, the data from TSS was used to measure the variables related to fiscal efficiency and academic progress. The findings are outlined below:

- **Curriculum/Staff Development***: An increase in the percentage of budget devoted to curriculum/staff development, holding other things constant, is not related to an increase in **math***, **reading***, or **composite*** academic progress. Furthermore, districts who spend more on curriculum/staff development are not necessarily more cost-efficient in terms of increasing student academic progress or spending less in comparison to peer districts. Finally, districts' curriculum/staff development expenditures are not predictive of whether the district are low spending in comparison to **fiscal peers***.
- **Instructional Leadership***: An increase in the percentage of budget devoted to instructional leadership, holding other things constant, is not related to an increase in math, reading, or composite academic progress. Moreover, as the percentage of budget spent on instructional leadership expenditures increases, cost efficiency decreases relative to fiscal peers.
- **Instruction***: An increase in percentage of budget spent on instruction is not associated with an increase in a student's math, reading, or composite academic progress.
- **Extracurricular Activities***: An increase in percent of budget expenditures on extracurricular activities, is associated with increased composite and reading progress. There does not appear to be an association between extracurricular expenditures and math progress.

---

[1] * Denotes term is defined in the glossary.
[2] Ballotpedia: The Encyclopedia of American Politics. 2017. "Texas State Budget and Finances." https://ballotpedia.org/Texas_state_budget_and_finances (January 20, 2017).
[3] Texas Education Agency. 2016. "Enrollment Trends." http://tea.texas.gov/acctres/enroll_index.html (October 5, 2016).

- **Bilingual Education***: An increase in the percentage of budget devoted to bilingual education expenditures, holding other things constant, is related to an increase in math, reading, and composite academic progress.
- **Administrative Cost Ratio (ACR)***: For traditional public school districts, an increase in the administrative cost ratio is not associated with a decrease in academic progress, Smart Score, and Spending Score across district enrollment sizes. For charter schools, an increase in ACR is not associated with lower academic progress. Furthermore, the ACR does not predict whether charter schools are likely to engage in more cost-efficient practices relative to fiscal peers.

The Capstone Team's quantitative findings indicate certain expenditures are consistently associated with student academic progress and district fiscal efficiency, while others are not. The lack of correlation between student outcomes and some expenditures calls to attention the spending practices related to these expenditure areas.

Qualitative Findings

Based on the qualitative analyses of the superintendent interviews, there are few differences in the practices employed by high and low performing districts. However, high performing districts consistently have a focus on impact as opposed to specific practices. Other recurring practices related to dealing with *growth* in student enrollment, using *districts of innovation* as a best practice, and leveraging the regional *education service centers* for ideas related to reform.

Qualitative analyses of the CBO interviews reveal no difference in the practices employed by the high and low performing school districts. Practices varied greatly in budgeting, forecasting, cost savings, and responding to (as well as attitudes regarding) legislative climate. However, differences emerge in how the CBOs respond to challenging situations. While the high performing districts adopt a "transformer" attitude, the low performing districts adopt a "coper" attitude. High performing CBOs with a "transformer" attitude seek to work within the limitations of the district to employ efficient practices, while the "copers" are often overwhelmed and even disgruntled with the obstacles they describe. High performing districts often believe they can produce a good outcome regardless of the scarcity of resources. Findings indicate, for CBOs in Texas school districts, the approach taken may be more important than the practice in place.

These findings suggest the approach taken by school district superintendents and CBOs can affect both student outcomes and fiscal efficiency.

Recommendations

To assist TSS in its mission of improve academic progress while maintaining cost efficiency, the TSS Capstone recommends the following:

- **Recommendation 1**: Improve the current system utilized by the TEA to minimize variation in the quality of Professional Development opportunities.
- **Recommendation 2**: Monitor and evaluate ongoing-implementation of Texas's Advancing Educational Leadership training to assess its effectiveness.
- **Recommendation 3:** Collect and analyze data to make targeted decisions on instructional expenditures.
- **Recommendation 4**: Track education technology expenditures in the state through the TEA Financial Accountability System Resource Guide (FASRG) or the Public Education Information Management System (PEIMS).
- **Recommendation 5**: Monitor Texas's bilingual education waiver and exception procedures and work with school districts to identify priorities to fund bilingual education programs.
- **Recommendation 6**: Eliminate the use of the Administrative Cost Ratio, and utilize the TXSmartSchool.org Spending Score to measure fiscal efficiency.

As a project deliverable, policy briefs related to these recommendations are expected to be published on http://txsmartschools.org/highlights/smart-practices/ by May 2017.

Introduction

TXSmartSchools.org (TSS) examines the academic performance and cost efficiency of school districts and campuses in Texas, ranking them on a one to five star scale based on their fiscal efficiency and academic progress. TSS is a continuation of the Financial Allocation Study for Texas (FAST) originally administered by the State Comptroller's Office and now administered by Texas A&M University. TSS seeks to further former state Comptroller Susan Combs's vision of an online resource that empowers school districts to benchmark themselves against their peers and enables parents to assess the quality of education their children are receiving compared to its cost. The TSS Capstone Team was tasked with providing policy briefs identifying shareable best practices of school districts that could improve academic performance and cost efficiency.

The TSS Capstone Team's project was guided by the descriptive and exploratory research question: "What are the best practices of high performing and fiscally efficient school districts?" From the review, the TSS Capstone Team identified ten themes, subsequently creating six hypotheses to examine possible relationships between academic progress and variables found in the literature.

Data from the TEA was used to measure the association of the variables of interests, which were identified in the literature, with the TSS fiscal efficiency and academic progress measures. The TSS Capstone Team collected primary qualitative data through interviews with school district officials. The Capstone Team chose to conduct longer, open-ended qualitative interviews of school district officials from a small, diverse sample of districts instead of a survey sent to a larger sample population to determine whether high performing districts are employing different practices than their low performing counterparts. This report includes a description of the TSS Capstone Team's literature review, research methodology, findings, implications of the research, discussion, and areas of further research.

Section I: Literature Review

Literature Review

In consultation with the Center for Systematic Reviews at Texas A&M University, the TSS Capstone Team chose a thematic narrative literature review to research best practices within K-12 public schools. The purpose of this literature review was to identify applicable research related to best practices within K-12 public schools. In the literature review, the TSS Capstone Team examined existing information about best practices within K-12 public schools.

Team members individually identified potential best practice themes found in the literature or of individual interest. Later, the Capstone Team achieved consensus on which themes to include in the literature review through multiple group discussions. Once consensus was achieved on themes to include, the review was initiated using EBSCO through databases including Business Source Complete, EconLit, Academic Search Complete, SocINDEX with Full Text, Public Affairs Index, PsycINFO, Public Administration Abstracts, Military & Government Collection, and Political Science Complete. Search terms included administrative practices, school mission and climate, fiscal distribution, community relations, teacher professional development, data usage, schedule structure, classroom management, student discipline, and extracurricular activity participation. Results related to search terms are presented thematically. Each thematic section includes an overview, definitions, and subsections.

Collectively, the research suggests that there are many practices that institutions can perform to improve student performance. While the individual thematic sections will go into far greater detail, best practices in the research are consistently found to encourage collaboration, whether that be across the community, students, administration, teachers, or all four. Actively supporting instruction, supporting trust and collaboration, and focusing the mission and goals of the school lead to improved instruction and learning. Many best practices that change traditional models can be costly to implement, including changes in teacher development, schedule structure, the usage of data, or extracurricular participation. Across all themes, a larger picture emerges that there is no "single solution" to improving student achievement in the classroom. Rather, reforms in each theme discussed- whether they affect the culture, fiscal structure, or day-to-day operational activities of a school or district- can positively affect student outcomes.

Administrative Practices

Overview

Several principal practices are associated with student achievement and high performing schools, including creating and supporting a commonly accepted vision and mission, engaging with teachers and data on student performance and instructional services issues, managing resources efficiently, promoting safe learning environments for staff and students, developing strong relationships with parents, communities and businesses, and acting in a moral and professional way (Council of Chief State School Officers (CCSSO) 2008; Marzano, Waters, and McNulty 2005; Stronge, Richard and Catano 2008). Those with a transformational attitude, who had a clear vision of what their school could be like and brought a positive attitude to their job, viewed instructional leadership and adequate support for faculty and staff as a key to success (Johnson, Rochkind, and Doble 2008). Administrative practices refer primarily to the principal, and are examined more in depth here in terms of their effectiveness and role in instructional leadership.

Definition

Administrative processes are those practices that campus or district administrators use to perform their duties. These practices can include systems, attitudes, networks, or other methods by which duties are performed, and can be formal or informal in nature.

Principal Effectiveness

A meta-analysis of 70 research studies on the work of principals shows that school leadership is responsible for .25 of the variation in student achievement (Waters et al. 2003). Research shows that the following principal practices are associated with student achievement and high-performing schools: creating and supporting a commonly accepted vision and mission, engaging with teachers and data on student performance and instructional services issues, managing resources efficiently, promoting safe learning environments for staff and students, developing strong relationships with parents, communities and businesses, and acting in a moral and professional way (CCSSO 2008; Marzano, Waters, and McNulty 2005; Stronge, Richard and Catano 2008).

A synthesis of principal effectiveness conducted by Clifford, Behrstock-Sherratt, and Fetters (2012) reveals an evolution in the role of principals. Over time, principal leadership has transformed from that of a traditional manager, to a supervisor of standards, to an adaptive leader, to an instructional leader, to a leader among leaders (Clifford 2010; Walker 2002). Walker (2002) describes the recent conceptualization of an effective principal as one who creates a community of practice by sharing and distributing authority and leadership among teachers whose skills and capacities match the tasks at hand. Two emerging policy perspectives in principal effectiveness, either a practice perspective or an impact perspective, were evident in the reviewed literature (Clifford, Behrstock-Sherratt, and Fetters 2012). The practice perspective, characterized by the quality of the principal's leadership or administrative practices, focuses on a principal's knowledge, skills, and practice. The impact perspective, characterized by the principal's impact on his or her school, focuses on results for students. In addition to these perspectives, a framework known as "the ripple effect" provides insight into understanding the direct and indirect effects of principal practice. This "ripple effect" framework may be used to design principal evaluation, professional development, and other support structures. Principal practice, which includes knowledge, dispositions, and actions, is at the center of the ripple effect (2012).

Research by Clifford, Behrstock-Sherratt and Fetters (2012) illustrates principal practice can directly influence school conditions, teacher quality and placement, and instructional quality. Ladd (2009) finds a correlation between positive teacher working condition and student achievement. Effective principals are also successful in recruiting, retaining and nurturing high- quality teachers (Leithwood et al. 2004). In addition to the direct influence principals have, principals also have indirect influence on teacher and school improvement through instructional quality and student achievement. Effective principals provide relevant resources and support, and increase learning by signaling to teachers the types of instruction that are acceptable and ideal (Spillane, Halverson, and Diamond 2004). Principals also promote teacher's learning in job-embedded professional development by emphasizing its importance, developing a culture that values learning, encouraging faculty members to facilitate learning, providing structured time for learning, and providing teachers with student data to inform learning (Croft et al. 2010).

Instructional Leadership

One of the key roles that a school administrator plays is that of an instructional leader. Johnson, Rochkind, and Doble (2008) completed five focus groups with principals in high-needs districts and sixteen one-on-one interviews with superintendents and other officials. These focus groups and interviews were framed by this overarching question, "What makes an effective leader in a high-needs school, and how can we attract, train, retain and support more effective leaders of this kind?" (Johnson, Rochkind, and Doble 2008, 1). Nearly all leaders interviewed mentioned the importance of instructional leadership. Furthermore, researchers found that individuals fell into one of two categories: transformers or

copers. Transformers had a clear vision of what their school could be like and brought a positive attitude to their job. The copers typically struggled to avoid being overwhelmed by the duties of their job. Transformers viewed instructional leadership as a top priority and were currently devoting time and efforts to evaluation, coaching and support of teachers. In contrast, copers talked about instructional leadership but they were not taking actionable steps. Transformers were also committed to working directly with teachers, "walking the halls" to stay in touch and be aware of what was happening in the classrooms. Copers viewed this concept as a luxury, citing a lack of time (2008).

In their own examination of instructional leadership, the authors of a report by EdFuel (2016) discuss the current changes in America's public school systems and the accompanying need for developing strong teachers, teacher leaders, and school leaders. Based on a spring 2015 survey of non-instructional leaders and interviews with current and rising education system leaders, the researchers suggest taking four steps to improve current practices: adopting a development mindset, building muscle, prioritizing diversity, and measuring, testing, learning and adapting (2016).

In the same survey, leaders cite a deficit in internal career advancement and opportunities for development as key reasons for attrition (EdFuel 2016). Top leadership often focuses on recruitment and on-boarding rather than career development and advancement opportunities, which respondents put at the top of their lists of needs and desires. In adopting a development mindset, system leaders must make a commitment to internal talent development. Such a move will help make schools an employer of choice for the best, most diverse system-level leadership. A development mindset also allows employees to move up the career ladder and horizontally across employee roles. Leaders should set clear goals and invest in the processes and systems required to make real progress. Prioritizing diversity is necessary; investing in leadership development requires making diversity a core commitment. To measure, test, learn, and adapt practices, organizations should set goals and establish measures for progress. School district and charter networks can consider launching a pilot program to start small, learn, and build a sense of momentum (2016). It is clear that professional development is an important dimension of instructional leadership.

School Mission and Climate

Overview

District and campus administrators have many tasks, with promoting cultural sustainability among the most important. There is a growing body of literature addressing school climate and culture and the role it plays in education (Lee 2011). A positive school climate is associated with greater persistence and higher grade point averages ("Link Between School Climate" 2010; Suldo, Shaffer, and Riley 2008). There is also a link between a mission-led culture and student achievement measures (Fryer 2011; Hagelskamp and DiStasi 2012).

Definition

According to the National School Climate on Culture, school culture refers to the quality and character of school life. School climate is based on patterns of students', parents' and school personnel's experience of school life, reflecting norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures (Cohen et al. 2009).

School Climate

According to Cohen et al. (2009, 187) "what is clear is that school climate matters." A 2010 school climate survey administered to 70+ middle and high schools with over 25,000 student respondents, conducted through a partnership between the Center for Social and Emotional Education (CSEE) and the Ohio Department of Education, supports this assertion. The survey found that schools with higher graduation rates and test scores had higher climate ratings, the relationship between school climate and school

performance was even stronger for schools with high rates of impoverished students, and a positive school environment was correlated with high school persistence ("Link Between School Climate" 2008).

Another study examining school climate examined linkages between student satisfaction and school environment (Suldo, Shaffer, and Riley 2008). Suldo, Shaffer, and Riley (2008) found significant relationships between school environment and climate and student life satisfaction. Significant findings revealed: positive relationships with teachers' impacts on students, parental involvement is positively correlated with student life satisfaction, school satisfaction is positively correlated with life satisfaction, school attachment was positively correlated with higher grade point averages, and personal academic beliefs were strongly positively correlated with life satisfaction (2008).

School Mission

A school's mission is part of its climate. Hagelskamp and DiStasi (2012) and Sebastian and Allensworth (2012) discuss the importance of mission-led schools and their impact on student outcomes. Hagelskamp and DiStasi (2012) highlight an example of the importance of being mission-led. At Eastmoor Academy, the current principal felt the school lacked a strong, guiding mission-statement. She brought together faculty and staff members to create a mission statement that communicated their efforts and served as a directive not only to outsiders, but also to their own team members (Hagelskamp and DiStasi 2012).

The "No Excuses" Model

According to Hagelskamp and DiStasi (2012), a "No Excuses" model is defined as when administrators, teachers, and support staff do not employ excuses when student do not meet benchmarks or when individual students fall behind. Research suggests that the "No Excuses" model creates a higher standard for school culture and raises the expectations of academics and behavior (Peyser 2011). Hagelskamp and DiStasi (2012) also discuss instilling a culture of high-expectations for student academic achievement and student behavior. After interviewing administrators, teachers, parents and students from nine public schools in Ohio, they identify a commitment to leading with a clear vision or mission as their chief best practice or recommendation (2012).

As the "No Excuses" model originated in charter schools, the majority of the literature focused on its application in charter schools. The "No Excuses" model is designed to increase student achievement by allowing administrators to self-govern and apply innovative ideas (Angrist, Pathak, and Walters 2013). The use of the "No Excuses" model has been demonstrated to be effective at increasing student performance in charters (2013). Almost all charter schools implement at least one aspect of the model (2013). In the schools examined by Angrist, Pathak, and Walters (2013), the model consists of extended time in school, a focus on reading and math skills, teacher quality, and an emphasis of student behavior and comportment through discipline. Most "No Excuse" model charter school administrators also require a contract to be signed by all parties, and discipline has been identified as one of the most important components of the model (Dobbie and Fryer 2011).

The Knowledge is Power Program (KIPP) charter schools are the most commonly referenced charter schools that use the "No Excuses" model (Dobbie and Fryer 2011). KIPP schools have had remarkable success, ranked as one of the five most effective charter school programs and often capable of achieving better than average results with 90 percent student graduation rates (Stetson 2013). In fact, all five of the most effective charter schools in the nation implement a slight variation of the "No Excuses" model (Stetson 2013). The research suggests that these traits individually may not directly impact student achievement, but have a positive impact in aggregate (Angrist, Pathak, and Walters 2013).

While schools vary greatly in their implementation of these factors, research supports the "No Excuses" model as an effective method to increase student performance (Dobbie and Fryer 2011). It is also an effective method for increasing student performance when controlling for demographic served and location, but results vary when looking at urban and nonurban schools (Angrist, Pathak, and Walters 2013). Charter schools in urban areas are demographically different and allow for a more conducive

environment for the "No Excuses" model to make the greatest impact on student performance (2013). Because most charter schools implement a variation of the "No Excuses" model, it can be postulated that the model may be limited at increasing student performance in nonurban areas with a lower percentage of demographically diverse people.

There has also been successful implementation of the "No Excuses" Model in the traditional public school (Fryer 2011). The Fryer (2011) study was conducted in a similar demographic to the charter schools that were successful and in an urban area. Fryer implemented the "No Excuses" model in nine poor-performing traditional public schools in the Houston area. The schools chosen took the five components of the model and implemented practices to be as similar to the model exemplified by the charter schools as possible. Thus it was shown that it is possible to transfer the practices and methods that have been found to be successful in charter schools to traditional public schools. It is important to note that this study was in an urban area, demonstrating that there may be a limitation on nonurban areas being impacted by the approaches of the charter schools (2011).

Fiscal Distribution

Definition

Fiscal distribution in the context of this review refers to the method by which administrative entities (state or school district officials) distribute funding resources. State education financial distribution policies fall into two broad categories: centralized or decentralized. The centralized funding model was popularized and adopted over 20 years ago; thus, the research discussed will focus on the effects of those adopted reforms (Baker and Welner 2011). The decentralized model is when school districts rely on property tax revenue to fund local schools directly, and is the standard for most states (Jackson, Johnson, and Perisco 2015). Both distribution models have their merits, and both are bolstered by additional federal funding that generally makes no distinction between the two.

Origins of Financial Distribution Reform

During the 1980s and 1990s, many states such as New Jersey, Massachusetts, and Michigan successfully implemented sweeping education finance reforms aimed at reducing disparities between school district funds (Baker and Welner 2011). They rewrote the financial resource distribution formulas and sought to centralize school district funding at the state level. Michigan went as far as removing local property tax revenue from school district funding and instead centralized funding resources entirely to the state (2011).

Fiscal distribution-focused reforms have the potential to reduce disparities among districts and to introduce funding to districts of need, which have been shown to impact student achievement. While current results have been promising, researchers have found mixed results on whether the reforms are the direct causes of increased student performance and other performance measures (Baker and Welner 2011). Secondary effects of centralized education funding, such as hiring better teachers or reducing teacher-student ratios could be the causes of increased student performance (Epple and Ferreyra 2008). The results are also difficult to generalize. In many studies, significant results were only seen in 4th grade cohorts compared to their 8th grade student counterparts, or were subject specific (Guryan 2001). These reforms are often designed to take individual district characteristics into account, including aggregate student performance, to determine an equitable distribution of funding.

Centralized Financial Distribution

In the early 1990s Michigan passed education finance reforms removing local property tax revenue from district funding, replacing it with a centralized state-sourced model supported by a modest increase in state sales tax. The program created a "foundation allowance," referring to grants offered to districts based on student enrollment and unique student characteristics (Chaudhary 2009; Epple and Ferreyra

2008; Papke 2005). One of the primary motivations for this reform was rooted in property tax relief. Wealthy residents could no longer vote to increase local property taxes to bring additional funding to their school districts, and poor residents could then receive more funding than would otherwise be available (Epple and Ferreyra 2008).

Subject and Grade Specific Results

Many studies have looked at the effects of Proposal A, the Michigan school finance reform policy that centralized education funding (Chaudhary 2009; Cullen and Loeb 2004; Epple and Ferreyra 2008; Papke 2005). Researchers have found that centralized financial distribution yielded increased investment in fourth grade classrooms. This yielded modest increases in math scores, but results for seventh grade investment were inconclusive (Chaudhary 2009). They concluded that fourth grade test performance seemed to be tied to increased teacher salaries that were a product of these reforms. However, these effects were not significant in the seventh and eighth grade groups (Chaudhary 2009). One possible explanation for this variation was a difference in class sizes, which were smaller for fourth grade classes than for 8th grade classes. The researchers also concluded teacher salaries in this context could serve as a proxy for teacher quality, meaning centralization reforms may indirectly impact teacher quality if districts hire more experienced or well-trained teachers (Chaudhary 2009, Hyman 2013).

Research done on similar centralization reforms passed in Massachusetts showed similar subject and grade-specific results (Guryan 2001, Nguyen-Hoang and Yinger 2014). The researchers found 4th grade student performance in math was most impacted from centralized education finance reforms. Eighth grade student performance, by comparison, was largely unaffected. One theory offered to explain this difference was that fourth graders spent more of their education in "well-funded schools" (Guryan 2001). Furthermore, whereas the highest and lowest performing fourth grade students had increases in student performance, the eighth grade cohort had a regression towards the mean from both tails of the normal distribution (Guryan 2001). The authors provided no explanation for this phenomenon.

Incremental Financial Distribution Reforms

The case of finance reform in New Jersey raises important questions over the student performance effects of incremental financial distribution reforms (Coate and Vanderhoff 1999). After analyzing student performance data over several decades, researchers found that per pupil expenditures in New Jersey did not necessarily lead to improved performance (1999). Furthermore, the results were insignificant in high schools among special needs students or high family income students (1999). By looking at the shift from local to state government financing of school districts and the aggregate effect of such policies over a historical period, the researchers found school districts still retained much autonomy over programs, yielding differing student performance results across districts (1999).

Externalities and Doubts of Centralization Reforms

Researchers have looked at the direct effects of Proposal A style centralization reforms for over two decades, but research on the secondary effects have only recently come to the forefront. One study focused on the secondary effects of Proposal A in the Detroit community (Epple and Ferreyra 2008). In addition to the supported changes in student performance, the reforms are associated with significant changes to property valuation, district demographics, and school quality improvement efforts (Epple and Ferreyra 2008). The findings suggest that state centralization reforms have led to increased real property values (as a result of reduced property taxes) as well as increased student enrollment. This raises the question about whether increases in student performance are a result of changing student demographics or district reforms (Epple and Ferreyra 2008).

Hypothetical Equalized Distribution

While Baker and Welner (2010) discussed the effects of centralized funding models in regards to equitable distribution of resources, they made a clear distinction between true equal distribution and

equitable distribution based on need and student performance. Some researchers have attempted to test hypothetical equalized distribution models based on holding funding characteristics constant (Baker and Welner 2010). While these factors may not be actionable from an education policy standpoint, the results are nevertheless an important reminder that financial distribution methods may not be solely responsible for increasing or decreasing student test performance in school districts.

Focus on Students with Equalized Distribution

While much of the research has examined statewide formula funding, very little has examined the equity problem on a student-by-student level. Some researchers have taken a novel approach by holding financial distribution constant across school districts, thereby testing a hypothetical equalized financial distribution model (Baker 2016; Jackson, Johnson, and Perisco 2015). By controlling for financial distribution, researchers were able to assess other possible causes of student performance such as demographic characteristics or urbanization (Baker 2016; Jackson, Johnson, and Perisco 2015). By choosing to use financial distribution as a control the results are perhaps less externally generalizable, but nevertheless useful in assessing alternatives (Baker 2016; Jackson, Johnson, and Perisco 2015). Furthermore, researchers were able to show that teacher and student characteristics alone in a hypothetical equalized distribution model were sufficient in determining student performance (Baker 2016; Jackson, Johnson, and Perisco 2015).

Some researchers have attempted to correct for variation by using different research methodologies such as Virtual Control Records as well as Fixed Effects (Davis and Raymond 2012). The data from such studies showed that a variety of metrics such as poverty level, urban versus non-urban, and regional differences could be used to predict student performance when using a hypothetical equalized financial distribution model.

Impact on Students with Low Family Income

According to the National Center for Education Statistics (NCES), the United States spent approximately $620 billion in 2013 on public elementary and secondary schools (NCES 2016). Many of these expenditures were spent on instruction, making teacher performance of special fiscal concern in education policy. Regarding indirect metrics, Jackson, Johnson, and Perisco (2015, 5) attempt to document and differentiate between "long-run outcomes and exogenous variation in school spending." By using panel data matched with school spending and fiscal reform data at the local level, they showed increased spending-per-pupil yielded increases in educational attainment in children from low-income families. The effects were lessened in children from non-poor families. The panel data results showed that per-pupil-spending has an effect on student performance; however significant results were determined by family poverty status, not by other school factors (2015).

Community Relations

Overview

The literature suggests parent and community member involvement positively affect school culture, impacting student achievement (Hagelskamp and DiStasi 2012; Sebastian and Allensworth 2012). These relationships contribute to capacity building and performance outcomes of those who develop and foster close working relationships (Calabrese et al, 2007). Some schools work with parents to hold them accountable for their children's success (Kannapel and Clements 2005; Weiss, Lopez, and Rosenberg 2010). Others work with community partners to increase their resources and give students nontraditional learning opportunities (Hagelskamp and DiStasi 2012). Regardless of the measures, research illustrates that parent and community involvement has a positive influence on school culture. Four key roles played by families to increase educational success are learning supporter, school partner, school improvement advocate, decision-maker and leader (Weiss, Lopez and Rosenberg 2010).

Definition

School community refers to individuals, groups, businesses, and institutions invested in the welfare and vitality of a school district and its community (Glossary of Education Reform 2004). Community relations address the intersection between schools, districts, and the communities in which they reside.

Community Support

Kannapel and Clements (2005) used a standardized school audit instrument developed by the Kentucky Department of Education to examine common characteristics that appear to contribute to high student performance and are shared by a set of high performing, high poverty schools. Eight schools were selected. These schools received high ratings on the audit, scoring high in areas of school culture and student, family, and community support. Each of the eight schools shared common characteristics: high expectations, relationships, academic, instructional focus, student assessment, leadership and decision-making, faculty work ethic and morale and teacher recruitment, hiring, and assignment. At the studied schools, "high expectations" were exhibited in concrete ways. Audit results revealed that faculty and staff took responsibility for student learning. Each of the eight schools emphasized strong relationships. Fostering respectful relationships among adults, between adults and children, and among children, as well as relationships between school staff and parents and families was extremely important. Careful and intentional recruitment, hiring, and assignment were a focus in each of the eight schools. These practices contributed to high morale and overall success (2005).

Schools can also form relationships with community partners. For example, MC^2 STEM High School has fostered strong formal relationships with partner organizations such as General Electric, NASA, and the Great Lakes Science Center, providing content, instructors, tutors and opportunities for internships (Hagelskamp and DiStasi 2012).

Appreciative Inquiry

Calabrese et al. (2010), in a study examining the effects of appreciative inquiry on communal relations, applied a theoretical framework known as "appreciative inquiry," which involves four stages: discovery, dream, design, and destiny. The appreciative inquiry (AI) cycle consists of four steps and stages: establishing a common set of protocols (discovery), identifying themes from successful experiences (dream), building a blueprint based on the design (design), and committing the blueprint to action (destiny) (Whitney and Cooperrider 2000). Participants in the dream stage generated seven themes: collaboration, framing student and community growth from a global perspective, enriching student lives, open-mindedness, promoting community pride, connecting pride in the past to the present, and fostering progressive thinking. The study yields three key findings regarding the effects of appreciative inquiry: greater respect and value of strengths and assets, transformation of culture, and increase in social capital (Calabrese et al. 2010).

In another study by Calabrese et al. (2007), relationships contribute to capacity building and performance outcomes of those who develop and foster close working relationships. Building close-knit relationships based on mutual trust is critical for organizational effectiveness (Lorenz and Riley 2000). Those who participated in relationship building also acted as "conduits of hope," becoming ambassadors to community agencies in assuming leadership and serving as a stimulus to create new networks and build social capital (Ruiters 1997). Participation in the appreciative inquiry cycle resulted in an increase in social capital, referred to as "bridging capital", between and among school districts and community agencies. This increase in bridging capital fostered an awareness that district and community survival were linked to creating and sustaining global connections (Calabrese et al. 2010).

Family Engagement

Weiss, Lopez, and Rosenberg (2010) argue that family, school, and community engagement should be key strategies in building a student's pathway to college and career readiness. According to the authors,

family engagement is a shared responsibility, must be continuous throughout an individual's lifetime, and should occur across multiple settings. They assert that family engagement should be systemic, purposefully designed as a core component of educational goals, integrated, embedded into structures and processes, and operationally sustainable with adequate resources. Schools and communities must leverage family assets to support personalized learning and cultivate a growth mindset in students. Community engagement refers to support, services, and advocacy activities that community-based organizations provide to increase student learning and foster family engagement (2010).

Weiss, Lopez, and Rosenberg (2010) advocate for four key roles played by families to increase educational success: learning supporter, school partner, school improvement advocator, decision-maker and leader. According to the authors, multiple policy opportunities exist in the following areas: leadership, capacity building, training and development, innovation, and learning and accountability. They also advocate for the need for systemic family engagement and data-driven reform in transforming low-performing schools. Three key elements involved in reframing family engagement in education were identified. First, it is imperative that individuals understand engagement is a shared responsibility. Second, family engagement is a continuous process. Third, family engagement reinforces student learning in multiple settings. Further, data-driven reform is imperative. Data can be used to support short-term and long-term education goals (2010).

Increasing families' knowledge of academic goals and demonstrating how they can partner with staff to reinforce learning within the home and community can complement and strengthen efforts made in the classroom. Research also shows that ninth grade is a critical year for students in terms of college-readiness and post-high school success (The Consortium on Chicago School Research at the University of Chicago 2007). Family engagement tends to drop off as children transition into adolescence; therefore, engaging parents is critical to student success. Families of students in high-poverty schools are more likely to need assistance in not only understanding how to interpret their students' performance but also in acting on such information in a beneficial way (Weiss, Lopez, and Rosenberg 2010). Combined, these factors demonstrate some of the obstacles that parents face when looking to strengthen and complement student classroom experiences.

Teacher Professional Development

Overview

The current educational environment emphasizes the need of teachers to teach critical thinking skills (Gulamhussein 2013). Teachers must develop their content knowledge in their respective areas to present information in different ways and increase student understanding, and thus their outcomes (Garet et al. 2001; Gulamhussein 2013; Heba et al. 2015; Holm and Kajander 2015). To develop teacher knowledge, schools invest in professional development opportunities for teachers. Continuous, interactive, content specific, and collaborative professional development opportunities with built-in support systems facilitate teacher success (Garet et al. 2001; Gulamhussein 2013; Heba et al. 2015; Holm and Kajander 2015). These elements encourage teachers to develop content knowledge and master teaching techniques. Learning the difference between these professional development opportunities increases the likelihood that teachers are participating in optimal opportunities that will maximize their students' success.

Definition

Effective teacher development is demonstrated by a teacher's augmented ability to improve their student outcomes as a result of internal and external development opportunities provided by their employer.

Interactive Development

Effective educator professional development activities include an interactive aspect. Many professional development opportunities tend to follow a lecture-based "workshop" format. According to Gulamhussein (2013), at least 90 percent of teachers have attended a workshop in the past year, many of which were structured in such a way that the educators were passive participants in their learning (Gulamhussein 2013; Heba et al. 2015). Research demonstrates this is not the best way to increase teacher effectiveness. The workshop structure assumes that teachers are deficient in knowledge; thus if knowledge is transferred to them, they will improve their teaching enough to increase student achievement (Gulamhussein 2013; Webster-Wright 2009). This theory of deficiency is the reason for most common workshop formats. However, teachers struggle with implementing, rather than learning, professional development practices (Gulamhussein 2013; Heba et al. 2015). Teachers have expressed concern about workshops being too short and not allowing enough time to practice the techniques learned (Gulamhussein 2013; Heba et al. 2015). Interactive activities could help with the implementation struggle by giving teachers the opportunity to practice the teaching techniques they learn during professional development training (Gulamhussein 2013; Heba et al. 2015; Webster-Wright 2009).

Ongoing Professional Development

In addition to interactive professional development opportunities, the literature indicates that continuous professional development improves teaching. According to Gulamhussein (2013), programs lasting less than 14 hours had no effect on teacher improvement. On the other hand, Garet et al. (2001) found that reform programs that lasted 35 hours on average did have an effect on teacher improvement. Researchers have deemed workshops as largely ineffective because they do not provide teachers the opportunity to practice what they have learned—a concern echoed by teachers (Gulamhussein 2013; Heba et al. 2015). Conversely, professional development opportunities that span a longer period of time, such as learning communities, coaching sessions, and modeling, have been deemed more effective at improving teaching (Garet et al. 2001; Gulamhussein 2013; Holm and Kajander 2015). This is because teachers are encouraged to continue mastering the practices learned despite failures (Gulamhussein 2013). Furthermore, longer-spanning professional development opportunities offer more active learning opportunities to overcome the implementation struggle (Garet et al. 2001; Heba et al. 2015). However, professional development opportunities that span a longer period of time tend to be costlier in terms of money and time, a possible deterrent to pursuing continuous professional development (Garet et al. 2001; Gulamhussein 2013).

Continuous professional development also enhances educators' effectiveness enough to improve student outcomes. Although researchers largely denounce the workshop format of professional development, a report by Yoon et al. (2007) outlines that workshops can be designed in a way that delivers continuous and effective professional development. Teachers who received professional development using the workshop format averaged 49 professional development hours and increased their students' achievement score by an average of 21 percentile points (2007). The authors found that follow-up sessions for the main workshops were offered to support teachers implementing the new teaching techniques that they learned (2007). A well-organized structure for professional development is more meaningful than its type (Guskey and Yoon 2009).

Content Knowledge

The content and materials provided in development programs can have just as much of an effect on teacher quality as the program type. More scholars are finding that professional development opportunities that provide teachers with greater content knowledge relate to higher student achievement. Professional development support systems that encourage content knowledge growth give teachers a deeper understanding of their subjects, enabling them to present the material in several different ways to aid student understanding (Garet et al. 2001; Guskey and Yoon 2009; Holm and Kajander 2015). Developing content knowledge is particularly important for mathematics and science teachers who have

not completed a degree in the content area, addressing how a lack of knowledge may hinder a teacher's ability to teach due to a lack of expertise (Holm and Kajander 2015; National Research Council 2011). According to Darling-Hammond and McLaughlin (2011, 82), content learning provides the most utility when it focuses on "concrete tasks of teaching, assessment, observation and reflection rather than abstract discussions of teaching," because it deepens teachers' knowledge of a subject.

Support System

Professional development opportunities that offer support systems are more effective than those that do not because teachers can encourage each other to continue trying techniques and can share feedback for improvement (Gulamhussein 2013; Holm and Kajander 2015; National Research Council 2011). Research shows that teachers may abandon an effective technique before fully mastering its execution, demonstrating the necessity of feedback and encouragement (Gulamhussein 2013; Holm and Kajander 2015). Learning communities also allow teachers to share teaching techniques (Holm and Kajander 2015). According to the Alberta Assessment Consortium (AAC) (2012), a supportive and collaborative professional development system can build teachers' confidence and facilitate learning. Other scholars have noted that collaborative professional development support systems that focus on student learning result in changed teacher practices and improved student achievement (Wei et al. 2009). This is potentially because they are required to respond to collective standards regarding teaching quality, thus encouraging learning (2009).

Coaching sessions, another method of support, are also associated with a multitude of benefits. Coaching allows teachers to gain professional development that is specific to his or her classroom, grade level, or academic level, increasing its utility to the teacher (AAC 2012). One study found that these coaching sessions can dictate whether changes in teachers' practices are sustained after the initial training has occurred (2012). However, it can be expensive to bring in an outside coach for a teacher (Jayaram, Moffit, and Scott 2012). Finding the money to partake in opportunities such as coaching and learning communities may involve a trade-off between current professional development activities (Gulamhussein 2013; Jayaram, Moffit, and Scott 2012).

Data Usage

Overview

Data usage has become more prevalent and important in preparing classroom instruction, designing student-level interventions, and creating test preparation. Hagelskamp and DiStasi (2012) and Fryer (2011) identify the use of data as a best practice in education, regardless of school type. Scholars recommend the following steps to create a data-driven culture: incorporating data into an ongoing cycle of instructional improvement, teaching students to use their own data to set learning goals, establishing a clear school-wide vision for data usage, providing training and support to promote a school wide data-driven culture, and develop a sustainable district wide data system (National Association of Elementary School Principals 2011). To sustain this data-driven culture, Messelt (2004) recommends conducting an information inventory, standardizing data management, analyzing existing data, implementing measures for continuous improvement and communicating results.

Definition

Effective data usage informs student instruction and creates a culture of self-improvement among teachers and students (Messelt 2004). Data usage can narrow achievement gaps, enhance teacher quality, improve curriculum, share best practices, communicate issues in education more effectively, encourage parental involvement, increase dialogue among education stakeholders, and improve decision making and instruction (Hagelskamp and DiStasi 2012; Fryer 2011).

Data in Decision Making and Instruction

Messelt (2004) discusses the importance of decision making being data-driven in a white paper entitled "Data-Driven Decision Making: A Powerful Tool for School Improvement." Data-driven decision making is about collecting appropriate data, analyzing the data in a germane way, putting the data in the hands of those who need it, using the data to increase efficiency and improve achievement, and communicating data-driven decisions to stakeholders. Data-driven decision making can be used to narrow achievement gaps, improve teacher quality, improve curriculum, share best practices, communicate issues in education more effectively, encourage parental involvement, and increase dialogue among education stakeholders. Messelt (2004) recommends five steps for implementing a data-driven decision making system: conduct an information inventory, standardize data management, analyze existing data, implement measures for continuous improvement, and communicate results.

Fryer (2011) highlights the frequency of data usage in classroom instruction to alter the scope and sequence of classroom instruction as an education best practice. The National Association of Elementary School Principals (NAESP) (2011) produced a white paper entitled "Using Student Achievement Data to Support Instructional Decision Making." This white paper outlines five recommendations to help principals put student achievement data to good use: incorporate data into an ongoing cycle of instructional improvement, teach students to use their own data to set learning goals, establish a clear school-wide vision for data usage, provide training and support to promote a school wide data-driven culture and develop a sustainable district wide data system (2011).

To incorporate data into an ongoing cycle of instructional improvement, teachers must collaborate amongst themselves to maximize data use benefits (NAESP 2011). Collecting and preparing data about student learning, interpreting data and developing hypotheses regarding student learning improvement, and modifying instruction to test these hypotheses are the key steps for incorporating data in the classroom. Once the data is in the classroom, teachers can use students' data analysis to identify factors that motivate student performance to teach students to use their own data to set learning goals that better fit their instructional needs. This can be done by explaining expectations and assessment criteria, providing timely, specific, and constructive feedback to students, providing tools to help students learn from feedback, and using data to guide instructional change. Principals can form a data team to serve as advisors throughout the school to act as a model for the use of data and establish a clear school-wide vision for data usage through establishing a school wide data team, defining critical teaching and learning concepts, developing a written plan articulating roles and responsibilities, and providing ongoing data leadership (2011).

Data facilitators and professional development can help school staff obtain an understanding of their roles and responsibilities in using data, providing training and support to promote a school-wide data-driven culture (NAESP 2011). Data facilitators can be implemented by designating a school-based facilitator who collaborates with teacher teams in discussing and solving data problems, dedicating structured time for staff collaboration, and providing targeted professional development. Finally, to develop a sustainable district wide data system, a district data system advisory council should be involved in determining requirements, selecting, and implementing the new system. The process to do so consists of involving a multitude of stakeholders, clearly articulating system requirements, and planning and staging the implementation of the data system (2011). Effective data usage informs student instruction and creates a culture of self-improvement among teachers and students.

Many school leaders discussed the importance of reviewing and analyzing data on student learning (Johnson, Rochkind, and Doble 2008). Some, including most transformers, viewed data as a means for setting goals, analyzing problems, and allocating resources. Others, including the majority of copers, saw data as a burden, not an asset. When discussing how to recruit leaders, nearly all principals and superintendents believed the best pool of applicants were young teachers or vice principals already in the schools. While most leaders thought more money would help entice leaders to school administration, few

thought this alone would be sufficient. Principals declared that the most important element to attract and retain leadership is adequate support (Johnson, Rochkind, and Doble 2008).

Schedule Structure

Overview

Another theme that emerged from the literature regarding best practices that affect student improvement is the structure of a school's schedule. Adjustments have been made in school schedules to maximize time spent in instruction. These adjustments include block schedules to increase students' time with a particular subject area, later start times to account for hormonal changes, and extended schooling hours, days, and years to increase students' engaged learning time. The impacts of school schedule structure reform on student improvement are mixed at best, suggesting that the assumption, greater time in school leads to more learning, does not always hold true (Hossler 1988). In fact, reforms could result in increased costs and a transition period that could result in a temporary decrease in student performance (Gruber and Onwuegbuzie 2001). These results are further clouded by variables such as race, socioeconomic status, and teacher time management effectiveness. Schools and districts should be aware of this nebulous relationship when making potentially costly changes to their scheduling.

Definition

Schedule structure is the way in which a school or district assigns time for curriculum instruction each day, week, month, or year. It is examined here in terms of its effect on student academic improvement.

General Structure

Currently, many states have a minimum amount of time required for students to spend in school –180 days, averaging six hours per day (O'Brien 2006). Traditionally students have attended seven classes daily varying from 45-55 minutes each (Arnold 2002). Over the years, state legislatures have attempted to increase the minimum amount of time for students under the assumption that greater time in school will increase learning (Gardner 1983). The minimum amount of days has not been incorporated into law for an overwhelming majority of the states (34 states) due to the additional expenses associated with increasing time in school (Aronson, Zimmerman, and Carlos 1999). The following subsections will examine the nuance within these structures.

Block Schedules

The demand to increase the amount of time spent on a subject area led to the increased prevalence of the block schedule. There are two popular block schedules: the four-by-four block schedule and the A/B block schedule (Arnold 2002; O'Brien 2006). On the four-by-four block schedule, four classes meet every day for 90 minutes for 90 days. After the first 90 days, four new classes meet for 90 minutes for 90 days. Thus, eight classes are essentially split between the two semesters of the school year. The A/B block schedule, on the other hand, requires classes to meet every other day for 85-100 minutes for the entire 180-day school year. One class meets at a consistent time each day for the traditional 50-minute period. Currently, approximately two-thirds of schools operate on the traditional schedule (O'Brien 2006). Among those that operate on the block schedule, the A/B block schedule is the most popular, followed by the four-by-four block schedule (2006).

Researchers have sought to parse out the impacts of block schedules on students' academic performance, and different studies have yielded different results. One researcher found that the A/B block schedule did not necessarily increase high school students' overall achievement on the Virginia standardized tests, and he discovered decreases in standardized test scores over time (Arnold 2002). Another group of researchers found no statistically significant difference in GPA and writing scores on the Georgia High School Graduation test between students on a four-by-four block schedule and a traditional

block schedule, and that students who received instruction via a traditional schedule received statistically significant higher scores in arts, math, social studies, and science on the test than those on the four-by-four block schedule (Gruber and Onwuegbuzie 2001). Likewise, in a North Carolina school district, students tended to do better on a traditional schedule as opposed to a block schedule (Lawrence and McPherson 2000). Mean ACT scores in all subjects increased for those students on a block schedule in comparison to a traditional schedule (Harmston et al. 2003). Additionally, some researchers have noted that students on a four-by-four block schedule demonstrated increases in student daily attendance, the number of students making the honor roll, and students going on to four-year colleges (O'Neil 1995).

Research does indicate that it can take over a year for teachers and students to get adjusted to block schedules (Gruber and Onwuegbuzie 2001). Therefore, there may be a temporary decrease in student performance during this transition phase. It is not clear, however, whether this temporary decrease is statistically significant.

Later Start Times

Many researchers agree that students in elementary, middle, and high school are sleep-deprived due to irregular sleeping patterns caused by developmental changes (Bergin and Bergin 2009; Edwards 2012; Keller et al. 2015). Nationally, adolescents tend to begin school around 8:00 AM, which is earlier than elementary and middle school students (Edwards 2012). High school students tend to wake up early because districts stagger their start time to reduce the number of buses used, and thus transportation costs (Edwards 2012; O'Brien 2006). Yet, researchers have noticed that adolescents do not go to bed earlier, resulting in sleepiness during school hours (Bergin and Bergin 2009; Edwards 2012). The resulting sleepiness has led researchers to believe that students are not performing as well as they could. Although this research has not been conducted, middle and elementary school children are believed to experience similar sleep deprivation issues as high school students (Bergin and Bergin 2009; Edwards 2012).

Edwards (2012) took advantage of a quasi-experiment in Wake County, North Carolina, to examine the impact of later start times on middle school students and found an increase in academic performance. These researchers found that 45 percent of middle school students at early starting schools have math test scores at or below the 50th percentile, while 36 percent of students at late-starting schools test at or below the 50th percentile. Additionally, they found a one-hour later start time decreased the black-white test score gap by roughly 14 percent, the eligible and ineligible free or reduced price lunch test score gap by 40 percent, and the parental education test score gap by 85 percent. These results were strongest for the lowest performers (2012).

Another study on Kentucky elementary students found that earlier start times were associated with poorer academic performance for middle and upper-class students (Keller et al. 2015). The difference associated with a one-hour difference in start time ranged from three to seven points on the Kentucky standardized test, with no impact on lower income students (2015).

Year-Round Schooling

Year-round schooling (YRS) is another schedule structure and may be implemented by school districts for several reasons. To alleviate overcrowding, schools may place students on a "multi-track system" where each track comes with its own unique schedule (O'Brien 2006). By implementing year-round schools, districts can tinker with state minimum time in school mandates by adjusting their schedule so that some students are in school while others are on vacation, spreading the 180-day mandate over the entire twelve months rather than the traditional nine.

For instance, Wake County, North Carolina implemented a multi-track system where the school year was separated into four quarters, with 45 days of instruction and 15 days of break (McMullen and Rouse 2012). This increased their campuses' capacities by 20 to 33 percent. Another reason school districts

may implement year-round schooling is to minimize the effect of learning loss that occurs over the summer, especially for lower-income students (2012).

As with block scheduling and later start times, the effect of YRS on student improvement is not definitive. In the Wake County study, students in YRS tended to be white (McMullen and Rouse 2012). When controlling for race, researchers found that there was a positive impact on the sample, but these results may overstate the impact of YRS on student improvement. They also found that the estimates on reading test scores for African American students were positive, but the effects were not statistically significant (2012).

Similarly, other researchers have noticed that positive effects are found overall for YRS, but negative results are found once socioeconomic factors are considered. Hossler (1988) mentioned that YRS alone does not necessarily lead to improved student performance. Rather, it is the effective use of the additional time that results in improved student performance. Hossler concluded that if schools were not effectively using their time before, it is unlikely that YRS will result in positive results for that school (1988). Overall, it is not clear if the additional learning outweighs the additional expenses associated with extending the school year.

Classroom Management

Overview

With increased focus on student performance and school district effectiveness, the effect of teachers can often go overlooked. Classroom management is crucial to understanding teacher and student performance. Thus, researchers have examined a variety of methods that look at managing disruptions, keeping students on task, and reducing teacher stress (Caldarella et al. 2015). Some methods, such as classroom management training with intervention have been shown to reduce "reality shock" and increase teacher retention and quality (Caldarella et al. 2015). Schools must choose which methods work best for their teachers, considering retention and student performance.

Definition

Classroom management refers to policies implemented by teachers to engage with and manage pupil education. Time management skills, teacher training, and other factors designed to reduce teacher stress and improve student participation are all tools for classroom management. Techniques are often designed to reduce "reality shock," or the distress felt by teachers who move from the student to teacher role. Proactive classroom management refers to the creation and management of a positive, routine, and planned learning environment, while reactive classroom management encompasses a redirection or reframing of teaching as a result of ongoing classroom activity (Clunie-Ross et al. 2008). Classroom management encompasses several different methods; some focus on teacher retention, others focus on student misbehavior management.

Managing Disruptions and Teacher Stress

Key effects of classroom management that have been examined at length are its influence on self-efficacy in the classroom class disturbances, and student performance. Dicke et al. (2014) found that a moderation-mediation model proved to have statistically significant results in reducing teacher stress and increasing student participation. The moderated-mediation model is a feedback design in which a moderator "shapes" and a mediator "conveys" feedback to a student (Caldarella et al. 2015). Caldarella et al. (2015) found improved student performance in kindergarten through second grade when classroom management practices such as class-wide function-related intervention teams (CW-FIT) were implemented (Dicke et al. 2015). CW-FIT is a behavioral intervention technique to teach and reinforce appropriate skills in a game format (Dicke et al. 2015). Classroom management policies can positively influence student behavior. Researchers also found that management intervention training was

successful in managing teacher stress and increasing student engagement, helping teachers manage classroom disturbances and even reducing their attrition rates (Dicke et al. 2015). Management intervention describes any method by which an administrator offers feedback to an instructor prior to an instructor's actions in a classroom.

Another topic of interest in the field of classroom management has been the comparison of proactive and reactive classroom management activities and their relation to teacher stress and student behavior. By using teacher self-reports, Clunie-Ross et al. (2008) found student misbehavior was the most common cause for teacher stress that harmed classroom management. Reactive management strategies were found to be most effective at reducing such misbehavior and improving teacher retention (Clunie-Ross et al. 2008). Teachers did not seem to communicate their management issues with other teachers, making preventative measures crucial to effective management (2008).

Student Discipline

Overview

Zero tolerance student disciplinary policies can have detrimental effects on student performance by removing them from the classroom and creating unhealthy cultures for student achievement (Skiba et al. 2008; Sugai and Horner 2002). An alternative found in positive behavior support (PBS) practices can serve to better student performance through a whole school approach. PBS practices focus on rewarding positive behavior through a school wide commitment to promoting, rather than oppressing, certain behaviors and developing students in a process rather than a singular event (Bradshaw et al. 2009; Osher et al. 2010; Sugai and Horner 2002).

Definition

"Disciplinary practices" are defined as formalized steps taken by a district or school intended to maintain order and safety in a student's environment, thus promoting a positive learning experience. At their most basic level, disciplinary practices exist to keep students safe and create an environment with minimal chaos, essential elements if students are to succeed academically (Skiba et al. 2008). This is the first implied best practice of disciplinary practices: having school discipline is better than no school discipline.

Zero Tolerance Policies

Zero tolerance policies are disciplinary practices in which a predetermined consequence is applied in response to a particular behavior (Skiba et al. 2008). The consequences are typically severe in nature, focusing on actions such as expulsion or suspension from certain school-functions or privileges. An American Psychological Association (APA) task force formed to examine zero tolerance policies came to several conclusions. First, the effectiveness of zero tolerance policies is in doubt. The task force found that zero tolerance policies often did not produce disciplinary action any more consistent than other forms of discipline, despite arguments that set punishments would. In fact, zero tolerance policies have been found to disproportionately affect students of color and students with disabilities (2008). Schools with more punitive punishments were found to have environments less conducive to learning, harming the ability of students to learn, and zero tolerance practices were found to not have a deterrent effect (Skiba et al. 2008; Sugai and Horner 2002). On the contrary, at least one study found that such measures increased the severity and rate of incidence of the behaviors they were meant to deter (Safran and Oswald 2003).

The APA study authors further recommend that if zero tolerance practices are to continue in schools, reforms need to be made (Skiba et al. 2008). They recommend redefining what practices are worthy of the most punitive measures, such as expulsion or suspension, defining the penalties for a range of infractions at a range of levels, defining the infractions themselves, applying zero tolerance policies with greater context, considering the context of the offense, and training campus police officers in adolescent

development (2008). Despite zero tolerance policies being widespread in United States schools for more than 20 years, there has been little evidence or effort to study the effects of such practices (Skiba et al. 2008; Sugai and Horner 2002).

Positive Behavior Support Practices

Disciplinary policies that move beyond the focus on the individual student to create an environment that rewards good behavior and focuses on developing students who display bad behavior are an alternative to punitive zero-tolerance policies. More commonly coined "positive behavior support" (PBS), or alternatively "positive behavioral interventions and supports" (PBIS), such policies are a broad range of practices driven by data and focused on achieving social and learning outcomes while also preventing negative behavior (Sugai and Horner 2002). Such a policy, or a derivative thereof, can be found in more than 7500 schools in the U.S. today (Bradshaw et al. 2009).

PBS policies set expectations in advance for students in a school-wide focus on institution culture and operation, creating systems of support for students who misbehave to give them opportunities to learn from their mistakes and develop (Sugai and Horner 2002). They clearly define behavioral outcomes to students, teachers, and parents, use research-validated practices, make decisions based on data analysis, and have systems in place that ensure widespread implementation of the policies on the campus (2002). Such actions are generally referred to as "whole school reforms" (Bradshaw et al. 2009; Osher et al. 2010; Sugai and Horner 2002). An additional element of PBS policies is the reward of positive behaviors (Osher et al. 2010). Passing out coupons to students who are seen behaving in the correct manner that they can later redeem for prizes or other rewards is an example of a PBS policy (Safran and Oswald 2003).

The implementation of PBS practices was found to increase student performance along with student perceptions of safety (Bradshaw et al. 2009). Campus organizational health, among whose measures include academic performance, is a predictor of PBS implementation success- and increases in health are typically another outcome (Bradshaw et al. 2009; Osher et al. 2010). Schools with the lowest levels of academic emphasis saw the greatest gains in the same category upon the implementation of PBS, suggesting that PBS positively affects at least some academic outcomes (Bradshaw et al. 2009). Schools that saw the largest increases in quality had standardized their training in PBS for their faculty (2009). This supports a larger observation that the implementation of PBS practices will have a greater impact on some campuses than others, and the research is not clear as to which campuses are which (Safran and Oswald 2003). A practical application of such practices are behavior-focused alternative schools, where especially problematic children who struggle to behave are placed in alternative environments with more resources focused on behavioral changes and support (Wilkerson et al. 2016). A study of one such program produced a mixed bag of results. The program seemed to decrease minor student discipline issues, but also failed to have a substantial impact on student attendance, suspensions, and earned credits, all important factors when considering academic performance (2016).

Extracurricular Activity Participation

Overview

Participation in extracurricular activities by students is related to positive outcomes such as reductions in some risky behaviors, increased academic performance, and improved social connections with the school and peers (Feldman and Matjasko 2005). If one accepts that participation in extracurricular activities has a positive effect on student achievement, then the question of best extracurricular practices that positively affect achievement is less about the existence of participation and more about how institutions can incentivize extracurricular involvement. Practices regarding a school's program structure, operational framework, funding mechanisms, volume of participation, and activity type influence participation and its effects on students of a variety of demographics. Such practices found to increase participation can thus

be considered "best practices" for promoting extracurricular involvement that subsequently improves a host of student outcomes, including academic performance.

Definition

Extracurricular activities are defined as any activities that a student may participate in outside of the classroom that are operated through the school. For example, a lab in a science class is not extracurricular, but a science club is. Additionally, athletics or other activities not sponsored by the school, for example Little League Baseball, are not defined as extracurricular activities.

Extracurricular Activity and Student Improvement

While there are slight deviances depending on student characteristics and other factors, it is generally accepted that extracurricular activity participation has a positive relationship with academic achievement, according to a comprehensive review of extracurricular literature conducted by Feldman and Matjasko (2005). The relationship is weakened once controls for external factors such as maternal education or ability-test scores are considered, but the relationship remains significant (Eccles and Barber 1999; Feldman and Matjasko 2005). Extracurricular activities are not graded and generally do not directly affect student achievement in the sense that participation in an activity leads to automatically better test scores. Researchers have therefore proposed that benefits from extracurricular participation, such as increases in connectedness with the school, positive attitude changes concerning education, and the formation of peer groups are at least part of the reason for the relationship between achievement and participation (Feldman and Matjasko 2005). Students who participated in extracurricular activities were less likely to drop out, more able to find peer groups they identified with, and better able to function socially than their non-participatory peers (2005).

The research is unclear on whether extracurricular activities deter or encourage risky behavior such as drug use, alcohol use, and sexual activity (Feldman and Matjasko 2005). Rather, depending on the activity, different peer groups were likely to participate in different risky behaviors (2005). For example, Eccles and Barber (1999) found that boys who participated in a sport were more likely to drink alcohol than girls in a sport or peers who did not participate in a sport. The majority of the research indicates that of the extracurricular participants, those in sports participated in more risky behaviors than their peers in other activities (Feldman and Matjasko 2005). Across the board, extracurricular participation was found to generally reduce sexual activity in comparison to peers who did not participate (2005).

Structural Promoters of Extracurricular Participation

At the micro level, various student characteristics that cannot be controlled by schools influence their choice to participate in extracurricular activities (Feldman and Matjasko 2005). In Feldman's review of the literature examining extracurricular activity, there has been limited research concerning institutional structures or programs that influence participation. The size of a school, campus safety, teacher characteristics such as who sponsors extracurricular groups and how they recruit students to join, and the cultural emphasis of a school can all influence participation levels. Programs that limit the number of students who can participate inherently exclude some students from involvement, meaning that the larger the school the lower the proportion of students who can participate. Safer campuses create an environment where students feel safer to participate in activities outside of school hours. Schools whose culture emphasizes academics, restricting extracurricular participation through mechanisms such as GPA minimums and more constraining course loads, see lower levels of extracurricular participation (2005). It should be noted that school size, campus safety, and school culture are all also factors in student academic achievement outside of their influence on extracurricular participation.

Funding

In part due to their rapidly growing cost, the first programs to get cut in a budget crunch are often extracurricular activities in part due to their rapidly growing cost (Hoff and Mitchell 2006). Some schools

and districts have responded to budget cuts by creating participation fees, increasing ticket sales and costs, fundraisers and booster clubs, and using co-operatives between sports programs and schools-sharing resources like facilities and coaching across programs (Hoff and Mitchell 2006; Morton 1995). Some states have implemented a "pay to play" funding program to try and offset some of the costs, asking that students pay a fee to participate (Hoff and Mitchell 2006). However, pay to play structures reduce student participation (Ryan 2003). In several instances, such structures have been banned, with the California Supreme Court even ruling that extracurricular activities are a legal right for students, as an integral part of a "free public education," that cannot be paid for via student fees (Snow 2012). Ultimately, "pay to play" funding structures prevent those students who are most likely to benefit from extracurricular activities, those who are underrepresented and socioeconomically disadvantaged, from participating (Hoff and Mitchell 2006).

Potential best practices to reduce the costs and increase the funding of extracurricular activities rather than asking students to pay to play include sharing resources across districts (such as transportation to and from events or competitions), condensing programs to focus on their educational benefits rather than an experience (such as capping travel to extravagant tournaments), fundraising to pay for equipment and other needs, or seeking out corporate sponsorships from the community and beyond (Hoff and Mitchell 2006; Morton 1995; Ryan 2003).

Volume of Participation

While there is consensus that extracurricular participation is a positive activity, some scholars have worried that excessive participation could result in negative experiences for students rather than positive academic outcomes, also known as the "Over-Scheduling Hypothesis" (Mahoney and Vest 2012). The theory posits that too much extracurricular participation could result in added stress for students, and subsequently lead to a range of negative behaviors that harm student development and performance. However, research largely does not support this theory, indicating that students who participate in extracurricular activities regardless of level of intensity are still better off than those who do not participate in extracurricular activities (2012). Thus, it is good policy to encourage extracurricular participation, rather than try and monitor intensity of participation. In fact, research points to better outcomes with each additional activity participated in, with the type of activity rather than the volume having an impact on performance (Feldman and Matjasko 2005; Fredricks and Eccles 2006).

Extracurricular Structures

School structures also effect extracurricular participation. A study by Gifford and Dean (1990) found that 9th grade students in Mississippi who attended middle school rather than attending senior high school (9th grade was a part of their middle school) participated in significantly more extracurricular activities. A common approach to extracurricular activities, the "No pass, no play" rule, which requires student participation to be contingent on passing their classes, has been found to negatively affect student participation, especially among African Americans (Burnett 2000). The irony of this program is not lost; requiring students to do well academically can at times prevent the students who most need the academic promotion found in extracurricular participation from being involved. Engagement with the school that extracurricular involvement incentivizes leads to better achievement, not the negative reinforcement that "No pass, no play" rules create (2000).

Extracurricular Activities and Underprivileged Students

In studying extracurricular effects on SAT scores, Everson and Millsap (2005) found that extracurricular activity participation particularly helps minority and socioeconomically disadvantaged students achieve more than for their advantaged counterparts, indicating that extracurricular programs are most beneficial to less-advantaged students. This was echoed in a study by Dumais (2006), which found that less-privileged children derived greater benefit from extracurricular involvement than their more-privileged peers. Thus, it is concerning that students of lower socioeconomic status were found to be less likely to

participate in extracurricular activities, and that as socioeconomic status improved so too did levels of participation (Covay and Carbonaro 2010). Covay and Carbonaro (2010) further present that minority students were also less likely to participate in extracurricular activities, and credit this in part to unequal access to opportunities in communities that still experience de-facto segregation in funding and service provision.

Combined, this information indicates that while underprivileged students stand to benefit the most from extracurricular activities, they are the least likely to engage. Best practices would conceptually find ways to target these students who stand to benefit the most from participation.

Types of Extracurricular Activities

Eccles and Barber (1999) divided extracurricular activities into five separate categories, examining independently their influence on student performance (measured in graduation, assessment test scores, and GPA). In their study, students were given the option of identifying as participants among 46 distinct extracurricular activities, categorized into prosocial activities (volunteering), performance activities (fine arts such as dance or marching band), team sports, school involvement (student governments, cheerleading, pep squad), or academic clubs (such as the chess team or science club) (1999). Participation in prosocial activities, team sports, performance activities, and academic clubs was found to be positively related to higher GPAs, and all but participation in prosocial activities predicted higher than expected college enrollment at age 21 (1999). Despite differences in types of activities, involvement in an extracurricular activity boosted student academic performance at the high school-level (1999). This indicates that it is a good practice to encourage extracurricular involvement regardless of type. Controls for other factors that influence academic achievement, for example level of parental education and previous student test scores, underscore that there is some relationship between achievement and extracurricular involvement (1999). The research does not indicate if one type of extracurricular activity influences academic achievement more than another, but this is largely due to the fact that the literature has yet to examine differences between most extracurricular activities (for example one sport versus another) (Feldman and Matjasko 2005).

Summary of Literature Review Findings

The TSS narrative literature review was guided by the research question: "What research exists about the best practices used by higher performing districts and campuses?" After publications were identified, they were presented thematically across ten areas, administrative practices, school mission and climate, fiscal distribution, community relations, teacher professional development, data usage, schedule structure, classroom management, student discipline, and extracurricular activity participation, with applicable subcategories.

Scholars found that creating and supporting a commonly accepted vision and mission, engaging with teachers and data on student performance and instructional services issues, managing resources efficiently, promoting safe learning environments for staff and students, developing strong relationships with parents, communities and businesses, and acting in a moral and professional way were administrative practices that helped improve student achievement (CCSSO 2008; Marzano, Waters, and McNulty 2005; Stronge, Richard and Catano 2008). Researchers have demonstrated a link between a mission-led culture and student achievement (Fryer 2011; Hagelskamp and DiStasi 2012). Fiscal distribution was found in the research to have an indirect effect on performance, and programs that increase community and parental involvement as a method to increase performance have been promoted as a best practice (Baker 2016; Jackson, Johnson, and Perisco 2015).

The review also suggests that continuous, interactive, content specific, and collaborative professional development opportunities with built-in support systems facilitate teacher, and thus student, success (Garet et al. 2001; Gulamhussein 2013; Heba et al. 2015; Holm and Kajander 2015). Effective data usage

informs student instruction and creates a culture of self-improvement among teachers and students. Research regarding scheduling structure initiatives suggests that impacts on student improvement are mixed at best, indicating that the assumption (greater time in school leads to more learning) does not always hold true (Hossler 1988). Best classroom management practices, such as classroom management training with management intervention, were found to reduce "reality shock," increase teacher retention, and encourage higher teacher quality (Clunie-Ross et al. 2008). Finally, disciplinary practices that were not zero-tolerance and practices that encourage extracurricular participation were found to improve student academic performance (Bradshaw et al. 2009; Feldman and Matjasko 2005; Osher et al. 2010; Sugai and Horner 2002).

Results of this literature review informed the research for the remainder of the Capstone project, including a statistical analysis of publicly available quantitative data from TXSmartSchools.org and the Texas Educational Agency and a qualitative analysis of data obtained from interviews with select school district officials.

Section II: Quantitative Data, Methodology, and Findings

Quantitative Data and Methods

Secondary, data for the population of Texas public school districts (*N* =1,219) was examined using publicly available data from the TEA and TSS for the 2014-2015 academic year. Variables of interest from the TSS dataset included the TSS Academic Progress Measure, TSS Spending Index, and TSS Smart Score. Variables of interest from the TEA dataset included percentage of funds devoted to curriculum and staff development, percentage of funds devoted to instructional leadership, percentage of funds devoted to instruction, percentage of funds devoted to extracurricular activities, percentage of funds devoted to bilingual education, and administrative cost ratio. These variables were examined in a series of statistical analyses with controls.

Description of Variables

TSS variables were used to measure the cost efficiency and academic growth in districts. The TSS Smart Score and Spending Score were used to measure cost efficiency; Composite Academic Progress Percentile, Three-Year Math Progress Z Score, and Three-Year Reading Progress Z Score were used to measure the academic growth within a district. Detailed descriptions of these variables are as follows:

TSS Spending Index and Spending Score

To create valid financial comparisons, the TSS comparison tool identifies up to 40 fiscal peers for each school district based on common cost factors such as local labor market conditions, size and geography, and student demographics. Each district is assigned a spending index based on its spending relative to its fiscal peers. The district-level spending index compares core-operating expenditures per pupil (adjusted for differences in labor cost) within a group of similarly situated school districts. The spending index ranges from very low to very high. The analyses used the Spending Score, which translates the Spending Index into a five star scale, with half star increments. A score of five indicates the district is very low spending relative to its fiscal peers while a score of one indicates the district is very high spending district relative to its fiscal peers.

TSS Smart Score

TSS created a Smart Score that combines academic progress and spending measures to identify districts with cost-effective academic growth. Each district receives a Smart Score rating ranging from one to five stars, with half star increments.[4]

Composite Academic Progress Percentile

The Composite Academic Progress Percentile is the percentile ranking of combined annual academic student growth in math and reading averaged over the prior three years. The 2015 Composite Academic Progress Percentile is the average of the student progress shown on the STAAR and/or end-of-course exams for the 2011-2012, 2012-2013, and 2013-2014 school years. Values range from one (low) to 99 (high).

Three-Year Math Progress Z Score

The Three-Year Math Progress Z Score is the Z Score indicating how many standard deviations a district or school is from the average academic student growth in math over the prior three years on the 2011-2012, 2012-2013, and 2013-2014 STARR and/or end-of-course exam.

---

[4] TXSmartSchools.org. 2016. "About the Data." http://www.txsmartschools.org/about/data.php (September 5, 2017).

Three-Year Reading Progress Z Score

The Three-Year Reading Progress Z Score is the Z Score indicating how many standard deviations a district or school is from the average mean academic student growth in reading over the prior three years from the 2011-2012, 2012-2013, and 2013-2014 STARR and/or end-of-course exam.

Summary statistics for the population can be found in Tables 1, 2, and 3.

Table 1. Summary Statistics related to School District Controls

Control Variables	N	Mean	Standard Deviation	Minimum	Maximum
% Limited English Proficiency*	1219	10.17	10.17	0.00	92.20
% African American*	1219	9.69	16.35	0.00	98.10
% Economically Disadvantaged*	1219	58.41	20.88	0.00	100.00
% Special Education*	1207	8.95	3.64	0.00	46.00
% Hispanic*	1219	40.58	27.80	0.30	99.90
Log of **Enrollment Size***	1219	6.95	1.52	2.20	12.28
Log of Enrollment Size Squared	1219	50.58	22.73	4.83	150.70
Urban County Indicator*	1207	0.54	0.50	0.00	1.00
Charter*	1219	0.16	0.37	0.00	1.00

Table 2. Summary Statistics related to Dependent Variables

Dependent Variables	N	Mean	Standard Deviation	Minimum	Maximum
Composite Academic Progress Percentile	1165	49.57	28.81	0.00	99.00
Math Progress Z Score 3 Year Average	1165	0.00	0.10	-0.38	0.52
Reading Progress Z Score 3 Year Average	1165	0.00	0.07	-0.26	0.20
TSS Smart Score	1165	3.04	0.99	1.00	5.00
TSS Spending Score	1188	3.06	1.30	1.00	5.00

Table 3. Summary Statistics related to Variables of Interest

Variables of Interest	N	Mean	Standard Deviation	Minimum	Maximum
% All Funds Curriculum and Staff Development	1207	1.21	1.25	0.00	13.00
All Funds Curriculum and Staff Development Expenditures	1207	$ 829,347.40	$ 3,316,060.00	0.00	$ 64,400,000.00
% All Funds Instruction	1207	54.42	4.94	33.6	73.71
All Funds Instruction Expenditures	1207	$ 594,906.10	$ 1,901,175.00	0.00	$ 30,800,000.00
All Funds Extracurricular Activities	1207	$ 1,132,725.00	$ 2,345,315.00	$(2,000.00)	$ 26,800,000.00
% All Funds Extracurricular Activities	1207	4.02	2.29	-0.05	33.09
All Funds Bilingual Education Expenditures	1207	$ 725,144.50	$ 4,904,462.00	0.00	$129,000,000.00
% All Funds Bilingual Education	1207	1.17	2.02	0.00	36.69
Administrative Cost Ratio	1207	0.13	0.08	0.01	0.78
% All Funds Instructional Leadership	1207	1.08	1.27	0.00	11.17
All Funds Instructional Leadership	1207	$ 22,300,000.00	$ 66,400,000.00	206,879	$1,060,000,000.00

Quantitative Statistical Techniques

The analysis primarily employed ordinary least squares (OLS) regression and ordered probit regression. For preliminary analysis of the administrative cost ratio variable, a t-test was used to determine if there was a difference in average administrative cost ratios between charter school districts and traditional public school districts.

Ordinary Least Squares Regression

The OLS regression was chosen as a statistical technique because it measures the percentage point change in academic progress measures associated with a one-percentage point change in percent of budget devoted to expenditures. This statistical technique was used to test percent spending on curriculum/staff development, extracurricular programs, instruction, bilingual education, and administrative cost ratio in relation to academic progress. The following baseline equation is the foundation of the OLS regression analyses where $outcome_i$ is the measured effect of the independent variables on the dependent variable, and the independent variables being measured are controls.

$$outcome_i = \beta_0 + \beta_1 * \text{studentsafricanamerican} + \beta_2 * \text{studentshispanic} + \beta_3 * \text{economicallydisadvantaged} + \beta_4 * \text{special education} + \beta_5 * \text{lenrollment} + \beta_6 * \text{lenrollment}^2 + \beta_7 * \text{urbancountyindicator} + \beta_8 * \text{charterschool}$$

In a typical analysis for the study, the following variables are used as controls: percentage of economically disadvantaged students, percentage in special education, percentage considered to be of limited English proficiency (LEP), percentage African American, percentage Hispanic, the log of enrollment size, the log of enrollment size squared, an urban county indicator, and the charter or traditional public school district binary variable. These variables were chosen as controls due to the effects that each of these categories has on student academic progress as well as fiscal efficiency, as demonstrated by the academic literature. Furthermore, to account for the variance in district size, the log of enrollment and the log of enrollment squared were also set as controls to better control for the scale of the districts.

Ordered Probit Regression

For additional analysis, the ordered probit regression was chosen because the Smart Score and Spending Score are ordered rankings from one to five stars, with half star increments. A regular OLS regression would assume the distance between each half star increment is equal, which there is no basis to support this assumption. Therefore, the ordered probit was used as a statistical technique of choice when using Smart Score and Spending Score as measures of cost efficiency.

Quantitative Findings

The following subsections detail the hypotheses created after a review of the literature and the respective findings and interpretations.

Curriculum/Staff Development

The first analysis tests the relationship between academic progress and cost efficiency, with curriculum/staff development as the independent variable of interest. Specifically, a review of the literature found professional development is associated with academic performance. Thus, the TSS Capstone Team hypothesized:

> H_1: An increase in funds related to professional development is associated with an increase in academic performance and cost efficiency.

To test this hypothesis, the percentage of and amount of budget spent on curriculum/staff development are used as independent variables of interest. Curriculum/staff development expenditures are defined as those used to aid instructional staff in planning, developing, and evaluating the process of providing learning experiences for students (function code 13 in the Texas Financial Accountability System Resource Guide (FASRG)). As this variable captures expenses other than professional development, it is

not a precise assessment of the relationship between professional development and academic performance.

As seen in Table 4, there is a statistically significant relationship between curriculum/staff development expenditures and the outcome variables composite academic performance and Three-Year Reading Progress Z Score. However, there is no statistically significant relationship between curriculum/staff development expenditures and Three-Year Math Progress Z Score. Thus, it appears that an increase in the percentage of budget devoted to curriculum/staff development, holding other things constant, is not related to an increase in math, reading, or composite academic progress.

Table 4. Curriculum/Staff Development Expenditures' Association with Academic Performance

Independent Variables	Composite Academic Progress	Math Progress	Reading Progress
% Curriculum/Staff Development	-1.8856*	-0.0056	-0.0045*
	(0.8991)	(0.0042)	(0.0020)
Curriculum/Staff Development Expenditures	-0.0000	-0.0000*	-0.0000
	(0.0000)	(0.0000)	(0.0000)
Constant	169.9652**	0.2708**	0.3695**
	(16.3721)	(0.0609)	(0.0383)
Individual/District Controls Included?	Yes	Yes	Yes
R^2	0.21	0.13	0.28
N	1,165	1,165	1,165

Robust standard errors included in parentheses

* $p<0.05$; ** $p<0.01$

In Table 5, the test using Smart Score as the dependent variable reveals there is a statistically significant relationship between percentage of budget devoted to curriculum/staff expenditures and Smart Score. Since the relationship is negative, it suggests districts who expend more on curriculum/staff development are not necessarily more cost-efficient in terms of increasing student academic progress or spending less in comparison to peer districts.

Moreover, the test using Spending Score as a dependent variable revealed there is no statistically significant association between curriculum/staff development and Spending Score (Table 5). Thus, districts' curriculum/staff development expenditures are not predictive of whether they would be low spending in comparison to peer districts.

Table 5. Curriculum/Staff Development Expenditures' Association with Cost Efficiency

Independent Variables	Smart Score	Spending Score
% All Funds Curriculum/Staff Development	-0.0735*	-0.0302
	(0.0353)	(0.0334)
All Funds Curriculum/Staff Development Expenditures	-0.0000*	-0.0000
	(0.0000)	(0.0000)
Constant	-2.1218**	
	(0.7350)	
Individual/District Controls Included?	Yes	Yes
N	1,165	1,188

Robust standard errors included in parentheses

* $p<0.05$; ** $p<0.01$

Instructional Leadership

The second analysis tests the relationship between academic progress and cost efficiency, with instructional leadership as the independent variable of interest. Specifically, a review of the literature found instructional leadership is associated with academic performance. Thus, the TSS Capstone Team hypothesized:

> H_2: An increase in funds related to instructional leadership is associated with an increase in academic performance and cost efficiency.

To test this hypothesis, the percentage of and amount of budget spent on instructional leadership are used as independent variables of interest, with instructional leadership expenditures defined as those used for managing, directing, supervising, and leading of staff who provide either instructional or instruction-related services (function code 21 in the Texas FASRG).

As seen in Table 6, there is a negative, statistically significant relationship between instructional leadership expenditures and the outcome variables composite academic performance and Three-Year Reading Progress Z Score. However, there is no statistically significant relationship between instructional leadership and Three-Year Math Progress Z Score. Thus, it appears that an increase in the percentage of budget devoted to instructional leadership, holding other things constant, is not related to an increase in math, reading, or composite academic progress. Moreover, the test using Spending Score as a dependent variable revealed there is a statistically significant association between instructional leadership and Spending Score (Table 7). Thus, as the percentage of budget spent on instructional leadership expenditures increases, cost efficiency decreases relative to peer districts.

Table 6. Instructional Leadership Expenditures' Association with Academic Performance

Independent Variables	Composite Academic Progress	Math Progress	Reading Progress
% Instructional Leadership	-1.6903*	-0.0046	-0.0060**
	(0.6578)	(0.0027)	(0.0017)
Instructional Leadership Expenditures	-0.0000**	-0.0000**	-0.0000
	(0.0000)	(0.0000)	(0.0000)
Constant	174.2294**	0.2868**	0.3627**
	(16.8340)	(0.0627)	(0.0391)
Individual/District Controls Included?	Yes	Yes	Yes
R^2	0.22	0.14	0.28
N	1,165	1,165	1,165

Robust standard errors included in parentheses

* $p<0.05$; ** $p<0.01$

Table 7. Instructional Leadership Expenditures' Association with Cost Efficiency

Independent Variables	Spending Score
% Instructional Leadership	-0.0988**
	(0.0285
Instructional Leadership Expenditures	-0.0000
	(0.0000)
Constant	2.2118**
	(0.7109)
Individual/District Controls Included?	Yes
N	1,188

Robust standard errors included in parentheses

* $p<0.05$; ** $p<0.01$

Instruction

The third analysis tests the relationship between academic progress and the percentage of funds devoted to instruction. This variable was selected because the administrative cost ratio, which measures the proportion of administrative-related expenditures to instruction-related expenditures, implicitly assumes

that increasing money spent on instruction increases student outcomes. Thus, the TSS Capstone Team hypothesized:

> H_3: An increase in funds related to instruction is associated with an increase in academic performance and cost efficiency.

To test this hypothesis, the percentage of and amount of budget spent on instruction are used as the variables of interest. Instruction costs are defined as operating expenses made from funds other than federal funds associated with teacher-student instruction (function code 11 in the Texas FASRG). Although this variable was selected to measure instruction expenditures, it also includes transfer expenditures as the TEA does not parse them out.

As seen in Table 8, there is no relationship between an increase in instruction expenditures and student academic progress when controlling for district and socioeconomic factors. This is found to be true when testing instruction expenditures against composite academic performance, Three-Year Reading Progress Z Score, and Three-Year Math Progress Z Score. Thus, an increase in money spent on instruction does not necessarily result in an increase in a student's math, reading, or composite academic progress.

Table 8. Instruction Expenditures' Association with Academic Performance

Independent Variables	Composite Academic Progress	Math Progress	Reading Progress
% Instruction	-1.3715	-0.0098	-0.0012
	(2.1741)	(0.0089)	(0.0052)
Instruction expenditures	-0.0000	-0.0000	-0.0000
	(0.0000)	(0.0000)	(0.0000)
Instruction expenditures^2	0.0197	0.0001	0.0000
	(0.0200)	(0.0001)	(0.0000)
Constant	179.0221**	0.4336	0.3501*
	(59.8207)	(0.2412)	(0.1433)
Individual/District Controls Included?	Yes	Yes	Yes
R^2	0.22	0.14	0.28
N	1,165	1,165	1,165

Robust standard errors included in parentheses

$* p<0.05; ** p<0.01$

Extracurricular Activities

The fourth analysis tests the relationship between the percentage of funds spent on extracurricular activities and academic progress. Extracurricular activities are those activities that do not enhance the instructional program, including athletics, which normally involve competition between schools and related

activities. A review of the literature found there is a mixed relationship between the effects of extracurricular activity participation and student performance. Thus, the TSS Capstone Team hypothesized:

H$_4$: Extracurricular expenditures affect student performance.

To test this hypothesis, the percentage and amount spent on extracurricular activities were tested against composite academic progress percentile, Three-Year Reading Progress Z Score, and Three-Year Math Progress Z Score.

Table 9 shows positive, statistically significant relationships are found between extracurricular expenditures and composite academic progress percentile and Three-Year Reading Progress Z Score. No statistically significant association is found between extracurricular expenditures and Three-Year Math Progress Z Score. Therefore, as expenditures on extracurricular activities increases, student composite academic performance and reading progress performance increase. There does not appear to be an association between extracurricular expenditures and math progress performance.

Table 9. Extracurricular Activities Expenditures' Association with Academic Performance

Independent Variable	Composite Academic Progress	Math Progress	Reading Progress
% Extracurricular	1.0065*	0.0030	0.0021*
	(0.4468)	(0.0016)	(0.0011)
Extracurricular Expenditures	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)
Constant	156.3523**	0.2260**	0.3465**
	(21.1620)	(0.0769)	(0.0488)
Individual/District Controls Included?	Yes	Yes	Yes
R^2	0.21	0.13	0.28
N	1,165	1,165	1,165

Robust standard errors included in parentheses

* $p<0.05$; ** $p<0.01$

Bilingual

The fifth analysis tests the relationship between academic progress and percent funds devoted to bilingual education as the independent variable of interest. The TSS Capstone Team hypothesized:

H$_5$: An increase in the percent of bilingual education funds is associated with an increase in academic performance.

To test this hypothesis, the percentage of and amount of budget spent on bilingual education are used as independent variables of interest. In addition to the controls described in the methodology, additional

characteristics were controlled for such as grade level. Furthermore, percentage LEP was dropped to avoid collinearity – that is, two variables being predictive of each other – with the variable percentage Hispanic.

As seen in Table 10, there is a statistically significant relationship between bilingual education expenditures and the outcome variables composite academic performance, Three-Year Reading Progress Z Score, and Three-Year Math Progress Z Score. Thus, it appears that an increase in the percentage of budget devoted to bilingual expenditures, when controlling for district and student characteristics, is related to an increase in math, reading, and composite academic progress.

Table 10. Bilingual Education Expenditures' Association with Academic Performance

Independent Variables	Composite Academic Progress	Math Progress	Reading Progress
% Bilingual Education	1.8708**	0.0062**	0.0046**
	(0.5555)	(0.0021)	(0.0012)
Bilingual Education Expenditures	-0.0000**	-0.0000**	-0.0000**
	(0.0000)	(0.0000)	(0.0000)
Constant	147.6266**	0.2150**	0.2830**
	(16.3779)	(0.0598)	(0.0412)
K-8 Grade Level Controls Included?	Yes	Yes	Yes
Individual/District Controls Included?	Yes	Yes	Yes
R^2	0.21	0.14	0.28
N	1,165	1,165	1,165

Robust standard errors included in parentheses

* $p<0.05$; ** $p<0.01$

Administrative Cost Ratio

Finally, the sixth analysis tests the relationship between academic progress and cost efficiency, using the administrative cost ratio as a variable of interest. The Capstone Team hypothesized:

H[6]: There is no relationship between administrative cost ratio and academic performance and cost efficiency.

To test this hypothesis, the independent variable of interest examined is the administrative cost ratio (ACR) of each district. Administrative costs are those operating expenditures associated with managing, planning, directing, coordinating, and evaluating a school district. Instruction costs are defined as

operating expenses made from funds other than federal funds associated with teacher-student instruction. The ACR is calculated by dividing administrative costs by instruction costs.[5]

Because an "acceptable" ACR is based on district size categories, the administrative cost ratio's association with academic progress and cost efficiency was tested within the district size categories. This allows us to determine whether the ratio is associated with academic progress and cost efficiency for certain districts. Moreover, charter schools and traditional public school districts were analyzed separately because charter schools' have less of an incentive to follow the administrative cost ratio recommendations.

Traditional Public School Districts

As seen in Table 11, the relationship between ACRs and composite academic performance in traditional public school districts differ depending on district size. In some instances, there is no relationship between academic performance and ACRs for traditional public school district. In other district sizes, academic performance increase as ACRs decrease. The mixed relationship between academic performance and the ACR indicates the administrative cost ratio is not a reliable predictor of academic growth.

Similarly, Table 12 shows, when the ACR is tested using the Smart Score, ACRs are not cost-efficient across school district sizes. In most traditional public school district size categories, as ACRs increase, the Smart Scores decline. However, for school districts with over 10,000 students, there is not statistically significant association. This suggests a decrease in the ACR is not necessarily related to an increase in cost efficiency for all district size categories.

Once fiscal comparisons are made using the Spending Score a mixed relationship between the ACR and Spending Score emerges (See Table 13). The mixed relationship shows the ACR is not a consistent predictor of whether a district is low spending relative to its peers. One would anticipate that the Spending Score would decrease as the ACR increases, but this relationship is only observed for districts in the 5000-10000 student enrollment range – a small proportion of districts.

---

[5] Texas Education Agency. 2010. "Texas Education Agency Financial Accountability Resource Guide." http://tea.texas.gov/Finance_and_Grants/Financial_Accountability/Financial__Accountability_System_Resource_Guide/ (January 30, 2017).

Table 11. TPS' Administrative Cost Ratio's Association with Academic Performance

		District Enrollment Size				
Dependent Variable	Independent Variables	Under 500	500-1000	1000-5000	5000-10000	Over 10000
Composite Academic Progress Percentile	Administrative Cost Ratio	-31.3700	-101.8628*	-223.3690**	-152.3119	-233.2860
		(24.6523)	(40.2867)	(59.8099)	(124.0458)	(160.8404)
	Constant	83.0313	-1,318.3584	335.8381	1,086.4231	143.1469
		(84.2682)	(2,107.5940)	(367.8526)	(5,415.2276)	(436.3547)
	Individual/ District Controls Included?	Yes	Yes	Yes	Yes	Yes
	R^2	0.15	0.16	0.31	0.56	0.45
	N	321	196	325	72	105

Robust standard errors included in parentheses

* $p<0.05$; ** $p<0.01$

Table 12. Ordered Probit Test of Traditional Public School District's Administrative Cost Ratio's Association with Smart Score Robust standard errors included in parentheses

		District Enrollment Size				
Dependent Variable	Independent Variables	Under 500	500-1000	1000-5000	5000-10000	Over 10000
Smart Score	Administrative Cost Ratio	-2.0603*	-5.1169**	-8.4658**	-14.3337*	-13.5483
		(0.9520)	(1.8180)	(3.0384)	(6.6744)	(9.0039)
	Constant	-7.9563*	-0.0103	-32.7324	115.4290	6.7532
		(3.8446)	(90.2471)	(17.4032)	(272.4273)	(17.9466)
	Individual/District Controls Included?	Yes	Yes	Yes	Yes	Yes
	N	321	196	325	72	105

* $p<0.05$; ** $p<0.01$

Table 13. Ordered Probit Test of Traditional Public School District's Administrative Cost Ratio's Association with Spending Score

Dependent Variable	Independent Variables	District Enrollment Size				
		Under 500	500-1000	1000-5000	5000-10000	Over 10000
Spending Score	Administrative Cost Ratio	-1.6863	-3.1986	-0.9843	-13.8796*	-9.4817
		(0.8793)	(1.9362)	(3.3099)	(6.0158)	(8.9918)
	Constant	3.0351	-57.7751	-29.0393	51.2666	11.5924
		(2.4317)	(91.2251)	(17.6418)	(252.6042)	(21.3283)
	Individual/District Controls Included?	Yes	Yes	Yes	Yes	Yes
	N	325	196	326	72	105

Robust standard errors included in parentheses

$* p<0.05; ** p<0.01$

Charter Schools

As seen in Table 14, for charter schools, there is no statistically significant relationship between the ACR and composite academic percentile. Thus, among charter schools, lower ACRs are not associated with increased academic performance. Table 15 shows, among examined charter schools, a district's ACR's relationship with Smart Score is mixed. In charter schools with a population of less than 500 students, as administrative cost ratios increase, Smart Scores decrease. Thus, like the TPS analysis, ACRs are not predictive of cost efficiency across district sizes. Table 16 shows, once fiscal comparisons were made using the Spending Score, there is no relationship between the ACR and Spending Score. The ACR does not predict whether districts are likely to engage in more cost-efficient practices relative to districts with similar cost environments.

Table 14. Charter Schools' Administrative Cost Ratios' Association with Composite Academic Progress Percentile

		District Enrollment Size				
Dependent Variable	Independent Variables	Under 500	500-1000	1000-5000	5000-10000	Over 10000
Composite Academic Percentile	Administrative Cost Ratio	-43.9755	-22.3378	-75.5367		
		(29.1575)	(87.4441)	(61.1742)		
	Constant	132.5810	-912.8036	1,291.5778		
		(264.8206)	(6,787.6626)	(1,653.0557)		
	Individual/District Controls Included?	Yes	Yes	Yes		
	R^2	0.43	0.28	0.44		
	N	64	37	39	3	3

Robust standard errors included in parentheses

* $p<0.05$; ** $p<0.01$

Table 15. Ordered Probit Test of Charter School's Administrative Cost Ratios' Association with Smart Score

		District Enrollment Size				
Dependent Variable	Independent Variables	Under 500	500-1000	1000-5000	5000-10000	Over 10000
Smart Score	Administrative Cost Ratio	-2.0044*	-2.7901	-4.1689		
		(0.9371)	(1.9802)	(3.2587)		
	Constant	15.6318	4.1410	-82.9787		
		(8.6513)	(222.8527)	(76.2213)		
	Individual/District Controls Included?	Yes	Yes	Yes		
	N	64	37	39	3	3

Robust standard errors included in parentheses

* $p<0.05$; ** $p<0.01$

Table 16. Ordered Probit Test of Charter School's Administrative Cost Ratios' Association with Spending Score

		District Enrollment Size				
Dependent Variable	Independent Variables	Under 500	500-1000	1000-5000	5000-10000	Over 10000
Spending Score	Administrative Cost Ratio	-0.6868	-3.6433	-1.5037		
		(1.1804)	(2.4286)	(3.0499)		
	Constant	28.3608**	28.5303	-61.3818		
		(10.9345)	(246.6744)	(60.6383)		
	Individual/District Controls Included?	Yes	Yes	Yes		
N		76	41	41	3	3

Robust standard errors included in parentheses

* p<0.05; ** p<0.01

Section III: Qualitative Methodology and Findings

Qualitative Methodology

Upon IRB approval, superintendents and CBOs were interviewed to determine what practices are implemented on a district-wide level to increase academic performance and cost efficiency. The Capstone Team chose to speak with officials who were most directly involved in the practices the client asked the Capstone Team to examine. Superintendents were interviewed for their knowledge of district practices that affect student academic performance. Moreover, CBOs were selected due the direct role they play in the design and execution of district practices related to cost efficiency. By interviewing these two types of officials, the Capstone Team maximized its potential to capture best practices at the district-level related to academic performance and cost efficiency.

Sampling

Unlike the quantitative methods, the Capstone Team was required to employ sampling techniques for the qualitative methods. Sample size was initially estimated based on the Capstone Team's resource constraints. Although the goal was to interview participants until saturation and redundancy was reached, the Capstone team was limited by time. Therefore, an initial estimate of 20 interviews was targeted, as this was the number of interviews the Capstone Team could physically complete in the final semester of the project.

A stratified random sampling methodology was used to determine which districts would be contacted. The high and low performing population was divided into a smaller group, or strata, of repeat high and low performers. After a random sample of school districts was pulled from the low performing pool, these districts were randomly paired with a high performing district within the TSS fiscal peer group. Although not generalizable to the population, pairing within the TSS fiscal peer group helped maximize the transferability of qualitative findings from a high performing school district to a demographically similar low performing school district.

Qualitative Participants

The 17 school district interviews represented both high and low performing districts. The participants were officials from 12 school districts from ten different TEA regions. The interviews consisted of seven superintendent interviews and ten CBO interviews. Participants represented both traditional public school districts and charter districts, ranging in size from very small (one campus) to large (five or more campuses). In small school districts, where superintendents tend to be highly involved in budgeting processes, superintendents could also answer questions related to cost efficiency. Finally, participating district officials represented districts found in both urban and rural areas in Texas, as defined by the census.

Instruments: Interview Questions

Questions were developed following a literature review of best educational practices. Interviewers used a semi-structured, open-ended interview format allowing interviewers to probe for additional detail. There were ten specific themes regarding best practices associated with high academic performance that emerged during the literature review. Questions were then created to target the ten themes described below:

- Administrative Practices
- School Mission and Climate
- Fiscal Distribution
- Community Relations

- Teacher Professional Development
- Data Usage
- Schedule Structure
- Classroom Management
- Student Discipline
- Extracurricular Activity Participation

Ten questions were given priority in interviews to accommodate time constraints. Questions deemed "optional" were asked if there was enough time. The interview was designed to stay under an hour due to resource constraints and out of respect for the time of the individuals being interviewed.

CBO and superintendent questions were designed to gather more information regarding academic performance and cost efficiency. CBOs were asked questions related to cost efficiency. Superintendent questions were primarily focused on the non-financial operations and educational mission of the interviewed districts. In this study, CBOs were district officials whose job role specifically entails that they have primary responsibility in managing a district's finances. For a full list of interview questions, see Appendix A.

Procedures

Interviews were conducted either at the school district's office or via phone. In all cases, informed consent was obtained. Each participant was asked to give permission to record the interview, three declined. In the cases where the interview session was not recorded, detailed notes were taken. Recorded interviews were transcribed to allow for further analysis.

In each interview, two team members were present: one acted as the primary interviewer and the other took notes. Interviews lasted 20-40 minutes on average. After explaining the study, the interviewers would ask the appropriate set of questions that pertained to the interviewee's job title and duties, asking follow up and clarification questions if necessary.

Analytical Techniques

After transcription, interviews were imported into Dedoose, a qualitative data analysis software. Dedoose was used to perform content analysis of interviews and to identify themes regarding best practices related to cost efficiency and high academic performance. Codes were created by team members as the analysis progressed allowing interviews to be sorted thematically by themes that were consistently brought up in the interviews. CBO interviews were blindly coded by three team members, while the superintendent interviews were blindly coded by two team members. The Capstone Team performed interrater reliability checks to arrive at a consensus about themes. These themes were then used to determine whether low and high performing districts employed practices that differed.

Qualitative Findings

Two themes emerged from the qualitative interviews. In the CBO interviews, the idea of "transformers versus copers" emerged. This idea captures the ways CBOs from high and low performing districts dealt with financial challenges districts faced. CBOs from high performing districts tended to work to overcome the challenges, whereas CBOs from low performing districts where often overwhelmed by the challenges. In the superintendent interviews a focus on practice versus impact emerged. Superintendents from high performing districts tended to focus on the impact practices had on students' lives as opposed to short-term gains in test scores.

Findings from CBO Interviews

High performing school district CBOs tended to be transformers, and low performing school district CBOs tended to be copers. The transformers had a clear vision of what their school could be like and brought a positive attitude to their job, while the copers typically struggled to avoid being overwhelmed by the duties of their job.[6] Upon analysis of interviews with CBOs, this same theme seemed to emerge. In high-performing school districts, CBOs focused on using their current resources as effectively and efficiently as possible. In contrast, CBOs from low-performing school districts were often disgruntled and frustrated by their school districts' financial situation. This theme will be further illustrated in subsequent sections.

Budgeting, Forecasting and Safeguards

BUDGETING

Budgeting was a fundamentally important component of the qualitative interviews as it was coded over 200 times in every CBO interview. However, no consistent budgeting practices were performed by either the high or low performing districts. For instance, *balanced budgets, deficit budgets, strict budgeting, conservative budgeting,* and *collaborative budgeting*, demonstrate the wide variety of types of budgets and budgeting techniques implemented by the school district officials that were interviewed. However, a conservative approach to budgeting was mentioned more frequently by high performing districts. In fact of the 42 times *conservative budgeting* was coded in 7 of the 10 CBO interviews, high performers referred to a conservative approach 54.8 percent of the time, whereas low performers mentioned it 45.2 percent of the time. Additionally, when discussing *strict budgeting*, meaning that school districts prioritized following their forecasted budgets, high performers were the ones to discuss this idea 71 percent of the time. As one high performing district said:

> "I've gone in and said, "Hey, here's your budget." If it's 8,000, this is it. You're in control of it, you've got to make it last your season. Treat it no different as you would your checkbook at home. Once it's gone, it's gone."

This demonstrates a specific budgeting practice may not be as important as the approach school districts use when budgeting.

FORECASTING

There was no difference in the general forecasting practices between high and low performing districts. *Forecasting* was coded 84 times and was discussed by every CBO interviewed. The coding was evenly split at 50 percent of the time for both the high and low performing school districts. This demonstrates that it was an equally important topic for all school districts. Although, no differences in forecasting practices were identified, forecasting was mentioned as important in the context of growth projections and as a budgeting tool. This is seen through the fact that when coding forecasting, growth was also coded on the

---

[6] Johnson, Rochkind, and Doble 2008

same quote 54 percent of the time. One school district in particular not only looked at their own school districts growth but at growth of those districts around them. This district CBO stated:

> "We know the growth is coming and we know that the only way to generate more revenue is through additional students. But again, we don't get that money until they get here. We just have to conservatively budget until the students get here."

An additional area that was illustrated as vitally important is *student attendance* and *enrollment*. This was coded along with forecasting 89 percent of the time demonstrating that it is a significant area of interest to CBOs in the forecasting process. School districts discussed the need to forecast student attendance and enrollment as that is one of the main determinants of revenue for the districts. One CBO discussed the impact of correctly forecasting student growth when they explained:

> "We are into this year and when we got our first enrolment figures, they were about a 150 kids short of what we projected. Well, 150 kids when you got almost 20,000 kids may not sound a lot, but that's a $750,000 hit. That's a pretty big number."

Overall, there were no specific practices that set the high and low performers apart however, it is a common theme that school districts use growth and student enrollment as a means to forecast.

SAFEGUARDS

An assumption going into the qualitative interviews was that school districts would seek to balance their budgets. This did not hold true when interviewing specific CBO's, therefore when asking about safeguards to ensure a balanced budget not all answered the question. Of the school districts asked about safeguards employed to balance their budget, district CBOs thought almost exclusively in terms of revenue generation and not of budget cuts. At no time did any of the CBOs who discussed balancing their budget mention cutting their budget as a safeguard. Revenue producing strategies, whether they be tax rate adjustments, bond revenue generation, or student attendance measured via average daily attendance (ADA), are mentioned in several of the coded interviews as methods of safeguarding for a balanced budget. Most prominent among these revenue-producing strategies are discussions around student attendance, namely forecasting and projecting ADA in such a way that projected revenues are not overestimated nor incorrect. There was no difference in safeguarding methods between high and low performing school districts.

Cost Saving Measures

GENERAL MEASURES

Depending on their unique environments and challenges, each district interviewed had different approaches and methods for reducing costs. Districts have finite revenue for operations and the provision of education, requiring them to prudently manage costs so they do not overspend. Throughout the discussion concerning cost savings and budget reductions, it is important to note that reverse causality could be a factor in the analyses. Low performing districts may be implementing different methodologies and practices because they are low performing, rather than them being low performing because they are applying the outlined methodologies and practices. Changes in methodology and practice were often spurred by reductions in revenue, such as the 2011 Texas legislative cut to education that was mentioned several times in interviews as a catalyst for examination of areas for cost and spending reductions. As one official explained:

> "Back in 2011, the legislature reduced funding for schools. And at that point in time, we went through a[n]… exhaustive process, because we had to cut almost 12 million dollars out of a 130 million dollar budget."

Some approaches were more culture based, with *cost savings measures* and *school culture* being coded together 44 times. Three high performing and three low performing district officials link *school culture* with *cost savings measures.* One official cited a culture of stewardship, emphasizing to students and staff the need to take care of the school's property and supplies in order to "not [spend] a lot of money fixing or replacing things." District officials placed a premium on ensuring that the last place where cost savings were looked at was in an area that would directly affect students. As one high performing CBO said "it's all about making the changes that are going to least impact student success, student outcomes and student supports." Such a "student first" culture was demonstrated through prioritizing cuts that least affected students, giving teachers and schools greater leeway in spending than other departments, and generally stating that their priority was to limit harm to students in the event of budgetary issues. Four of the six CBOs who linked *culture* with *cost saving measures* demonstrated *"*student first" attitudes, and three of those CBOs were in high performing districts. This practice has sometimes been called a "bottom up" approach to budgeting in which decision making is delegated to lower-level, or non-administrative, positions.

When asked to discuss cost savings measures for their districts that often resulted from scenarios such as the one described above, CBOs cited a variety of other practices to save costs. No two districts, high or low performing, cited an identical set of methodologies or practices. A unique cost-savings measure mentioned by a CBO was the monetization of district resources originally purchased by bonds, such as buses or personal computers, to increase their fund balance. Proceeds from such sales cannot be recaptured by the State under Chapter 42, and the district could thus keep the resale money and issue a new bond to pay for new computers and buses. Of the three districts that specifically reference using data to inform their cost savings practices, two are high performing and one is low performing.

Four district officials, two high performing and two low performing, discussed how they used forecasting to prepare cost savings. Of the practices described, one high performing district used the growth rates and numbers of surrounding districts to project their own future growth, tracking when they will see a growth in student enrollment and setting aside money to prepare for the increased demands on the school due to the coming growth. Essentially, when asked about cost savings measures, district officials naturally discussed forecasting without being prompted, indicating the importance of knowing where they are in order to know where they need to prioritize spending.

An assumed area of *cost savings measures* was the practice of streamlining business offices. The interviews conducted do not demonstrate any one practice that high or low performing school districts implement that streamlines their businesses offices. However, 40 percent of the individuals interviewed discuss cross-training employees to allow a single employee to perform multiple jobs. That interviewed stated that cross-training improved efficiency and allowed for the possibility of individuals being out of the office without bringing operations to a stop. These school districts that cross–train were both high and low performers from rural and urban areas, demonstrating the practice is not specific to any one category of school districts. Streamlining of hiring and procurement practices via automation was cited as a method of streamlining business operations, with the added caveat that it aided with cost savings as well.

For many officials, *cost savings measures* were synonymous with budget cuts. When asked about *cost savings measures,* six of the nine CBOs discussed cutting their budgets (coded *budget cuts).* Of the six respondents who discussed *budget cuts* when asked about *cost savings measures*, four are CBOs of low performing districts, suggesting that lower performing districts may have difficulty identifying alternative ways to reduce expenses. When district officials thought of saving costs, they immediately thought of cutting budgets.

STAFF REDUCTIONS AND PROGRAM CUTS

Once all the "*low hanging fruit*" is cut, as one CBO describes expenditures on non-essential materials, districts turn almost entirely to personnel decisions to cut their budget, with a secondary emphasis on program cuts. When exploring ways to reduce their budgets, CBOs almost universally turn to *staff reductions* as the main way they cut. Of the nine CBOs who discussed *budget cuts*, eight discussed *staff reductions* in length, regardless of high or low performing status. *Budget Cuts* and *staff reduction* were coded together 112 times. As one CBO said:

> "The only place you can do any meaningful cut is with salaries. There's two things you can do with that. You can reduce salaries and you can cut positions. Those are the primary ways any school district in the State is going to make any kind of budget cut. You can cut athletics. You can cut everything you want. It won't make any difference until you cut salaries because that's 82, 80 percent of your budget."

Another CBO put it a different way stating, "one of the first things that you can do if there's finance issues within a school district, run a staffing study and you're going to find that usually that's going to dictate the financial issues that exist there." There is little doubt that the primary category for budget cuts among district officials is staffing. Half of the CBOs mentioned staff reduction as an option when saving costs. All but one CBO that linked cost savings measures with staff reduction was employed at a low performing district.

While staff reductions are by far the most often mentioned category for budget reductions, half (five of ten) of the CBOs also mention *program cuts* as an area where budgets could potentially be cut, with three from high performing and two from low performing districts. Such cuts are often made when confined by state laws regarding student-teacher ratios and mandatory programs that must be provided, reducing the flexibility that districts have to make decisions regarding budget cuts. It is not an area of significant cuts, and rarely makes a significant impact on costs or budget.

UTILITIES AND CONTRACT BIDDING

Utilities as an area of cost savings was discussed by low performing district officials, with three of the four officials who discuss utilities in terms of cost savings being CBOs from low performing districts, and the high performing CBOs mentioning utilities as cost savings as somewhat of an afterthought. In total, *utilities* was coded with *cost savings measures* 44 times. Practices mentioned to reduce utilities costs included: installing more energy-efficient lighting (four districts), using electricity futures contracts to secure low energy prices, maintaining extensive records and employing real-time monitoring to detect unusual spikes in utilities usage (directing teams to investigate and fix these spikes as needed), using cost-recovery consulting to catch wastes in expenditures, training employees in energy saving practices, and installing systems that are more energy efficient (especially in new buildings). Two district officials placed monetary value on the total costs saved through utilities practices, one estimating $300,000 in savings and another estimating $500,000 in savings.

Much of the utilities savings was done through the bidding-out of contracts and the use of co-ops, another method of cost-savings. *Utilities* and *bidding out* were coded together 15 separate times, while *bidding out* and *cost savings measures* were coded together 17 separate times across three districts, two low performing and one high performing. In terms of utilities, bidding out of contracts mainly focused on electricity and other service contracts, with districts giving utilities companies the opportunity to compete via bids for contracts to provide services. Essentially, the bidding process was employed to, as one official explained, get "the best deals we possibly can." Bidding helped districts accrue cost savings in

utilities, "products over $50,000," insurance, consumables, custodial supplies, instructional supplies, and transportation services. In short, as one district official observed, "Any item that a school district expenses is negotiable." For example, one CBO spent several minutes discussing the significant cost savings derived from the district choosing to use a different floor wax that better protected floors and cost less over the long run.

General bidding out of vendor services was ran either by the districts or co-ops that sought out and provided vendor options to districts. As one official explained: "Purchasing co-ops basically go out for bids, to get people on their list, and it's one of the ways you can handle big purchases." There was not a preference across districts as to which practice was better, but one did note that co-ops not only saved money, but also saved time.

Regulations and Legislation

PENDING LEGISLATION

When asked how pending legislation affects the budgeting process, officials from high and low performing school districts responded differently. Low performers tended to focus on pending legislation when creating their budgets and to dwell on potential outcomes that could hurt their districts. High performers, in contrast, mention the current state of legislation but acknowledged that their district must continue forward, regardless of the outcomes of pending legislation. As one CBO from a high performing district said:

> "Is it good to be mindful of it? Sure, but there's so many bills that our education lays out, and I don't remember the number but it's in the thousands. This one time they were going to impact school districts – that could potentially impact school districts in the three months when the session ends, so if we were to try to respond to each one of those proactively, I think that we would find ourselves chasing our tail and not focusing on what we need to focus on in the student outcomes. You can usually read the tea leaves fairly well and understand when something may come through but I don't ever anticipate more money."

Furthermore, of the 72 times *legislature* was coded by the TSS Capstone Team, 84 percent are in low performer interviews. Of the 13 times, *legislative flux* was coded by the TSS Capstone Team, 64 percent are in low performer interviews.

REGULATION AND LAWS

When asked which regulations and laws affected budgeting the most, school district CBOs repeatedly spoke of unfunded mandates. Unfunded mandates refer to federal and state laws requiring school districts to act without the State providing fiscal support. Many school districts mentioned recent legislation requiring cameras in special education classrooms at the request of parents. This legislation imposed challenges on school districts. CBOs had to find funds for expensive video equipment and for data storage. As one low-performing CBO declared: *"*We have unfunded mandates all the time. They come up with new regulation and rules, but they don't come up with any money to help you comply with it." Of the 31 times *strings attached to funding* was coded, 84 percent are in low performer interviews. Of the 51 times, *unfunded mandates* was coded, 59 percent are in low performer interviews.

Of the ten school district CBOs interviewed, all mentioned Texas's school funding laws. *State funding laws* are mostly mentioned by CBOs from low performing districts and are commonly mentioned in conjunction with pending legislation and unfunded mandates. The code *state funding laws* encompasses the mention of ASATR, the *Basic Allotment, Chapter 41*, *Guaranteed Yield,* and *Recapture.* Of the 170 times *state funding laws* was coded, 82 percent of those are in low performer interviews. Of the 30 times

ASATR was coded, 90 percent of those are in low performer interviews. Of the 12 times, *Basic Allotment* was coded, 84 percent of those are in low performer interviews. Finally, of the times *Chapter 41*, *Guaranteed Yield*, and *Recapture* was coded, they are done so exclusively in low performer interviews.

Findings from Superintendent Interviews

While high and low performing districts do not engage in many different practices, their foci do differ. High performers generally have a focus on impact as opposed to specific practices. When discussing specific practices, high performers tend to focus on how the practices relate to the district's ability to meet its long-term visions for its students. Low performers, on the other hand, tend to focus on how practices can be used to improve student outcomes on tests. While these trends did not always break down along the lines of high and low performing districts in each category discussed below, high performers tend to focus on the impact the district could impart into the students' lives – rather than the short-term goal of exceling on a test. The difference in foci can be seen in the following subsections related to *mission statement*, *orientation*, *data usage practices*, and *community and parental involvement*.

MISSION STATEMENT

Superintendents' responses did not differ between high and low performing districts. Most districts could recall the gist of their *mission statement*. Two high performing districts' superintendents had trouble recalling the *mission statement*. One superintendent stated:

> "Yeah. I'll just shoot you straight. Our school mission statement – I can't even tell you off the top of my head what it would be. I would be the first to tell you probably need to do a better job at that. It is, you know, treat the kids as individuals, treat them fairly. I treat our teachers as individuals and empower them to make their decisions. That's pretty simple."

However, when high performing districts' superintendents discussed their *mission statement*, they seemed to address the values important to their district and how they worked to impart those values in their students. This suggests high performers maintain a focus on impact rather than the practice of recalling and having the *mission statement* readily available. The inability to recall the district's *mission statement* does not seem to hinder a district's ability to accomplish the district's mission. This finding suggests a district's likelihood of success is not necessarily correlated with the ability of a superintendent to recall the *mission statement*.

ORIENTATION

High performing districts' orientation also tend to display a focus on impact. High performing school districts were all *process-oriented*, which means they tend to focus on the larger vision for their students such as college readiness, creating productive citizens, etc. High performing school districts seemed confident in knowing that performance on tests would come naturally if they are meeting goals related to their district's vision. Low performing school districts were classified as *output-driven* because they focused more on immediate results such as success on test scores.

DATA USAGE PRACTICES

When superintendents were asked how their districts used data to inform decision-making, high and low performing districts differed in their responses. Generally, high performing districts displayed a focus on impact regarding data usage. Superintendents of high performing districts were coded as *data-informed* 85 percent of the time, meaning they do not use data as an end goal. Rather, the district's long-term vision is the end goal. Even among high performers, the way they used data to stay informed differed. For instance, one high performing district mentioned regularly using data in the teachers' professional learning community meetings. Another high performing district used data for benchmarking purposes.

But, accomplishing certain metrics on the data does not necessary direct how the district goes about accomplishing its goals. A superintendent of a high performing district summarized his view on data usage in the following manner:

> "We use the data to allow for us to evaluate where we are and what direction we want to go. That data is I guess informative in terms of it allows for us to gain perspective in what the current status quo is but really to get from where we are to where we want to go, the data doesn't really direct that. It's going to be an action and a pursuit of that end that's going to be driven by our values, and so we use data to inform us of the current standing but we use our values to carve out the how of where we're going to get to."

Surprisingly, one high performing district discussed the importance of having a curriculum specialist to determine exactly what a student is strong and weak at – suggesting a focus on practice.

On the other hand, low performing districts display mixed results: one low performing district was classified as *data-driven* since the district regularly practiced analyzing the data to increase test scores. Another low performing district mentioned using data in an informative sense; the low performing district discussed using data to inform parents of young children's academic progress. While districts' data usage practices varied, they are not predictive of whether a district will be classified as high or low performing.

COMMUNITY AND PARENTAL INVOLVEMENT

Both high and low performing districts discussed *community and parental involvement* in terms of impact on students. However, low and high performing districts differed in the level of parental involvement experienced. PTA and Non-PTA involvement were referenced by superintendents of high and low performing districts. One low performing district stated a barrier to parental involvement was the distance parents are from the district and time constraints. Another low performing district discussed the district's attempt to get the ESL students involved by hosting an ESL night where they teach parents strategies to help students at home.

Most high performing districts, on the other hand, did not mention a lot of challenges to getting parental involvement. High performing districts tended to discuss the ways they facilitated parental involvement such as PTA, booster clubs, and special event nights. One high performing district mentioned parental support was high – but not involvement. Thus, they try to reach out to parents to welcome them into the school environment. Another high performing district mentioned meeting with parents while the students were young to describe the district's vision for the child and how the school can play a role in that vision. Another district mentioned there was an expectation parents will contribute, but it did not seem like much outreach was necessary. This superintendent stated:

> "My adage is just stay out of the way. But as a parent, the home and school which is what our little PTO or PTA, it's the organization that supports the school that all the parents are a member of. They have meetings about four, five times a year."

For the most part, it does seem like parents and community members in high performing districts require as much district outreach to get their involvement. While high and low performers did not discuss practices that differed significantly, the level of effort seemed to encourage involvement differed. Yet, both high and low performers seemed to put forth effort to encourage involvement because they believe it positively impacts students.

Additional Findings

Other recurring practices that arose during interviews with superintendents related to dealing with *growth* in student enrollment, using *districts of innovation* as a best practice, and leveraging the regional *education service centers* for ideas related to reform.

GROWTH IN ENROLLMENT

When asked about strengths and challenges, superintendents from both high and low performing districts referred to *growth* in student numbers as a challenge. *Growth* was coded for high performers 66 percent of the time versus 34 percent for low performers. Typically, *growth* was discussed as a challenge by high performers because it placed strains on resources such as facilities and English Language Learner services. However, districts also mentioned *growth* positively because their district's school board mission was to grow and attract students from the surrounding areas. So, while *growth* was mentioned as a challenge by high performers, they were in the process of overcoming those barriers.

RELATIONSHIPS

Both high and low performing districts mentioned *relationships* are critical to achieving district success. However, most districts interviewed discussed different ways of building *relationships* with students, parents, and the community. Low performing districts discussed *relationships* more than high performing districts. *Relationships* was coded for low performing districts approximately 65 percent of the times versus high performers' 35 percent of the time. Low performing districts attempted to build *relationships* with students, community, and parents by sending teachers to training that reinforce the importance of good relationships. High performing districts, on the other hand, discussed *relationships* in terms of something that naturally occurs because their teachers are deeply ingrained in their small communities. Another high performing district discussed working with parents to create a vision for their child's future and showing how the school district can help transform that vision into reality. Other high performing districts mentioned the importance of teachers getting to know their students. While both high and low performing districts acknowledged that academic success was a community effort, each district approached the relationship-building process differently.

DISTRICTS OF INNOVATION

Superintendents from high performing and low performing districts referenced the concept of "*districts of innovation*" as a best practice that allows more customization at the district-level. However, high performing districts were coded as mentioning the idea 68 percent of the time. One superintendent referenced their district's online course options for students. Another superintendent mentioned districts of innovations allowed districts to best meet its students and staff when he stated:

> "But I think the state has, like the minute deal this district of innovation it's giving back a little bit of more local control for us to do what's best for our teachers, for our students first, for our teachers and for our community to make some local decisions about what's best."

While a low performing district also mentioned taking advantage of *districts of innovation*, it is a practice high performing districts in this sample mentioned as a best practice.

EDUCATION SERVICE CENTERS

Superintendents from both high performing and low performing districts mentioned the use of Regional *Education Service Centers* when discussing ideas for reform. These districts also mentioned having good

relationships with their Service Centers and taking advantage of teacher professional development opportunities offered.

Section IV: Discussion and Conclusion

Discussion

The mixed methodology approach has led to a greater understanding of what is working in Texas school districts and has provided insight into areas in need of further examination. The Capstone Team's quantitative findings indicate certain expenditures are associated with student academic progress and district fiscal efficiency. Other expenditures reveal negative or mixed associations. The lack of correlation between student outcomes and expenditures calls to attention the practices related to these expenditures. This is particularly interesting because the literature emphasizes practice quality. The results demonstrate a need to examine these practices more closely to determine whether the negative relationship exposes a problem inherit to the practice or a problem with the execution of the practice. The Capstone team's qualitative findings fill some of the gaps in knowledge, allowing researchers to begin to parse out best practices in the expenditure-related practices examined by the quantitative analysis.

Quantitative analyses of the school district financial and academic progress data show mixed results. These mixed findings create more uncertainty surrounding the effects of these variables on student academic progress, suggesting a need for alternative measures and/or methodology to study these concepts. The mixed findings also suggest the types of practices employed in various themes are just as, if not more, important than simply running a program. There are clear best practices that districts should employ; the challenge is that it is easier to record what districts are spending their money on than it is to record specifics as to what the expenditures produce in terms of program quality.

In contrast, extracurricular and bilingual education expenditures have significant, positive associations with TSS academic performance measures. These findings suggest increases in spending on these programs are associated with increases in student academic progress. The extracurricular findings are also consistent with the literature reviewed, which indicates that expenditures in extracurricular activities breeds better student outcomes.[7] No statistically significant relationship was found between percent of funds on instruction and transfer, which may suggest the need for a measure specific to each of these variables rather than the composite measure

According to the qualitative analyses of superintendent interviews, there are few differences in the practices employed by high and low performing school districts. High performers focus on impact rather than practice, and superintendents largely discussed their practices in terms of student impact. Additionally, high performing school districts are process-oriented rather than outcomes-oriented, meaning they tend to focus on the larger vision for their students such as college-readiness, creating productive citizens, etc. Few actual "practices" emerged. Rather, the culture districts foster is important to determining student academic achievement just as the literature indicated.[8]

Qualitative analyses of CBO interviews also reveal little difference in the practices employed by high and low performing school districts. Instead, differences emerge in how school district officials responded when confronted with challenges. High performing school districts adopt a "transformer" approach, meaning the CBOs work within their districts' limitations to employ efficient practices. Low performing school districts, in contrast, adopt a "coper" approach, meaning the CBOs are often overwhelmed or even disgruntled by the obstacles facing the district. Interestingly, these findings suggest the framing of an issue may be more important than how it is addressed. While school district CBOs employ several different techniques, high performers tend to be those who believe they could produce positive results with their current resources. Cost savings measures varied greatly across districts, with a common thread found in that any substantial cost savings could only be achieved via school and district staff reduction.

---

[7] Feldman and Matjasko 2005
[8] "Link Between School Climate" 2008; Suldo, Shaffer, and Riley 2008

Beyond the transformers versus copers paradigm, few common themes or practices were observed for either district budgeting or district treatments of legislation or regulations.

Limitations

In designing this study, the TSS Capstone Team was confronted with the need to provide analyses that examined a variety of Texas districts while identifying what specific practices were being utilized. Given the limited time and resources, the TSS Capstone Team narrowed the project's scope. All 1,219 districts in Texas could not be surveyed, so the Capstone Team chose a mixed methodology approach to gather the maximum data possible within the constraints confronted. Guided by the literature, the TSS Capstone Team answered the research question by combining quantitative analysis of population financial data and qualitative interviews with district officials.

Qualitatively, the Capstone Team opted for a "depth over breadth" approach, choosing to examine a small, diverse sample of districts in open-ended qualitative interviews rather than a survey sent to a larger sample population. While the sample-size for the Capstone Team's qualitative research was small, the Capstone Team's quantitative research, ensured that the Capstone Team could examine state trends in expenditures. Surveys were not used because the rote questions would have led the Capstone Team to have a series of questions answered rather than a wide breadth of practices explored guided by the subject matter experts that were the district officials. Some questions were not well guided due to a lack of literature regarding the topic, especially in discussing cost-efficient practices in school districts. Follow up research could possibly run a survey based on answers received, as well as create better informed questions in future interviews.

Open-ended, qualitative interviews were utilized to capture insight into specific, district-level practices associated with performance – something quantitative research cannot provide. Since the questions were not "yes" or "no" questions district officials could share their practices with the Capstone Team. This allowed the Capstone team to better assess what the districts are doing to achieve academic performance and cost efficiency.

Because the qualitative research was limited to a relatively small number of Texas school districts, conclusions from the interviews cannot be applied to the entire population of Texas districts. Rather, the Capstone Team is limited to drawing conclusions describing the answers of the district officials interviewed. While findings are not generalizable across the more than 1200 districts in the state, the Capstone Team is confident they are generalizable across each district's fiscal peers. This study outlines what the district officials described and similarities and differences across the districts interviewed, but any conclusions reached cannot be extrapolated to the population. Rather, the Capstone Team aimed to maximize transferability to interviewing within the TSS fiscal peer framework. Thus, practices may be transferable with the fiscal peer groups.

Implications

The qualitative analyses of the superintendent and CBO interviews appear to capture the importance of culture in district practices and operations. The "how" and "why" things are done are just as important as "what" is done. Attitudes that districts approach many of their practices with has a noticeable effect on their outcomes. Many areas of quantitative research point to the importance of expenditures in certain practices, such as extracurricular involvement and bilingual education. Where areas of quantitative research fail to connect districts' practices is to their student academic progress and fiscal efficiency; interviews with school district officials suggest practices such as the need for empowerment of staff and a transformative approach to budgeting may be the missing link.

A review of the literature and additional research can also help address the need to better understand program expenditure quality. As already demonstrated, there are best practices in fields such as

classroom management and professional development that have already been established in research. Once these best practices are defined, it is a simple next step for district officials to apply the information to their own unique district profiles. Best practices that can be adopted across districts are the chief deliverables of this project, and the Capstone Team's recommendations and literature review ultimately point to the same end goal: present what works so that it can be adopted and improve the lives of Texas students. These sharable practices are the chief focus of this work.

Application of research such as TSS's will help in the search for the missing link that will drastically improve student academic success without being fiscally impossible. But as was demonstrated in the qualitative analysis findings, where little consensus was reached across performance categories and few common practices emerged, there is no silver bullet. Each district has its own unique challenges and characteristics, and it would be dangerous to suggest that every recommendation made is applicable to every district, especially in a state as diverse and varying as Texas and a sample size as small as this qualitative sample. However, this should not stop districts from taking the findings and adopting them for their culture and setting, and there are certain practices that the state should pursue and adopt that will universally encourage better practices. District and state recommendations are outlined below.

Recommendations

Several recommendations have emerged based on the quantitative and qualitative analyses of the best practices. These recommendations are made to school districts, the Texas state legislature, and TEA, and seek to improve Texas K-12 education.

Recommendation 1: Improve the current system utilized by the TEA to minimize variation in the quality of professional development opportunities.

The quantitative analysis demonstrated a mixed relationship between professional development expenditures and academic progress. As a result, there should be an increased focus on the type of professional development programs that are used by school districts. This is further displayed through the Texas P-16 Council which recommended, "high-quality PD programs and opportunities be put under the purview of a division at TEA".[9] TEA has implemented this recommendation, but the current system should be improved to minimize the variation in quality of PD opportunities by ensuring all teacher PD opportunities meet the criteria of high-quality development as outlined by scholarly literature.

Recommendation 2: Monitor and evaluate ongoing-implementation of Texas's Advancing Educational Leadership training to assess its effectiveness.

The quantitative analysis of instructional leadership expenditures shows that spending money on instructional leadership academic progress or fiscal efficiency. This demonstrates that that it is about the type of instructional leadership rather than just expenditures. As such, TEA has recently updated its instructional leadership training processes to align with the current instructional leadership literature. To support teachers and administrators in their professional growth, Texas has created the Texas Teacher Evaluation and Support System (T-TESS)[10] as well as a new principal evaluation system designed to support principals in their professional development and help them improve as instructional leaders, known as the Texas Principal Evaluation & Support System (T-PESS).[11] Effective in 2017, the TEA and Education Research Center 13 have developed Advancing Educational Leadership (AEL) training to

---

[9] Texas Education Agency Office of P-16 Coordination. 2007. "Educator Quality Committee Report A report to the Texas P-16 Council on Recommendations Produced FY 2006-2007."

[10] Teach for Texas. 2017. "Texas Teacher Evaluation and Support System." https://teachfortexas.org/default.aspx (February 15, 2017).

[11] Teach for Texas. 2017."Texas Principal Evaluation and Support System." http://tea.texas.gov/Texas_Educators/Educator_Evaluation_and_Support_System/Texas_Principal_Evaluation_and_Support_System/ (February 15, 2017).

replace instructional leadership training. This training, along with T-TESS evaluation training, is mandatory for all teacher appraisers. This three-day training is based on five principles:

- "Creating positive school culture,
- Establishing and sustaining vision, mission, and goals,
- Developing self and others,
- Improving instruction, and
- Managing data and processes."[12]

Whether the AEL program effectively improves Texas instructional leadership is yet to be seen. It will be important to evaluate the program's effectiveness against the expected gains outlined in the literature. As a result, the TSS Capstone team suggests the TEA conduct a review of this program, five years after implementation, to assess whether the new program is accomplishing its goals or if it needs to make revisions to the T-TESS and T-PESS programs.

Recommendation 3: Collect and analyze data to make targeted decisions on instructional expenditures.

The quantitative analysis revealed that there was no relationship between additional spending on instruction and increased academic progress. Therefore, rather than school districts focusing on the amount of money devoted to instructional expenditures, attention should also be given to ensuring money is spent on quality instruction-related expenditures. To determine what expenditures are "quality," school districts should collect and analyze data[13], such as student performance data. This will allow school districts to make effective data informed decisions that will allow them to target key areas with their instructional expenditures[14].

Recommendation 4: Track education technology expenditures in the state through the TEA Financial Accountability System Resource Guide (FASRG) or the Public Education Information Management System (PEIMS).

Qualitative interviews indicated that districts were aggressively expanding their use of technology within and without the classroom. When the Capstone Team sought to quantitatively examine state financial records regarding technology expenditures and costs, the Capstone Team discovered that such data is not currently collected. Guided by qualitative results that indicated that districts were using bond elections to fund technological expansion, the Capstone Team examined Texas State Comptroller data of all known community bond elections in the state. A review of bond election subjects and results found more than $12 billion in ISD technology bonds passed since 2013. In 2015, Texas received $167.5 million in E-rate modernization grants from the Department of Education for *Wi-Fi access alone*, a 62 percent increase from the state's 2010-2014 annual average.

It is clear that Texas education technology expenditures are rapidly expanding, and the state does not have a specific way to capture its effect. Good first steps to capture and analyze the trend may include:

- subdividing current TEA reporting requirements to include a technology-specific line item,
- creating a new reporting category under the FASRG and PEIMS reporting systems to capture technology related revenues and expenditures,
- and/or conducting a TEA commissioned study to examine Texas district education technology infrastructure track education technology trends over time.

---

[12] Advancing Educational Leadership (AEL). 2017. "Learn." http://ael.education/learn (February 15, 2017).
[13] Messelt, J. 2004. "Data-Driven Decision Making: A Powerful Tool for School Improvement." A White Paper. Sagebrush Corporation. Minneapolis, Minnesota. 1-12.
[14] 2011. "Using Student Achievement Data to Support Instructional Decision Making." National Association of Elementary School Principals.

Recommendation 5: Monitor Texas's bilingual education waiver and exception procedures and work with school districts to identify priorities to fund bilingual education programs.

In the Capstone Team's qualitative interviews, the Capstone Team found school district officials were aware of the bilingual education program requirements outlined in the Texas Administrative Code. However, one district official had indicated that their district had received waivers from having to provide such education. When the Capstone Team sought to examine the frequency of or the reasons behind the granted waivers and exceptions, the Capstone team found that such data was difficult to assess. Furthermore, the variance in spending on bilingual education across districts was impacted by those districts that spent close to nothing on such programs as a result of the waivers and exceptions. This made it difficult to compare the results to districts that did spend on bilingual education. The analysis shows increasing spending on bilingual education is related to positive increases in student academic performance. Despite this, over two thirds of districts spend less than 1% of their budgets on providing these services and many districts provide no service by claiming waivers or exceptions. The Texas Legislature should evaluate the secondary effects of the bilingual education goals outlined in the Texas Administrative Code and should work with school districts to identify priorities and to fund high quality bilingual education programs. A closer look into how best to fund and deliver bilingual education services may provide new ways to serve students.

Recommendation 6: Eliminate the use of the Administrative Cost Ratio, and utilize the TXSmartSchool.org Spending Score to measure fiscal efficiency.

Currently, the TEA utilizes the Administrative Cost Ratio (ACR) as a financial accountability measure in the Financial Integrity Rating System of Texas (FIRST). The quantitative analyses show ACR is not consistently associated with academic growth or cost efficiency across all district sizes in either charter or traditional public school districts. Thus, the ACR is ineffective at measuring fiscal efficiency in districts. The TEA should eliminate the incentive to abide by the recommended ACR ranges as they do not accomplish the goals of FIRST. Instead, the TEA should use the TSS Spending Score to gauge fiscal efficiency. The TSS Spending Score would achieve the goals of FIRST because it measures fiscal efficiency by examining how a school districts' spending compares to other school districts with a similar cost environment.

As a deliverable, the Capstone Team created policy briefs related to these recommendations that are expected to be published on http://txsmartschools.org/highlights/smart-practices/ by May 2017.

Further Research

A deeper understanding of differences between TSS high and low performing districts may be found by further exploring school district practices. For example, performing a similar study at the individual campus-level could help determine what best practices principals and teachers are implementing on campuses to contribute to high academic performance while minimizing costs. Furthermore, quantitative analysis of interviews with school district officials could help identify whether best practices differ in a statistically significant way between high and low performing schools. Additionally, a review of the literature revealed that there was little scholarly research on cost-efficient best practices, making it a field that is relatively unexplored.

Due to time constraints, the Capstone Team was unable to examine in greater depth some of the findings in the literature review. For example, despite the TSS Capstone Team's findings indicating that extracurricular activities are a positive indicator of student performance, the Capstone Team was unable to write a more in-depth report. A statewide systematic analysis of districts would address many of the themes, and more definitively too.

The Capstone Team's research also opened new questions that the Capstone Team had not considered. Noting that low performing districts struggled with parental involvement, the Capstone Team was unable

to explain why this was the case. This is true throughout the Capstone Team's results; often more questions ended up being asked than answered once the qualitative analysis had begun. Another interesting approach would be to longitudinally follow the districts interviewed to see how their ratings and practices change over time, effectively tracking how policy decisions could influence their ability to produce high academic progress and be fiscally efficient.

A qualitative study of Texas' education-related laws and regulations would help determine whether there are laws preventing campuses and districts from operating as efficiently as possible or pursuing practices that would create the culture of success that the Capstone Team saw in the high performing districts that were examined. Doing so would also produce tangible areas for statewide policy reform that lawmakers could subsequently address.

Conclusion

The TSS Capstone team's research identified transferable best practices, gaps in state-wide data collection, and potential future research. The Capstone Team's findings are not generalizable to every district, they nonetheless outline many of the unique solutions districts are applying to the diverse challenges they face. If this research is pursued, educators and researchers alike will be able to better identify the best practices that will improve Texas schools' and districts' student academic progress and fiscal efficiency. Once identified, these practices, especially when coupled with the TSS metric, have potential to better outline and explain the current K-12 system in Texas.

Some findings can be used to affect changes in the current system. Definitively, the administrative cost ratio is a poor metric for fiscal efficiency that should be eliminated in favor of the TSS spending score. The state needs to begin to garner a better understanding of statewide spending and practices in regards to the use of educational technology, and a reporting system should be developed. Officials often feel overwhelmed by tight budgets as well as legislative restrictions and mandates, but adapting attitudes and promoting cultures that focus on impact and transforming rather than coping with an environment appears to be what is working for the highest performing districts. District officials would be wise to examine the quality of their professional development programs, rather than whether they have one. In fact, officials would be wise to examine the literature regarding quality programs across all practices, ensuring that state money is well spent on impactful programs that make a difference in the academic progress of students.

The mixed methodology approach allowed the Capstone Team to identify shareable best practices associated with academic success and fiscal efficiency. These recommendations and practices shared by districts, are not the proverbial "silver bullet" that guarantee all Texas districts will see gains in fiscal efficiency and student academic progress if adopted. The 1,219 Texas districts are too diverse to have a unified set of practices that can work in every locale. However, the qualitative findings may be transferable within TSS fiscal peer groups. Furthermore, recommendations related to quantitative findings can be applied statewide. The Capstone Team welcomes and encourages districts to take advantage of best practices found in this report and in the policy briefs on TXSmartSchools.org's website and adapt the implementation of these practices locally.

Section V: Glossary, Abbreviations, and References

Glossary

TXSmartSchools.org (TSS)

A nonprofit organization that uses an online platform to empower schools and districts to make comparisons against peers by identifying schools and districts that are increasing academic growth while minimizing costs.

Curriculum/Staff Development Expenditures

Curriculum/staff development expenditures are those used to aid instructional staff in planning, developing, and evaluating the process of providing learning experiences for students (function code 13).

% Curriculum/Staff Development

Percentage of total budget spent on curriculum/staff development expenditures which are used to aid instructional staff in planning, developing, and evaluating the process of providing learning experiences for students (function code 13).

All Funds Instructional Leadership Expenditures

Instructional leadership expenditures are those used for managing, directing, supervising, and leading of staff who provide either instructional or instruction-related services (function code 21).

% All Funds Instructional Leadership

Percentage of total budget spent on instructional leadership expenditures which are used for managing, directing, supervising, and leading of staff who provide either instructional or instruction-related services (function code 21).

All Funds Extracurricular Activities Expenditures

Extracurricular activities are those activities that do not enhance the instructional program, including athletics that normally involve competition between schools and related activities (such as drill team, pep squad, and cheerleading) that exist because of athletics.

% All Funds Extracurricular Activities

Bilingual education program expenditures are costs to evaluate students and to place them in and provide them with educational and/or other services that are intended to make the students proficient in the English language, primary language literacy, composition and academic language related to required courses (program intent code 25).

All Funds Instruction Expenditures

Instruction expenditures are expenditures related to activities that deal directly with the interaction between teachers and students (function code 11). Equity transfers are receipts for contracted instructional services between public schools (function code 91, Texas Education Code [TEC], Chapter 41).

% All Funds Instruction

Percentage of total budget spent on instruction, which are activities that deal directly with the interaction between teachers and students, and equity transfers which are receipts for contracted instructional services between public schools (function code 91, Texas Education Code [TEC], Chapter 41).

All Funds Bilingual Education Expenditures

Bilingual education program expenditures are costs to evaluate students and to place them in and provide them with educational and/or other services that are intended to make the students proficient in the English language, primary language literacy, composition and academic language related to required courses (program intent code 25).

% All Funds Bilingual Education	Percentage of total budget spent on bilingual education program expenditures which are costs to evaluate students and to place them in and provide them with educational and/or other services that are intended to make the students proficient in the English language, primary language literacy, composition and academic language related to required courses (program intent code 25).
Administrative Cost Ratio	TEA defines administrative costs as operating expenditures associated with managing, planning, directing, coordinating, and evaluating a school district. Instruction costs are defined as operating expenses made from funds other than federal funds associated with teacher-student instruction. The administrative cost ratio is calculated by dividing administrative costs by instruction costs, expressed as a percentage.
Charter School	A district was coded as one if the district is a charter school. A zero indicates the district is a traditional public school district. A charter school is defined as "a school created by the granting of a charter by the Texas State Board of Education pursuant to Chapter 12 of the Texas Education Code."
Composite Academic Progress Percentile	Percentile ranking of combined annual academic student growth in math and reading averaged over the prior three years. For example, a 2015 Composite Academic Progress Percentile will be based on an average of the student progress shown on the STAAR and/or end-of-course exams for the 2011-2012, 2012-2013, and 2013-2014 school years. Three-year averages are used to get a more stable and persistent measure with less year-to-year volatility. Values range from one (low) to 99 (high).
% Economically Disadvantaged	Percentage of students qualified as economically disadvantaged in a school or district, defined as students who are eligible for free or reduced-price lunch or other public assistance.
% LEP	Percentage of students that are designated as Limited English Proficiency (LEP) in a district. LEP is defined as "students that have limited proficiency with the English language and do not meet the Texas Administrative Code's English Language Proficiency Standards. Most of these students are enrolled in Bilingual Education/English as a Second Language programs."
Enrollment	Total Student enrollment in the district in 2015.
Three Year Math Progress Z Score	Z-score indicating how many standard deviations a district or school is from the average mean academic student growth in math over the prior three years from the 2011-2012, 2012-2013, and 2013-2014 STARR and/or end-of-course exam.
Three Year Reading Progress Z-Score	Z-score indicating how many standard deviations a district or school is from the average mean academic student growth in reading over the prior three years from the 2011-2012, 2012-2013, and 2013-2014 STARR and/or end-of-course exam.
Smart Score	A combination of the Spending Index and Composite Progress Percentile. Values range from one star (Very High spending/Low Composite progress) to five stars (Very Low spending/High Composite progress).

Spending Index	Quintile ranking of a district's (or campus's) cost-adjusted operating expenditures relative to their fiscal peer group. Ranges from Very Low to Very High. The TSS Smart Score transfers the Spending Index into a ranking between one and five stars, in half-star increments. A five indicates the district is fiscally efficient relative to its fiscal peers.
% Special Education	Percentage of Special Education Students in District
% Students Kindergarten	Percentage of students in kindergarten during the 2014-2015 school year
% Students Grade 1	Percentage of students in the first grade during the 2014-2015 school year
% Students Grade 2	Percentage of students in the second grade during the 2014-2015 school year
% Students Grade 3	Percentage of students in the third grade during the 2014-2015 school year
% Students Grade 4	Percentage of students in the fourth grade during the 2014-2015 school year
% Students Grade 5	Percentage of students in the fifth grade during the 2014-2015 school year
% Students Grade 6	Percentage of students in the sixth grade during the 2014-2015 school year
% Students Grade 7	Percentage of students in the seventh grade during the 2014-2015 school year
% Students Grade 8	Percentage of students in the eighth grade during the 2014-2015 school year
% Students African American	Percentage of African American students during the 2014-2015 school year
% Students Hispanic	Percentage of Hispanic students during the 2014-2015 school year

List of Abbreviations

AAC	Alberta Assessment Consortium
ACR	Administrative Cost Ratio
AEL	Advance Educational Leadership
AI	Appreciative Inquiry
APA	American Psychological Association
CSEE	Center for Social and Emotional Education
CW-FIT	Class-wide Function-related Intervention Teams
FASRG	Texas Financial Accountability System Resource Guide
FAST	Financial Allocation Study for Texas
KIPP	Knowledge is Power Program
LEP	Limited English Proficiency
NAESP	National Association of Elementary School Principals
NCES	National Center for Education Statistics
OLS	Ordinary Least Squares
PBIS	Positive Behavioral Interventions and Support
PBS	Positive Behavior Support
PIEMS	Public Education Information Management System
TEA	Texas Education Agency
T-PESS	Texas Principal Evaluation and Support System
TSS	TxSmartSchools.org
T-TESS	Texas Teacher Evaluation and Support System

Literature Review References

2004. "Hidden curriculum." The Glossary of Education Reform.

2008. "Link between School Climate and Student Success: Findings from CSEE's Ohio School Climate Survey." *Center for Social and Emotional Education Newsletter*.

2011. "Using Student Achievement Data to Support Instructional Decision Making." National Association of Elementary School Principals.

2012. "Supporting teacher professional learning using a sustained coaching model of professional development." Alberta Assessment Consortium.

2016. "Get the Facts." *National Alliance for Public Charter Schools.*

2016. "Hidden in Plain Sight: Tomorrow's Education Leaders Already Work for You." EdFuel.

Angrist, Joshua D., Parag A. Pathak, and Christopher R. Walters. 2013. "Explaining Charter School Effectiveness." *American Economic Journal: Applied Economics* 5 (4):1-27.

Arnold, Douglas E. 2002. "Block Schedule and Traditional Schedule Achievement: A Comparison." *NASSP Bulletin* 86: 42-53.

Aronson, Julie, Joy Zimmerman, and Lisa Carlos. 1999. "Improving Student Achievement by Extending School: Is it just a Matter of Time?"

Baker, Bruce, and Kevin G. Welner. 2010. "Premature Celebrations: The Persistence of Inter-District Funding Disparities." *Education Policy Analysis Archives* 18: 9.

Baker, Bruce, and Kevin Welner. 2011. "School Finance and Courts: Does Reform Matter, and how can we Tell." Teachers College Record 113 (11):2374-414.

Baker, Bruce D. 2016. "Does Money Matter in Education?" *Albert Shanker Institute*.

Bergin, Christi A., and David A. Bergin. 2009. "Sleep: The E-ZZZ Intervention." *Educational Leadership* 67(4): 44-47.

Bradshaw, Catherine P., Christine W. Koth, Leslie A. Thornton, and Philip J. Leaf. 2009. "Altering School Climate through School-Wide Positive Behavioral Interventions and Supports: Findings from a Group-Randomized Effectiveness Trial." *Prevention Science* 10(2): 100-115.

Burnett, Michael A. 2000. "'One Strike and You're Out': An Analysis of no pass/no Play Policies." *The High School Journal* 84(2): 1-6.

Calabrese, Raymond, Sally J. Zepeda, April L. Peters, Crystal Hummel, William H. Kruskamp, Teresa San Martin, and Stefanie C. Wynne. 2007. "An Appreciative Inquiry into Educational Administration Doctoral Programs: Stories from Doctoral Students at Three Universities." *Journal of Research on Leadership Education* 2 (3):1-29.

Calabrese, Raymond, Michael Hester, Scott Friesen, and Kim Burkhalter. 2010. "Using Appreciative Inquiry to Create a Sustainable Rural School District and Community." *International Journal of Educational Management* 24(3): 250-265.

Caldarella, P., Williams, L., Hansen, B. D., & Wills, H. 2015. Managing Student Behavior with Class-Wide Function-Related Intervention Teams: An Observational Study in Early Elementary Classrooms. Early Childhood Education Journal, 43(5), 357-365.

Chaudhary, Latika. 2009. "Education Inputs, Student Performance and School Finance Reform in Michigan." *Economics of Education Review* 28(1): 90-98.

Clifford, Matthew, Ellen Behrstock-Sherratt, Jenni Fetters. 2012. *The ripple effect: A synthesis of research on principal influence to inform performance evaluation design. A quality school leadership issue brief.* American Institutes for Research.

Clifford, Matthew. 2010. *Hiring quality school leaders: Challenges and emerging practices.* Learning Point Associates.

Clunies-Ross, P., Little, E., & Kienhuis, M. 2008. Self-reported and actual use of proactive and reactive classroom management strategies and their relationship with teacher stress and student behaviour. *Educational Psychology*, *28*(6), 693-710.

Coate, Douglas, and James VanderHoff. 1999. "Public School Spending and Student Achievement: The Case of New Jersey." *Cato J.* 19: 85.

Cohen, Jonathan, Elizabeth McCabe, Nicolas Michelli, and Terry Pickeral. 2009. "School Climate: Research, Policy, Practice, and Teacher Education." Teachers College Record 111 (January): 180-213.

Consortium on Chicago, School R. 2007. "Freshman Year: The make-it Or Break-it Year, Fall 2007. [Student Edition]." *Consortium on Chicago School Research.*

Council of Chief State School Officers. 2008. "Educational Leadership Policy Standards: ISLLC 2008."

Covay, Elizabeth, and William Carbonaro. 2010. "After the Bell: Participation in Extracurricular Activities, Classroom Behavior, and Academic Achievement." *Sociology of Education* 83(1): 20-45.

Croft, Andrew, Jane G. Coggshall, Megan Dolan, Elizabeth Powers and National Comprehensive Center for Teacher Quality. 2010. *Job-embedded professional development: What it is, who is responsible, and how to get it done well. Issue brief.* National Comprehensive Center for Teacher Quality.

Cullen, Julie B., and Susanna Loeb. 2004. "School Finance Reform in Michigan: Evaluating Proposal A." *Helping Children Left Behind: State Aid and the Pursuit of Educational Equity.* 215-250.

Darling-Hammond, Linda, and Milbrey W. McLaughlin. 2011. "Policies that Support Professional Development in an Era of Reform." *Phi Delta Kappan* 92(6): 81.

Davis, D. H., & Raymond, M.E. 2012. Choices for studying choice: Assessing charter school effectiveness using two quasi-experimental methods. Economics of Education Review, 31(2), 225-236.

Dicke, T., Elling, J., Schmeck, A., & Leutner, D. 2015. Reducing reality shock: The effects of classroom management skills training on beginning teachers. *Teaching and teacher education*, *48*, 1-12.

Dobbie, Will, and Roland G. Fryer. 2011. "Are High-Quality Schools enough to Increase Achievement among the Poor? Evidence from the Harlem Children's Zone." *American Economic Journal: Applied Economics* 3(3): 158-187.

Dumais, Susan. A. 2006. "Elementary School Students' Extracurricular Activities: The Effects of Participation on Achievement and Teachers' Evaluations." *Sociological Spectrum* 26(2): 117-47.

Eccles, Jacquelynne S., and Bonnie L. Barber. 1999. "Student Council, Volunteering, Basketball, Or Marching Band: What Kind of Extracurricular Involvement Matters?" *Journal of Adolescent Research* 14(1): 10-43.

Edwards, Finley. 2012. "Early to Rise? The Effect of Daily Start Times on Academic Performance." *Economics of Education Review* 31(6): 970-83.

Epple, Dennis, and Maria M. Ferreyra. 2008. "School Finance Reform: Assessing General Equilibrium Effects." *Journal of Public Economics* 92(5): 1326-1351.

Everson, Howard T., and Roger E. Millsap. 2005. *Everyone gains: Extracurricular activities in high school and higher SAT® scores. Research report no. 2005-2.* College Board.

Feldman, Amy F., and Jennifer L. Matjasko. 2005. "The Role of School-Based Extracurricular Activities in Adolescent Development: A Comprehensive Review and Future Directions." *Review of Educational Research* (2): 159.

Fredricks, Jennifer. A., and Jacquelynne S Eccles. 2006. "Extracurricular involvement and adolescent adjustment: Impact of duration, number of activities, and breadth of participation". *Applied Developmental Science* (10): 132–146.

Fryer, Roland G. 2011. *Injecting Successful Charter School Strategies into Traditional Public Schools: Early Results from an Experiment in Houston.* National Bureau of Economic Research.

Gardner, David P. 1983. "A Nation at Risk." *Washington, DC: The National Commission on Excellence in Education, US Department of Education.*

Garet, Michael S., Andrew C. Porter, Laura Desimone, Beatrice F. Birman, and Kwang S. Yoon. 2001. "What Makes Professional Development Effective? Results from a National Sample of Teachers." *American Educational Research Journal* 38 (4): 915-45.

Gifford, Vernon D., and Margie M. Dean. 1990. "Differences in Extracurricular Activity Participation, Achievement, and Attitudes Toward School between Ninth-Grade Students Attending Junior High School and those Attending Senior High School." *Adolescence* 25(100): 799-802.

Gruber, Charlotte D., and Anthony J. Onwuegbuzie. 2001. "Effects of Block Scheduling on Academic Achievement among High School Students." *High School Journal* 84(4): 32-42.

Gulamhussein, Allison. 2013. "Teaching the Teachers: Effective Professional Development in an Era of High Stakes Accountability." *Center for Public Education.* 1-47.

Guryan, Jonathan. 2001. *Does Money Matter? Regression-Discontinuity Estimates from Education Finance Reform in Massachusetts.*

Guskey, Thomas R., and Kwang S. Yoon. 2009. "What Works in Professional Development." *Phi Delta Kappan* 90(7): 495-500.

Hagelskamp, Carolin, and Christopher DiStasi. 2012. "Failure is Not an Option: How Principals, Teachers, Students and Parents from Ohio's High-Achieving, High-Poverty Schools Explain their Success." *Public Agenda.*

Harmston, Matt T., Ann-Maureen Pliska, Robert L. Ziomek, and Donald G. Hackman. 2003. "The Relationship between Schedule Type and ACT Assessment Scores: A Longitudinal Study."

Heba, EL-Deghaidy, Nasser Mansour, Abdulwali Aldahmash, and Saeed Alshamrani. 2015. "A Framework for Designing Effective Professional Development: Science Teachers' Perspectives in a Context of Reform." *Eurasia Journal of Mathematics, Science & Technology Education* 11(6): 1579-1601.

Hoff, Dianne L., and Sidney N. Mitchell. 2006. "Pay-to-Play: Fair or Foul?" *Phi Delta Kappan* 88(3): 230-234.

Holm, Jennifer, and Ann Kajander. 2015. "Lessons Learned about Effective Professional Development: Two Contrasting Case Studies." *International Journal of Education in Mathematics, Science and Technology* 3 (4):262-74.

Hossler, Carol-Anne. 1988. "The Relationship of Increased Instructional Time to Student Achievement. Policy Bulletin No. 1." *Policy Bulletin: Consortium on Educational Policy Studies*.

Hyman, Joshua. 2013. "Does Money Matter in the Long Run? Effects of School Spending on Educational Attainment." *Unpublished Manuscript*.

Jackson, C. K., Rucker C. Johnson, and Claudia Persico. 2015. *The Effects of School Spending on Educational and Economic Outcomes: Evidence from School Finance Reforms*.

Jayaram, Kartik, Andy Moffit, and Doug Scott. 2012. "Breaking the Habit of Ineffective Professional Development for Teachers." *McKinsey*.

Johnson, J., Rochkind, J., & Doble, J. (2008). A mission of the heart: What does it take to transform a school? *Public Agenda.*

Keller, Peggy S., Olivia A. Smith, Lauren R. Gilbert, Shuang Bi, Eric A. Haak, and Joseph A. Buckhalt. 2015. "Earlier School Start Times as a Risk Factor for Poor School Performance: An Examination of Public Elementary Schools in the Commonwealth of Kentucky." *Journal of Educational Psychology* 107(1): 236-245.

Kannapel, Patricia J., and Stephen K. Clements. 2005. "Inside the Black Box of High-Performing High-Poverty Schools." *Lexington, KY: Prichard Committee for Academic Excellence.*

Ladd, H. 2009. "Teachers' perceptions of working conditions: How predictive of policy relevant outcomes?" *Washington, DC: National Center for Analysis of Longitudinal Data in Education Research.*

Lawrence, William W., and Danny D. McPherson. 2000. "A Comparative Study of Block Scheduling and Traditional Scheduling on Academic Achievement." *Journal of Instructional Psychology* 27(3): 178-182.

Lee, Kristi. 2011. "School Climate and Culture: A Scan of Policy and Practice."

Leithwood, K., KS Louis, S. Anderson, and K. Wahlstrom. 2004. "How Leadership Influences Student Learning." Review of Research: The Wallace Foundation, Five Penn Plaza, 7th Floor, New York, NY 10001."Lincoln, Yvonne S., and Guba, Egon G. 1985. *Naturalistic Inquiry*. Beverly Hills, CA: Sage Publications.

Lorenzi, N. M., and R. T. Riley. 2000. "Managing Change: An Overview." *Journal of the American Medical Informatics Association: JAMIA* 7(2): 116-24.

Mahoney, Joseph L., and Andrea E. Vest. 2012. "The Over-Scheduling Hypothesis Revisited: Intensity of Organized Activity Participation during Adolescence and Young Adult Outcomes." *Journal of Research on Adolescence* 22(3): 409-418.

Marzano, Robert J., Timothy Waters, and Brian A. McNulty. 2005. *School Leadership that Works: From Research to Results.* ASCD.

McMullen, Steven C., and Kathryn E. Rouse. 2012. "School Crowding, Year-Round Schooling, and Mobile Classroom use: Evidence from North Carolina." *Economics of Education Review* 31(5): 812-823.

Messelt, J. 2004. "Data-Driven Decision Making: A Powerful Tool for School Improvement." *A White Paper. Sagebrush Corporation. Minneapolis, Minnesota.* 1-12.

Morton, Claudette and Western Montana Coll, Dillon Montana Rural Education Center. 1995. *Creativity versus dollars: How rural schools in one state have maintained or improved their extra-curricular programs in the face of funding cuts.*

National Research Council (US): Committee on Highly Successful Schools or Programs for K-12 STEM Education. 2011. *Successful K-12 STEM Education: Identifying Effective Approaches in Science, Technology, Engineering, and Mathematics.* National Academies Press.

Nguyen-Hoang, Phuong, and John Yinger. 2014. "Education Finance Reform, Local Behavior, and Student Performance in Massachusetts." *Journal of Education Finance* 39(4): 297-322.

O'Brien, Eileen M. 2006. "Making Time: What Research Says about Reorganizing School Schedules." *Center for Public Education*.

O'Neil, John. 1995. "Finding Time to Learn." *Educational Leadership* 53(3): 11-5.

Osher, David, George G. Bear, Jeffrey R. Sprague, and Walter Doyle. 2010. "How can we Improve School Discipline?" *Educational Researcher* (1): 48.

Papke, Leslie E. 2005. "The Effects of Spending on Test Pass Rates: Evidence from Michigan." *Journal of Public Economics* 89(5): 821-39.

Peyser, James A. 2011. "Unlocking the Secrets of High-Performing Charters: Tight Management and "no Excuses"." *Education Next* 11(4): 36-43.

Ruiters, M. 1997. "Social Capital." *ACE Project.*

Ryan, Shannon M. 2003. "Fees for Extracurricular Activities Alienate Students Who Would Otherwise Participate and Should Be Replaced with Alternate Means of Fundraising." *Seton Hall Journal of Sport Law* 13: 239.

Safran, Stephen P., and Karen Oswald. 2003. "Positive Behavior Supports: Can Schools Reshape Disciplinary Practices?" *Exceptional Children* 69(3): 361.

Sebastian, James, and Elaine Allensworth. 2012. "The Influence of Principal Leadership on Classroom Instruction and Student Learning: A Study of Mediated Pathways to Learning." *Educational Administration Quarterly* 48(4): 626-663.

Skiba, Russel J., Cecil R. Reynolds, Sandra Graham, Peter Sheras, Jane C. Conoley, and Enedina Garcia-Vazquez. 2008. "Are Zero Tolerance Policies Effective in the Schools?: An Evidentiary Review and Recommendations." *American Psychologist* 63(9): 852-862.

Snow, Daniel B. 2012. "Someone to Watch Over Me: A Court Mandated Right to Adequate Extracurricular Activities in California." *Georgetown Journal on Poverty Law & Policy* 19(1): 135-158.

Spillane, James P., Richard Halverson, and John B. Diamond. 2004. "Towards a Theory of Leadership Practice: A Distributed Perspective." *Journal of Curriculum Studies* 36(1): 3-34.

Stetson, Ranae. 2013. "Common Traits of Successful U.S. Charter Schools." *Childhood Education* 89(2): 70-75.

Stronge, James H., Holly B. Richard, and Nancy Catano. 2008. *Qualities of Effective Principals.* Association for Supervision and Curriculum Development, 2008.

Sugai, George, and Robert Horner. 2002. "The Evolution of Discipline Practices: School-Wide Positive Behavior Supports." *Child & Family Behavior Therapy* 24(1-2): 23-50.

Suldo, Shannon M., Emily J. Shaffer, and Kristen N. Riley. 2008. "A Social-Cognitive-Behavioral Model of Academic Predictors of Adolescents' Life Satisfaction." *School Psychology Quarterly* 23(1): 56.

Walker, Deborah. 2002. "Constructivist Leadership: Standards, Equity, and Learning: Weaving Whole Cloth from Multiple Strands." *The Constructivist Leader* 2.

Waters, Timothy, Robert J. Marzano, Brian McNulty, and Educational L. Mid-Continent Regional. 2003. *Balanced Leadership: What 30 Years of Research Tells Us about the Effect of Leadership on Student Achievement. A Working Paper*.

Webster-Wright, Ann. 2009. "Reframing Professional Development through Understanding Authentic Professional Learning." *Review of Educational Research* 79(2): 702-739.

Wei, Ruth Chunk, Linda Darling-Hammond, Alethea Adree, Nikole Richardson and Stelios Orphanos. 2009. *Professional learning in the learning profession: Status report on teacher development in the U.S. and abroad.* Dallas, TX: National Staff Development Council.

Weiss, Heather B., M. E. Lopez, and Heidi Rosenberg. 2010. "Beyond Random Acts: Family, School, and Community Engagement as an Integral Part of Education Reform. National Policy Forum for Family, School, & Community Engagement." *Harvard Family Research Project*.

Whitney, Diana, and David L. Cooperrider. 2000. "The Appreciative Inquiry Summit: An Emerging Methodology for Whole System Positive Change." *Od Practitioner* 32(1): 13-26.

Wilkerson, Kimber, Kemal Afacan, Aaron Perzigian, Whitney Justin, and Jenna Lequia. 2016. "Behavior-Focused Alternative Schools: Impact on Student Outcomes." *Behavioral Disorders* 41(2): 81-94.

Yoon, Kwang S., Teresa Duncan, Silva Wen-Yu Lee, Beth Scarloss, Kathy L. Shapley. 2007. "Reviewing the Evidence on How Teacher Professional Development Affects Student Achievement." *Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest.*

Section VI: Appendices

Appendix A: Interview Questions

Interview with Chief Business Officer

1. Describe your budgeting and forecasting process
2. What cost saving measures do you employ to save your district money?
3. How do you budget in anticipation of pending legislation that may affect spending?
4. What regulations and laws have the greatest impact on your ability to manage money in the most efficient manner?
5. What safeguards do you employ to insure the budget is balanced annually?
6. What recommendations would you make to the superintendent in the event the budget had to be reduced?
7. Describe measures you have put in place to streamline and build efficiency into the management of the Business Office.

Interview with Superintendent

Standard Interview Questions

1. What are you most proud of or looking forward to during your tenure?
2. What is your mission statement? How does your district use it to inform your practices and operations?
3. Tell me about the strengths of your districts. Tell me about the challenges your districts face.
4. How do you use data to inform your decision-making?
5. What do your most effective principals in your district do differently than principals in other districts? What do your most effective teachers in your district do differently than teachers in other districts?
6. According to your website, your school district disciplinary policy is X. What does that mean?
7. How does your district encourage community and parental involvement?
8. What best practices would you share with other districts?
9. Where do you get your ideas for school reform?
10. Tell us about the academic successes and challenges of your extracurricular programs.

Optional Interview Questions

1. What type of professional development opportunities do you provide for your teachers?
2. If you had a magic wand, what are three practices you would implement today to improve the educational experience for your children?
3. How does your district fund extracurricular participation?
4. As a charter school, how do your practices differ from a traditional public school?

Appendix B: IRB Outcome Letter

Submission Approval DATE: January 31, 2017

MEMORANDUM

TO: Stacy Cole
TAMU - College Of Education & Human Dev - Educational Adm & Human Resource Develop

FROM: Dr. David Martin
Chair, TAMU IRB

SUBJECT: Approval for IRB Amendment REF: 049285

Study Number: IRB2016-0793D

Title: The TXSmartSchools Capstone

Initial Application Approval Date: 01/03/2017

Continuing Review Due: 12/01/2017

Expiration Date: 01/01/2018

Documents Reviewed and Approved: Only IRB-stamped approved versions of study materials (e.g., consent forms, recruitment materials, and questionnaires) can be distributed to human participants. Please log into iRIS to download the stamped, approved version of all study materials. If you are unable to locate the stamped version in iRIS, please contact the iRIS Support Team at 979.845.4969 or the IRB liaison assigned to your area.

Submission Components			
Study Document			
Title	Version Number	Version Date	Outcome
InterviewQuestions1.20.17	Version 1.0	01/20/2017	Approved

Document of Consent: Written consent in accordance with 45 CF 46.116/ 21 CFR 50.27

Comments:
- Amendment approved additional interview questions.
- This IRB study application has been reviewed and approved by the IRB. Research may begin on the approval date stated above.
- Research is to be conducted according to the study application approved by the IRB prior to implementation.
- Any future correspondence should include the IRB study number and the study title.

Investigators assume the following responsibilities:

1. **Continuing Review:** The study must be renewed by the expiration date in order to continue with the research. A Continuing Review application along with required documents must be submitted by the continuing review deadline. Failure to do so may result in processing delays, study expiration, and/or loss of funding.
2. **Completion Report:** Upon completion of the research study (including data collection and analysis), a Completion Report must be submitted to the IRB.
3. **Unanticipated Problems and Adverse Events:** Unanticipated problems and adverse events must be reported to the IRB immediately.
4. **Reports of Potential Non-compliance:** Potential non-compliance, including deviations from protocol and violations, must be reported to the IRB office immediately.
5. **Amendments:** Changes to the protocol and/or study documents must be requested by submitting an Amendment to the IRB for review. The Amendment must be approved by the IRB before being implemented.
6. **Consent Forms:** When using a consent form or information sheet, the IRB stamped approved version must be used. Please log into iRIS to download the stamped approved version of the consenting instruments. If you are unable to locate the stamped version in iRIS, please contact the iRIS Support Team at 979.845.4969 or the IRB liaison assigned to your area. Human participants are to receive a copy of the consent document, if appropriate.
7. **Post Approval Monitoring:** Expedited and full board studies may be subject to post approval monitoring. During the life of the study, please review and document study progress using the PI self-assessment found on the RCB website as a method of preparation for the potential review. Investigators are responsible for maintaining complete and accurate study records and making them available for post approval monitoring. Investigators are encouraged to request a pre-initiation site visit with the Post Approval Monitor. These visits are designed to help ensure that all necessary documents are approved and in order prior to initiating the study and to help investigators maintain compliance.
8. **Recruitment**: All approved recruitment materials will be stamped electronically by the HRPP staff and available for download from iRIS. These IRB-stamped approved documents from iRIS must be used for recruitment. For materials that are distributed to potential participants electronically and for which you can only feasibly use the approved text rather than the stamped document, the study's IRB Study Number, approval date, and expiration dates must be included in the following format: TAMU IRB#20XX-XXXX Approved: XX/XX/XXXX Expiration Date: XX/XX/XXXX.
9. **FERPA and PPRA:** Investigators conducting research with students must have appropriate approvals from the FERPA administrator at the institution where the research will be conducted in accordance with the Family Education Rights and Privacy Act (FERPA). The Protection of Pupil Rights Amendment (PPRA) protects the rights of parents in students ensuring that written parental consent is required for participation in surveys, analysis, or evaluation that ask questions falling into categories of protected information.
10. **Food:** Any use of food in the conduct of human research must follow Texas A&M University Standard Administrative Procedure 24.01.01.M4.02.
11. **Payments:** Any use of payments to human research participants must follow Texas A&M University Standard Administrative Procedure 21.01.99.M0.03.
12. **Records Retention**: Federal Regulations require records be retained for at least 3 years. Records of a study that collects protected health information are required to be retained for at least 6 years. Some sponsors require extended records retention. Texas A&M University rule 15.99.03.M1.03 Responsible Stewardship of Research Data requires that research records be retained on Texas A&M property.

This electronic document provides notification of the review results by the Institutional Review Board.