Evaluation of the Texas High School Project

Second Comprehensive Annual Report




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This second annual report of the evaluation satisfies *Rider 79 of the General Appropriations Act of the 80th Texas Legislative Session pertaining to the Texas-Science, Technology, Engineering, and Mathematics (T-STEM), Early College High School (ECHS), and High School Redesign and Restructuring (HSRR) programs, which stipulates that those programs be evaluated by TEA.*

Contents

Exhibits

Abbreviations

AA	Academically Acceptable
AA	Associate of Arts
ACT	American College Test
AED	Area Executive Director
AEIS	Academic Excellence Indicator System
AISD	Austin Independent School District
AP	Advanced Placement
AU	Academically Unacceptable
AVID	Advancement Via Individual Determination
AYP	Adequate Yearly Progress
BA	Bachelor of Arts
Big 8 Council	Big 8 Urban Superintendents Council
BMGF	Bill & Melinda Gates Foundation
CDC	County/District/Campus Code
CIC	Campus Instructional Coordinators
CIS	Communities in Schools
CIT	Campus Integration Team
CFT	Communities Foundation of Texas
CMO	Charter Management Organization
CTE	Career and Technical Education
CRIS	College Readiness Indicator System
CRSS	Center for Reform of School Systems
CSGF	Charter Schools Growth Fund
CTE	Career and Technical Education
DATE	District Awards for Teacher Excellence
DISD	Dallas Independent School District
DIEN	District Engagement
DLD	District Leadership Development program
DMS	Data Management System
DSRD	District Redesign
ECHS	Early College High School
ECHSI	Early College High School Initiative
ELA	English Language Arts
ELI	Education Leadership Initiative
EOC	End-of-Course Exams
ESC	Educational Service Center
GEAR UP	Gaining Early Awareness and Readiness for Undergraduate Programs
GPA	Grade Point Average
HB	House Bill
HISD	Houston Independent School District
HLM	Hierarchical Linear Modeling
HR	Human Resources

HSRD	High School Redesign
HSRR	High School Redesign and Restructuring
HSTW	High Schools That Work [Enhanced Design Network]
IB	International Baccalaureate
IHE	Institution of Higher Education
ISD	Independent School District
JFF	Jobs for the Future
KIPP	Knowledge is Power Program
LEP	Limited English Proficient
MMGW	Making Middle Grades Work
MOU	Memorandum of Understanding
NCLB	No Child Left Behind Act
NMSI	National Math and Science Initiative
NR	Nonrepeaters
NSCS	New Schools/Charter Schools
PBL	Problem-Based Learning
PBMAS	Performance-Based Monitoring Analysis System
PD	Professional Development
PEIMS	Public Education Information Management System
PLC	Professional Learning Community
PLTW	Project Lead the Way
PSAT	Preliminary Scholastic Aptitude Test
R	Repeaters
RFA	Request for Application
SAISD	San Antonio Independent School District
SAT	Scholastic Aptitude Test
SB	Senate Bill
SE	Standard Error
SLC	Small Learning Community
SREB	Southern Regional Education Board
STEM	Science, Technology, Engineering, and Math
TA	Technical Assistance
TAKS	Texas Assessment of Knowledge and Skills
TCSR	Texas Consortium on School Research
TEA	Texas Education Agency
TEKS	Texas Essential Knowledge and Skills
TFA	Teach for America
THECB	Texas Higher Education Coordinating Board
THSP	Texas High School Project
TNT	Teach North Texas
TOC	Theory of Change
T-STEM	Texas Science, Technology, Engineering, and Math Initiative
UT	University of Texas
YES	Youth Engaged in Service

Executive Summary

This report is the second comprehensive annual report of the Texas High School Project (THSP) evaluation. The evaluation encompasses the multiple high school reform grant programs under THSP, assessing the implementation and impact on student performance of grantees that first began reforms from 2006–07 through 2009–10.

Drawing on qualitative and quantitative data, the second annual report builds on the results discussed in the prior report covering 2007–08 (Young, et al., 2010),[1] and addresses the following questions for the 2008–09 school year specifically:

- How are THSP-supported schools implementing key reform elements as designed or described by the THSP grant programs? What factors facilitate implementation, and what factors hinder it?
- How do reform model networks support schools in implementation?
- What effects have THSP and its individual grant programs had to date on selected ninth-, tenth-, and eleventh-grade student outcomes?

THSP's mission is to ensure that all Texas students graduate from high school ready to tackle college and/or career successfully. The $346 million investment[2] supports the redesign of existing high schools, as well as the start-up of new standalone schools and schools within schools. THSP was created in 2003 by a public-private alliance that includes the Texas Education Agency (TEA), Office of the Governor, Texas Legislature, Texas Higher Education Coordinating Board (THECB), Bill & Melinda Gates Foundation (BMGF), Michael & Susan Dell Foundation, Communities Foundation of Texas (CFT), National Instruments, Wallace Foundation, Greater Texas Foundation, and Meadows Foundation.

Through 2008–09, THSP fulfilled its mission by funding schools, districts, and charter management organizations (CMOs) across a range of grant programs, specifically:

- Texas Science, Technology, Engineering, and Mathematics (T-STEM)
- Early College High School (ECHS)
- High School Redesign initiatives including High School Redesign and Restructuring (HSRR), High Schools That Work Enhanced Design Network (HSTW), High School Redesign (HSRD), and District Engagement (DIEN)
- New Schools and Charter Schools (NSCS).

THSP began enacting a new strategic plan in 2009–10. In their new phase, THSP aims to scale up promising practices using evidence of grantees' ongoing reform efforts. This change in strategic direction is not reflected in this report because the report is based on 2008–09 data; subsequent reports will cover school years pertaining to the new strategic plan.

1 The report, *Evaluation of the Texas High School Project. First Comprehensive Annual Report,* can be downloaded from http://www.tea.state.tx.us/index4.aspx?id=2904&menu_id=949.

2 As of August 2010.

Key Findings

- In 2008–09, students in new, small schools opened under the T-STEM, ECHS, and NSCS programs generally performed better than matched comparison school peers on multiple ninth-, tenth-, and eleventh-grade outcomes, including TAKS achievement and attendance.
- Some evidence is also emerging that as T-STEM academies and ECHSs mature and as the grant programs refine their school supports over time, student performance in those schools is improving relative to matched comparison schools.
- Students in the comprehensive high schools supported by the grant programs under THSP's High School Redesign initiative performed similarly to matched comparison school peers on the vast majority of 2008–09 outcomes studied.
- T-STEM academies and ECHSs visited in 2008–09 had made significant progress in implementing certain core elements of their respective models while addressing challenges in others. Key features designed for upper-year students were also in the planning stages at the schools not yet serving juniors and seniors.
- Through 2008–09, CMOs funded under the NSCS program to replicate their respective school models were building central office capacity to support their schools and refining human capital strategies in particular as the foundation for continuing growth.
- With few exceptions, existing comprehensive high schools supported by grant programs under the High School Redesign initiative and visited in 2008–09 faced numerous challenges in reforming established norms and practices.

Program Implementation and Outcomes

T-STEM Program

The T-STEM program is unique in its efforts to build a network of STEM academies at the secondary level, along with a statewide infrastructure to support these schools. The program's ultimate purposes are to improve math and science achievement across the state and to increase the number of students who pursue STEM careers. It has achieved some fundamental successes: T-STEM academies, T-STEM centers, and an integrated T-STEM support network were established and are in operation, and the program plans to open more academies in the future. A T-STEM blueprint (2008–09) provided definitions and benchmarks for T-STEM academies and guided the work of school leaders and teachers, T-STEM center staff, and external T-STEM coaches who support the academies.

T-STEM academies implemented different benchmarks of the T-STEM blueprint to varying degrees. The level of implementation appeared to be based on the developmental stage of the school.

The seven academies visited in 2008–09 had implemented some core elements of the T-STEM blueprint, while other elements remained challenging. They had established a genuine STEM focus and college-going orientation for students. Other components of the blueprint, such as building dual-credit, internships, and work-based learning opportunities for students, were still under development at the academies not yet serving juniors and seniors. Most of the academies in the 2008–09 sample were actively planning dual-credit and internship programs for their students in the near future.

Other T-STEM blueprint components that were more challenging for academies to implement were related to the classroom practice, consistent with research findings that instructional reforms are among the most difficult to establish and that schools often focus on structural reforms before instructional changes (Shear, et al., 2005). T-STEM academy teachers implemented to varying degrees key pedagogical strategies promoted by the T-STEM blueprint, such as problem-based learning (PBL) and interdisciplinary instruction. The academies that used PBL consistently were those that were supported by an established national model that provided extensive training, materials, and supports for implementing PBL in the classroom. Teachers at most academies, however, did not have a consistent understanding of PBL or the background or tools to implement PBL as an integral component of their classroom practice. Similarly, academies did not consistently organize instruction in a way that supported interdisciplinary studies (e.g., team-teaching across subject areas, integrating multiple subjects into coursework and projects). At the time of data collection, T-STEM centers had developed a foundational professional development (PD) course on PBL that they were beginning to offer to all academies. These efforts may strengthen PBL implementation in the coming years.

Most academies also supported students with some form of advisory, an ungraded, small class that provides time for teachers to monitor student progress overall and to address individual students' academic and other needs that may affect their schooling. The academies, however, faced difficulties in implementing advisory as envisioned by the blueprint. Given the small school setting (as required by the T-STEM blueprint), teachers and students naturally developed strong relationships, and leaders and teachers at some academies did not view advisory as essential. T-STEM academies would benefit from coaching or other assistance that addresses how advisory can leverage, not duplicate, the relationships that exist at their schools to provide even more comprehensive supports for students.

During 2008–09, the T-STEM network began actively promoting learning across academies. These activities were still early in their development at the time of data collection. T-STEM coaching took place consistently, while other aspects of the network, including the online network and the statewide and regional academy meetings, were being designed and taking shape. The regional T-STEM centers, funded to support T-STEM academy implementation, opened in 2007–08 and were continuing to develop through 2008–09. Although the centers made notable progress building capacity, coordinating across centers, and building trusting relationships with the academies through 2009–10, few of the academies in the sample worked with the T-STEM centers, indicating that room remains for centers to expand their outreach efforts. The T-STEM centers were better positioned to assist the academies that opened subsequently in their planning and early implementation.

Students in the T-STEM program performed better than matched comparison school students in 2008–09 math and science TAKS scores. Outcomes may be improving as academies or the T-STEM program overall matures.

Perhaps reflecting their STEM focus, T-STEM academies thus far have performed better than matched comparison schools on TAKS-Math and Science scores. T-STEM academy ninth- and tenth-graders also had a higher likelihood of passing TAKS in all subjects compared with peers in matched schools. Ninth-grade nonrepeaters (i.e., first-time ninth-graders) in T-STEM academies had higher attendance than comparison school students.

In contrast, T-STEM eleventh-graders performed no better than their comparison school peers on the outcomes studied. The lack of differences in eleventh-grade outcomes may be due to the small number of T-STEM schools serving eleventh grade in 2008–09. Alternatively, T-STEM academies may serve students better the longer they have been in operation and thus subsequent cohorts of students obtained more positive results (i.e., ninth- and tenth-graders in T-STEM academies operating for three years or ninth-graders in T-STEM academies opened for two years as of 2008–09). Because the ninth- and tenth-grade results in the 2008–09 analysis include those from newly funded T-STEM schools, it also may be that the whole T-STEM system is improving, not just individual academies. The pattern is not entirely straightforward, but the 2008–09 analysis contributes to the evidence that the T-STEM model is demonstrating increasingly positive results.

ECHS Program

ECHSs implemented core components of the model but varied in the effectiveness of their college partnerships, implementation of key instructional strategies, and student supports.

In only their second year of operation, the four ECHSs visited in 2008–09 were on track in implementing key components of the ECHS model. They served the target population of at-risk students, refining student recruitment processes to do so; maintained a small-school structure, and had concrete plans for offering college courses or had already enrolled students in them.

The ECHSs varied, however, in:

- The nature of their college partnerships. The level of collaboration on PD and planning between institutes of higher education (IHE) and ECHS staff and the availability of a college liaison committed to developing the partnership and putting the college components in place to serve high school students were uneven across the schools in the sample. These ECHSs' experiences suggest that those located on the campus of the college partner have an easier time developing these aspects of the partnership.
- The degree to which teachers used the six instructional strategies defined by the ECHS model. The ECHSs visited were in the early stages of implementing those strategies. Trained instructional coaches planned to continue working with teachers on those strategies.
- The level of support teachers received generally. Where teachers reported feeling adequately supported, the school had strong professional learning communities with ample common planning time and PD opportunities.
- The comprehensiveness of student supports, i.e., the extent to which the school addressed students' academic, social, and emotional needs. The more comprehensive student support strategies included frequent, regularly scheduled tutoring, frequent advisories and study skills classes, college placement exam preparation, guidance counseling, and individual interventions by teachers. Teachers, however, expressed needs for more PD in offering the wide range of student supports.

Despite variation in how the ECHSs implemented the core elements, all of the visited schools enrolled students in college classes, thus beginning to provide them with the experience essential to the ECHS model.

The ECHS network has improved its guidance and assistance for schools in the early years of implementation. A focus on sustainability will be increasingly necessary as ECHSs move beyond their grant period.

Through a designation process introduced in 2008–09, the ECHS network clarified the core elements of the ECHS model. Schools wishing to be officially designated as an ECHS by TEA had to demonstrate that they were implementing all core components; the network provided supports to provisionally-designated schools so that they could strengthen their implementation. TEA and CFT also collaborated to increase support from coaches and TA providers for all designated schools.

Going forward, it is still too early to foresee what sustainability issues will arise for ECHSs in Texas. Sustaining the program is expensive because partnerships must cover tuition and textbooks for two years of college courses and provide the supports necessary to prepare high school students for success in college-level work. The first schools to receive ECHS grants completed their funding cycle in 2008–09. At the time of data collection, no schools had informed ECHS program officers that they could not continue to support the model financially. As more schools complete their grant funding, sharing across the network successful strategies for ensuring sustainability will be increasingly important. Along with stable funding sources to cover expenses such as tuition and textbooks, findings from the national ECHSI study suggest that other sustainability factors include a supportive policy environment and district and higher education partners' enduring commitment to the ECHS even when leadership turns over (AIR & SRI, 2009). Beyond school-level concerns, TEA is developing a sustainability strategy for the entire ECHS network. Options may include developing products and resources for ECHS-designated schools if grant funds are available or offered to them on a fee-for-service basis.

ECHS students performed better than matched comparison school peers on TAKS across multiple subject areas, as well as in other outcomes. The results may also indicate that ECHSs are improving over time.

Ninth-grade nonrepeaters and tenth-graders in ECHSs had higher TAKS performance in almost all core subject areas, as well as in passing all TAKS in general compared with students in matched schools. Ninth-grade nonrepeaters, tenth-, and eleventh-graders also had higher attendance than did comparison school peers. ECHS students were more likely to be promoted to the tenth-grade and to take accelerated learning courses in the eleventh-grade than were comparison school students.

Although the ECHSs' eleventh-graders performed similarly to peers in comparison schools on TAKS outcomes, those students were the first to attend ECHSs. The stronger results among ninth- and tenth-graders in 2008–09 TAKS outcomes may be a promising indicator that, as the original ECHSs mature, they have improved in meeting their students' needs. At the same time, the ECHSs that opened during the two subsequent years have contributed to the positive ninth- and tenth-grade results, which may indicate an improvement in the ECHS program overall and the supports it provides to schools.

New Schools and Charter Schools Program

The NSCS program funds CMOs to open new campuses that replicate their respective school models. The three CMOs visited in both spring 2008 and 2009 were relatively successful in establishing the key elements of their models at the replication sites. Although the CMOs' school models differ in specifics, the three CMOs aim to offer students a rigorous college preparatory curriculum and to engage students, many of whom come from economically disadvantaged backgrounds, in the importance of pursuing higher education.

To varying degrees, the three CMOs established rigorous curriculum and integrated extensive student supports. Making the curriculum relevant for students, however, was based on individual teacher skills and inclination.

Across the three CMOs studied, the replication sites generally established rigorous curriculum through high content standards—based on TEKS and in some cases higher standards—and expected all students to take advanced courses such as Advanced Placement (AP). The CMOs differed somewhat as teachers and CMO-level staff for two of the CMOs reported being able to implement school cultures and processes more consistently across campuses than those at the third. Because these CMOs served high-needs students who were often inadequately prepared for the challenging curriculum that the charter schools offered, the CMOs sought to raise students' skills up to grade level in their first year there; they all served students in the middle grades and below to maximize student achievement before the critical high school years.

To engage students in learning, CMOs expected teachers to personalize instruction and make course content relevant. For the most part, the small-school structure facilitated teachers' relationships with students as learners and their knowledge of students' lives outside of school insofar as homelife affected school engagement and performance. To help teachers understand students' needs better and to tailor instruction accordingly, all three CMOs were developing ways to use data comprehensively. Making the curriculum relevant to students, however, was largely left to individual teachers, as was true in THSP schools across the various grant programs. The CMOs generally assumed that their college preparatory curriculum was relevant to students because students aimed to go to college.

The CMOs' school models integrated extensive supports to help students and their parents realize college aspirations. In addition to providing more instruction through an extended day, the support strategies sought to broaden students' knowledge of potential careers, college application and financial aid processes, and college life. A curriculum that combined advisory, career exploration, and college knowledge started in the CMOs' middle schools, as did conversations between school staff and parents about the goal of sending their children to college and what achieving that goal entails. Although the three CMOs were at different stages in developing these strategies, their conception and implementation of student supports were far more comprehensive than those of most traditional high schools visited under other THSP grant programs.

Human capital strategies were critical to the CMOs' abilities to sustain their expansion plans and to replicate their school models.

The three CMOs' replication experiences illustrated the necessity for human capital strategies that sustain and develop leadership; facilitate teacher hiring, training, and retention; and build central office capacities to serve additional schools. The CMOs varied in their leadership development strategies, with a strong tendency to promote leaders from within their ranks to ensure that individuals familiar with the school model and culture lead the new schools. With rapid expansion, however, CMOs ran the risk of "cannibalizing" existing campuses to staff new schools with experienced leaders and teachers. Across the CMOs studied, high proportions of novice teachers made teacher training a large-scale effort annually—an effort that will continue to expand as the CMOs open more replication sites. The number of novices that CMOs need to train each year will also depend on the schools' ability to retain successful teachers, which would reduce the number of new hires. Although their plans were at different stages of development, the CMOs were attempting to improve teacher retention through more intensive supports and a differentiated career ladder that builds in formal teacher leadership roles for effective teachers.

Students in NSCS sites outperformed their peers in comparison schools on most outcomes studied.

NSCS students performed higher than comparison school students on TAKS in all subject areas for all three grade levels, except ninth- and tenth-grade reading/English, and had higher rates of passing all TAKS in general. NSCS' students' greater growth in TAKS-Math scores suggests sustained improvement in math achievement. Moreover, NSCS tenth- and eleventh-graders had higher attendance compared with peers in matched schools. On the other hand, ninth-grade nonrepeaters had a lower likelihood of passing Algebra I than did their comparison school peers, but the reasons for those results were unclear.

Although the effect sizes for eleventh-grade outcomes were notable, the results were based only on 19 eleventh-graders in one NSCS school and their peers in comparison schools. That one NSCS school seems to have had strong positive effects on all student outcomes but the results for the eleventh-graders cannot be generalized to the broader NSCS student population. The eleventh-grade analysis reported for NSCS in the next report will have a larger sample size.

High School Redesign Initiative

The grant programs under the High School Redesign initiative—HSRR, HSTW, HSRD, and DIEN—all target traditional comprehensive high schools, which are similar in structure to the high schools that the vast majority of Texas students attend. The four programs all aim to improve student achievement using various strategies, including strengthening teacher-student relationships; making curriculum more academically rigorous and real-world relevant; and providing PD and other supports to school leaders and teachers. Although not all of the schools are rated academically unacceptable (AU) during the whole grant period, improving student performance is a primary goal for the grantees under the High School Redesign initiative programs.

Across the 14 redesigned high schools visited in spring 2009, no patterns were distinguishable by grant program. Along with relatively similar goals across the programs, the common context of the comprehensive high school and the challenges they encountered in reforming existing structures and practices were in all likelihood more powerful than the specific supports offered by each grant program.

Schools with the most coherent reforms focused on teaching and learning and teacher-student relationships. State accountability policies exercised the most influence over AU schools and their reform efforts.

Across the programs under the High School Redesign initiative, the visited schools that made the most progress in reform implementation concentrated on instructional improvement, teacher PD, stronger teacher-student relationships, and teachers' data use to determine students' needs. However, few schools had a clearly communicated and shared vision of high-quality instruction and thus, their teacher learning opportunities were not strategically aligned with instructional improvement. Especially among AU schools, state accountability policies focusing on passing TAKS reinforced the prevalence of TAKS preparation, whether across core areas or in the one or two weakest subjects. Limited time, energy, and resources meant that improving instructional practices and rigor beyond preparing students for TAKS received relatively little attention at those schools.

Student supports are emerging as a distinguishing factor for schools that meet the needs of at-risk students and raise their performance and expectations to a college-ready level. In almost all cases, teachers are on the frontlines not just of instruction as traditionally defined, but also as the key providers of the student supports envisioned in the reforms. In the redesigned high schools with promising student support strategies, teachers received data and dedicated time to get to understand individual students as learners. And as some of the redesigned high schools demonstrated, if teachers are the primary deliverers of an advisory curriculum in particular, they need to be trained extensively; most teachers have not had the preparation to be guidance counselors or to deal with the range of social issues that many high school students struggle with today.

Students in each of the four programs under the High School Redesign initiative performed similarly to comparison school peers on the majority of 2008–09 outcomes examined.

Students in the programs under the High School Redesign initiative performed similarly to those in the matched comparison schools on almost all 2008–09 TAKS outcomes for ninth-, tenth-, and eleventh-graders. The only exceptions were ninth-grade repeaters in HSTW schools, who performed better than those in comparison schools on both TAKS-Math and Reading, and ninth-grade repeaters in HSRD, who performed below those in comparison schools in TAKS-Reading.

Likewise, students in schools under the High School Redesign initiative programs performed similarly to comparison schools peers on almost all 2008–09 non-TAKS outcomes investigated for the three grades. The only exceptions were ninth-grade repeaters in DIEN schools who had a higher likelihood of passing Algebra I in their repeated year than did their peers in comparison schools; HSRR students who had a higher likelihood of being promoted to tenth grade; and HSRD tenth-graders who had a higher average absence rate than comparison school peers.

District Leadership Program

In addition to the school-level grants provided by the programs discussed thus far, THSP operated a smaller effort focused on building district leadership capacity. This program recognized the influence of the district on local school reform and thus targeted central office capacity to improve school reform implementation. The district leadership program supported Dallas Independent School District (ISD), Houston ISD, and San Antonio ISD to build district capacity in supporting high school reform.

THSP's district capacity-building efforts shifted to emphasize performance management.

THSP's strategies to build district capacity evolved in 2008–09 to focus on performance-management activities. Such activities encompassed improving the districts' abilities to integrate their initiatives, promoting data use, and expanding the infrastructure for data use through a planning grant from BMGF for the Big 8 districts (eight of the largest urban districts in the state). The power of collaboration was one early lesson. Collaboration not only helped districts learn from one another, but also engaged administrators more deeply in district improvement processes. Such engagement in turn might lead administrators to sustain new practices after seed funding expires.

Networking schools and districts emerged as a capacity-building strategy that both THSP and districts were adopting. THSP efforts to establish a professional learning community (PLC) of large districts (and possibly an expanded group to achieve greater regional representation), combined with the Texas Consortium on School Research (a researcher-practitioner partnership in 19 districts), may prove a source for future district capacity-building. Similarly, large districts were engaging their school leaders in activities such as joint campus visits to learn from each other.

District priorities and strategies influenced whether and how schools implement THSP-related reforms.

High school reform efforts, including those related to THSP, continued to fall under—and in many cases be dominated by—overarching district strategies. School-level reform efforts fell on a landscape shaped by central office efforts to improve their supports for schools and to ensure high-quality instruction for all students across the district. To build more central supports, districts required common practices across schools such as using similar benchmark assessments so that district staff could differentiate areas for which all schools or a subset of schools needed assistance. Districts required teachers to follow a common curricular scope and sequence and to use data to inform instruction as additional levers in creating coherence and accountability across their schools. But maintaining the appropriate balance between central office requirements and providing schools with sufficient flexibility to adapt reforms appeared to remain a challenge for districts.

Across the various THSP reforms, districts with schools participating in T-STEM or ECHS explicitly endorsed those school models, although their provision of resources and expertise varied. For THSP programs addressing comprehensive high schools, district support varied and, in almost all cases, district strategies took priority. As a result, engaging districts may prove critical if external network providers want to encourage schools to implement their reform models with greater fidelity. Finally, districts are at different stages of thinking about how to improve high school performance, suggesting that THSP's efforts to engage districts may need to be tailored to their contexts.

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THSP is an ambitious and complex undertaking, offering great challenges to all involved parties—grantees, TA providers, network leaders, both sides of the public-private alliance that supports the work, and, not least, the evaluators. After two years of documented implementation, the evaluation can begin to detect the possibility of some positive trends emerging from the concerted efforts to improve high school education in Texas. For example, students in schools following several of the THSP models are outperforming peers in comparison schools on important student outcome indicators. Nevertheless, findings after two years of data collection and analysis are not yet definitive or robust. A third year of data (for the 2009–10 school year) is currently being analyzed, with the next evaluation report scheduled for submission in spring 2011, after 2009–10 student outcome data become available from TEA. The trends across three points in time (four, including the baseline of eighth-grade achievement for each ninth-grade cohort) for a substantial number of schools will provide a much stronger case for THSP results—whether positive, neutral, or negative. Further, for a limited number of participating THSP schools (those beginning implementation in 2006–07), the next report will include student outcomes through twelfth grade and high school completion. The long wait for answers to evaluation questions may be on the horizon.

Chapter 1 Introduction

This report is the second comprehensive annual report of the evaluation of the Texas High School Project (THSP). The evaluation assesses the implementation and impact on student performance of THSP grantees that first began implementing reforms from 2006–07 through 2009–10. The current report presents findings from evaluation activities conducted in 2008–09 and builds on the results discussed in the prior report (Young, et al., 2010).[3]

The second annual report addresses the following questions as observed up through the 2008–09 school year:

- How are THSP-supported schools implementing key reform elements as designed or described by the THSP grant programs? What factors facilitate implementation, and what factors hinder it?
- How do reform model networks support schools in implementation?
- What effects have THSP and its individual grant programs had to date on selected ninth-, tenth-, and eleventh-grade student outcomes?

Overview of the Texas High School Project

THSP is dedicated to seeing that all Texas students graduate from high school ready to tackle college and/or career successfully. Established in 2003, the THSP public-private alliance has evolved over time and includes the Texas Education Agency (TEA), Office of the Governor, Texas Legislature, Texas Higher Education Coordinating Board (THECB), Bill & Melinda Gates Foundation (BMGF), Michael & Susan Dell Foundation, Communities Foundation of Texas (CFT), National Instruments, Wallace Foundation, Greater Texas Foundation, and Meadows Foundation. The $346 million investment[4] in THSP supports the redesign of existing high schools, as well as starting up new standalone schools and schools within schools.

THSP pursues its mission by funding schools, districts, or charter management organizations (CMOs) across a range of grant programs, specifically:

- Texas Science, Technology, Engineering, and Mathematics (T-STEM) academies and centers
- Early College High School (ECHS)
- Redesign High School initiatives—High School Redesign and Restructuring (HSRR), High Schools That Work Enhanced Design Network (HSTW), High School Redesign (HSRD), and District Engagement (DIEN)
- New Schools/Charter Schools (NSCS).

Across all of these programs, THSP strives to serve youth at greatest risk of dropping out and originally targeted its funding to urban settings and areas along the border. In recent years, funding has included areas throughout the state with a deliberate attempt to incorporate rural

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3 The report, *Evaluation of the Texas High School Project. First comprehensive annual report,* can be downloaded from http://www.tea.state.tx.us/index4.aspx?id=2904&menu_id=949

4 As of August 2010.

areas. To varying degrees, the grant programs aim to assist schools in establishing a college-going culture, strengthening academic programs to prepare students for college, integrating real-world applications and 21st-century skills into the curriculum, and providing training and other supports to school leaders, teachers, and students in making these changes. T-STEM, ECHS, and NSCS explicitly call for small school structures[5] and fund new start-ups as standalone or schools within schools. The Redesigned High School initiatives (HSRR, HSTW, HSRD, and DIEN) support reforms at traditional, comprehensive high schools[6] and are designed to change the existing structures, practices, and culture en route to improving student performance. Exhibit 1-1 provides details about each grant program. The program-specific chapters of the report provide fuller descriptions of each program.

The THSP-funded high school reforms fit within a supportive state policy context. Texas state policymakers have passed several landmark bills to stimulate high school improvement and college and career readiness for all students. Chief among them is House Bill (HB) 1 (79th Legislature, Third Called Session, 2006). Along with other provisions, that bill established the requirement for four years of English, math, science, and social studies (the "four by four" curriculum); began a process to develop college-readiness standards to vertically align the high school curriculum with college expectations; mandated that all districts provide dual-credit[7] opportunities to high school students; and provided the High School Allotment to decrease drop-out rates, increase academic rigor, and promote advanced coursework and high school graduation. Subsequently, new accountability provisions were passed in 2007 that included raising the passing scale score for the Texas Assessment of Knowledge and Skills (TAKS) over time, establishing End-of-Course (EOC) examinations in the four core academic subjects, and adding college readiness measures to the school accountability reports (Senate Bill [SB] 1031, 80th Legislature, Regular Session).[8] The 81st Legislature in 2009 passed a number of bills also consistent with the goals of THSP, including incorporating college readiness into the accountability system (HB 3, 81st Legislature, Regular Session).

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5 Small schools are generally defined in THSP programs as 100 students per grade or fewer.

6 "Comprehensive" high schools refer to the traditional American high school, one that typically offers a wide range of academic and elective courses, athletics, and other extracurricular activities.

7 Dual-credit courses are college-level courses for which high school students earn high school and college credit simultaneously.

8 A detailed review of the state policies affecting high schools in Texas was published separately as part of this evaluation (Keating, et al., 2008) and is available for download at http://ritter.tea.state.tx.us/opge/progeval/HighSchoolCollege/THSP_Policy_Report_1_13_09_FINAL.pdf. An update from the 2009 Texas Legislative Session will be included in the next comprehensive annual report for the evaluation of THSP.

Exhibit 1-1
THSP Program Characteristics

Program	Funding (Funder)	Total Number of Schools	Schools Included in Evaluation	Description	Geographic Focus	Target Population
T-STEM	$50.6 million for academies (TEA and CFT)	51	46	Rigorous secondary schools focus on improving instruction and academic performance in science- and mathematics-related subjects and increasing the number of students who study and enter STEM careers. Academies are stand-alone small schools or schools within schools.	Major urban centers (Houston, Dallas/Fort Worth, San Antonio, Austin) Mid-size cities and rural locations The Texas-Mexico border	High-need, at-risk, economically disadvantaged, English learners, or first-generation college-going students
ECHS	$19.8 million (TEA and CFT)	44	22	Students simultaneously attain a high school diploma and significant college credit hours (up to a 60-credit Associate of Arts [AA] degree) in small schools or schools within schools, with some located on or in close proximity to college campuses.	Statewide, including urban and rural areas and the Texas-Mexico border	Students at risk of dropping out of high school or who want to accelerate high school completion
NSCS	$9 million (CFT)	13	13	New campuses replicate successful college preparatory models as established by their respective CMOs.	Major urban centers The Texas-Mexico border	High-need, at-risk students traditionally underrepresented in college
HSRR	$20.2 million (TEA)	78	38	Traditional comprehensive high schools rated Academically Unacceptable (AU) undertake fundamental redesign and build organizational capacity to improve student achievement.	Statewide	AU campuses

Exhibit 1-1
THSP Program Characteristics (concluded)

Program	Funding (Funder)	Total Number of Schools	Schools Included in Evaluation	Description	Geographic Focus	Target Population
HSTW	$3.2 million (TEA)	38	30	Comprehensive high schools implement the national HSTW model designed by the Southern Educational Regional Board, with focus on integrating academic and career and technical education (CTE) coursework and creating a culture of continuous improvement.	Statewide	Campuses rated AU, or in a district with CTE Stage 3 or 4 rating or with 55% of students identified as economically disadvantaged and 45% at risk of dropping out
HSRD	$11 million HSRD and DIEN (CFT)	6	6	Comprehensive high schools implement a modified version of the national HSTW model, with additional coaching on reorganizing into smaller learning communities	Austin, Fort Worth, San Antonio, Ysleta (El Paso)	Low-performing schools in targeted districts
DIEN		4	4	Comprehensive high schools implement a modified version of the national HSTW model, with additional coaching for reorganization into smaller learning communities. The district-level executive principal provides additional school leadership support.	Houston	Low-performing schools

Notes: Among the 51 T-STEM academies, five are implementing a combined T-STEM/ECHS model.

The CFT-funded ECHSs were included in the national evaluation of the ECHS Initiative and are included only in the student outcomes analysis of this evaluation.

The first two cycles of the HSRR were evaluated separately and not included in the present evaluation of THSP. The HSRD schools were not included in all data collection activities in the first year of the evaluation because they were not identified until after the data collection period began. Funding data and total number of schools as of August 2010.

Overview of the THSP Evaluation

TEA contracts for the evaluation with SRI International and its subcontractors, Copia Consulting, the Public Policy Research Institute at Texas A&M University, the Texas Schools Project at the University of Texas (UT), Dallas, and Triand Inc. The evaluation is funded by TEA, BMGF, and CFT.

The study examines grantees' reform implementation efforts, as well as investigating the effects of THSP and its constituent programs on student outcomes. The evaluation tracks the outcomes through twelfth grade for the 2006–07 cohort of ninth-graders in THSP schools that began implementation that year. The evaluation then adds subsequent ninth-grade cohorts enrolling at those THSP schools, as well as at THSP schools that received grants in 2007–08, 2008–09, or 2009–10. Over four years, the evaluation will offer a cumulative picture of how schools implement THSP reforms, their successes and challenges, sustainability efforts, and the effect of those reforms on student achievement and other outcomes.

One challenge faced by the evaluation is that four years is likely to be the minimum amount of time necessary before substantial effects on student outcomes become evident. The first years of an implementation rarely produce changes in final student outcomes. For example, in the Evaluation of BMGF's High School Grants Initiative, researchers found some evidence of improvements in reading achievement and mixed results in math achievement among schools serving students for three or fewer years; they suggested that, on the basis of prior research, five to six years would need to pass before student achievement improvements would be evident (Rhodes, et al., 2005). Therefore, throughout the study, the evaluation team will continue to examine implementation trends that appear promising and that may result in student outcome improvements after study completion.

Data Sources and Methods

To examine implementation and outcomes, the evaluation uses qualitative and quantitative data, drawing on site visits, case studies, interviews, surveys, and extant data. This report draws on qualitative data collected in spring 2009 from site visits and interviews. The qualitative data addressed school-level implementation and the role of districts, CMOs, and the reform model networks. Quantitative data to analyze the effects of THSP on 2008–09 student outcomes come from TEA.

Site Visits and Interviews

Evaluators conducted site visits in spring 2009 at:

- 22 THSP schools randomly chosen from the schools that began implementation in 2007–08
- Six THSP schools that began implementation in 2006–07 that showed promising practices based on site visits in the prior year
- 14 non-THSP schools.

The THSP site visit sample consisted of schools from the T-STEM, ECHS, HSRR, HSTW, HSRD, DIEN, and NSCS programs. At each site visited, the evaluation team collected interview data from multiple respondents representing different levels in the education system. At the school level, site visitors interviewed principals, assistant principals for instruction (or the equivalent), instructional coaches (when applicable), the administrators most knowledgeable about student supports, and teachers of ninth-grade English, math, and science. Site visitors also interviewed district administrators responsible for high school reform, curriculum, instruction, professional development (PD), and accountability (or their equivalents). In three urban districts funded for district-level initiatives—Dallas Independent School District (DISD), Houston Independent School District (HISD), and San Antonio Independent School District (SAISD)—researchers conducted more extensive district interviews with a broader base of administrators. Evaluators also conducted interviews with key technical assistance (TA) providers and program officers associated with each THSP grant program. Appendix A describes the qualitative methods in more detail.

Surveys. In spring 2008, the evaluation team administered surveys to principals, a sample of teachers of ninth-grade English, math, and science, and a sample of ninth-grade students in THSP schools that began implementation in 2006–07 and 2007–08. An analysis of the relationship between key implementation factors based on the survey responses and 2007–08 student outcomes was presented in the first evaluation report (Young, et al., 2010). That analysis was replicated with 2008–09 student outcomes for this report.

TEA Data and Comparative Student Outcomes Analysis

TEA provided campus-level and student-level datasets from the Academic Excellence Indicator System (AEIS) and the Public Education Information Management System (PEIMS).[9] These datasets include unique school- and student-level identifiers that allow the data to be linked across years. The evaluation team used a rigorous approach to first identify appropriate comparison schools and then to analyze differences in key outcomes between THSP and matched non-THSP schools. Schools were matched both in regard to school characteristics (e.g., enrollment size, overall student demographics) and student characteristics (e.g., prior achievement in the eighth grade). Evaluators examined the data for potential effects of participation in individual grant programs on ninth-, tenth-, and eleventh-grade student outcomes, including attendance, TAKS scores, and measures of being on track to graduate such as passing all four core courses under the state's "four by four" curriculum policy.[10] The outcomes analyzed for this report are for the 2008–09 school year. Appendix B describes the student outcomes methods in detail.

Report Overview

Chapter 2 describes the schools and students served by THSP through the 2008–09 school year. The subsequent chapters review each program in turn, describing the purposes and key reform elements, the nature of reform implementation at the schools visited in 2008–09, and the effects on student outcomes for each program. Chapters 3 and 4 discuss the T-STEM and ECHS programs, respectively. Because the contexts are so similar and because the evaluation team found great similarities in implementation, Chapter 5 examines all of the programs falling under the Redesigned High School initiative: HSRR, HSTW, HSRD, and DIEN. Discussion of the NSCS program follows in Chapter 6. Chapter 7 presents the cumulative findings on the three districts that were funded under the District Leadership Development (DLD) program.

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9 TEA stripped out confidential identifiers and assigned random student numbers to track students over time.

10 Each model predicting student outcomes was estimated with the hierarchical frameworks described in Appendix B.

Chapter 8 concludes the report, highlighting themes that cut across the individual programs and offering implications for the THSP alliance and network and program supports.

Chapter 2
THSP School Characteristics and Student Outcomes

Key Findings

- Schools funded under the THSP initiative serve higher proportions of economically disadvantaged, African-American, and Hispanic students than the average non-THSP high school in Texas.
- T-STEM students performed better than comparison school peers on 2008–09 TAKS-Math and Science scores.
- ECHS students performed better than matched comparison school peers in TAKS across multiple subject areas, as well as in other outcomes.
- NSCS grantees surpassed comparison school students on most outcomes studied.
- Schools in the HSRR, HSTW, HSRD, and DIEN programs under the High School Redesign initiative performed similarly to matched comparison schools on the vast majority of outcomes examined.

Introduction

THSP encompasses grant programs that target different types of schools and students and pursue different strategies to create effective high schools. Common across the grant programs is the goal to graduate all Texas high school students college and/or work ready. This chapter examines how THSP schools included in this evaluation compared with rigorously matched non-THSP schools on key student outcomes related to THSP's ultimate goals. Drawing on school and student data from TEA, the evaluation team analyzed student outcomes for each individual THSP program. This chapter addresses the following research question:

- To what extent do student outcomes such as academic achievement, access to college preparatory courses, and attendance in schools in each THSP program differ from such outcomes for students in well-matched comparison schools?

At this stage of the evaluation, findings are preliminary for a number of reasons. As is often the case with statewide data, certain data collected by TEA that are necessary for the analysis lag by one year. Therefore, the latest available data for this report pertain to the 2008–09 school year. The analyses for that year include (1) eleventh-graders who have been in THSP programs for three years,[11] (2) tenth-graders who have been in THSP programs for two years and (3) ninth-graders who have been in the THSP programs for one year.[12] Because schools in the THSP programs included in the analysis were in the first, second, or third year of implementation in 2008–09, the outcomes for which one can reasonably expect to see any effects are short and medium term. As the THSP schools included in this evaluation start serving higher graders, the analysis incorporates additional grade-appropriate outcomes (reviewed below).

This chapter briefly reviews the methods used to match THSP schools with similar non-THSP schools, the sample, student outcome measures, and statistical procedures. Demographic and achievement data for the 2008–09 academic year are presented for THSP and all non-THSP schools serving similar students in Texas. A summary of the various THSP programs' effects on TAKS and other student outcomes for ninth-, tenth-, and eleventh-graders then follow. Finally, the relationships between key implementation factors measured in the spring 2008 surveys and selected tenth-grade 2008–09 student outcomes are presented. This analysis specifically examines whether implementation factors that were related to ninth-grade outcomes in 2007–08 relationships continue to hold one year later. This chapter provides an overview of the findings. Detailed program-specific results are included in the subsequent program-specific chapters.

Methods Overview

Identifying Appropriate Comparison Schools

Descriptive analyses of THSP and non-THSP schools in Texas demonstrated that THSP schools differ from the average Texas school in student composition and other school and

11 Students were only included in a given cohort if they had attended the same school during all implementation years

12 The implementation started in September 2008 for a given ninth-grade cohort of students, even if the school began implementing THSP reforms in prior years. The TAKS were administered around March through May 2009. Thus, the ninth-grade students were in THSP programs for less than the full school year but more than half of the school year when TAKS began.

district characteristics (see Young, et. al., 2010). Compared with non-THSP schools with the same grade span, students at THSP schools on average tend to be more disadvantaged and higher risk than those at non-THSP Texas schools (Young, et. al., 2010).Therefore, comparing THSP schools with all other Texas high schools is not appropriate. To obtain an appropriate comparison group, the evaluation team first matched THSP schools with non-THSP schools on a set of baseline school characteristics for the year prior to THSP participation. School matching characteristics included grade span, campus accountability rating, TAKS-Math and Reading passing rates, urbanicity, total enrollment, Title I status, and percentage of minority students. The researchers chose these school characteristics because they provide the context for student learning and are likely related to future student outcomes (Lavin, 1965). The matching method is described further in Appendix B and the lists of THSP schools and their matched comparison schools are summarized in Exhibits C-3 to C-5.

The evaluation team verified that the existing schools beginning THSP implementation in 2006–07, 2007–08, or 2008–09 were similar to their matched schools on a wide range of school characteristics, student demographics, teacher characteristics, and performance indicators. Due to their distinguishing features, schools newly opened in 2006–07, 2007–08, or 2008–09 were matched closely with comparison schools on some key indicators but not others.[13] Due to the limited number of non-THSP schools that were newly opened in the same year as the THSP schools, the researchers did not match newly-opened THSP schools exclusively to other newly-opened schools. As a result, any interpretation of the outcomes analysis presented here must be taken cautiously where THSP new schools are included. Characteristics of students at THSP and non-THSP schools were also examined to make sure that the matched schools served similar types of students before THSP schools began implementation. These baseline similarities ensure that any identified THSP program effects on student outcomes are not due to prior differences in observable student characteristics, although they may be influenced by differences in unobserved characteristics. Descriptive statistics documenting the quality of the matches between THSP and non-THSP schools are in Appendix D.

Student Sample

Ultimately, the THSP evaluation will longitudinally assess the implementation and effects of the various programs for students from ninth grade through high school graduation. The evaluation began following the ninth-graders in school embarking on THSP implementation in 2006–07. The first annual report from this evaluation (Young, et al., 2010) included student outcomes analyses through the 2007–08 school year for schools that began implementation in 2006–07 or 2007–08. The analysis presented here for the 2008–09 school year includes three student samples: (1) eleventh-graders who have been in schools in THSP programs for three years; (2) tenth-graders who have been in schools in THSP programs for two or three years; and (3) ninth-graders at schools in THSP programs that have been implementing reforms for one, two, or three years (Exhibit 2-1). Programs that started implementation in 2007–08 do not have eleventh-graders included in the analysis. Programs that started implementation in 2008–09 do not have tenth- or eleventh-graders included in the analysis.

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13 Newly-opened THSP schools and their matched comparison schools are fairly similar on baseline students' prior TAKS achievement, Title I status, and percentage of limited English proficiency (LEP) students, but they differ in school size, urbanicity status, percentage of minority students, and percentage of economically disadvantaged students.

Exhibit 2-1
Grades Included in 2008–09 Analysis by Year Funded and Year of Implementation

Year Funded	2006–07	2007–08	2008–09
Year of Implementation in 2008–09	Third	Second	First
Grade Included in 2008–09 Analysis			
Nine	●	●	●
Ten	●	●	
Eleven	●		

The evaluation team analyzed the effects of individual THSP programs for the ninth-, tenth- and eleventh-grade student samples separately as the outcome measures that are available and appropriate differ by grade (e.g., TAKS is given in different subjects in different grades, AP and dual credit course-taking are more common in eleventh and twelfth grade).

Student Outcome Measures and Analysis

Based on data availability and relevance, the student outcomes analysis focused on TAKS performance in individual subjects and passing all TAKS, passing Algebra I by ninth grade, taking accelerated learning courses, being on track to graduate with the "four by four" curriculum,[14] absence rate, and grade promotion (Exhibit 2-2). Exhibits D-5 through D-7 present the means, standard deviations, and sample sizes for all the outcome measures for the ninth-, tenth- and eleventh-grade samples.

[14] Many of the schools in the T-STEM, ECHS, and NSCS programs have an extended instructional year that includes a summer session, during which students can gain credit. However, credit earned outside of the traditional 180-day instructional year is not reported to TEA in the course-taking databases that were used for this study. Therefore, the effects on being on track with the "four by four" curriculum were not analyzed for T-STEM, ECHS, and NSCS. The "four by four" on track analysis was only conducted for HSTW, HSRD, HSRR, and DIEN. Although these and the comparison schools also offer summer school, the missing summer credit likely does not affect the HSTW, HSRD, HSRR, and DIEN and their comparison schools differently, as would be case with the T-STEM, ECHS, and NSCS programs.

Exhibit 2-2
Student Outcomes Analyzed for 2008–09 School Year

Student Outcome Measures	Ninth Grade	Tenth Grade	Eleventh Grade
TAKS-Reading/English	✓	✓	✓
TAKS-Math	✓	✓	✓
TAKS-Science		✓	✓
TAKS-Social Studies		✓	✓
Passing TAKS in all core subjects	✓	✓	✓
Passing Algebra I by ninth grade	✓		
Meeting “four by four” curriculum requirement[a]	✓	✓	✓
Accelerated learning			✓
Promoted to tenth/eleventh grade		✓	✓
Percentage of days absent	✓	✓	✓

[a] Only analyzed for HSTW, HSRD, HSRR, and DIEN.

Evaluators used hierarchical modeling to analyze key student outcomes at THSP program and comparison schools. To control for observable differences between students, the analysis included variables describing individual student demographics and previous achievement on mathematics and reading TAKS tests. To account for differences between THSP program and comparison schools that remained after matching, the analysis also included school-level characteristics such as the percentage of first-year teachers and the school’s accountability rating. For consistency, essentially the same model is used for each outcome. Details about the analytic approach are included in Appendix B.

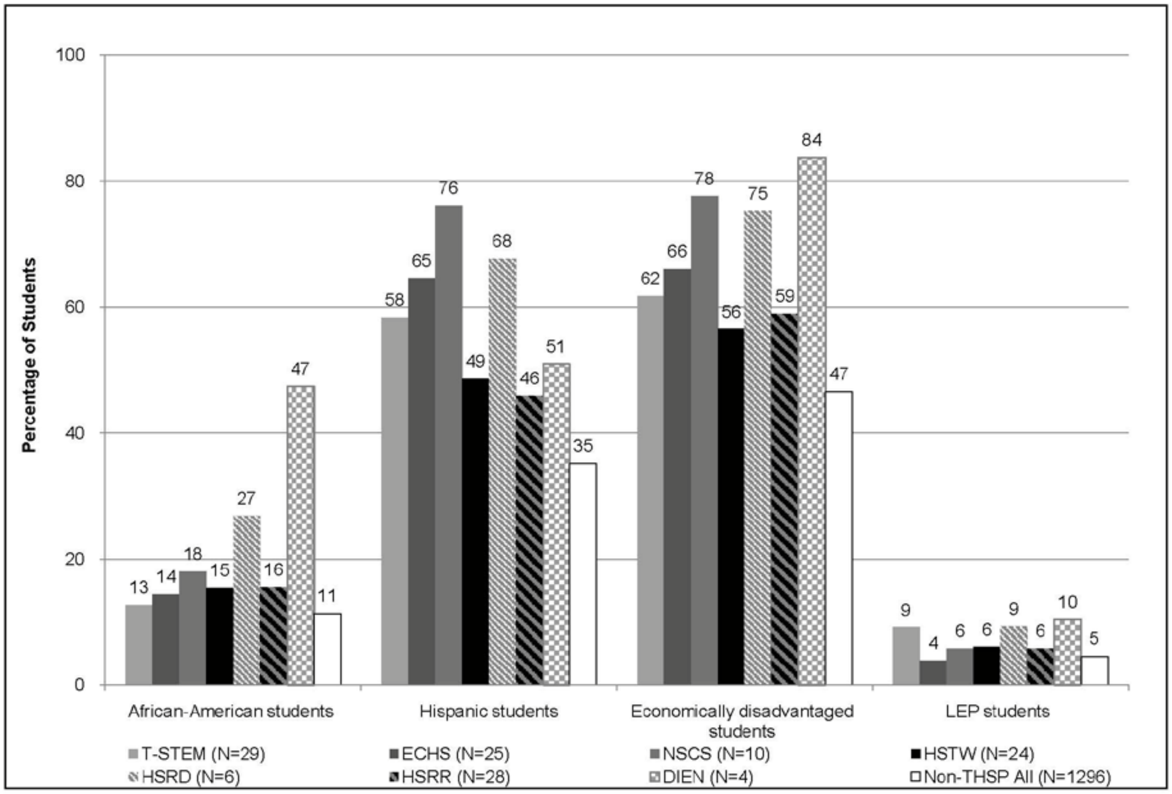
Description of Students at THSP and Non-THSP Schools

At a basic level, it is helpful to understand which students THSP schools serve in comparison to the average non-THSP high school in Texas. This snapshot for 2008–09 includes 157 THSP schools that were first funded in 2006–07, 2007–08, or 2008–09, and 1,296 non-THSP schools in Texas serving grades 9, 10, 11, or 12. As was true in 2006–07 and 2007–08, THSP schools continued to serve greater proportions of underrepresented students and had higher proportions of novice teachers than non-THSP schools in Texas. The THSP grant programs varied in average accountability rating, with larger proportions of AU schools than the state overall. In short, THSP continued to tackle some of the highest-needs schools in the state with its financial support and technical assistance.

Student Characteristics

Although THSP programs varied substantially, THSP schools in general served higher proportions of African-American, Hispanic, and economically disadvantaged students than other high schools in the state (Exhibit 2-3). THSP schools generally had higher or similar proportions of limited English proficient students compared to non-THSP schools.

Exhibit 2-3
Selected Student Characteristics (2008–09) for THSP and Non-THSP Schools



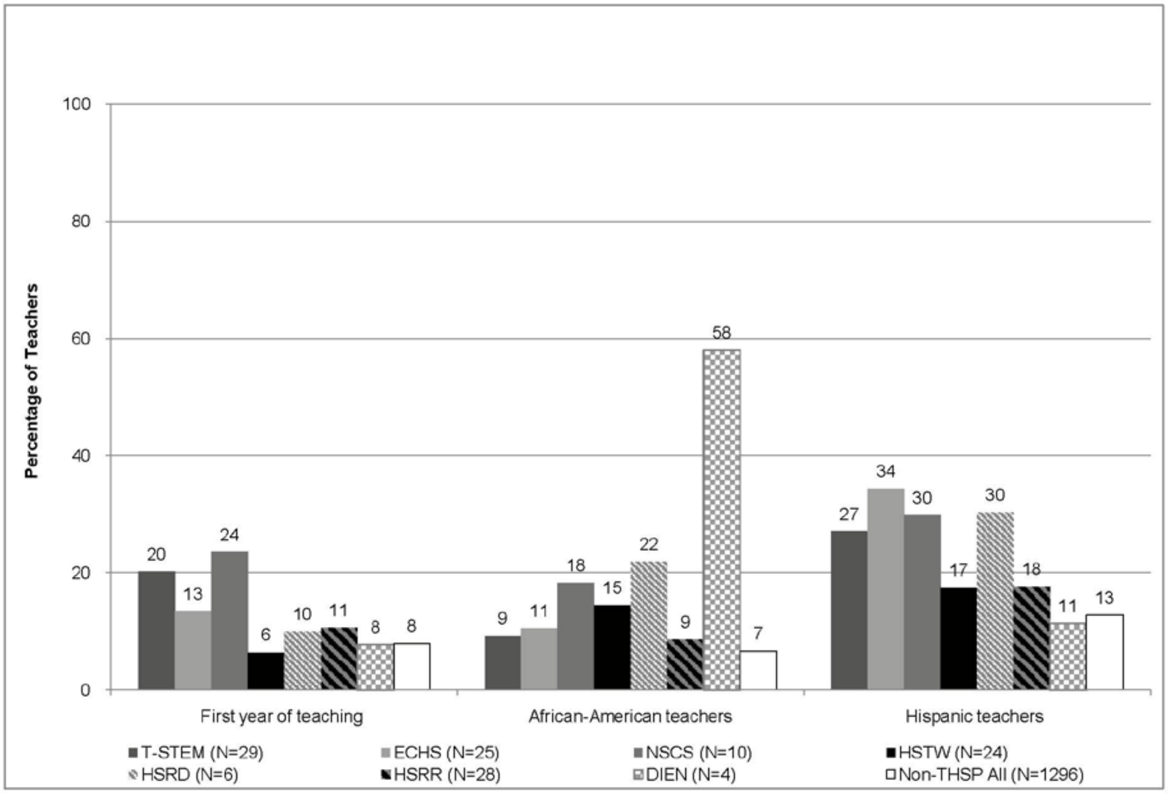
Notes: The number of schools is shown in parentheses after each school category. Non-THSP schools refer to all non-THSP schools in the state serving grades 9, 10, 11, or 12.

Source: Academic Excellence Indicator System (AEIS) 2008–09 academic year.

Teacher Characteristics

Schools in the T-STEM, ECHS, and NSCS programs had higher proportions of teachers in their first year of teaching compared to other THSP programs and non-THSP schools in the state (Exhibit 2-4). These results are not surprising as T-STEM, ECHS, and NSCS are the programs that primarily feature new start-up schools, which tend to hire novice teachers based on site visit data in this study and others charting new start-ups (Woodworth, et al., 2008; Young, et al., 2009) . In addition, reflecting the student populations that the schools serve, schools in THSP programs in general had larger or similar proportions of African-American and Hispanic teachers than non-THSP schools in the state.

Exhibit 2-4
Teachers Characteristics (2008–09) for THSP and Non-THSP Schools



Notes: The number of schools is shown in parentheses after each school category. Non-THSP schools refer to all non-THSP schools in the state serving grades 9, 10, 11, or 12.

Source: Academic Excellence Indicator System (AEIS) 2008–09 academic year.

This description thus illustrates the characteristics of target schools under THSP, reflecting the goals of the initiative to provide opportunities for economically disadvantaged and minority students and to graduate all high students college- and career-ready. The student outcomes analysis discussed next hones in on how students in THSP schools are performing compared to their peers in similar non-THSP schools.

Findings of the Student Outcomes Analysis

The student outcomes analysis compares schools in THSP programs to the sub-group of matched non-THSP schools (as described under the methods section in this chapter) to isolate the effects of THSP programs on the student outcomes of interest. The analysis controlled for a wide range of student- and school-level covariates, including students' gender, ethnicity, limited English proficiency status, immigration status, at-risk status, economically disadvantaged status, and eighth-grade TAKS scores (i.e., baseline achievement prior to THSP implementation). The analysis also controlled for baseline school accountability rating, urbanicity, percentage of mobile students, percentage of special education students, and percentage of teachers in their first year of teaching. These adjustments—as well as the careful matching of comparison schools in the first place—come close to isolating whether the school's participation in each THSP program has an effect on individual student achievement for similar students in each THSP program versus the matched schools. On the other hand, matching and covariant adjustment can only adjust for observed differences between THSP and comparison schools, but not unobserved characteristics such as student, teacher and principal motivations. Therefore the estimated effects should be interpreted with caution. This chapter presents the estimated THSP effects; the complete specification for each outcome model can be found in Appendix E. Unless otherwise stated, all results discussed below are statistically significant at the 0.05 significance level (i.e., $p < .05$). The results for each THSP program follow.

T-STEM

Students in T-STEM academies performed better than peers in comparison schools in several aspects but not consistently better across all outcomes.

- Ninth-grade nonrepeaters and tenth-graders in T-STEM academies had higher TAKS-Math scores than comparison school peers.
- Tenth-graders in T-STEM academies had higher TAKS-Science scores than their counterparts in comparison schools.
- Ninth-grade nonrepeaters in T-STEM academies had a higher likelihood of passing all TAKS subjects than their peers in comparison schools.
- Ninth-grade nonrepeaters in T-STEM academies had a lower likelihood of being absent than peers in comparison schools

Early College High School

Results showed that attending an ECHS had positive effects on TAKS performance in almost all core subject areas; attendance for ninth-grade nonrepeaters and tenth- and eleventh-graders; promotion to the tenth grade, and participation in accelerated learning courses in the eleventh grade.

High School Redesign Initiative

Programs under the High School Redesign initiatives yielded the following outcomes compared to matched schools:

- HSRR ninth-graders had a higher likelihood of being promoted to tenth grade
- HSTW ninth-grade repeaters had a higher likelihood of passing both TAKS-Math and Reading
- Ninth-grade repeaters' in HSRD schools had lower TAKS-Reading scores and HSRD tenth-graders had a lower attendance rate
- Ninth-grade repeaters in DIEN schools had a higher likelihood of passing Algebra I

On all other ninth-, tenth-, and eleventh-grade outcomes, students in High School Redesign initiative schools performed similarly to those in comparison schools.

New School and Charter Schools

NSCS in general had positive effects on student outcomes:

- NSCS ninth-, tenth-, and eleventh-graders outperformed their comparison school counterparts on all TAKS subjects, except for ninth-grade TAKS-Reading and tenth-grade TAKS-English/Language Arts.
- Ninth-grade nonrepeaters in NSCS had a higher likelihood (2.6 times) of passing both TAKS-Reading and TAKS-Math, and NSCS tenth-graders were 3.7 times more likely to pass TAKS in all four subject areas versus their comparison school counterparts.
- NSCS ninth-, tenth-, and eleventh-graders had better attendance results than their comparison schools peers.

Relationships Between Implementation Factors and Student Outcomes

A number of implementation factors—for example, organizational characteristics, school climate, and relationships—are central aspects of reforms across the THSP programs. The evaluation team administered surveys to principals, teachers, and ninth-grade students in all THSP schools serving ninth-graders in the 2007–08 academic year to measure these implementation factors. In the *First Comprehensive Annual Report* (Young, et al., 2010), researchers explored the relationship between some key implementation factors and selected ninth-grade outcomes in 2007–08. This section further explores the relationship between the same key implementation factors collected from the spring 2008 surveys and some selected tenth-grade outcomes in 2008–09 to examine whether the results persist one year later. The tenth-grade outcomes included in the analysis were TAKS-Math and Reading scores and absence rates.

The survey sample included THSP schools that began implementation in 2006–07 or 2007–08. Thus, in spring 2008, the survey captured implementation factors after one to two years of implementation. The evaluation team used factor analysis (Gorsuch, 1983) to construct factors at the school, teacher, and student levels that described components of THSP reform. The factors measured district and school leadership, professional learning for teachers, student supports, data use, and school climate descriptors such as high expectations and respectful relationships. Appendix G details the factors from the spring 2008 surveys.

The findings in this section must be considered exploratory as the survey and student samples were not completely random and therefore may not be an unbiased representation of the whole student population in THSP schools. The surveys were voluntary and the results therefore reflect respondent self-selection. Students completing the surveys were matched with TEA outcomes data but systematic differences exist between those who could and could not be matched (e.g., students matched to the TEA outcomes data and included in the analysis reported higher levels of parental involvement and more positive attitudes towards school). In addition, the analysis was only conducted on 2007–08 ninth-grade nonrepeaters who proceeded to tenth grade in the same school where they attended ninth grade in 2008–09. The results in this section thus reflect processes that occurred within the subsample of schools and students, but they do not necessarily reflect the processes that generally occurred in THSP schools—the results may not be generalizable to the larger population of THSP schools.[15]

The results for the 2008–09 tenth-grader analysis, followed by a comparison between the 2008–09 tenth-grader analysis and the 2007–08 ninth-grader analysis are presented below.

Implementation Factors Related to Tenth-Grade Outcomes

A variety of implementation factors were related to the 2008–09 tenth-grade outcomes analyzed, but the findings are not consistent across the outcomes. While student-reported attitudes towards the importance of school is positively associated with all tenth-grade outcomes, most of the implementation factors are significantly associated with only one or two outcomes and some of the associations are negative. As the implementation factors were measured relatively early in the surveyed THSP schools' reform implementation, these findings merely suggest factors to attend to in the ongoing evaluation. Most importantly, more data is needed to understand how and why the relationships between the implementation factors and student outcomes exist because in some cases, the relationship is indirect, which will be apparent in the summary of results below. Appendix H lists the implementation factors that are significantly related to at least one of the three tenth-grade outcomes examined, along with the full hierarchical models. All results reported are statistically significant at $p < .05$ unless otherwise noted.

Student attitudes towards schooling have been shown to influence achievement (Cote & Levine, 2000; Singh, Granville, & Dika, 2002). Consistent with that research, this analysis shows that student attitudes toward the importance of school were positively associated with TAKS-Reading and Math scores, and they also had a marginally significant ($p < .10$) negative association with the absence rate. That is, students who had more positive attitudes about school in 2007–08 had higher TAKS scores and fewer absences in 2008–09.

Other factors that have a positive impact on student outcomes under the THSP grant programs include student-reported respect between students and adults, teacher-reported frequency of collaboration with colleagues, and student-reported access to social supports. Students' reports of respect between students and adults had a marginally significant ($p < .10$) negative association with the absence rate and teacher report of frequency of collaboration with colleagues had a significant negative association with the absence rate. These findings provide some evidence of the importance of these school climate, teacher professional learning, student supports and student attitudinal factors in ultimately leading to student achievement and achievement-related outcomes.

However, some unexpected findings also emerged. Specifically, teacher-reported access to PD was associated with a marginally significant ($p < .10$) higher absence rate. Teaching advanced skills such as students' using evidence to support their ideas, considering multiple solutions or perspectives, synthesizing information from multiple sources was also associated with a higher absence rate. Students' access to academic and postsecondary supports was negatively associated with TAKS-Reading achievement.

These unexpected findings indicate that we need a better understanding of how these implementation factors might operate and the different contexts under which they might lead to

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15 Details on survey implementation and sampling issues are provided in Appendix A of the *First Comprehensive Annual Report* (Young, et al., 2010).

positive student outcomes and the contexts in which they might not. Also, this early in the implementation, it is possible that these results reflect that schools struggling with student performance might be adopting strategies to improve the school climate and student achievement, thus the negative association between these efforts and certain student outcomes may simply reflect the types of schools pursuing those strategies rather than the effect of the strategies. These efforts simply may not be translating into improved student outcomes yet. Furthermore, the negative association between teaching advanced skills and absence rate may be due to the possibility that poorly executed instruction, whether focused on basic or critical thinking skills, may indeed yield negative results.

Comparing Findings for Ninth- and Tenth-Grade Outcomes

Compared with the findings for ninth-grade outcomes, the tenth-grade analysis found fewer implementation factors that significantly predicted tenth-grade outcomes. Principal-reported district leadership for school effectiveness, teacher-reported sense of responsibility for student learning, and student-reported parental involvement were not associated with tenth-grade outcomes as they were with ninth-grade outcomes. Teacher-reported support for data use and student-reported aspiration to graduate from high school also were not associated with tenth-grade outcomes as they were with ninth-grade outcomes.

For implementation factors that were associated with both ninth- and tenth-grade outcomes, the associations with tenth-grade outcomes were in general weaker than those with ninth-grade outcomes. These results suggest that these implementation factors persist but with diminishing effect over the years.

In contrast, more frequency of collaboration with colleagues, as reported by teachers, was not associated with improved ninth- grade outcomes but it was associated with improved tenth-grade outcomes, suggesting that it may take time for teacher collaboration to translate to practices that might affect student outcomes .

Conclusions and Implications

Given the newness of the THSP reform initiative— the schools included in the various outcomes analyses are at most three years into implementation—the evaluation team believes it is still too soon to make broad claims about the efficacy of THSP in Texas. These findings do, however, give reason for optimism about the initiative. T-STEM students performed better than comparison school peers on 2008–09 TAKS-Math and Science scores; ECHS students performed better than matched comparison school peers in TAKS across multiple subject areas, as well as in other outcomes; NSCS grantees surpassed comparison school students on most outcomes studied. On the other hand, schools in the four programs under the High School Redesign initiative did not perform better than matched comparison schools on the vast majority of outcomes examined.

Findings regarding the relationships between implementation factors and student outcomes are mixed. Certain implementation factors such as respect between teachers and students and frequency of collaboration among teachers merit further research to understand how they might lead to improved student achievement. Similarly, positive student attitudes towards school were significantly associated with TAKS-Math and Reading achievement and lower absence rates, and reform strategies that promote such attitudes will be important to follow through the evaluation. Other implementation factors were negatively related to student outcomes, which may reflect struggling schools' beginning efforts to implement reform strategies, too soon to improve student outcomes and underscoring the importance of understanding the contexts in which certain reform strategies are effective as well as the contexts in which they may not be. Future survey analysis following the same cohort of students into eleventh grade as well as including a new cohort of ninth-graders in more THSP schools will provide an opportunity to better understand the relationships between implementation factors and student outcomes.

Key Findings

Implementation

- Across the sample, academies effectively implemented features in the T-STEM blueprint that were: (1) more clearly defined and focused on school operations; (2) aligned with state requirements; and (3) more critical at the early stages of academy development.
  - Academies consistently had a strong science, technology, engineering, and math (STEM) focus in their curriculum.
  - Academies actively built a college-going orientation for students.
- Other features in the T-STEM blueprint were not implemented with consistency across academies.
  - Twelfth-grade internships and dual-credit offerings were often still in planning stages since few academies had twelfth-graders enrolled.
  - Project-based learning (PBL) ranged from being the primary mode of instruction to no implementation, with most academies visited demonstrating inconsistent implementation.
  - Interdisciplinary instruction was rarely implemented, and often academies had no structures to support such efforts.
- The T-STEM network is continuing to develop among centers, and between centers and academies.
  - Centers are now working more collaboratively, including providing common baseline PD for academies.
  - Centers and academy leaders have opportunities to meet face to face at regional and statewide meetings.
  - Nonetheless, connections between centers and academies can improve as academies in our sample reported little involvement with centers.

Outcomes

- Students in T-STEM academies performed better than peers in comparison schools in several aspects but not consistently better across all outcomes.
  - Ninth-grade nonrepeaters and tenth-graders in T-STEM academies had higher TAKS-Math scores than comparison school peers.
  - Tenth-graders in T-STEM academies had higher TAKS-Science scores than their counterparts in comparison schools.
  - Ninth-grade nonrepeaters had a higher likelihood of passing all TAKS subjects than their peers in comparison schools.
  - Ninth-grade nonrepeaters in T-STEM academies had a lower likelihood of being absent than peers in comparison schools

Introduction

The T-STEM initiative is designed to improve math and science achievement across the state and increase the number of students who pursue STEM careers. To accomplish these goals, THSP is currently funding 46 T-STEM academies, with five new academies slated to open in fall 2010. THSP also funds seven regional T-STEM centers[16] to provide TA to the academies, develop innovative STEM curricula, and establish partnerships with businesses and institutions of higher education (IHEs) to support STEM education across the state. The T-STEM initiative also funded four T-STEM Early Innovator schools[17] and a set of grant programs to expand the reach of the initiative. Exhibit 3-1 summarizes the T-STEM program from 2006–07 through 2008–09.

Exhibit 3-1
T-STEM Program, 2006–07 through 2008–09

Program Dimensions	Details
Number of academies funded[18]	2006–07: 7 academies 2007–08: 15 academies 2008–09: 16 academies Total as of 2009: 38 academies
Number of centers	Seven centers
Number of students enrolled	13,484 students (as of November 2009)
Total funding	2006–07: $71 million 2008 through 2010: $49 million (http://www.tea.state.tx.us/index3.aspx?id=4470)

The T-STEM academies are designed to focus on math and science, whether they are new schools, small schools within a school, or existing redesigned schools. They aim to provide a personalized learning environment with explicitly high expectations and a college focus. Not all academies serve only high school students; 17 of the 46 academies serve grades nine through 12, and 29 serve grades six through 12. Academies must have approximately 100 students per grade level; they must be nonselective (i.e. they cannot select students based on prior performance); and they must have a student population that is more than 50% economically disadvantaged or a majority minority population. The academies are typically located in high-need areas of the state and include stand-alone schools (20 academies) and schools within schools (26 academies), as well as charter and traditional public schools.

TEA and CFT developed the T-STEM Academies Design Blueprint to specify the T-STEM model. The design blueprint includes requirements in the following areas: (1) mission-

16 THSP also provides funding to the Dana Center at UT Austin to provide strategic, programmatic, and technical support for the creation of strong and effective T-STEM centers, and to build capacity across the state to ensure the long-term sustainability of the T-STEM initiative.

17 The Early Innovator Schools were funded because they exemplified certain elements of what would eventually define T-STEM academies. However, they are not formally T-STEM academies and are not included in the THSP evaluation.

18 These Academy totals are according to TEA. CFT has slightly different counts because of mid-year Academy openings and closures.

driven leadership, (2) school culture and design, (3) student outreach, recruitment, selection, and retention, (4) teacher selection, development, and retention, (5) curriculum, instruction, and assessment (6) strategic alliances, and (7) academy advancement and sustainability.[19] Within these areas, the blueprint stipulates, for example, that all students must take four years of math and science classes;[20] have work-based and real-world learning opportunities; participate in math, science, and technology-focused extracurricular activities; complete an internship primarily focused in the state's economic development clusters, or a capstone senior project; and graduate with 12 to 30 college credits (through programs such as dual credit,[21] AP, the IB, and concurrent enrollment). Further, the academies are expected to provide advisory for students and build partnerships with IHEs and employers. To support their teachers, academies are expected to provide ongoing PD, weekly common planning time, and external networking opportunities.

In the 2008–09 school year, researchers visited seven T-STEM academies,[22] visited or conducted phone interviews with staff from all the T-STEM centers as well as the Dana Center, and conducted interviews with T-STEM program officers from CFT and TEA. This chapter summarizes findings derived from these sources, describing the academies' ongoing work to implement the T-STEM model according to the design blueprint and the T-STEM network's efforts to provide supports to the academies. The chapter also examines implications for the T-STEM initiative as it moves forward.

School-level Implementation Findings

This section describes findings regarding the school-level implementation of the T-STEM program, as defined by the T-STEM Academy Design Blueprint. The site visits to T-STEM academies in 2008–09 revealed that they varied in their implementation of the following core components of the T-STEM model: school vision and leadership; school culture and student supports; strategies for supporting postsecondary success; student outreach, recruitment, selection and retention; teacher and leader recruitment, development and retention; and data systems and data-driven decision-making.

School Vision and Leadership

Research has found that articulating and communicating a clear vision is an important foundational component of success for school reform (Shear, et al., 2005). A school's ability to

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19 The T-STEM leadership at TEA and CFT is revising the T-STEM Academies Design Blueprint. Subsequent reports will describe changes to the blueprint design. The current version of the blueprint is accessible online at http://ritter.tea.state.tx.us/ed_init/thscsic/T-STEMAcademyDesignBlueprintFinal.doc

20 In 2005 the Texas legislature passed the "four by four" policy, which requires all high school students entering ninth grade in 2007–08 to take four years of each of the four core subjects (math, science, English language arts, and social studies) to graduate with the recommended or distinguished achievement programs (covering all students without special dispensations). As a result, this requirement is no longer unique to T-STEM academies.

21 State policy requires all Texas school districts to offer dual-credit opportunities to students. Students in Texas cannot take dual credit until they are juniors and have passed the college placement test. The only exceptions are students who have received a waiver from the Texas Higher Education Coordinating Board (THECB), including students at a designated ECHS. Some T-STEM academies have applied for ECHS designation; if granted, that designation would enable them to receive the waiver for dual-credit courses.

22 All seven academies visited in 2008–09 were located in urban areas. The sample consisted of four public charter schools and three district schools. All of the schools were new small schools except one, which was a school within a school.

implement the core elements of the T-STEM model relies heavily on how much emphasis school leadership places on those practices, particularly in comparison with other models or initiatives at the school. Across the T-STEM academies, the extent to which school leadership, administration, and teachers shared a common vision depended on a variety of factors, including the presence of a strong external school model and a strong school leader with the ability to communicate a clear vision to teachers and staff.

At most T-STEM academies, the T-STEM model (as articulated through the blueprint) was one of multiple influences, including other networks and CMO models or, at existing schools, the established school structure. Although these additional models were generally well-aligned with the blueprint, they nonetheless required a concerted integration to yield a coherent overall vision for the school. In most cases, the academies identified with and oriented themselves toward their charter or network model more than the T-STEM model. That situation likely occurred because academies typically had stronger ties with the CMO or network than with their T-STEM coach or program officer, and because the charter or network models had more established cultures than did the newly developed T-STEM initiative. Accordingly, the academies tended to implement the components related to the CMO or network model first. Nevertheless, because those models tended to align with T-STEM, the academies were still implementing a vision that was highly consistent with the T-STEM model. It is likely that without that alignment, the existing models would have overshadowed the T-STEM vision. This scenario suggests that at schools implementing multiple models or programs simultaneously, strong alignment between the T-STEM model and other school models is important for strong implementation of the T-STEM model.

When multiple models are in use at a school, strong leadership and clear vision are necessary to help teachers integrate them into a coherent program for students. For example, one academy was implementing multiple initiatives (e.g., the IB, T-STEM, dual credit, an engineering program, the charter model), each with its own implications for curriculum and instruction. The CMO to which the academy belonged arguably had the weakest central management and loosest vision for schools. That context made reform implementation difficult, with teachers struggling to merge all of the initiatives into one clear instructional program, which contributed to a weaker implementation of T-STEM overall.

In comparison, of the schools visited, the T-STEM vision was strongest at an academy that had no prior school structure or competing models. Three factors contributed to elevating the T-STEM vision: (1) the school was new and thus had no existing models and practices; (2) the school was not part of another network or CMO; and (3) the school's strong relationship with the THSP TA provider supported implementation of the T-STEM model. This example demonstrates that T-STEM is able to establish a stronger foothold when it does not compete with other models (even those compatible with the T-STEM model) and when the TA provider and the school have a strong relationship. Although it may not always be feasible or desirable to provide T-STEM grants only to new schools or schools without existing models, these findings nonetheless highlight the conditions that support the strongest implementation of the program; they also underscore the value of having strong programmatic support for implementation at the school level. If such support is lacking, the findings argue for implementing T-STEM in schools with existing models or networks that are consistent with the T-STEM vision or for hiring a school leader with the autonomy and drive to encourage T-STEM model implementation.

School Culture and Student Supports

The T-STEM blueprint specifies that academies foster a school culture that emphasizes mutual respect between teachers and students, and provides personalized social and academic supports to help prepare students for postsecondary success. For example, the blueprint stipulates that schools develop a culture of respect, offer advisory,[23] and provide academic supports for students. Overall, in the academies visited, the small school size served to facilitate the goals of these social and academic structures. Even when those structures had not been fully implemented, teachers reported that working with fewer students enabled them to develop stronger relationships with the students, which in turn built mutual respect; enabled teachers to identify and provide personalized supports for students; and made students feel more accountable for their success at school.

Across the academies, a culture of respect was evident. Some schools implemented concrete strategies to help students feel respected, encourage them to take ownership of their school, and give them responsibility for their education. At one academy, the principal held regular focus groups with students to gather their feedback on school programs and regular school-wide meetings on Fridays to celebrate accomplishments and discuss and resolve disputes or conflicts. Close, informal relationships between teachers and students at T-STEM academies also contributed to the culture of respect. For example, at the academy where researchers conducted a student focus group,[24] students reported that teachers at their school cared about them. Teachers and students alike reported that small school size made it possible to develop strong relationships with one another. The T-STEM requirement regarding school size thus appears to support strong relationships and the mutual respect between teachers and students that grows out of those relationships.

The advisory structure is also meant to build strong relationships between students and adults on campus. Almost all of the academies in the 2008–09 site visit sample had implemented advisories, and their designs varied significantly since no single advisory model is required. For example, most academies had weekly advisories, although one school held advisory daily, another monthly, and another held advisory for just the first 10 minutes of each day. The purpose of advisories also differed across the sample schools. For example, the two schools with more highly developed advisory structures had markedly different approaches. One school focused advisory on fostering relationships between teachers and students, building character through readings and discussions, and supporting academic success through regular check-ins about courses, homework, grades, and attendance. The other school focused advisory on preparatory skills, such as practicing for the SAT and preparing college materials like resumes, personal statements, and financial aid. At the other academies, small school size may have compensated for their less robust advisories, resulting in the same strong teacher-student relationships and high level of support that advisory aims to provide. Thus, even without strong advisory programs, these academies were succeeding in fostering the type of culture envisioned by the blueprint. Nonetheless, because T-STEM academies are required to serve underprivileged students, the students still need the explicit social supports that advisory can provide.

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23 The T-STEM Academy Design Blueprint defines advisory as "a time during the school day that is non-graded and focuses on personalizing the student experience, building relationships with students and parents, and character-development."

24 Researchers conducted student focus groups at schools being visited for the second time. In the 2008–09 T-STEM academy sample, only one school received a return visit.

As it did for social supports, the small-schools structure enhanced and facilitated academic supports. Like schools across all THSP grant programs, the most ubiquitous academic support for T-STEM students was tutoring, which all of the academies provided. Schools generally used academic data (e.g., TAKS, mock TAKS, benchmarks, diagnostic assessments, in-class tests) to determine student ability levels and identify students for tutoring. Teachers provided nearly all of the tutoring, which was offered before and after school, during lunch, on Saturdays, and sometimes in special sessions when students were pulled out of their regular classes for focused tutoring. Because teachers knew their students well, they could identify student needs in a variety of informal ways, in addition to using formal data-driven methods. For example, a teacher said, "The kids always have [the] grade portal on, they're always checking their grades, and I'll just walk by and ask, 'What's going on with that 70?' You can easily tell who is … falling below 70 with our grading system. I monitor them a lot to know what is going on." At this school, any student whom a teacher identified as needing support (e.g., for receiving a grade less than a 70 or missing an assignment) was eligible for tutoring. Finally, although tutoring was not technically required for students at most academies, teachers did not mention any difficulties in getting students to attend tutoring. Here again, the small school size (which made it possible for teachers to keep close track of students) and the rigorous academic culture together created an environment that appears to have encouraged students to attend tutoring. This situation contrasts with those at many large comprehensive high schools, where getting students to attend tutoring sessions can be a struggle.

Strategies for Postsecondary Success

One of the purposes of the social and academic supports is to prepare all students at the school for college. The T-STEM academies also try to instill a college-going culture through campus-level strategies and courses and partnerships with IHEs. All of the T-STEM academies visited in 2008–09 exhibited a strong college-going culture and a focus on college readiness. The strategies that the academies implemented to promote college-going cultures included arranging visits to colleges and decorating hallways and classrooms with college paraphernalia. Schools also provided college-related resources and assistance for students and families, such as offering help with college applications and information about financial aid. At least two academies had courses that focused on preparation for college; at one, juniors took a course that provided college counseling and preparation for the Scholastic Aptitude Test (SAT), and seniors took a seminar designed to support their transition to college. That school had remarkably high college entrance rates, with more than 80% of students entering postsecondary institutions on graduation. Across academies, these programs not only provided students with some of the academic and logistical supports needed to reach college, but the culture also encouraged students to perceive themselves as college-bound—a perception important both for graduating from high school and for proceeding to college.

One important academic strategy to support college readiness specified in the T-STEM blueprint is offering dual-credit opportunities. At the time of the site visits, only one academy had begun offering dual-credit courses; most academies were still in the planning stages. Dual-credit remained a priority for later implementation because Texas high school students cannot take dual credit until they are juniors and have passed the college placement test and many T-STEM academies did not yet serve upperclassmen at the time of the site visits. Leaders at several academies hoped to hire accredited teachers or certify existing teachers so they could offer dual credit on site. Doing so would simplify logistics because students would not have to travel off-campus or coordinate schedules with an IHE and would help to ensure that the pedagogy stipulated by the T-STEM blueprint was being used (as opposed to the lectures that traditionally dominate college instruction).

Given their status as relatively new schools, most academies had also not yet formed strong relationships with IHEs. As academies become more established, begin serving juniors and seniors, and turn their attention from foundational issues to partnerships and outreach, alliances with IHEs are expected to develop and will be addressed in future evaluations.

Student Outreach, Recruitment, Selection, and Retention

The T-STEM blueprint requires academies to have outreach and recruitment procedures that attract a diverse student body, including high-need and underserved students. Specifically, the blueprint stipulates that the student population at each academy must exceed 50% of economically disadvantaged students or have a greater than 50% ethnic minority population. Each academy must have open access and open enrollment to fill its 100 slots per grade; when applications exceed capacity, the school must use a lottery system to select students for admission. All of the academies we visited were abiding by the T-STEM recruitment and selection requirements. Only one of the academies in the 2008–09 sample had enough applicants to necessitate the use of a lottery, although many were not far under the maximum. The lack of greater demand for T-STEM may reflect insufficient community awareness because the schools are still young. However, if that trend continues or if enrollments decline, academies may need to increase their outreach and recruitment efforts.

The small school environment and the academic focus on STEM and course rigor served as both an attraction and a deterrent for students. For some academies, course and program offerings were key factors in student recruitment and retention. Principals at two schools sought to provide unique offerings (e.g., engineering courses, dual credit) to differentiate their schools from others in the area and, in a related vein, to attract students by helping boost high school transcripts to improve chances for college acceptance. One principal explained that when the academy first opened it was unique in requiring students to take four years of courses in each of the four core subject areas, but when the new state "four by four" policy was implemented, the school had to find new ways to differentiate itself. At the same time, the level of rigor across courses reportedly led to student attrition at one academy.

Teacher and Leader Recruitment, Development, and Retention

According to academy leaders, T-STEM academies face the challenge of recruiting and retaining highly qualified teachers in the STEM fields who support the T-STEM model. Given the academies' small sizes, academy leaders also typically needed to hire teachers who were willing to take on additional responsibilities, such as teaching dual-credit courses and serving as tutors or advisors for students. (Although in theory other people could fill these roles, at the schools visited teachers were directly involved in tutoring and advisory. Many schools were also planning to offer in-house dual credit because they wanted to maintain control over teaching quality and the learning environment.) It is incumbent on the T-STEM academies to provide enough supports for teachers to bring them on board with the T-STEM model when necessary and to give them the appropriate skills for project-based learning (PBL) and interdisciplinary teaching.[25]

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25 Teacher support for the T-STEM model was not a challenge overall at the schools visited. However, in some instances, school leadership had to build support for the program among staff. For example, the principal at

As is common both in the state and nationwide, academies faced a shortage of available math and science teachers (Ingersoll & Perda, 2009). T-STEM academies have an even harder time in recruiting teachers than do typical schools because they offer higher level STEM courses, thus requiring teachers with higher levels of expertise, advanced degrees, and more content specialization; such teachers also command higher salaries. Finding these teachers is even more difficult in rural areas, where teacher turnover rates are high. The East Texas T-STEM center staff reported that the teacher turnover rate in their area had been high over the last three years. One administrator said, "It's not that they leave the area; they go to the school down the road because they need a math or science teacher and will pay them more." This situation has created something of a "bidding war" for qualified teachers in those disciplines. Small rural schools face an even greater challenge because staff must be responsible for multiple types of courses; for example, a teacher may be trained to teach biology, but must teach chemistry, physics, and earth science as well.

Moreover, academies that were hoping to offer dual-credit onsite need to find teachers with advanced degrees that qualify them to teach those courses. In several cases, unstable relationships with local IHEs created further challenges for academies in hiring or certifying teachers with suitable dual-credit credentials. At least one academy had difficulty in certifying its teachers for dual credit: the local community college had strict rules about which degree titles qualified teachers for dual-credit certification in specific fields and refused to recognize the advanced degrees of some academy teachers. It is important to note that as long as local IHEs can determine whether certain degrees qualify teachers for dual-credit certification in particular subject areas, they will necessarily define the nature of relationships with T-STEM academies.

All teachers in the academy, not just those in STEM areas, have to meet general T-STEM academy requirements, posing further constraints for staffing. For all subject areas, T-STEM administrators must hire teachers who share the vision of the T-STEM model and other models operating at the school. This challenge was exacerbated for academies that were required to hire teachers in their districts who may not have had experience or interest in adopting T-STEM approaches such as PBL. Finally, because T-STEM academies are small, teachers were often required to serve in multiple capacities (e.g., as tutors and advisors), creating additional responsibilities that incoming teachers must be willing to accept.

Most of the T-STEM academies visited (all of which were in urban areas) had stable faculties. Leaders from only one academy reported that teacher turnover was a problem; the leaders at that academy cited at-will contracts as a major factor in the turnover because of the associated unpredictability for teachers, who would rather teach at a school that offered greater job security. At four academies (including three where teacher turnover was not a problem), teachers and leaders nonetheless expressed concern that teacher burnout, due to the additional roles and extra preparation for PBL and interdisciplinary coursework required, might ultimately increase teacher attrition. Another leader feared that budget cuts would force him to hire from within the district, introducing teachers whose philosophies and teaching styles did not necessarily match those of the academy and thus result in greater teacher turnover.

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one school explained that, because he was required to hire from within the district, teachers were more established in their traditional practices than the type of teacher he would have ideally hired. At this academy, the leadership had to make a concerted effort to bring teachers on board with the T-STEM model, particularly PBL.

One of the ways in which academies can both support teachers and bring them on board with the academy design is through PD and common planning time, both of which support the implementation of new practices and build professional community. Interviews with teachers suggested that, by and large, they felt supported by their schools and that their professional learning needs were being adequately met. For the most part, however, the type or content of PD that teachers received, and the structure or focus of the common planning time in which teachers engaged, were not specific to T-STEM. Only two of the academies visited in 2008–09 had PD related to PBL. Those two academies serve as best-practice examples in which the schools had a clear instructional model and accompanying PD that was coherent, project-based, and focused on math and science (Exhibit 3-2).

Exhibit 3-2
Professional Supports for PBL at Two Academies

Two academies within a national school model were included in the 2008–09 T-STEM sample, and used a project-based curriculum and instructional approach for the majority of coursework in all classes. A series of teacher supports were in place at these schools to enable successful implementation of PBL. First, teachers at both schools attended an annual all schools conference and quarterly regional conferences, where they gathered with other PBL educators in the same content area to share ideas and practices. Through their national model organization, teachers at both schools also received support from an instructional coach who visited the school regularly, and was also available outside school hours, to provide hands-on support for teachers as they designed and implemented projects. Teachers at both schools spoke highly of the national model organization conferences and instructional coaches, describing them as "invaluable."

Both academies had strong professional communities of teachers that collaborated actively and effectively. For example, teachers at both schools engaged in "critical friends"—a peer-review process where teachers reviewed and critiqued colleagues' projects under development to increase their rigor and relevance and help ensure student engagement and learning. At one academy, two teachers were designated as advocates for the national model, tasked with helping teachers develop projects and integrate technology into their instruction. Teachers at both schools also had common planning periods of some form when they could develop and revise projects with colleagues.

Across the academies, teachers received PD from a variety of internal and external providers. In most cases, the CMO or parent organization (e.g., New Tech) provided the majority of the PD for the teachers at their respective schools. Academies in large urban districts typically received some PD from their district as well. In addition, teachers at some academies received PD or coaching/mentoring from their regional education service center (ESC). Of the seven T-STEM academies in the 2008–09 sample, about half reported having contact with the T-STEM network (including T-STEM centers, T-STEM coaches, and T-STEM program officers), but none relied on the network as a substantial source of teacher PD. (This topic is discussed in more detail in the T-STEM Network Supports section.)

In addition to the internal and external PD received, teachers from five of the seven T-STEM academies visited had common planning times when they could collaborate with colleagues. Teachers from four of the seven visited academies were able to meet regularly with teachers in their department and/or of the same subject area, and teachers from three academies had opportunities to meet across disciplines with their grade-level teams. In some cases, teachers had designated time for meeting with both grade-level and departmental groups, with the topics of discussion varying accordingly. For example, departmental or subject-area teams discussed lesson plans, project ideas, and common assessments; grade-level teams discussed interdisciplinary projects and their shared students. Given the focus on PBL and interdisciplinary projects, having common planning time appears to be critical for T-STEM teachers.

Curriculum, Instruction, and Assessment

Recruiting and retaining teachers who are qualified for and buy into the T-STEM model is crucial for successful implementation of the instructional program, which gives priority to rigor and relevance. The T-STEM Academy Design Blueprint stipulates that academies:

- Use high-quality curricula that follow state standards and that are aligned with instruction and assessment
- Provide students with innovative STEM programming and have a plan for accelerating student achievement, particularly for underserved students, in math and science
- Provide opportunities for students to extend their learning outside of the school, such as internships and work-based learning
- Use PBL as a strategy for supporting student learning
- Integrate technology into daily school operations and classroom teaching and learning.

Overall, the seven academies visited were implementing innovative programs and using curricula that met the blueprint specifications. However, the schools had more difficulty practicing the T-STEM instructional strategies meant to increase rigor in the classroom and in implementing internships or work-based programs outside of school.

Definitions of Rigor and Characteristics of Rigorous Curricula and Programming

One way T-STEM academies sought to increase the rigor of student learning was through their curricular programming. Teachers typically conceived of rigor as challenging students with advanced material and/or advanced courses. Some teachers equated rigor with the level of difficulty found in AP and dual-credit courses in particular. Other teachers discussed rigor in the context of going beyond basic skills to challenge students' critical thinking.

Curricula are critical in determining the level of rigor of students' educational experience. The T-STEM blueprint requires curricula that have: (1) a detailed scope and sequence that is aligned with standards; (2) assessments that are aligned with the standards and with the curriculum; and (3) vertical alignment that connects the curriculum with what comes before and what comes after. All of the academies that visited were implementing curricula that met these specifications to some degree. In many cases, schools received a detailed scope and sequence, with accompanying assessments, from the CMO or parent organization. In contrast, teachers at one academy that was not part of any national model or parent organization reported that they had no preset curriculum at hand, and that they often wrote their own lessons and curriculum. These teachers struggled with the burden of teaching without existing curricular materials, and one teacher sought help from the school and district administration as a result. In such cases, teachers must clearly understand what rigor means and may benefit from seeing model curricula and assessment packages.

T-STEM academies also strive to provide a rigorous education for students through innovative programs in STEM fields. All of the academies offered some kind of engineering program or course, and some required it for all students in a certain grade. For example, one academy offered the Project Lead the Way[26] (PLTW) engineering program for upperclassmen and had a mandatory freshman class called "Computer Applications and Engineering." Although some non-T-STEM high schools offer engineering courses as electives in the upper grades, T-STEM academies offered these classes to their students earlier, starting in ninth or tenth grade. Moreover, engineering opportunities are more integrated in the instructional program at T-STEM academies—both because they are required and through interdisciplinary programming with core courses—than is typical at traditional high schools.

Finally, T-STEM academies attempted to increase rigor by accelerating student achievement. A strategy some schools used was to offer more advanced courses earlier in students' school trajectory. For example, at one academy students typically took algebra in seventh grade, setting them on course to take more advanced classes by the time they graduate from high school. Another academy used regular student assessment to identify students ready to move up a level (as well as to identify students who needed additional support). Yet another academy offered student supports designed specifically to help students keep pace with the accelerated curriculum (notably, tutoring designed to support accelerated learning in math). Given the target population for T-STEM academies, it is important for schools to provide enough instructional support to students to allow them to be successful with the accelerated pace.

Pedagogy and Instruction: Teaching for Success Within a Rigorous Curriculum

Teachers' delivery of instructional content influences the level of rigor in classrooms. The T-STEM blueprint focuses on innovative, student-centered pedagogy as a key component of instructional rigor. In particular, the blueprint highlights PBL, performance assessments, real-world demonstration of abilities, interdisciplinary coursework, and the use of technology as important and valuable instructional strategies. According to T-STEM program officers, T-STEM requires academies to provide students with a contextualized learning environment in which academic subjects relate to one another and in which knowledge and skills relate to the real world. Overall, the use of these instructional approaches varied across the schools visited, with academies associated with the New Tech model further along in using PBL, performance assessments, and interdisciplinary learning, and in integrating technology. The findings suggest that teachers and leaders at most academies need more guidance and training on how to implement these strategies.

Teachers at all of the academies were aware of the strategies promulgated by T-STEM; they mentioned PBL, hands-on learning, 21st-century skills, and putting learning in a real-world context. However, both interviews and classroom observations suggested that the ways in which teachers operationalized the notion of rigor and employed the T-STEM instructional strategies in their classrooms varied greatly. At some schools, pedagogy was more traditional: teachers

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26 PLTW is a nonprofit organization that partners with middle schools and high schools to provide innovative and rigorous STEM education programs that include curricula, course materials and equipment, and PD and implementation support. For more information, visit http://beta.pltw.org/

typically posed more closed-ended questions, and instruction focused on preparation for TAKS. As the major accountability measure in the state, it is not surprising that TAKS influences rigor at all levels of the system. Educators across the board viewed TAKS both as a minimum expectation and a looming requirement. As one teacher said, "TAKS is just a minimum. It's not hard to pass, some [students] just get it in classroom, others get it after studying, some people need to study more. Everyone is different. We don't want to see any student held back because they didn't pass TAKS." Despite some academies' focus on TAKS, evidence suggests that T-STEM academies focused less explicitly on TAKS than did other high schools.

In contrast to traditional approaches, other schools used projects to challenge students at individually appropriate levels of rigor. Those schools focused less explicitly on TAKS than did schools with more traditional instruction. Although TAKS remained a critical indicator for teachers and students at these schools, on a day-to-day basis they were more focused on their projects, which were aligned with specified learning outcomes and contained embedded assessments to measure student progress and achievement. A teacher at one school described their process for ensuring rigor in their courses:

> What we did first as a staff was define our learning outcomes, because unless we define something we can't possibly go about assessing it, much less explain it to the students.… We have them posted in each room, and then what we did as a staff also was develop a rubric for each one of those learning outcomes … there is actually a rubric that defines for [our school] what critical thinking and problem solving looks like in the classroom, and so when we go about teaching to the students, or applying that to a certain assignment or a given project, we go back to that rubric and say, "Ok, when we go about assessing your critical thinking, this is what we're looking for." Revisiting those rubrics is a good way to help students understand what the definition is—what we're looking for as teachers.

Overall, interviews with teachers and school leaders revealed that PBL was not used consistently across the academies visited. At two academies PBL was the primary mode of instruction; at four academies PBL was being planned and emphasized, but not yet consistently implemented; and at one academy PBL was not a focus for instruction. Even among the academies with lower levels of PBL implementation, the status of PBL varied. At some schools, the leadership focused on PBL, but this focus had not yet translated into consistent implementation among all teachers. At other schools, teachers commonly conducted a few small projects spread throughout the year, but PBL was generally seen as an add-on rather than as a principal mode of instruction. At the school where PBL had much less prominence, teachers talked about it less, few teachers used it in the classroom, and projects were typically reserved for the science fair projects that students were required to complete outside of class.

One explanation for the inconsistent use of projects is the difficulty of implementing PBL for teachers. In the academies visited, those challenges began with the definition of PBL itself and extended to uncertainties about how to enact PBL in the classroom. For example, some teachers appeared to confound PBL with all types of hands-on learning. Other teachers believed that they had to sacrifice breadth to gain the depth of content that PBL affords. One principal noted that it was difficult to know how to frame PBL for teachers in regard to setting standards for projects and deciding whether all projects should be interdisciplinary. This principal reported asking other T-STEM academy principals for guidance, but indicated that all concurred that it was difficult to find the balance between projects and state accountability requirements. At some schools, teachers reported that undertaking PBL was harder in math and science classes. These struggles suggest a need for more PD to address a consistent definition for and implementation of PBL.

In addition to PBL, the T-STEM blueprint highlights performance assessments and the real-world demonstration of abilities. Performance assessments require students to "actively accomplish complex and significant tasks, while bringing to bear prior knowledge, recent learning and relevant skills to solve realistic or authentic problems" (Herman, Aschbacher, & Winters, 1992, p. 2). Although most academies were not regularly using performance assessments, researchers encountered some examples of innovative assessments. In particular, at two academies students presented their project results as a culminating PBL activity. The presentations served as a primary component of the school's assessment strategy, and members of the local community often attended these presentations, thereby making them more authentic for students.

Interdisciplinary instruction and coursework also are key elements of the instructional model outlined in the T-STEM blueprint. Schools are encouraged to integrate coursework across STEM fields. By and large, however, at the schools visited, courses across the spectrum of disciplines remained in separate silos. The exception was at two New Tech academies, where PBL was the principal mode of instruction, with teachers paired for team-teaching. Team teachers came from two different subjects, jointly taught a class for the duration of the course, and worked together to plan lessons and projects and to assess student work. As such, interdisciplinary teaching and learning constituted the standard mode of operation for many courses at these high schools. These patterns suggest that the New Tech model of teaching through PBL lends itself much more easily to innovative assessments and interdisciplinary coursework than academies' use of more traditional pedagogical approaches.

Finally, the T-STEM blueprint calls for teachers to integrate technology into their curriculum, instruction, and daily operations so that students have "access to technology and media resources that support and enhance learning." The blueprint does not stipulate what technology should be available or how it should be used for learning. Across academies, technology access for students varied: some students had ready access to computers in their classrooms; other students had to go to designated computer labs. Overall, science labs were relatively traditional, although some schools did have access to advanced graphing calculators and other hardware, and to software for science instruction (e.g., probeware that allows data measured by science instruments to be loaded directly on to a computer). In addition to differing degrees of access, student uses of technology also varied. Students from at least one academy used technology like professionals, organizing their work, conducting research, writing reports, and making presentations. In some engineering classes, students also made extensive use of technology, including using engineering software to complete tasks. These two academies' use of PBL was also the most advanced, which may suggest that it is easier for teachers to integrate technology in projects than in traditional lessons.

Learning Opportunities beyond the Classroom

In T-STEM academies, learning is supposed to extend beyond the classroom. The blueprint requires schools to provide students with opportunities for extracurricular activities in STEM fields, internships, work-based and contextual learning, and connection with local businesses and professionals working in STEM fields. Given that most T-STEM academies were in their early years of implementation at the time of this research, however, they were more focused on their core school systems than on external learning opportunities. Moreover, some opportunities, such as internships and work-based learning, would be likely to be geared toward older students, whom academies were not yet serving. As a result, at most academies these external learning opportunities were still in the planning stages.

Nonetheless, at least three schools had more developed offerings in some of these areas. At these academies, students were actively engaged in science fair and other STEM competitions. No single factor, or constellation of factors, appeared to enable these academies to develop extended learning opportunities for students whereas other academies did not. Instead, in each case, a unique circumstance drove the offerings. For example, at one school, the science fair was treated as a core instructional activity: all students were required to participate, with students working on their science fair projects outside of class. One academy that served twelfth-grade students had arranged for internships to meet the T-STEM requirement that all students complete an internship before graduating. And one academy had strong connections with the local business community, and local professionals regularly attended the presentations that students gave as the culmination of many of their projects. The presence of local business leaders and professionals helped make the student presentations authentic, and according to teachers, helped students develop professionalism and confidence.

Data Systems and Data-Driven Decisionmaking

The T-STEM blueprint stipulates that school leaders and teachers use data to drive instruction, support student learning, and inform continuous improvement processes. Across academies, leaders and teachers used data for a variety of purposes, both in the classroom and at the school level. However, data use was more sophisticated at academies associated with CMOs that had their own data systems: at those schools, educators typically had access to a wider variety of data, and used data on a more regular basis. Across all types of academies, many teachers reported needing more support for using data for instructional purposes.

At the classroom level, teachers at the seven academies visited reported using data to inform instructional decisionmaking to some degree. For example, teachers monitored student mastery on a certain topic and adjusted whole-class instruction accordingly to address areas of weakness. At one academy, teachers used pre-test results to group students (sometimes homogenously, sometimes heterogeneously) for their upcoming projects. They also used data to identify students who needed additional academic supports. In particular, teachers from at least two academies used previous TAKS or mock TAKS results to identify students who needed TAKS-specific remediation and to identify the areas (e.g., standards, objectives) in which the students needed assistance. Teachers also used data to identify struggling or at-risk students for special attention in areas other than TAKS. For example, teachers at one school used benchmark and mock TAKS scores to place students in one of four grade-level sections based on ability. Teachers at another school used homework grades as a type of ongoing formative assessment. One teacher explained that if a minority of students failed to master a homework assignment, she provided mini-lessons for those students, without reviewing the concept with the whole class.

Just as teachers used data to support student learning, some school leaders used data to support teacher learning. Leaders from at least three academies reported using classroom observations and walkthroughs to evaluate teachers, monitor their development, highlight additional areas for improvement, or plan PD. Teachers at one academy participated in a program that sought to make instruction more rigorous and relevant. In that program, master teachers used a rubric to observe teachers both informally and during official evaluations, and then worked with the teachers to improve their practice in targeted ways.

To enable widespread data use, some academies employed advanced data systems to support both academic and administrative school functions. Among the schools visited, the academies that belonged to a CMO were more likely to have access to a robust data system that housed multiple types of student data from multiple sources (e.g., student assessments, attendance, behavior) than were academies that did not belong to CMOs. For example, at the three academies that belonged to charter networks, the CMO provided a data system to help teachers and other stakeholders (e.g., administrators, parents) track student progress and behavior. (Exhibit 3-3 describes one academy's support for data use.)

Exhibit 3-3
Use of Data at a T-STEM Academy

The CMO of a charter school provided all of its schools, including an academy in the 2008–09 sample, with a robust data system that tracked student attendance, discipline, and performance (including data for unit tests, course grades, benchmarks, and online learning applications). The database also included sections with instructional materials; teachers could access existing materials or upload new materials (on approval from the central office) to share with colleagues. CMO administrators indicated that a new feature of the database helped students track their college application process.

School leaders, teachers, parents, and students all had ready access to the information in the database. According to the principal, teachers at the academy analyzed the achievement data to determine which students needed tutoring, which objectives caused difficulty for individuals or groups of students, what topics required reteaching, etc. One component of the database, called the Test Center, also allowed teachers to create tests for students.

Students' access to their own data was an important component of the database. Indeed, at this academy, which was the only school in the sample where students used academic data, students were held accountable for using the school-wide data system to track their results and for requesting academic help when needed. An English teacher at this school said, "Kids are accountable all the way up. It's a way of communicating and keeps everyone responsible."

The data system at this academy represents a comprehensive approach to tracking, analyzing, and using student-level data to support students' success in school. Although the CMO provided training to teachers for using the database, leaders noted that supporting nontech-savvy teachers in optimizing their use of the database was an ongoing challenge. CMO leaders also requested feedback from teachers regarding more and less effective components of the system to inform ongoing improvements to the database.

To support the use of data in instructional decisionmaking, schools need to provide supports to help leaders and teachers use data effectively. Teachers from several schools reported that they were unsure of how best to integrate data into their instructional decisionmaking process. At the same time, few teachers reported receiving any PD on data use.

In a notable exception, teachers in one district attended the Margaret Kilgo[27] training to help them incorporate TAKS assessment items into their lessons.

Changes in Student Attitudes and Aspirations: Qualitative Evidence of Initial Progress

Although the T-STEM academies are still in the early stages of development, at the time of the site visits promising student outcomes were beginning to emerge. Although some teachers cited improved attendance and student retention rates as evidence of success, more commonly teachers reported outcomes that fell into five other categories: student behaviors; attitudes toward school and academics; maturity and self-directed learning; college-going aspirations; and interest in STEM careers.

Teachers from at least five of the seven academies visited reported changes in students' attitudes toward school and academics, noting in particular that their students were engaged and enthusiastic about learning. At one school, teachers attributed this enthusiasm largely to the special STEM programming and competitions in which students were involved. Teachers from other academies noted that students were taking more pride in their work and making a cultural shift toward the perspective that "it's okay to be smart." In a related vein, many teachers noted that students were developing maturity and a more self-directed approach to learning. One teacher exclaimed, "I have never seen students grow as much as I have from the beginning of the school year to the end of the school year. In just about every single category you can think of, they are different people [than] when they stepped into [this school]." At another school, teachers noted that students had developed more confidence, evidenced by their increasing comfort with public speaking. Teachers at the same school also cited students' self-motivated requests for mini-tutorials on topics where they needed instruction or guidance to move forward effectively with their project work. One teacher elaborated,

> I'm also seeing sophomores and juniors ask for different workshops, which are designed to teach or review concepts with smaller groups of students, which is the point we want to get at. They realize what they need to know and are motivated to participate in the workshop. I'm seeing that piece click with sophomores and juniors, more so than with freshmen.

Teachers from at least four academies noted emerging successes related to college and college-going expectations. Many academies emphasized that they had incubated a culture characterized by strong expectations and motivations for attending college. Teachers from at least three academies reported that their students were increasingly considering college in their post-graduation plans. One teacher hypothesized that graduating with a head-start on college hours, combined with the increased academic confidence that students build at the high school, contributed to making students see themselves as college-bound. As one counselor stated,

> The majority of the students in [this academy] truly plan to attend college; they've taken the [Preliminary SAT] PSAT, they take dual-credit classes; it's not just a hope. Other kids say I want to go to college, [these students] say

[27] The Margaret Kilgo trainings, provided by Kilgo Consulting, Inc., focus on the relationship between the state curriculum, the Texas Essential Knowledge and Skills (TEKS) and Student Expectations (SEs), and TAKS in reading, math, science, and social studies for grades K-12 (http://www.margaretkilgo.com).

> I'm going to go to college. That one word [saying "going" vs. "want"] is important. And there is more expectation here to do so.

Finally, one academy had a strong college-going culture and impressive college acceptance figures before becoming a T-STEM academy; that existing culture supported the school's transformation to a T-STEM academy.

Teachers from several academies also noted that students showed an increased interest in STEM careers beyond college. One school counselor hypothesized that the interest in STEM professions resulted at least in part from students' real-world experiences in their engineering class.

Overall Implementation

Across the sample, the benchmarks and indicators that academies were implementing with greater fidelity than others were those that were: (1) more clearly defined and focused on school operations; (2) aligned with state requirements; and (3) more critical at the early stages of academy development. For example, all academies abided by the stipulations about school size and open enrollment. They were also implementing academic supports for students, especially tutoring; STEM course offerings, especially engineering and robotics classes; high-level courses, including AP courses; and a college-going culture.

The academies' implementation of model elements that were less critical at school start-up or that required more staff time and training were generally weaker. For example, many academies were not implementing PBL, interdisciplinary instruction, or advisory as envisioned by T-STEM. Some academies were also struggling to create professional learning opportunities for teachers. Certainly, instruction, social supports for students, and professional learning are all core areas of the T-STEM model and should ideally be implemented with fidelity from the outset. The situation at many academies, however, may have resulted in school leaders' and teachers' selection of fewer critical school-based elements for initial implementation, with the intent of implementing other areas as the school became more established. Many academies may also have delayed implementing those components that applied to upper level students, such as partnerships with IHEs and businesses for dual credit and internships, because most started out serving only ninth-graders. Despite variations in implementation, however, academies were starting to see positive student outcomes in regard to attitudes, learning habits, and aspirations in particular.

T-STEM Network Supports

The T-STEM network consists not only of T-STEM academies, but also T-STEM centers, an online T-STEM network, and program officers. The supports provided through this network are intended to help T-STEM academies implement the model according to the blueprint. The T-STEM centers were created to provide academies with guidance and resources around pedagogy, content, and community partnerships. Staff at TEA and CFT (including program officers and T-STEM coaches) provided school-level and network-wide supports to the academies, including leadership coaching, cluster meetings, and an online portal. Although all of the academies visited received some support from T-STEM program officers, few academies in the sample used the services of the T-STEM centers,[28] and none relied on the network as a substantial source of teacher PD.

T-STEM Centers

At the time of the research, the T-STEM network included seven T-STEM centers, located at universities and regional education centers throughout the state, plus the Charles A. Dana Center at UT Austin. The T-STEM centers were created to provide T-STEM academies, as well as other schools in their regions, with pedagogical and STEM content expertise and to facilitate strong community partnerships by building relationships with schools in their region.[29] By all accounts, the T-STEM centers had made significant progress in 2008–09 both in the services they provided for academies and in their work with one another. The initial T-STEM centers that received funding in 2007–08 were selected through a competitive proposal process, which served to create an atmosphere of competition rather than collaboration among the centers. T-STEM centers were also expected to develop plans for sustaining their operations beyond the term of their grants. As a result, centers had to come up with products and services that differentiated them from other centers and supported their ongoing operations. That need further contributed to the sense of competition between centers.

According to a T-STEM program officer, however, competition turned noticeably toward cooperation in fall 2008 as the centers began working diligently to coordinate their offerings. The program officer explained:

> The relationship [among T-STEM centers] getting older has helped. They are able to have honest, open conversations. They are able to share and write grants as a group… and see themselves as collectively strong rather than as individual [organizations] all the time. They recognize the strengths of each other. They were coming from competing for [the T-STEM center] grant, [which] gave a sense of 'we don't share' but now they that have been in business, it's not competition but about growing the STEM network.

For example, the centers agreed to the baseline PD that all academies needed, and then provided those fundamental supports to academies in an aligned and coherent manner. Specifically, the centers developed a common workshop on PBL so that all could offer the same PBL training to teachers in their regions. At the same time, the centers purposefully began to differentiate their offerings so that each center could specialize, providing content or services in a particular area in which they had expertise. Further, the centers worked together during the 2008–09 year to organize the third annual Best Practices Conference as well as the second annual PBL Institute, which staff from both centers and academies attended. The centers also

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28 Interviewees did not cite one consistent reason why their school had not used the services of the T-STEM centers. In one case, the principal was not aware of the local T-STEM center. In another case, a longer school year made it logistically infeasible for teachers at that school to attend most of the center's PD offerings. Also note that the T-STEM academies were also heavily influenced and supported by a range of external TA and support providers. In particular, academies that belonged to CMOs received substantial guidance and support from them. Those supports and influences are discussed in relevant sections throughout this chapter.

29 Initially, T-STEM centers were charged with providing support both to T-STEM academies and other schools in their respective regions. Interviews with T-STEM program officers and T-STEM center leaders suggested that over the 2009–10 school year, program leadership has increasingly emphasized supports to T-STEM academies, rather than non-T-STEM schools in the region.

collectively applied for grants, and in some instances the centers provided training to one another on the PD they offered so that other centers could offer the same PD in their regions.

The T-STEM centers worked with T-STEM academies across the state, providing PD, mentoring, and resources for the schools. Information from T-STEM center directors suggested that the number of T-STEM academies that each center typically served increased from a maximum of six schools in the 2007–08 school year to a maximum of 10 schools in the 2008–09 school year. Leadership at the T-STEM centers reported that they had been able to expand the number of educators they served and provide more consistent support as a result of the foundations they built in their early years. Over time, T-STEM centers have grown in their capacity to support the schools, and the schools have become more aware of the resources that the centers offer.

Although T-STEM center support for academies appeared to be increasing overall, of the academies visited, only three reported that they had received support from a T-STEM center. The academies that had a working relationship with a T-STEM center valued the supports they received, but nonetheless reported that the centers were not usually their primary source of PD or other supports. One principal reported, for example, that the centers were valuable in creating a network of contacts across the state for the school to leverage, but they were not particularly involved in the school's instructional program. Because the centers typically worked with school leaders, the supports they offered did not always extend down to the teacher level, and many teachers were not aware of the supports available from the centers.

There is reason to believe, however, that T-STEM centers will become an increasingly prominent support for academies: the schools visited in 2008–09 opened at the same time as the T-STEM centers and because the centers were developing at the same time that the schools were being launched, providing robust support for the academies was difficult initially. Now that the centers are more established, they are better positioned to support both new and existing academies. T-STEM program officers indicated that subsequent academy cohorts (established in later funding cycles) have more involvement with the T-STEM centers than did those established in the initial funding cycle. Moreover, the T-STEM center leaders have conducted more systematic needs assessments with the academies to determine the supports that would benefit the academies the most. With that information, the centers have begun basing their offerings more directly on the specific needs of the academies they serve. One T-STEM program officer described this progress:

> Texas is the first in [the] nation doing this; we were all learning as we went along. Now, [T-STEM] centers can see more clearly what the needs of the schools are and base their offerings on the needs of the academies. [During the] last 1.5 years, the centers have been working diligently with academies to determine their needs.… Centers have gotten much better at aligning their offerings with what academies need, both from a PD and TA perspective.

Thus, as the centers become more established, they have been able to collaborate more with one another and increase their support for academies. Evidence suggests that this trend will continue: centers have been building on their relationships with each other and with academies to offer supports that both provide consistency across the state and offer targeted assistance to meet real needs at the schools.

T-STEM Academy Network and Supports for Academies

Through participation in the T-STEM network, schools received both school-level and network-wide supports. Beginning during the application process, T-STEM coaches supported school leaders in regard to design and administrative challenges. The duties of these coaches included visiting the T-STEM academies monthly, contacting the academy leader weekly via e-mail and/or phone, submitting site visit reports to T-STEM staff using a needs assessment tool tailored specifically for T-STEM, collecting indicators of the academies' progress toward meeting school goals, and facilitating the growth of the T-STEM network to further the academies' success. At the time of the research, nine coaches provided support to approximately four academies each. Typically, coaches tailored their supports by responding to the individual needs and requests of the academy leaders. Because coaching was typically directed to the school leaders, the coaches' interaction with teachers or instructional staff was minimal. Instead, coaches worked through school leaders to address school-wide needs or challenges.

In addition to leadership coaching, two of the key supports the T-STEM network provided were its website and the newly instituted semiannual cluster meetings. The T-STEM website provides academy leaders and teachers with information about PD opportunities, science competitions, other grant opportunities, and online resources. The website also houses online profiles of all grantees. Through the website, all academy teachers are part of a professional learning community (PLC), where they can participate in threaded discussions on topics such as PBL. T-STEM program officers reported that the website had taken some time to get up and running, and that teachers were not using it as frequently as the program officers had hoped. The program officers hoped to build a more active user-base by enhancing the resources available on the site (including linking to other statewide resources, such as materials on college readiness from Gaining Early Awareness and Readiness for Undergraduate Programs [GEAR UP] 30), and conducting marketing to make teachers across the state (including teachers from T-STEM academies and other secondary schools) aware of the website.

In the past year, T-STEM program officers also convened meetings for T-STEM leaders and teachers twice a year. These meetings were held in three regions across the state. The T-STEM centers played a large role in planning and organizing those meetings, which are based on themes particularly relevant to the academies (e.g., leadership in science; counseling). The T-STEM program officers and T-STEM center staff typically identified academies that excelled in a particular area or that had implemented an innovative program or strategy and asked the faculty at those academies to share their best practices at the meeting. For example, at one meeting, math teachers talked about how to use robotics to teach algebraic principles, and an academy leader talked about establishing an internship program for juniors and seniors.

Of the schools visited, school staff at four schools reported receiving valuable support from program officers. In one instance, the T-STEM coach played an integral role in starting the academy, in part because the proposal author left the district and the school was not part of other networks or models that could provide that support. One staff member at the same school noted that the THSP conference on college readiness was highly relevant for getting the school's dual-credit program under way. The dean of instruction at another school reported that the

[30] GEAR UP is a federal program designed to "increase the number of low-income students who are prepared to enter and succeed in postsecondary education" (http://www2.ed.gov/programs/gearup/index.html).

T-STEM coach helped draft an observation form for use for monitoring instruction quality at the school. Finally, a principal indicated that the coach visited the school to monitor activities and provide feedback. The principal believed that this was the right direction for coaching for T-STEM academies.

T-STEM Effects on Student Outcomes

The 2008–09 school year marked the third year of implementation for the earliest T-STEM academies, which were first funded in 2006–07. Over that period of time, the earliest T-STEM academies have brought in two new cohorts of students, thus serving ninth-, tenth-, and eleventh-graders by 2008–09. New T-STEM academies also opened in 2007–08 and 2008-09. The student outcomes analysis presented in this section focuses on outcomes from the 2008–09 school year and includes all of the T-STEM academies that served ninth-graders or higher.

The researchers analyzed T-STEM effects for three student samples: (1) eleventh-graders in two T-STEM schools that had implemented the model for three years; (2) tenth-graders in 14 T-STEM schools that had implemented the model for two or three years; and (3) ninth-graders at 30 T-STEM schools that had implemented the model for one, two or three years. The T-STEM effects were estimated separately for ninth-grade nonrepeaters and repeaters[31] and tenth- and eleventh-grade former nonrepeaters[32] (simply referred to as tenth- and eleventh-graders hereafter). Because only two T-STEM schools are represented in the eleventh-grade student sample, any estimated T-STEM effect for eleventh-grade outcomes is likely not representative of the larger program. Consequently, the eleventh-grade T-STEM results should not be emphasized. With larger school and student sample sizes, the ninth- and tenth-grade analyses are able to provide more reliable estimates of the T-STEM effect. Also, as noted in Chapter 2, a large number of T-STEM academies are new small schools. They were matched closely to comparison schools on key indicators but not exclusively to newly opened non-THSP schools because so few opened in the same year as the specific T-STEM academies. Therefore, these results should be interpreted cautiously.

In addition to looking at a snapshot of ninth-, tenth- and eleventh-grade student achievement between T-STEM and comparison schools, the researchers also conducted growth modeling on TAKS math standardized scores from eighth to tenth grade.[33] The analysis included ninth-graders in 2007–08 and tenth-graders in 2008–09 from 14 T-STEM schools and their comparison schools. Growth modeling enables a comprehensive study of the T-STEM effect on students' overall progress in math by examining students' growth trajectories after their

31 Ninth-grade repeaters and nonrepeaters were analyzed separately because their prior achievement indicators are not comparable and cannot be included in the same model. The prior year achievement indicator is eighth-grade achievement for nonrepeaters and ninth-grade achievement for repeaters. In addition, repeaters by definition have been exposed to the curriculum before, and being at risk, likely have different experiences at schools from nonrepeaters, e.g., are potentially less engaged or confident, or alternatively receive extra academic supports. Thus, T-STEM is not expected to impact repeaters in the same way as nonrepeaters. However, the T-STEM repeater analysis is not reported because the sample size is too small.

32 A large proportion (around 30%) of ninth-grade repeaters were promoted to their original cohort in the subsequent year and a larger proportion (around 50%) were promoted to their original cohort in two years. These ninth-grade repeaters do not belong to tenth grade in the following year or to eleventh grade in the year after. Therefore, repeaters are not included in tenth- and eleventh-grade analysis.

33 TAKS mathematics scores were standardized against the state average for eighth, ninth and tenth grade respectively. The standardized scores have a mean of 0 and a standard deviation of 1 for each grade.

schools began T-STEM implementation and including students who were at the school for only the ninth or the tenth grade, thereby making full use of the available data. Unless otherwise stated, all results discussed below are statistically significant at $p < 0.05$.

TAKS-Math, English/Language Arts, Science, and Social Studies Achievement

Exhibits 3-4 to 3-9 show the 2008–09 outcomes for the average student at T-STEM and comparison schools across the three samples of first-time ninth-graders (nonrepeaters), tenth-graders who have been in the same school for two consecutive years, and eleventh-graders who have been in the same school for three consecutive years. For convenience, the exhibits show value labels and effect sizes for each outcome where the T-STEM effect reaches statistical significance at the 0.05 level. Marginally significant findings at the 0.10 significance level are also noted.

> *Ninth-grade nonrepeaters and tenth-graders in T-STEM academies had higher TAKS mathematics and science (tenth-grade only) scores and ninth-grade nonrepeaters had a higher likelihood of passing all TAKS than their peers in comparison schools.*

Exhibit 3-4 indicates that ninth-grade nonrepeater students in the T-STEM program scored 27 points higher on TAKS-Math than their peers in comparison schools. Exhibit 3-5 indicates that T-STEM tenth-grade students also scored on average 21 points higher on TAKS-Math than students in comparison school peers. These T-STEM effects, combined with a pooled standard deviation of 227 points for ninth-graders and 180 points for tenth-graders, translates into a small effect size of 0.12 standard deviations for both grades.[34]

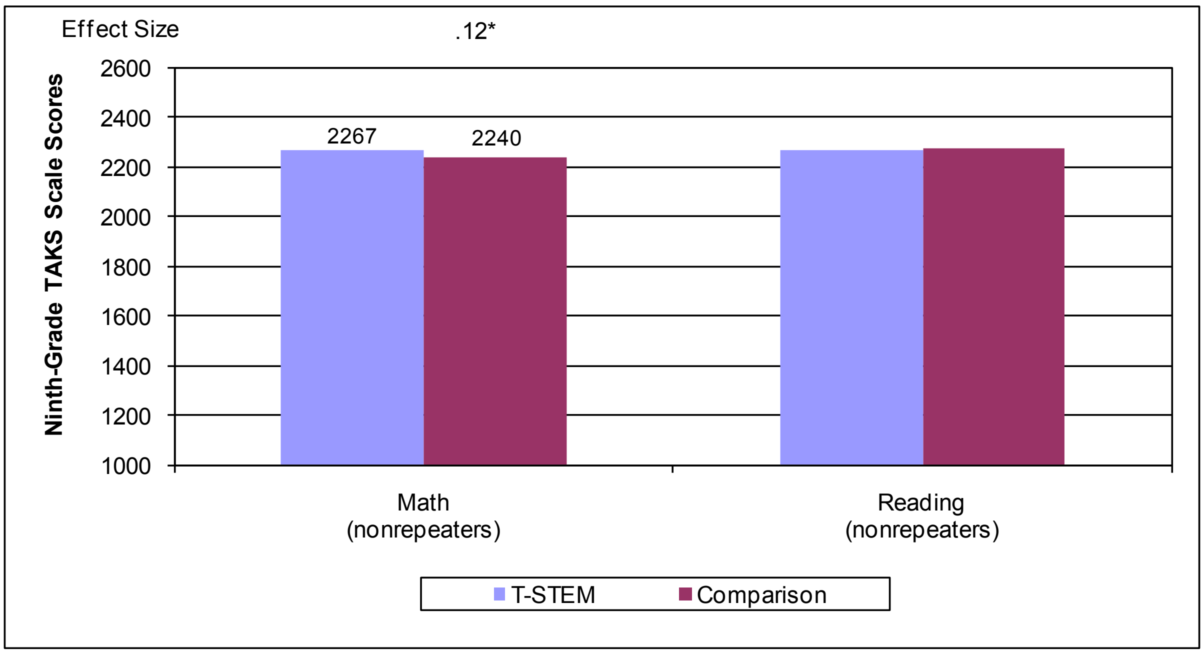
The T-STEM program had a positive effect on science for tenth-graders. Tenth-grade students in T-STEM schools scored an average of 29 points higher on TAKS-Science than comparison school students. In addition, T-STEM students had a marginally significant higher growth rate of 0.02 standardized points from eighth to tenth grade on TAKS-Math than their comparison school peers , who had an average growth rate of -.01 standardized points. These results may reflect the emphasis on STEM subjects that is central to the mission of T-STEM academies. T-STEM students performed similarly to their comparison school peers on ninth-grade TAKS-Reading, on tenth-grade TAKS-English/Language Arts and TAKS-Social Studies, and on all eleventh-grade TAKS outcomes (Exhibits 3-4 to 3-6).

T-STEM had a positive effect on the likelihood of passing all TAKS. Ninth-grade nonrepeaters in T-STEM academies had a higher likelihood (1.8 times) of passing both TAKS-Reading and TAKS-Math than their comparison school counterparts. The probability of passing both TAKS-Math and TAKS-Reading for an average ninth-grade nonrepeater is 78% in T-STEM schools versus 72% in comparison schools. T-STEM tenth-graders also had a marginally significant ($p < .10$) higher likelihood (1.5 times) of passing TAKS in all four subject

[34] The effect size was calculated by dividing the coefficient of the T-STEM indicator by the pooled within-group standard deviation of the outcome at the student level (What Works Clearinghouse, 2008). Note that both the *T-STEM effect* and the *effect size* are presented throughout the discussion of results. The former is the raw differences between students in T-STEM and comparison schools, whereas the latter puts all the raw differences on the same metric. Unlike the raw T-STEM effects, effect sizes can be compared across different outcomes and indicate the strength of the intervention effect. Consistent with standard practice, the evaluation team considers an effect size of 0.20 as small, 0.50 as moderate, and 0.80 as large. Therefore, 0.12 is considered a small effect size (Cohen, 1988).

areas.[35] The probability of passing all four TAKS for an average tenth-grader is 64% in T-STEM schools versus 59% in comparison schools. These higher rates of passing all TAKS at T-STEM compared to their matched schools is promising; particularly among ninth-graders. Although the T-STEM does have higher rates than comparison schools for tenth-graders, 64% nonetheless leaves room for improvement. Eleventh-graders in the two T-STEM academies and their comparison schools had no statistically significant differences in the likelihood of passing TAKS in all four subject areas.

Exhibit 3-4
T-STEM Effect on Ninth-Grade TAKS Scores in 2008–09



Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

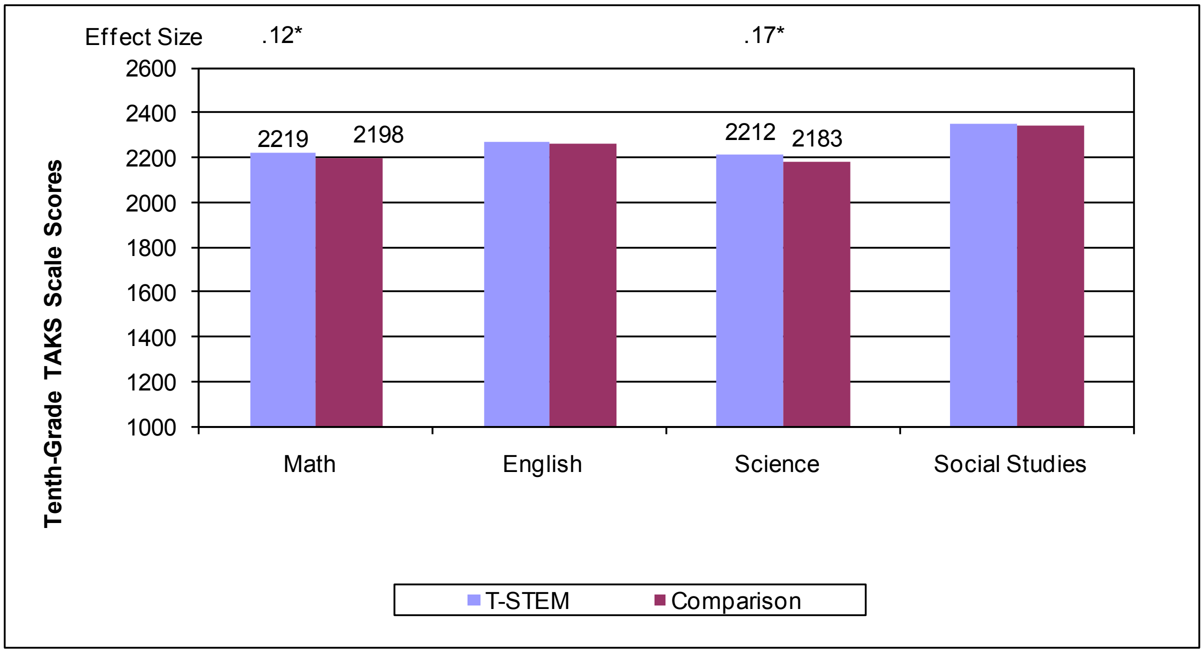
**p* < .05, ◊*p* < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

1,406 students from 30 T-STEM schools and 151,576 students from 132 comparison schools are included in the analyses.

35 In the "Passing TAKS in four subjects" model, the dependent variable is dichotomous (equal to 1 if a student passed all four exams and 0 otherwise) rather than a continuous TAKS scale score. Consequently, the coefficient for this model is interpreted in terms of an odds ratio.

Exhibit 3-5
T-STEM Effect on Tenth-Grade TAKS Scores in 2008–09



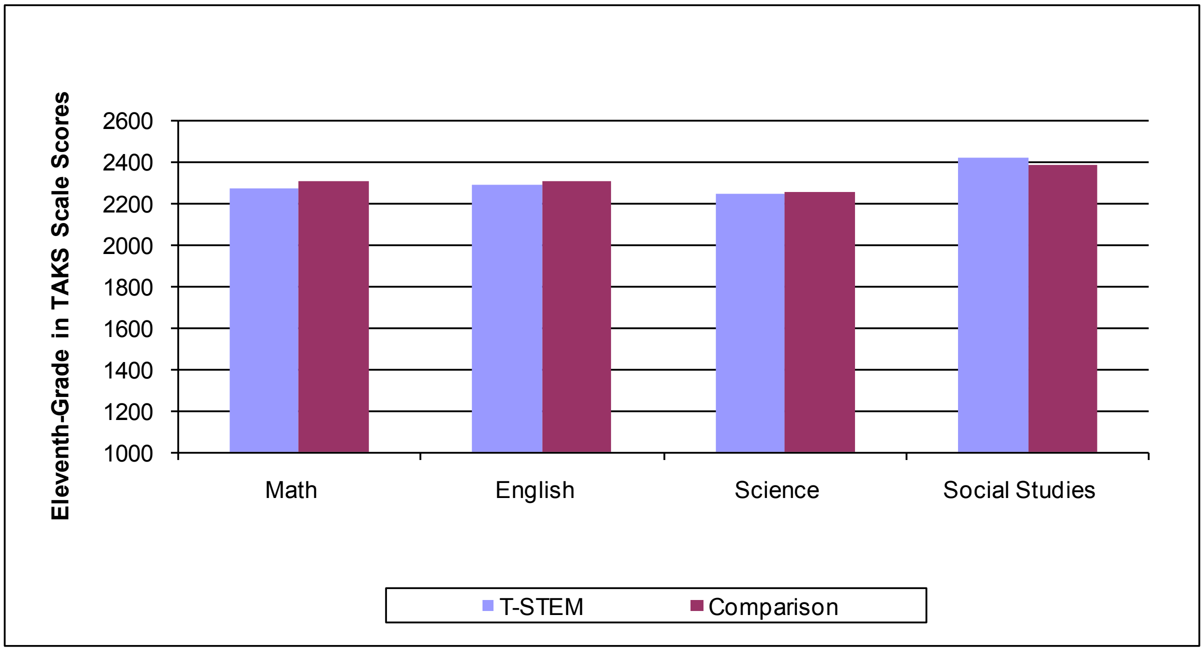
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

**p* < .05, ◊*p* < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

696 students from 14 T-STEM schools and 12,053 students from 81 comparison schools are included in the analyses.

Exhibit 3-6
T-STEM Effect on Eleventh-Grade TAKS Scores in 2008–09



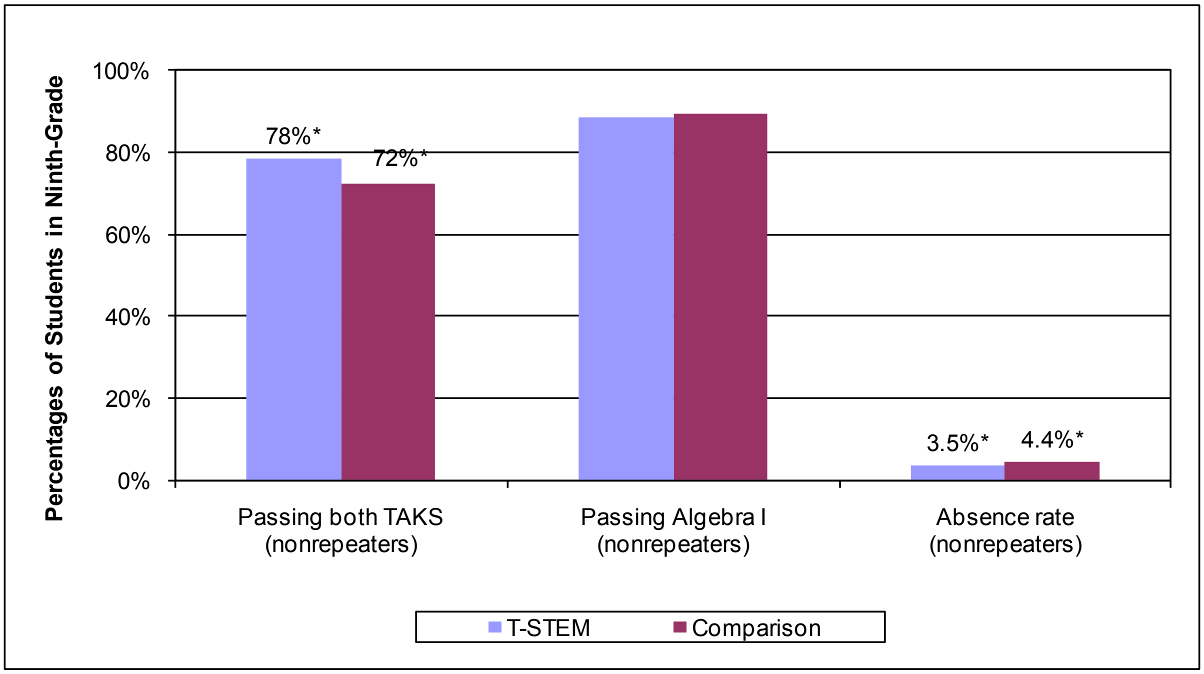
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*$p < .05$, ◊$p < .10$.

TAKS passing rates are set at a scale score of 2100 every year and TAKS commended status is set at a scale score of 2400 for each TAKS subject in each grade.

86 students from 2 T-STEM schools and 804 students from 12 comparison schools are included in the analyses.

Exhibit 3-7
T-STEM Effect on Ninth-Grade Outcomes Other than TAKS Scores in 2008–09

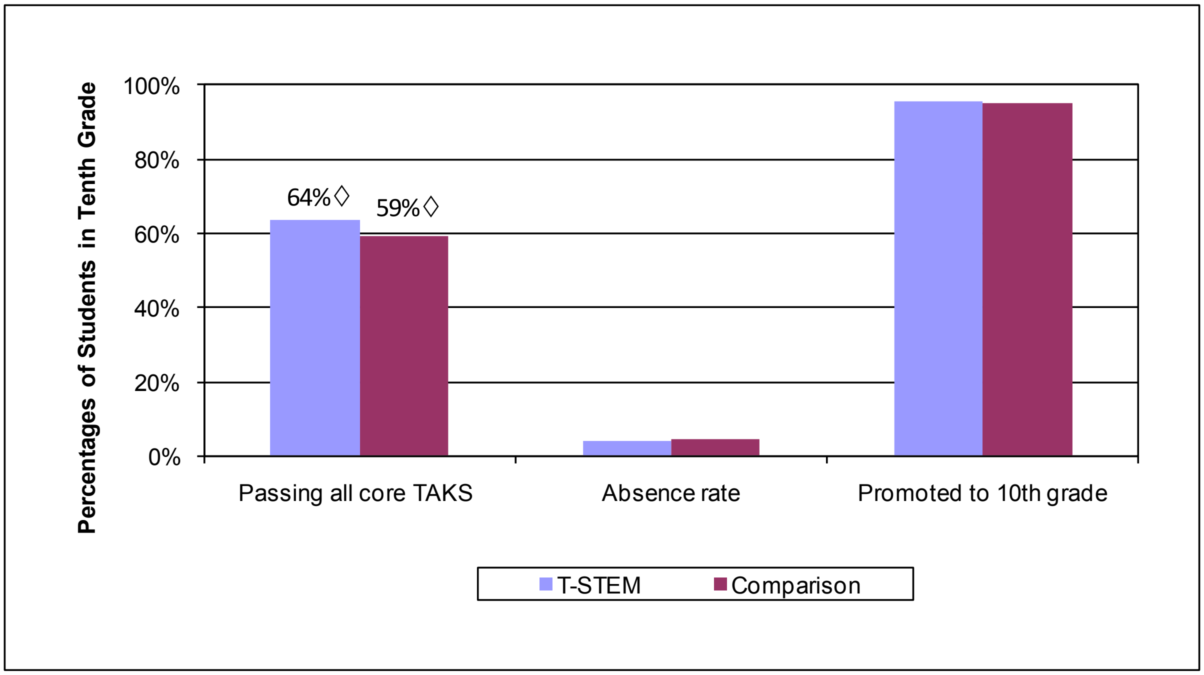


Notes: Values are shown for significant differences in outcomes.

*$p < .05$, ◊$p < .10$.

1,406 students from 30 T-STEM schools and 151,576 students from 132 comparison schools are included in the analyses.

Exhibit 3-8
T-STEM Effect on Tenth-Grade Outcomes Other than TAKS Scores in 2008–09

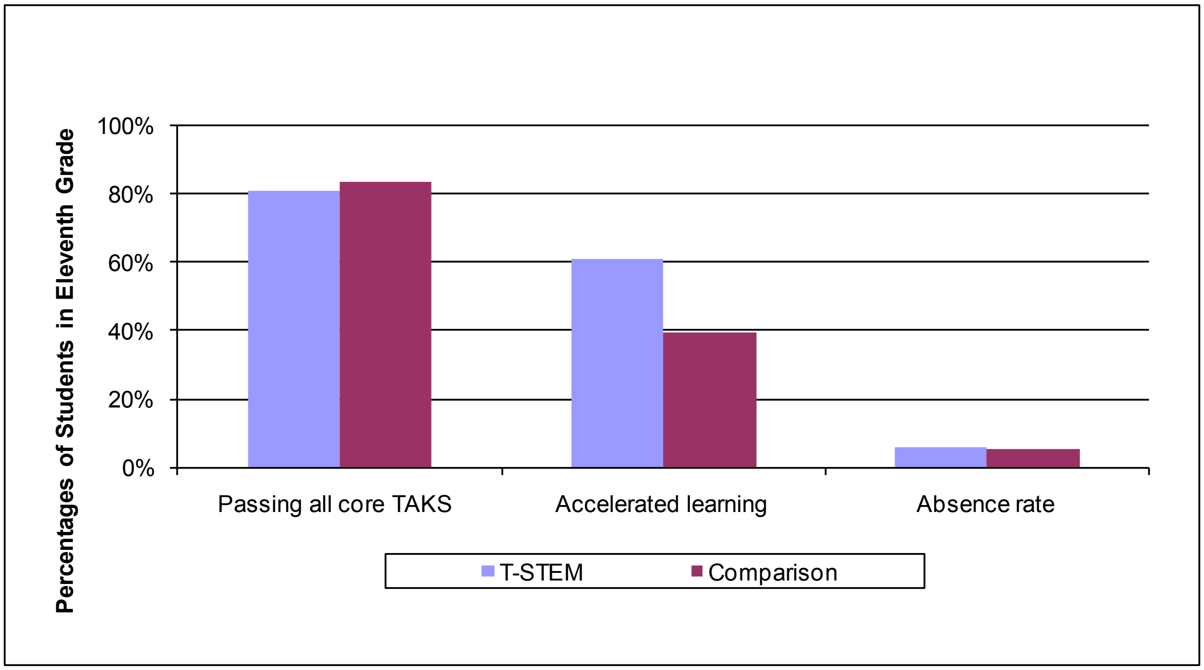


Notes: Values are shown for significant differences in outcomes.

*$p < .05$, ◊$p < .10$.

696 students from 14 T-STEM schools and 12,053 students from 81 comparison schools are included in the analyses.

Exhibit 3-9
T-STEM Effect on Eleventh-Grade Outcomes Other than TAKS Scores in 2008–09



Notes: Values are shown for significant differences in outcomes.
$^*p < .05$, ◊$p < .10$.
86 students from 2 T-STEM schools and 804 students from 12 comparison schools are included in the analyses.

Attendance

T-STEM had a positive effect on attendance for ninth-grade nonrepeaters, who had lower likelihood (80%) of being absent than similar students in comparison schools (Exhibit 3-7). The probability of being absent for an average ninth-grade nonrepeater is 3.5% in T-STEM schools versus 4.4% in comparison schools. This difference may be due to T-STEM academies' high academic expectations and hard work for their students, which based on site visit data appear to include building a strong awareness and expectation that students must attend class. Also from site visits, teachers and school leaders attributed the small school design with being able to develop close connections with students and the school's ability to track down every absent student. No statistically significant differences in the likelihood of being absent existed between tenth- and eleventh-graders in T-STEM schools and their comparison school peers, however, although so few T-STEMs served eleventh-graders that detecting effects for that grade is difficult (Exhibits 3-8 and 3-9).

Other Outcomes

No significant differences between T-STEM academies and comparison schools were found in passing Algebra I by the ninth grade, being promoted into the tenth grade, or participation in accelerated learning at eleventh grade (Exhibits 3-7 to 3-9). It is unclear why T-STEM academies did not have higher rates of passing Algebra I by ninth grade than their comparison schools. One would have expected the math emphasis at T-STEM academies to yield a more positive result there. One possible explanation is that the same issues associated with analyzing being on track with the "four by four" curriculum, i.e., credits outside of the 180-day instructional school year are not captured in the datasets, limit the ability to analyze passing Algebra I for T-STEMs because many T-STEMs have an extended school year and may use it to support students in math. Participation in accelerated learning courses (i.e., AP, IB, and dual credit) is an element of the T-STEM blueprint but two factors likely influence the lack of results for T-STEM on that outcome: (1) the small number of T-STEMs serving eleventh-graders as already discussed; and (2) based on site visit data, T-STEM academies were only beginning to put in place the blueprint elements relevant for higher grades such as access to the advanced courses and internships (discussed in Chapter 3).

Comparison of T-STEM Effects over Time

The 2008–09 outcomes analysis provides a snapshot capturing the cumulative effect of T-STEM on student outcomes. Likewise, the first annual report (Young, et al., 2010) provided a snapshot of the T-STEM effect on student outcomes in the previous year. Two approaches to comparing the 2007–08 and 2008–09 results can trace the performance of T-STEM schools over time: (1) looking at how ninth-graders in one year fare compared to ninth-graders in the next year and similarly looking at how tenth-graders in one year do compared to tenth-graders in the next year (i.e., cross-sectionally); (2) examining how students in the same cohort perform over the years (i.e., as ninth-graders in 2007–08 and then as tenth-graders in 2008–09). The first approach can indicate whether T-STEM schools improve in serving students at specific grade levels, and the second approach sheds light on when during a typical student progression through high school T-STEM has effects on student outcomes and whether the effects are sustained over time. Both kinds of comparisons are presented below.

Comparing Different Cohorts of Students

The evaluation revealed some statistically significant results among ninth- and tenth-grade outcomes in 2007–08 and 2008–09 and among those, the trend appears slightly positive for some outcomes but not for others. For ninth-grade nonrepeaters, T-STEM schools had a positive effect on TAKS-Math and on attendance in 2008–09, an improvement from 2007–08 when T-STEM had no effects on these outcomes. On the other hand, the marginally significant positive T-STEM effect on TAKS-Reading for ninth-grade nonrepeaters in 2007–08 disappeared in 2008–09.

Among tenth-grade outcomes, T-STEM had a positive effect on TAKS-Math in both 2007–08 and 2008–09. It had a positive effect on TAKS-Science in 2008–09, an improvement compared to 2007–08. In addition, T-STEM had a marginally significant positive effect on passing all TAKS subjects in 2008–09 but not in 2007–08. In contrast, the marginally significant positive T-STEM effect on TAKS-Social Studies in 2007–08 disappeared in 2008–09.

These comparative results suggest sustainability and improvement in TAKS-Math and Science for T-STEM schools but not in TAKS-Reading/English and Social Studies. Although T-STEM academies by definition embrace the math and sciences, they are also committed to a college-going culture and based on site visit data, hold high expectations for students across all academic areas. Thus their performance in English and social studies will be important to follow.

T-STEM schools also appeared to improve attendance rates for ninth-grade nonrepeaters. These observations may be a modest start of a trend where T-STEM schools serve each successive cohort of students entering the school better than the prior cohort, as compared to comparison schools. Note that the 2008–09 analysis included about two times the number of T-STEM schools in the 2007–08 analysis. Therefore the improvements in 2008–09 may be a combination of both stronger practice in T-STEM schools that began implementation in prior years and better performance vis à vis comparisons for the T-STEM schools beginning implementation in 2008–09.

Comparing Students in the Same Cohort over Time

The comparison of students in the same cohort over time presents more mixed results than the different cohort comparison. Tenth-graders in T-STEM outperformed their comparison school peers in TAKS-Math in 2008–09, an improvement from no differences vis à vis the comparison schools as ninth-graders the year before. On the other hand, the positive T-STEM effect on tenth-grade TAKS-Math in 2007–08 disappeared one year later in eleventh grade. Similarly, the marginally significant positive effect on TAKS-Reading for T-STEM ninth-grade nonrepeaters in 2007–08 was lost one year later for the tenth-graders. These results suggest that although T-STEM has achieved some positive results in math and science to date, sustaining or improving outcomes for the same student cohort over time may require attention.

Conclusions and Implications

The T-STEM initiative is unique in its efforts to build a network of STEM academies at the secondary level, along with the ecology needed to support these schools. The T-STEM initiative has achieved some fundamental successes: T-STEM academies, T-STEM centers, and an integrated T-STEM network were established and are in operation, with plans for more academies to open in the future. In addition, a T-STEM blueprint that provides definitions and benchmarks for T-STEM academies has been designed and put into operation.

At the school level, academies implemented different benchmarks of the T-STEM blueprint to varying degrees, with the level of implementation appearing to be based on the developmental stages of the schools and the grades being served. For example, the academies' curriculum had a genuine STEM focus and a genuine college-going orientation for students. Other components of the blueprint, such as building dual-credit, internships, and work-based learning opportunities for students, were a lower priority for the academies at the time of this research. Those components are more salient for mature academies serving juniors and seniors; because many academies opened with only one or two grades, it was not surprising that their initial efforts would be geared toward core school functions and the needs of freshmen and sophomores. From this perspective, the absence of fully developed dual-credit and internship programs (including strong relationships with IHEs or business partners) fits with the developmental trajectory of the academies. As the academies become full-service high schools, it will be important for them to establish partnerships and programs that provide students with opportunities to receive college credits and pursue work experience. Given that most of the academies in the 2008–09 sample were actively planning dual-credit and internship programs, students are likely to have some access to these programs in the near future. Subsequent data collection will examine progress in these areas.

Some areas of the T-STEM initiative have been more challenging for academies to implement. Research has found that, among education reforms, those affecting instruction are among the most difficult to implement and that structural reforms often precede changes in instruction (Shear, et al., 2005). The research revealed that academy teachers were not consistently implementing key pedagogical strategies promoted by the T-STEM blueprint, such as PBL and interdisciplinary instruction. One challenge was that teachers at most academies did not have a consistent understanding of PBL or the background or tools to implement PBL as an integral component of their classroom practice. Similarly, academies were not consistently organizing instruction in a way that supported interdisciplinary studies (e.g., team-teaching across subject areas, integrating multiple subjects into coursework and projects).

If revised versions of the T-STEM blueprint retain a central focus on PBL and interdisciplinary instruction, it will be important for academies to take concerted measures to support the implementation of these strategies in the classroom. Teachers need training and resources, sustained coaching and supports, and structures such as common time for planning projects and interdisciplinary studies. Indeed, the academies whose use of PBL was strongest were those that had access to an established national model in which PBL is the primary mode of instruction, and from which the academies received extensive training, materials, and supports for implementing PBL in the classroom. At the time of the research, T-STEM centers had recently developed a foundational PD on PBL that they could uniformly offer to academies, and some centers were beginning to provide targeted PD on implementing PBL in the classroom. Providing support to teachers for implementing PBL and interdisciplinary instruction is one area in which T-STEM centers could provide valuable expertise for the academies in the coming years.

Academies were not implementing advisory as envisioned by the blueprint. Although most academies had something they called advisory, these advisories did not always provide students with advocates to support them both academically and socially throughout their high school careers. One contributing factor was that some academy leaders and teachers did not view advisory as essential, given the small school setting in which teachers and students naturally develop strong relationships. Nonetheless, T-STEM academies could benefit from addressing how advisory can leverage, not duplicate, the relationships that exist at their schools in order to provide even more comprehensive supports for students.

At the level of the T-STEM network, activities were still in early stages of development, but these too were beginning to coalesce into better-defined offerings with added value for academies. Although T-STEM coaching took place consistently, other aspects of the network, including the online network and the statewide and regional academy meetings, were still being designed and taking shape. Like the academies, T-STEM centers were also following their own developmental trajectory; in the past year the centers made notable progress building capacity, coordinating across centers, and building trusted relationships with the academies. Nonetheless, few of the academies in the sample worked with the T-STEM centers, indicating that room remains for growth in the centers' outreach efforts.

The T-STEM initiative leadership was aware of the issues that existed throughout the network and continued to move the initiative forward. They began working to revise the blueprint, to provide benchmarks for academies in their developmental trajectories, and to specify particular components of the model better. In addition, T-STEM center representatives attended regional academy cluster meetings, which assisted in creating connections between centers and academies. T-STEM centers began aligning their efforts to ensure that academies would receive comparable baseline supports from the different centers across the state; centers were also aligning their services with individual academy needs by conducting purposeful needs assessments with the schools.

Sustainability is a key issue for both T-STEM academies and centers. For the academies, sustainability requires maintaining fidelity to the T-STEM model, even in the face of the influence exerted by other models and organizations. Given the prominence of CMOs, in particular, in influencing the design and operations at some academies, it is important to make sure that the tenets of the CMO are consistent with details and the spirit of the T-STEM initiative. Given the increasing number of T-STEM academies being designated ECHSs, it will be important to align the two initiatives and build an understanding of what it means to be a blended T-STEM/ECHS school.

For T-STEM centers, sustainability hinges on continuing to build capacity to support T-STEM academies, including both coordinating efforts among the centers and differentiating their offerings as distinct centers. The success of the centers lies in building strong connections with T-STEM academies and other schools; offering unique and valued STEM-focused trainings, services, and advocacy; and finding continued funding streams to support these efforts. The original grants provided funding for five years, at the end of which centers were supposed to become self-sustaining by obtaining external grants or charging fees for their services. However, grants are not typically intended to support profit-making endeavors, and a fee-for-service model is insufficient because charging schools high costs for services would be at odds with the intent of the program. Leadership will have to consider realistic possibilities for long-term financial sustainability of the T-STEM centers.

T-STEM academies emphasized math and science learning, and the analysis found that thus far they have had positive effects on those two subjects in TAKS, as well as for passing all TAKS subjects in general for ninth- and tenth-graders. The analysis also found a positive T-STEM effect on attendance for ninth-grade nonrepeaters. The lack of positive effects on the outcomes studied for eleventh-graders may be due to the small number of T-STEM schools serving eleventh grade in 2008–09 (as discussed above). An alternative explanation could be that T-STEM academies serve students better as the academies mature and that more positive results are thus exhibited in subsequent cohorts of students (i.e., ninth- and tenth-graders in T-STEM academies operating for three years or ninth-graders in T-STEM academies opened for two years). Note also that because the later cohorts of students included those from newly funded T-STEM schools, the maturation effect could pertain to the whole T-STEM system rather than to individual academies.

Texas is in the vanguard in envisioning and defining the concept of a STEM network of high schools, supported by regional centers. The academies are working to define and operationalize what it means to provide a "STEM education" at the high-school level. At the same time, T-STEM is working to build a statewide infrastructure in a very large state. Unlike the replication that occurs when new charter schools open within existing networks and models, the T-STEM initiative is charting a new course. With this in mind, the progress that has been realized to date should be celebrated. The challenges, while being recognized as endemic to the process, must be addressed directly to support the success of the initiative. Ongoing research can provide insights into the degree of success of the initiative, particularly with regard to the ultimate goals of improving math and science achievement across the state and of increasing the number of students who pursue STEM careers.

Chapter 4
Early College High Schools

Key Findings

Implementation

- Although only in their second year of operation, the four ECHS sites visited in 2008–09 were on track for serving the target population, maintaining the small school structure, and offering college courses.
- Implementation of partnerships with IHEs and student and staff supports varied across the four schools. Data suggest that ECHSs in urban areas had easier access to college partners and resources.
- Through the designation process and more collaboration across the organizations, TEA and CFT revamped their supports for THSP grantees and nongrantees to better maintain the integrity of the ECHS model.

Outcomes

- Student achievement data showed that attending an ECHS had positive effects on TAKS performance in almost all core subject areas; attendance for first-time ninth-, tenth- and eleventh-graders; promotion to the tenth grade, and participation in accelerated learning courses in the eleventh grade.

Introduction

ECHSs are designed to provide students who are traditionally underserved in postsecondary education with the opportunity to earn both a high school diploma and one to two years of transferable college credit by high school graduation.[36] By giving students a jumpstart on college, the underlying goal is to increase high school graduation rates and college attendance and persistence rates.

At the time of the 2008–09 site visits, TEA was operating three cycles of ECHS grants and a small and rural grants program.[37] TEA released an application for Cycle 4 of the ECHS grants in fall 2009; those schools received funding in January 2010. The grants provide districts or CMOs with funding to implement the core elements of the ECHS model, including serving the target population, forming a partnership with an IHE, and providing appropriate social-emotional and academic supports. These features, which are designed to prepare students for success in college, make ECHSs unique among Texas high schools. Signifying the importance of these core elements, in 2008–09 TEA implemented a designation process for all ECHSs, both THSP grantees and nongrantees, to ensure that those schools implement the features as intended.

This chapter outlines the core elements of the ECHS model, explains how the designation process allows TEA to monitor school fidelity in implementing those elements, illustrates the range of model implementation in four ECHSs that were visited in spring 2008, outlines the supports provided to schools by the ECHS network, and describes early outcomes in ECHSs involved in THSP.

ECHS Core Elements

The core elements are the minimum components that schools are required to have to be designated as ECHSs (including those ECHSs not funded through THSP). The elements include having an autonomous school design that provides access to a college campus, targeting the appropriate population, engaging in a partnership with an IHE, providing a rigorous curriculum that gives students the opportunity to earn up to 60 college credits, providing adequate academic and social-emotional supports, and hiring and supporting highly qualified teachers. Exhibit 4-1 describes the core elements, taken from the TEA designation application, in more detail. [38]

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36 Dual-credit courses, in which students earn both high school and college credits for the same course, enable students to work toward this goal.

37 The small and rural grants program is for districts with fewer than 5,000 students. It provides funding for small and rural districts to research the ECHS model, identify challenges and propose solutions for small and rural districts, and establish a design team and develop plans for creating an ECHS. It allows very small districts to partner with each other to create an ECHS. This grant program is not part of the THSP evaluation and is not assessed in this report.

38 Schools must demonstrate that they are implementing all of the design elements and their components to receive ECHS designation from TEA. For more information about the design elements, contact the ECHS program officer at TEA at echs@tea.state.tx.us

Exhibit 4-1
ECHS Core Elements

School Design

- Must be an autonomous high school (i.e., have its own principal and staff)
- Can be on an IHE campus, on a stand-alone high school campus near an IHE campus, or a small learning community (SLC) within a larger high school located near an IHE campus
- Must be full-day program

Target Population

- Must serve grades nine through 12, but may include grades six through eight
- Must target and enroll a majority of students at risk of dropping out of school
- Targets 100 students per grade level

P-16 Partnership

- Must have a current, signed memorandum of understanding (MOU) that defines the partnership between the district and IHE
- Must have the district or charter pay for tuition, fees, or books unless the IHE waives those costs
- Must have the district and IHE enter into an active partnership, including having joint decision-making procedures that allow for planning, implementation, and monitoring of coherent program across institutions
- Must provide opportunities for ECHS teachers and IHE faculty to collaborate

Curriculum and Academic Rigor

- Must have a curriculum plan that enables students to receive a high school diploma and an AA degree or 60 credits toward a Bachelor of Arts (BA) degree in grades nine through 12
- Must administer the Texas Success Initiative college placement exam to all incoming ninth-graders

Support Structures

- Must implement strategies and activities that foster a college-going culture
- Must provide a personalized learning environment and student academic support services
- Must provide social and emotional support
- Must have regular access to IHE facilities, resources, and services
- Must demonstrate commitment to substantial parent and community involvement

Staffing

- Must demonstrate that teachers are highly qualified and have the ability to provide accelerated instruction to at-risk students
- Must provide a common planning time for ECHS staff, and if possible, IHE faculty
- Must provide teachers with support and guidance through mentoring, PD, and induction programs

Whereas all current grantees must exhibit these core elements, applicants for ECHS grants beginning in 2008–09 and later needed to include additional elements. In particular, ECHSs had to include middle school outreach in their plans, either by including grades six through 12, grades seven through 12, or by having the traditional ninth- through 12th-grade model but with significant eighth-grade outreach. Schools that received grants in earlier cycles are not required to include middle grades, but they are encouraged to do so. Further, starting with the 2009–10 cycle, districts can partner with other districts to start an ECHS, a change that enables smaller, rural districts with fewer students to open ECHSs. Because the schools visited in 2008–09 predated these changes in the program, the evaluation team will examine these modifications in future years.

ECHS Designation

In 2008–09, given concerns about the variability of implementation, the ECHS network created a process to ensure schools implement the ECHS model with fidelity and to offer appropriate supports when necessary. In spring 2008, TEA instituted the designation process (under authority of TEC §29.908(b) and Texas Administration Code §102.1091) to clarify which core elements schools must have to be considered ECHSs and to gauge schools' progress toward full implementation.

To receive designation status, all existing and proposed ECHSs must apply or reapply for designation annually, even those that did not receive a THSP grant.[39] An ECHS can be opened in Texas without receiving designation. However, if the ECHS does not have designation status, it does not receive the supports and exemptions that enable and allow it to put into place those features that define it as an ECHS, such as exemption from state dual-credit restrictions to allow students to take college classes in as early as the ninth grade.[40] These supports are available for all designated ECHSs. Schools can receive one of two types of designation:

- Designation: Schools must have been in operation for at least two years and must have addressed all required design elements.
- Provisional designation: Schools must have either been in operation for less than two years or have not yet addressed all of the required design elements but are working toward doing so.

As of 2008–09, TEA had accorded the ECHS designation to 41 schools in the state, provisionally to 25 and fully to 16. Designated schools receive several benefits, including being recognized as a TEA-approved ECHS and being granted membership in the Texas ECHS network. ECHSs are given access to conferences, PD, and TA from TEA, CFT, the Texas Higher Education Coordinating Board (THECB), and other TA providers. Finally, as mentioned, designated ECHSs are eligible for exemption from state dual-credit restrictions and

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39 For more information on the designation process, visit http://www.txechs.com/echs_designation_announcement.php

40 Students attending a high school other than an ECHS are allowed to enroll in only two dual-credit courses each semester and must be a junior or senior to do so. With exemptions, students attending a designated ECHS are permitted to enroll in more than two dual-credit courses per semester and can enroll in dual-credit classes as early as ninth grade. For additional information about the exemption, visit http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=19&pt=1&ch=4&rl=161

for other state programs (e.g., the Optional Flexible School Day). In addition to this designation process, TEA monitors implementation through visits by coaches, review of the fidelity of implementation reports that coaches complete three times per year based on the design elements, and progress reports submitted by THSP grantees.

School-Level Implementation Findings

ECHSs exhibit a wide range of implementation levels across the state, in spite of being required to implement the same core elements. One reason for this variability is that ECHSs began the program at different times and are at different stages of implementation. Some ECHSs have aged out of THSP grant funding and are fully implemented; other ECHSs still receiving THSP grants are in their first year of start-up. In 2008–09, the evaluators visited four THSP-funded ECHSs out of the eight that opened in 2007–08.[41]

The following section discusses how implementation progress across the core elements varied at these schools. Although the designation process identifies and defines key elements, the data below illustrate how these schools modified the design to adjust to the local context. In addition, because many of the features of Texas ECHSs were drawn from the national Early College High School Initiative (ECHSI) funded by BMGF and because some ECHSs in Texas began as part of the ECHSI, lessons learned from the national initiative are included to offer confirmation of, or alternative possibilities for, how to address issues Texas ECHSs face.[42]

School Design

ECHSs must be autonomous, full-day high schools with their own principals and teachers, even if they are an SLC in another school. As noted, ECHSs operate within a range of contexts that influence how they implement the model. One of the key factors influencing the model design is the location of the school, including both its degree of urbanicity and proximity to the partner IHE.

Two of the ECHS schools visited were in urban centers, and two were in more rural parts of the state. The two urban ECHSs were district schools situated on college campuses, one of the rural schools was a charter in an office building near the college campus, and the other was an SLC in a larger district high school. Although the SLC had its own principal and teachers, autonomy at this school was less clear than at the others: its seventh- to tenth-graders were housed in a separate wing but its eleventh- and twelfth-graders were integrated into the larger high school's classes.

ECHSs and their IHE partners must work within the confines of their geographies and local resources as they design their schools. THECB assigns each school district to a community college service area based on its location,[43] and the district is limited to working with the IHE in that service area. For smaller or rural districts, their closest IHE might be miles away, potentially creating issues around transportation and access to college resources. At the same time, urban

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41 The evaluators visited ECHSs for the first time in 2008–09.

42 The ECHSI began in 2002 and has created more than 200 ECHSs across the country. The Texas schools that started as part of the ECHSI are included only in the outcomes analysis of the THSP evaluation (i.e., not in the site visit or survey data collection). Those schools received a variety of initial supports that other ECHSs in Texas did not receive. For more information on the ECHSI, visit http://www.earlycolleges.org/

43 There are 20 service areas for two-year IHEs across the state that were established by the Legislature to provide the IHEs with a taxing district. The service areas do not apply to four-year IHEs.

districts may also encounter challenges if their assigned IHE is unwilling or unable to provide the dual credit courses or supports the ECHS needs. ECHSs have the option of changing or adding an IHE partner through the designation process (with exceptions for extenuating circumstances), although this is rare. ECHSs in urban areas tend to have more opportunities to make such a change because there are multiple college partners available in their vicinity.

The location of the ECHS with respect to the partner IHE also has implications for implementation of the model, particularly in regard to how college classes are offered (i.e., on the college or high school campus, or virtually) and when. For ECHSs not located on the IHE campus, the schools must plan scheduling and transportation strategically (e.g., allowing students to take college classes only in the morning, providing buses to and from campus at specific times). In the case of the SLC, college classes were offered at both the high school and college campuses; college professors traveled to the high school to offer the courses there. At the charter ECHS located blocks from the IHE, the principal drove students to and from campus several times a day, a strategy that may not be sustainable depending on how many students need to get to campus in a given semester and when they need to do so.

Whether an ECHS is located on or off the college campus has other implications in addition to logistics. Research has shown that being on the college campus creates a "power of place" for ECHSs that can positively influence student outcomes (AIR & SRI, 2009). ECHSs that are not on a college campus may have difficulty in instilling the same level of college culture or atmosphere that exists when an ECHS is on a college campus. At the SLC, it was apparent that students in the upper grades did not identify with the ECHS, likely as a result of their integration into classes at the comprehensive high school in grades 11 and 12. On the other hand, ECHSs on a college campus are more directly affected by college policies, in addition to the district's. Some interviewed teachers found the blending of high school and college to be challenging in terms of determining which institution's rules and philosophies to follow. As one teacher said,

> We professionally need a definition of what our school's rules are. The 'not being a high school', the 'not being a college' so what are we? What applies and what doesn't? What is going to be detrimental to our philosophy because we're borrowing it from both places?

The challenge of adhering to the policies of multiple governing bodies is not unique to ECHSs and applies to any high school located on a college campus. But because ECHS students are often integrated into traditional college classes, ECHSs also face the added conundrum of how to treat students who are seen as part of both the high school and college populations.

Target Student Population

The primary purpose of ECHSs is to increase the college-going rates of students typically underrepresented in higher education. Recruiting the proper target population, then, is one of the most important core elements for ECHSs. To become a designated ECHS, schools must recruit and enroll a majority of students who are at risk of dropping out of high school (e.g., English-language learners, economically disadvantaged, first-generation college-goers) and thus would not continue on to college. To create a personalized environment, the schools must be small, serving 100 students per grade in grades nine through 12, though they may serve grades six through eight as well.

All four schools visited served the intended population of at-risk students. At three of the ECHSs, the percent of economically disadvantaged students ranged from 75% to 98%, with nonwhite students ranging from 90% to 100%. Although one of the schools served a lower proportion of economically disadvantaged and minority students, it received students from its sister charter school who were screened as being at high risk. This ECHS was trying to bolster its recruitment efforts in the Hispanic community through outreach at a local Catholic church. In addition, other public schools in the region aided recruitment efforts by spreading the word about the school and suggesting to some of their students that they transfer to the ECHS. According to school staff, the community was aware that the school was intent on serving at-risk students and was happy those students had a place to go.

Even if students meet the target population criteria, however, they still may not be a good fit for the model. Two of the ECHSs (those currently serving grades nine and 10) came to realize the importance of student motivation, given that the model expects students to accelerate through the traditional high school curriculum. In their first year, both schools did not have strict admissions criteria. As newly formed schools needing to fill student slots, one needed to accept whoever was interested, and the other was assigned students by the district. According to respondents, the former had many students without the proper work ethic and with attendance and behavior issues, and the latter received students who did not want to be at the school and were not committed to the ECHS experience. As a result, both schools struggled with retention in their current sophomore classes. In their second years, both schools revised their recruiting and application practices to seek students with the necessary motivation and drive. For example, one of the schools began conducting more outreach among eighth-grade students, including interviews before the application process was undertaken to find better matches with the school. The required application included a teacher recommendation, test scores, behavioral data, and a handwritten essay. By the second year, both schools had a better understanding of the types of students who fit the model and had larger applicant pools from which to draw. These examples speak to the necessity of having a clear recruitment and application process in place before an ECHS accepts students.

Like the target population, all of the sample schools adhered to the size restrictions and did not exceed 100 students per grade. The ECHSs differed in their approaches to building their schools, however. The two schools on college campuses planned to add a grade each year and currently served only grades nine and 10. The other two started out with the full complement of grades, beginning in the middle grades; one served grades seven through 12 and one served grades eight through 12. At the former, students in grades 11 and 12 were integrated into the larger, comprehensive high school for remaining high school courses, which removed them from the small ECHS environment. However, the intention was for most of the students in grades 11 and 12 to take a majority, if not all, of their courses at the college by that point. The latter was restricted by the size of the building in which it was located and was serving less than 100 students total. It is unlikely that the school will be able to expand further unless it changes facilities.

P-16 Partnership

The partnership with a local IHE is at the heart of an ECHS because college classes cannot be offered without the cooperation and permission of the IHE. However, the relationship for ECHSs goes beyond merely allowing high school students to take college classes. In fact, state policy requires that all Texas high schools provide students with the opportunity to earn 12 college credits while in high school. In an ECHS partnership, both the school district and the IHE must make decisions about the ECHS and collaborate at the operational and instructional levels.

For state ECHS designation, both entities must submit a letter to TEA indicating their commitment to the ECHS model and to a collaborative partnership. Designated ECHSs must also enter into a current, signed MOU that outlines the partnership between the school and/or district and the IHE, including indication of how logistical and financial issues related to college course-taking will be handled. In Texas, districts or charters must pay for high school students' dual-credit tuition, books, and other fees unless the IHE waives those costs; covering some or all of the costs is one way the IHE shows its commitment to the ECHS. IHEs have also shown their commitment by initiating the partnership in the first place, securing space on campus for the ECHS, encouraging faculty to collaborate with high school teachers on curriculum and instruction, and/or providing a liaison to work directly with the ECHS on enrolling students in college courses.

Grant Initiation

Although all THSP ECHSs had to secure the commitment of an IHE to receive the grant, cases in which the IHE led the grant effort are indicative of a high level of buy-in from the IHE. At one of the sample sites, the IHE encouraged the district to apply for the grant. This IHE already had an ECHS on another of its campuses and wanted to create an ECHS on each of its satellite campuses. At another site, the district and IHE jointly piloted an ECHS program before applying for the grant. The college leader conducted extensive research on the ECHS during the process and remains committed to keeping the model "pure," in other words adhering to the model as intended by designation. These two ECHSs were located on the college campus, and the IHEs demonstrated further commitment by providing buildings for the schools.

In contrast, the only ECHS that reported issues with its IHE partner had initiated the partnership as part of the district superintendent's efforts to create an "ECHS district." The opening of the ECHS was the starting point for that process, and the district leader spearheaded the effort. He was subsequently displeased with the partnership, feeling the IHE paid more attention to its partnerships with other ECHSs. He indicated that, after forming the partnership with his ECHS, the IHE approached other larger, local districts to start ECHSs, presumably because they had more students. According to the leader, although senior IHE leaders had never visited his ECHS, they attended meetings at the ECHSs in the much larger school districts. The district leader also reported that the IHE did not provide the number of college classes the ECHS was promised. This example suggests that IHE buy-in and ownership of an ECHS may suffer if the IHE does not initiate the partnership or if the IHE does not view the partnership as meeting its needs (e.g., by not providing a large enough student base).

Faculty Collaboration

The strength of a partnership also can be demonstrated through the interactions of individuals across the institutions. For designation, the partnership must provide opportunities for ECHS staff and IHE faculty to collaborate. However, the depth of collaboration can vary significantly, from attending isolated PD opportunities together to participating in regularly scheduled planning meetings. For two of the sample schools, the two institutions had no formal or informal collaborations, although at one the ECHS teachers were aware that they should be collaborating. One teacher who taught at both the ECHS and IHE said,

> There really needs to be alignment in the curriculum and content instruction between [the ECHS] and [the IHE]. I teach calculus III … [at the IHE] and I adopted Marzano for college classes. I found that I have students in calculus III that couldn't pass an Algebra II test.

Some ECHS staff at the same school said they had not collaborated because their students were not yet taking college classes. Interaction also could have been hindered because, according to ECHS staff, IHE faculty members were hesitant to have high school students in their classes, believing they would not be capable of completing the work. One teacher was eager to see how collaboration might change once high school students were enrolled in college classes and IHE faculty saw the high quality of their work. In one case, the college liaison worked with faculty at the IHE to encourage their participation. About soliciting faculty buy-in, the liaison indicated,

> [It did] not happen overnight. I knocked on those doors plenty of times… You have to have the buy-in from faculty so that you can connect them to the high school faculty in the same discipline so they can work together and develop the curriculum properly to get the college readiness standards implemented from the freshmen year on… It's been very challenging but I kept knocking on doors 'til I found the right connections, the right matches.

In addition to agreements among leadership, these examples suggest the need for both ECHS and IHE faculty to espouse the idea of having high school students in college classes and to commit time for collaboration across the institutions.

One ECHS on a college campus provided an example of regular, formal collaboration. The ECHS teachers met with college faculty weekly to discuss curriculum, rotating the teachers that met each week so not all teachers were away from the school at once. As a result, each teacher met with his or her college counterparts every three weeks. The principal indicated that cooperation and communication differed by academic discipline, with some disciplines, the math and English faculty in particular, meeting and trading ideas more frequently than others. Having scheduled time does not ensure that collaboration will be productive, but it does open lines of communication between the faculties of the two institutions. Finding time to collaborate may be easier for ECHSs located on the college campus because neither the high school staff nor the college faculty has to allow for travel time in addition to meeting time.

College Liaison

Although not required for designation, the evaluation of the national ECHSI found that a college liaison with sufficient time dedicated solely to the ECHS is a sign of a committed IHE partner and is critical to successful implementation (AIR & SRI, 2009). The liaison, typically a vice-president, dean, or department head based at the college, is often central to joint decisionmaking by the two institutions, helps in scheduling ECHS students' college classes, and eases students' transition to the college campus by providing support while they are there.[44]

Three of the schools visited had someone in this position, but only one of the ECHSs, located on a college campus, had an involved college liaison. That liaison researched the early college model before implementation, was available to answer ECHS staff questions, participated in all ECHS network activities (see the Network Supports section below), and has

[44] The college liaison can be an employee of the district or the IHE; liaisons are most frequently IHE staff members.

been pivotal to the success of the school. The liaison noted, “I have a true passion for this school. I am connected to this school from my heart. This was our child. We believe in it.” As mentioned above, the liaison was instrumental in forging connections between ECHS and IHE faculty and in deepening their partnership beyond just allowing high school students to take college courses.

In contrast, some liaisons may have little interaction with the ECHS other than scheduling classes for student, especially if only a small percentage of their work day is devoted to serving as the liaison, as was the case for one ECHS. Another ECHS not located on the college campus limited the college liaison’s role by design to encourage students to become comfortable with taking responsibility for themselves on campus (e.g., by registering for college courses and picking up their textbooks at the college bookstore). With this strategy, students became aware of the costs of both courses and texts (although invoices were sent to the principal) and thus of the value of the ECHS. One ECHS had no formal liaison when visited and relied on a teacher who taught at both the ECHS and the IHE to facilitate the link between the two institutions. This teacher felt the partnership with the IHE was weak, but acknowledged that having a liaison was not a focus thus far because students were not yet taking college classes. However, research has found that engaging at the beginning of the partnership a college liaison who knows both IHE and ECHS faculty and is aware of how processes work at both institutions facilitates college course-taking and overall relationships later on (AIR & SRI, 2009).

Despite the various ways the IHE partner can show its commitment to the ECHS, some ECHSs believed that they did not receive the IHE support they had expected. For example, as alluded to earlier, for an ECHS that had both an MOU and a college liaison, the district leader felt that the IHE was paying more attention to its partnerships with ECHSs in other districts and had not provided the number of college classes the ECHS was promised. Thus, although an MOU can outline what components need to be in place, it does not guarantee a strong partnership. Often it is up to individuals to ensure that those components are implemented as agreed to. A strong partnership can often be attributed more to a good relationship between institutional leaders than to an MOU, as the national ECHSI evaluation demonstrated. That evaluation found that an MOU can lose its strength if the individuals who signed it leave the school or college; to ensure the sustainability of the partnership, the new leaders must be educated about the MOU and program (AIR & SRI, 2009). As THSP grantees mature and turnover occurs, monitoring the ongoing strength of ECHS-IHE partnerships will be important.

Rigorous Curriculum Plan

The rigorous curriculum plan is unique to and vital for the ECHS model. As noted, ECHSs are designed to allow high school students to earn an AA or up to 60 transferable college credits while working toward their high school diploma. They must have a comprehensive curriculum plan that outlines how and when students will earn the college credits. To ascertain if students are ready to enroll in college courses, ECHSs must administer a college placement exam to all incoming freshmen, with the goal of enrolling students in college courses as early as ninth grade.[45] With this plan, high school classes must use appropriate instructional strategies and be rigorous enough to prepare students academically for the college

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45 Designated ECHSs are eligible for exemption from the dual-credit restrictions, and students can take college courses beginning in the ninth grade. In other high schools, HB 1 (79th Legislature, Third Called Session, 2006) stipulates that students cannot begin taking college courses until the eleventh grade.

courses. According to ECHS PD documents, "Engaging lessons using the instructional strategies [promoted by the ECHS network] and a well-designed curriculum together will enable all students to meet the challenge of a rigorous early college program of study." This section describes the sample ECHSs' approaches to preparing students for college through high school instruction and to enrolling students in college courses.

High School Instruction

Although the designation process does not specify pedagogical approaches that schools must use as they implement the rigorous curriculum plan, the ECHS network promulgates six instructional strategies targeted at raising student capabilities to the high level required to succeed in college courses (see Exhibit 4-2).[46] As described in ECHS PD documents, these strategies "offer a framework that when used across content areas and grade levels, enables all students to successfully transition to college courses while enrolled in high school." Teachers base their units on what will be expected of students in college classes while still addressing what students need to know for the TAKS. Through the strategies, teachers engage students in higher levels of academic discussions and inquiry, and help them access and understand more difficult material.

Exhibit 4-2
Six Instructional Strategies

Collaborative Group Work brings students together for collective inquiry. Activities are designed so that students with diverse skill levels are supported and challenged by their peers.

Writing to Learn helps students develop their ideas, critical thinking, and fluency of expression as they experiment every day with written language.

Literacy Groups use specific roles and guidelines to increase student engagement with a variety of texts across content areas and raise the level of discourse.

Questioning challenges students and teachers to use questions as a way to open conversations and further intellectual inquiry.

Scaffolding encompasses a range of techniques such as pre-reading activities and graphic organizers to help students connect prior knowledge to challenging new concepts.

Classroom Talk uses class discussion to develop students' thinking, listening, and speaking skills, and promote a supportive classroom environment.

The four ECHSs visited for this evaluation were only in their second year of operation. Therefore, they had only begun the first step of the process, which consists of identifying one staff member to be trained in the six instructional strategies who then becomes an internal instructional coach (see the Networks Supports section for more information on the training). The instructional coach's role is to work with teachers to plan units based on his or her

[46] For more information, visit http://www.thsp.org/cms/One.aspx?portalId=274785&pageId=5162654

knowledge of college freshman-level course expectations and of the high-level analysis skills required in college classes.

At the time of the visit, one school had just finished training a teacher to serve as the instructional coach, but she had not yet done much with other teachers. At another school, the internal coach was just beginning to work with teachers. She described her role as helping

> the other teachers work on instructional strategies and working together. … [as] I was telling them this morning, they plan a lesson, we look at what's going on in the class. I observe and record what's going on, and we try to improve on what's there. And then come back and talk about it.

Teachers in this school were quite positive about the initial support they received from the internal instructional coach. A teacher described a strategy that the coach had recently shared to facilitate independent learners in her class:

> The way that I have my desks grouped is in fours. If … [students] have a question, they first need to ask their group and then me. So they can try to help each other out. I put a strong person in each group and [for] other [students] I will put them with someone a little higher and [who] won't get frustrated with them asking questions.

At another ECHS, the instructional coach had a "free" teaching period in which he supported teachers on the use of the six instructional strategies through observing classes and helping them with lesson planning.

Unlike the other three ECHSs, the ECHS in the office building used nontraditional pedagogical methods in the form of an online and self-paced curriculum program, and had to modify the six instructional strategies to fit this context. Teachers served as facilitators, rather than instructors, working with students individually as needed. Students, for their part, had to take responsibility for their own learning and learn writing, studying, and time-management skills—all skills that aid in a successful transition to college. Because the school used one-on-one instruction in the content areas, collaborative groups were used to teach study skills. One teacher mentioned collaborating informally with the internal coach to discuss students' performance on the coursework and different approaches they may want to take when working with the students and scaffolding their learning.

Given that the instructional coaches were only beginning their work, the four schools did not appear to be using the six instructional strategies consistently, and teachers did not refer to them when asked about their instructional approaches. Although teachers did not articulate specific terms from the six instructional strategies, at the ECHS where the coach had a free period to observe classrooms, some teachers mentioned approaches that reflected those strategies. For example, one teacher said his vision for instruction is "that it's well-scaffolded, it builds on the concepts they already have in a logical structured way so that students can see the same patterns recurring in math, science, social studies." The school-within-a-school ECHS had a unique challenge in that eleventh- and twelfth-graders took their high school classes at the comprehensive high school, whose teachers had not received coaching or training on the six instructional strategies and had different definitions of high-quality instruction than the ECHS teachers did. This example raises the issue of how to deal with instruction when students take high school courses outside of the ECHS.

Course Enrollment

In addition to high school classroom instruction to prepare students for college, schools used a variety of approaches to transition students from high school to college courses. All schools in the sample had a curriculum plan that outlined how many college courses students should take each semester to meet the 60-credit goal, but the plans varied in terms of denoting the exact college classes that students should take. For example, one school let students' career plans dictate the classes they took, whereas at another school all students took the same college classes in tenth grade. All of the schools, however, were taking a gradual approach to enrolling students in college classes, starting students in a few elective courses in the lower grades and then adding more academic college courses as they progressed through the grades. (Exhibit 4-3 describes one school's approach.) A college liaison reasoned,

> We want to get them on a path so that a 60-credit hour Associate's degree is possible. We are gradually phasing them into only taking college classes by their eleventh- and twelfth-grade years. We start them out with electives because it gets them used to the transition to the higher education expectations.

Because the sample ECHSs were in their second year of implementation, it remains to be seen whether students will actually earn the full 60 credits.

Exhibit 4-3
Introducing College Courses to Students at One ECHS

> One ECHS has a carefully planned course of study for students that gradually introduces them to college. Students take a prep course for the college placement exam in ninth grade. In the second semester of tenth grade, they take their first college course, a physical education class taught only to tenth-graders by a college instructor on the college campus. The following summer they enroll in an "Introduction to College" course offered on the college campus. During the fall of eleventh grade, they begin taking college classes with matriculated college students, including a college speech class. Students continue to add college classes into their schedules as they progress until they take five college classes per semester as seniors.

Some teachers voiced concerns about students starting out by taking electives only. One problem cited was that not all elective courses count toward high school graduation requirements. One teacher said,

> One of my concerns: Have you seen the college classes these sophomores are taking? Art appreciation, music appreciation, kinesiology. They haven't taken a core subject yet. And I know they want to start them up but they're burning up their electives.

The electives may not adequately prepare students for the rigor of college core academic classes, lulling them into a false sense of security about college courses. Teachers felt that monitoring student performance closely as they began to take the more difficult core classes was therefore needed.

At least one ECHS had trouble enrolling its students in the requisite number of college courses because they could not pass the college placement tests (another reason for enrolling students in elective classes first, given that those classes do not require a placement exam). Because the ninth-grade students struggled with the placement exams in the first year of implementation, the following year the ECHS instituted a freshmen review class for the college placement exam. As a result, nearly all of the students in that class passed the exam. Another school struggled with meeting the cost of having every student take the college placement test. Their college partner petitioned the state to allow it to become a test site and was able to reduce the cost from $30 to $10 per test.

Another challenge was having access to courses that fulfilled the curriculum plan. For example, one ECHS was partnered with a technical college that did not offer enough academic courses. To compensate, the school worked with another local college that offered courses not available at the partner college. Such a challenge could be problematic for ECHSs in remote areas that do not have multiple colleges to work with and underscores the importance of access to online courses. To fill the gaps in course availability, the state created the Texas Virtual Schools Network to offer online dual enrollment courses taught by faculty from universities across the state. In addition, recent state legislation allows school districts to seek courses outside their assigned community college service area if district needs for a course cannot be met locally; this policy may make it easier for schools to access necessary courses.

Student Supports

The pace of the curriculum and accelerated access to college necessitate that ECHSs provide enough academic and social-emotional support for the target population to enable them to succeed. Designation requires a comprehensive set of academic and social supports, including those that foster college-going culture, provide a personalized learning environment, offer regular access to IHE resources, and show a commitment to parent and community involvement.

Two of the four visited schools had fairly comprehensive support systems in place that focused on all facets—academic, social, and emotional—of the students' experience at an ECHS. Both schools were in urban areas and served only grades nine and 10, which perhaps allowed them to be more targeted in providing supports. One school, for example, offered regular tutoring before and after school, on Friday nights, and on Saturdays; advisories twice a week (students kept the same advisory teacher for all four years); study skills classes three times a week; review classes for the college placement exam; a guidance counselor; and individual interventions by teachers. In the advisories, teachers worked with students to acquaint them with appropriate college behavior and expectations. The principal said, "Teachers are to make sure kids are meeting obligations of the syllabus, completing projects, helping them to deal with college issues." The other school, whose supports are illustrated in the text box below, provided an example of how individual teachers can focus tutoring sessions on furthering the skills of all students, not just those who are struggling. In his afterschool tutoring sessions, one teacher gave students who already understood the material bonus points for serving as tutors. Other students received credit for coming to the sessions and trying; those who succeeded in understanding the material were allowed to replace a grade that needed improvement. This teacher's goal was to involve all students in each other's learning. (Exhibit 4-4 details one ECHS' comprehensive approach to supporting students.)

Exhibit 4-4
Comprehensive Student Supports at an ECHS

One ECHS provided a comprehensive set of supports, including:

- A tiered program for struggling students that allowed for modifications and interventions to be tailored to individual student needs, including parent meetings
- A program that required students to work during lunch if they had not turned in an assignment and to miss club meetings if necessary
- Tutoring four days a week after school
- 90 minutes of support time every Friday
- College placement test preparation
- A career connections class for ninth-graders
- A study skills class and SAT/ ACT preparation class for tenth-graders
- Student study groups and support networks similar to those used in college.

One of the benefits of the ECHS support system is that students have access to supports at both the high school and the IHE. With a college ID card, ECHS students can use all available college resources, like writing and math labs. In general, though, students were more likely to use supports offered through the high school than those at the IHE. This finding corroborates the national ECHSI findings that students are more comfortable receiving supports from the ECHS (AIR & SRI, 2009). In addition to students identifying with and feeling more comfortable in the high school, part of this phenomenon may result because supports in high school are often required or more readily available, unlike college where students must seek supports on their own. Indeed, ECHSs have found that they have had to make certain supports mandatory to get students to use them, particularly students with less intrinsic motivation. For example, at one ECHS that was unable to use a strict application process the first year but did the second year, teachers reported that the first class of students used support services less than did the subsequent class. Teachers hypothesized that students in the first class did not have the same work ethic or commitment to the ECHS as the following class, who felt compelled to use the supports to achieve success. Schools in the sample required certain supports for individuals based on performance or for all students by design (e.g., through advisories). For example, one school made a minimum of one day per week of tutoring mandatory for students who had a 79 average or below in any class; doing so ensured that students received the help they needed. Another school scheduled tutorials every afternoon for all students.

It is easier to determine students' performance and identify when help is needed in high school classes; in college, students may be assessed only through a midterm and a final exam. Students must therefore take it upon themselves to approach their college instructors to learn how they are doing and then use their own initiative to obtain help. As one teacher described,

> Communicating with their professors is their largest issue at the college. Here on the [ECHS] campus, we constantly keep them aware of what their grades are, what their progress is. At the college level, you have to seek it, it's not given to you. They just give you a midterm grade and exit grade. We've had some students who have failed their courses or got lower grades than desired

> because they assumed they were doing fine. Here if they get 80 or below, we let them know. We're trying to get the kids to understand that they have to go seek that info, make themselves known to the professor.

Some of the ECHS supports are designed to help students learn how and when to use the college supports. One of the ECHSs in the sample used advisories to help prepare students for college expectations and to encourage them to be more proactive on the college campus. One teacher reported,

> During advisory, we sit down with them and help them with their assignments. We talk to them not about answers but resources. We tell them they have the best of both worlds because they have their college and high school resources. We … tell them to do the assignment first, then try tutoring centers at the college or tutoring sessions…. We tell them to ask the English teacher on campus to review their papers.

This example suggests that advisories are effective venues for imparting this knowledge, given that all students are required to attend them.

Like other schools participating in THSP, ECHSs had to rely on teachers to provide the bulk of the supports for students. Because ECHSs were kept small by design, they had small staffs, and staff members were required to take on many roles. One school in the sample had no licensed guidance counselor, and teachers had to provide emotional support for students. Supporting students often reduced teacher time for planning, but sometimes by the teacher's choice. Ninth-grade teachers at one of the ECHSs visited used their common planning time to discuss students of concern and create a list of students to receive interventions. As one teacher described,

> We sit in a circle with students and do a round robin where each teacher talks to the student about their current average, common trends in their classroom behaviorally and academically, and how the student could improve, and then we have the students talk about concerns they might have and to derive their own intervention plan for how to do better in their classes. They type it up, sign it, teachers all sign it as a collaborative agreement for how to help them, and then two weeks later, we have a post-intervention meeting to see if everyone is adhering to their plans.

Other teachers felt unprepared to provide some of the supports they were required to implement, particularly in regard to college preparation. For example, one school offered students a college success class in which students learned skills they would need for college classes, such as note-taking, and received preparation for the college placement test. This class was taught by the high school teachers, but as one teacher said, "I teach science and I don't know anything about the [placement exam]. I had never been required to take [it], didn't know what it was until I had to teach a class… I need help teaching the college success class…" Many teachers ended up teaching students by relying on their experiences in college and did not receive explicit support for how to teach these kinds of classes.

The overarching challenge for supporting students in ECHSs was striking a balance between providing enough supports and preparing students to take responsibility for their own learning as they would in college. One teacher said,

> This was a little bit difficult for me at the beginning because what I see is you're teaching at a higher level, trying to get students very college-oriented so that they see how college classes are run… [It's] like a security blanket where we're at high school running a college course and if they need support, it's here for them, whereas that's not the case at the college. When I first got here, I was running my class as a college class and quickly found students were failing, so had to backtrack.

Teachers at another ECHS were concerned that some of the philosophies used in traditional high schools to help lower achieving students, such as remediation, were not appropriate for the ECHS, given the need to accelerate students. At this school, the leader and teachers were unanimous in their belief that students should teach other students as a way to take ownership and responsibility for their own learning as they must in the college setting.

The tension between motivating students to accelerate into and succeed in college courses and providing enough supports caused some staff to conclude that attaining 60 college credits in high school may not be possible for all students. Some of the ECHS staff interviewed felt that students completing even one college course would be a success and that such students would still be completing a more advanced, rigorous program than that offered at other, non-ECHS high schools.

Staffing

Given the unique goals of an ECHS, schools must hire leaders and teachers who have the appropriate skills, buy in to the vision, and are committed to supporting students through the rigorous curriculum plan. Schools must also effectively communicate the vision to staff and support them in its implementation by providing common planning time and opportunities for PD. Two schools expressed trouble in recruiting highly skilled teachers, particularly in math. One ECHS did not have difficulty attracting high-quality teachers because its new leader brought teachers with him in the second year, and the school became a place teachers in the district wanted to work.

The rigorous model, combined with the need for teachers to fill multiple teaching and support roles, meant that ECHS teachers' workload was particularly heavy. As one teacher said,

> You have to have a really strong work ethic here. You can get complacent at other schools, enthusiasm isn't there anymore… [I]f you have been out there in the teaching world for five, six, seven years, you really are not used to doing this kind of work.

The many roles expected of teachers can lead to their feeling overwhelmed and burnt out, resulting in turnover. One school lost two of its four teachers after the first year because, according to the principal, they had not known what the job would entail. Although such turnover posed a challenge for staffing and stability, some interviewees also said that it helped to weed out less committed teachers and allowed the school to hire teachers who were a better fit. The same principal explained, "I think after everyone has one year under their belt, they'll go out and spread the word … [about] what it means to work here, and will also inform administration regarding qualities to look for when hiring."

With all of the demands placed on ECHS teachers, they must have ample support and time to accomplish all of their tasks. The level of support teachers received in the four ECHSs in the sample varied substantially across schools and depended on the emphasis leadership placed on it. Leadership's commitment to teacher support was evidenced through time set aside in the schedule for teacher PD, planning, or collaboration and through permitting teachers to engage in external PD. At two urban ECHSs, teachers felt supported by leaders, had time to engage in PD, and had broad, robust systems of teacher supports. These two ECHSs had strong professional communities that provided teachers with ample common planning time and PD opportunities. At one school, teachers noted their principal's "open-door policy" and indicated they could approach him with any concerns. New teachers were assigned mentors, and teachers met regularly by department and worked together on interdisciplinary projects. Teachers also observed each other's classrooms to improve their teaching. One teacher explained,

> We do teacher rounds where we observe each other here. It isn't about a dog and pony show. …we want to see what you do every day, so instead of focusing on weakness we focus on strength and use that to make you a good quality teacher. We adopt each other's strategies as they are useful or relevant.

At the other school, teachers were encouraged to visit and observe each other's classrooms and to collaborate in and outside their departments. An instructional coach supported teachers during a free period every day, typically by observing classes and helping plan lessons. The guidance counselor also received support through regular meetings with the college liaison and other counselors in the area.

In contrast, even though teachers at a third school felt supported by the administration by being able to attend PD of their choice outside the district, they felt they had little time to participate in that PD or even collaborate with each other. At the fourth ECHS in the sample, teachers reported receiving no support from the leadership and were constrained from seeking PD outside of the district. Even within the school, it appeared that teachers needed to seek out information on their own. For example, regarding instructional support, one teacher said,

> I have a book one of the junior high teachers loaned me on cooperative learning, I picked up a book on behavioral management. …since [I] never taught before and it wasn't what I went to school for, when I first came in, they were like, "Here is the key and good luck." I was constantly online to find things.

As this section highlights, in a sample of just four schools, implementation of the ECHS model varied significantly. Sufficient supports are necessary for the schools to adopt and adapt the core elements appropriately. The next section describes the PD provided by TEA and CFT to help ECHSs implement the core elements.

Supports Provided by the Network

The supports provided to Texas ECHSs have changed over the course of the THSP. In the beginning, ECHSs funded by TEA received supports from TEA, primarily from site design coaches who worked with schools to address start-up issues and facilitated visits to model schools. ECHSs funded by CFT were initially members of the national ECHSI and received ongoing, extensive support in implementing the model from CFT and Jobs for the Future (JFF).[47] The designation process provided a way for TEA to connect all of the ECHSs in the

47 JFF is a national action/research and policy organization that serves as the lead coordinator, manager, and policy advocate for the national ECHSI.

state, both grantees and nongrantees, in one network and to offer consistent supports. Now, through membership in the network, designated ECHSs can receive the support of site design coaches, leader facilitators, and instructional coaches, visit and learn from other ECHSs in the network, and attend trainings and conferences provided by TEA, THECB, and CFT. CFT and TEA-funded ECHSs also receive additional supports to help them start up their schools. Through this support, TEA can better ensure that schools are implementing the model as designed. TEA and CFT are collaborating to provide more targeted supports, both for individual schools and across the ECHS network.

To supplement the support provided by TEA, in fall 2008 TEA expanded its partnership with CFT to provide PD to existing and newly TEA-designated schools. CFT began by providing support only to Cycle 1 TEA grantees. TEA then provided CFT with another grant in spring 2009 to provide PD to all 41 schools in the network. As part of its new role in supporting all ECHSs in the network, CFT is collaborating with JFF to ensure that all ECHSs receive extensive PD. This PD program includes direct school-level support from four leader facilitators and seven instructional coaches; visits to University Park High School in Worcester, MA, a school that has adopted a successful college-prep model; and trainings presented by CFT and JFF. All designated ECHSs, grantees and nongrantees, can apply for a grant from CFT, ranging from $4,000–$6,000, to fund their participation in this PD.

The following section describes the school-level and network-wide supports that the ECHS network provides to member ECHSs. It also examines schools' access to and use of those intended supports, as well as leaders' and teachers' perceptions of their value.

School-Level Supports

All ECHSs in the network receive individual supports at their school sites, although support differs slightly for grantees and nongrantees. For the duration of their TEA grant, ECHSs receive support from one of four design coaches who support schools during the start-up process by ensuring their compliance with grant requirements, facilitating the partnership between school districts and their college partners through an MOU, and assisting school staff in recruiting students and creating a curriculum plan that allows students to earn up to 60 credit hours or an AA degree. Although the type of coaching offered depends on individual school needs, design coaches typically visit or connect with schools at least once a month. All grantees are supported by coaches; some designated nongrantees may also receive support from the design coaches as needed, but support in those cases is more limited.

In addition to the site design coaches, CFT created an extensive PD program for schools. Given that the ECHS PD received from JFF varied before 2008, the program differs somewhat by recipient. ECHSs that have not participated in any JFF training or have not completed a full year of training send a small team of representatives to a three-day residency at University Park. Schools in their first or second years of JFF support receive support at the school-level from both a leadership facilitator and an instructional support coach. The leadership facilitators visit once or twice a month and primarily support ECHS principals in creating and implementing a strategic academic plan, developing a college-ready culture and college-ready classrooms, and identifying how best to employ the CFT-provided instructional coach. The CFT or external instructional coach typically visits the schools twice a month and primarily supports ECHS faculty in creating college-ready classrooms through implementation of an instructional program designed around the six instructional strategies. The coach provides PD workshops for all faculty, models best practices, conducts classroom observations, and facilitates peer observations.

As mentioned in the school implementation section, each school is supposed to identify one staff member to be an internal or school-based instructional coach who provides ongoing support to ECHS faculty in implementing the six instructional strategies. Because the instructional strategies provide an instructional framework aligned with college expectations, TEA and CFT strongly encourage schools to use these strategies, even though they are not required for ECHS designation. The school-based instructional coaches are teachers at the schools whom their principals select and who receive training through visits to University Park and the external instructional coach. The school-based instructional coaches need to be those "who will open their classroom to others" and who also feel empowered by their school leader to use the six instructional strategies.

The ECHS instructional coaching model uses a train-the-trainer design developed to build greater capacity in the state and at each participating school. Initially, JFF trains the facilitators and external instructional coaches, who in turn provide training for the internal instructional coaches so that each school has onsite coaching available. According to one CFT representative, "as the model builds out in year two and three, [we] will encourage the principal to identify a staff member in another subject area that could be a secondary internal coach to grow the model over the next two to three years." The goal is for schools to be more self-sustaining in implementing the six instructional strategies.

Network-Wide Supports

Along with the support at the school-level, CFT provides offsite support throughout the year where staff from all designated ECHSs can train together. These opportunities include PD workshops, visits to model ECHSs, and conferences.

For schools in the first or second year of support, staff from the CFT PD network team provide leadership training, internal instructional coach training, and math training for a lead math teacher from each school. The math training focuses on helping students master the key algebraic concepts necessary for success in college preparatory math. CFT staff determine the relevant audience for each training (e.g., instructional coach, principal) and work closely with school staff to ensure the ongoing participation of identified teachers in the training sessions. In some cases, CFT staff members have negotiated with district leadership to obtain permission for ECHSs to attend CFT-sponsored trainings. For example, if districts have their own math training, CFT might intervene to ensure ECHSs are not prohibited from participating in CFT math training opportunities offered to all ECHSs in the network.

The ECHS professional network training also includes site visits to established ECHSs in the state. For example, in February 2010, representatives from all ECHSs in the state visited one of two model ECHSs in different regions of the state to better understand how PD was being embedded into the school culture. However, according to a CFT representative, CFT staff make sure to inform participants before the visits "that no one has a perfect model."

The ECHS network has resulted in relationships among the schools across the state that share ideas and strategies about leading and teaching in an ECHS. A leader of one ECHS indicated that he had formed a smaller network of leaders he met through the larger network events. The leader "set up a meeting with all the area early college campuses with the goal of sitting down and sharing ideas and best practices… They will come here and we will sit down and have a four- or five-hour meeting." Given that the schools were at various stages of implementation, the school leader believed the sharing of ideas would be fruitful for all attendees.

Schools' Use of Supports

Visits to ECHSs revealed differing levels of access to and participation in TA. At the time of the visits, these schools had not yet received the expanded support from CFT, which began in spring 2009. According to interviewees at all the ECHSs visited, the main source of TA was through the TEA site design coach. Typically, school leaders were the most frequent recipients of the coaching. At some schools, the frequency of interaction with coaches ranged from daily contact between the coach and school staff or college liaison to monthly training sessions. This support had been useful for the schools. As one interviewee said, "We have a great TEA liaison who's been helpful... [The coach] helps to answer instructional, logistical questions, anything involving the ECHS." At another school, however, the school leader reported minimal interactions with the site design coach (and teachers there had no access to the coach). The site design coach indicated difficulty in scheduling times with the principal for the visits.

As mentioned in the implementation section, in addition to the TEA site design coach, all four ECHSs had identified an internal instructional coach who had started or was about to start training on the six instructional strategies for his or her colleagues. On-site support seemed to be more beneficial for teachers because many had limited time to attend external PD. At one ECHS with few teachers, the guidance counselor attended more PD than the teachers because they did not want to be out of the classroom. Those who did attend the offsite trainings were expected to share the information they learned with the other teachers.

Some schools reported visiting either University Park or other ECHSs in the state to enhance their understanding and become familiar with successful implementation of the ECHS model. Most interviewees found it quite useful to see how other schools were implementing the model. One district representative acknowledged the value of the site visit, but also pointed out that the University Park model did not directly translate to her ECHS's context. She said,

> I don't think that there is an overabundance of support … for getting a system in place for what an ECHS looks like in a rural environment. … The best thing as far as support we've seen as far as how to work in an ECHS has been the actual time spent … in the classroom at the University Park School and spent in the classrooms at different ECHSs in the state. However, [because] ours is just simply a different model [because we are rural] … we can use that piece here but this piece doesn't fit. It has been a challenge.

In cases such as these, schools must adapt what they learn at other schools to their own contexts. The individual school-level support provided by the TEA and CFT coaches is critical in helping these schools implement the program in a way that is faithful to the model but also takes into account contextual differences.

Given the complexity of the ECHS model and the variation in implementation of the core elements across schools, sufficient supports are necessary to help schools achieve the desired outcomes. The next section describes student outcomes across all ECHSs included in the THSP evaluation.

ECHS Effects on Student Outcomes

As a result of ECHS's main goal to accelerate students through the high school curriculum, gain them early access to college, and provide comprehensive supports, one would expect to see positive effects of the ECHS program on student outcomes, particularly as students progress through the model. The researchers analyzed ECHS effects for three student samples: (1) eleventh-graders in eight ECHSs that have been implementing the model for three years; (2) tenth-graders in 17 ECHSs that have been implementing the model for two or three years; and (3) ninth-graders at 25 ECHSs that have been implementing the model for one, two, or three years in 2008–09. The ECHS effects were estimated separately for ninth-grade nonrepeaters and repeaters[48] and tenth- and eleventh-grade former nonrepeaters[49] (simply referred to as tenth- and eleventh-graders hereafter). As noted in Chapter 2, a large number of ECHSs are new small schools. They were matched closely to comparison schools on key indicators but not exclusively to newly opened non-THSP schools because so few opened in the same year as the specific ECHSs. Therefore, these results should be interpreted cautiously.

In addition to looking at a snapshot of ninth-, tenth- and eleventh-grade student achievement between ECHS and comparison schools, the researchers also conducted growth modeling on TAKS standardized scores from eighth to tenth grade.[50] The analysis included ninth-graders in 2007–08 and tenth-graders in 2008–09 from 17 ECHSs and their comparison schools. Growth modeling enables a comprehensive study of the ECHS effect on students' overall progress in math by examining students' growth trajectories after their schools began ECHS implementation and including students who were at the school for only the ninth or the tenth grade, thereby making full use of the available data. Unless otherwise stated, all results discussed below are statistically significant at the 0.05 significance level (i.e., $p < 0.05$).

TAKS-Math, English/Language Arts, Science, and Social Studies Achievement

Exhibits 4-5 to 4-7 show the effect of the ECHS program on various 2008–09 TAKS outcomes across samples of first-time ninth-graders (nonrepeaters), tenth-graders who have been in the same school for two consecutive years, and eleventh-graders who have been in the same school for three consecutive years.[51] Ninth-grade nonrepeaters in ECHSs scored on average 24 and 14 points higher on TAKS-Math and TAKS-Reading, respectively, than their peers in comparison schools. These ECHS effects, combined with a pooled standard deviation

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48 Ninth-grade repeaters and nonrepeaters were analyzed separately because their prior achievement indicators are not comparable and cannot be included in the same model. The prior year achievement indicator is eighth-grade achievement for nonrepeaters ninth-grade achievement for repeaters. In addition, repeaters by definition have been exposed to the curriculum before, and being at risk, likely have different experiences at schools from nonrepeaters, e.g., are potentially less engaged or confident, or alternatively receive extra academic supports. Thus, ECHS is not expected to impact repeaters in the same way as nonrepeaters. However, the ECHS repeater analysis is not reported because the sample size is too small.

49 A large proportion (around 30%) of ninth-grade repeaters were promoted to their original cohort in the subsequent year and a larger proportion (around 50%) were promoted to their original cohort in two years. These ninth-grade repeaters do not belong to tenth grade in the following year or to eleventh grade in the year after. Therefore, repeaters are not included in tenth- and eleventh-grade analysis.

50 TAKS mathematics scores were standardized against the state average for eighth, ninth and tenth grade respectively. The standardized scores have a mean of 0 and a standard deviation of 1 for each grade.

51 The number of ninth-grade repeaters is too small to perform valid ECHS effect analysis, therefore ninth-grade repeaters are omitted from the analysis.

Ninth-grade nonrepeaters and tenth-grade students in ECHS had higher TAKS scores in all core subjects except tenth-grade English, higher growth rate in TAKS-Math, and higher likelihood of passing all TAKS than their peers in comparison schools.

of 227 points for mathematics and 170 points for reading, translates into small effect sizes of 0.10 standard deviations for math and 0.08 standard deviations for reading.[52]

Among tenth-graders, the ECHS program had positive effects on TAKS achievement in all subjects except in tenth-grade English, where no differences were found between students in ECHSs and comparison schools. Tenth-graders in ECHSs scored an average of 24, 21, and 28 points higher on TAKS-Math, Science, and Social Studies, respectively, than similar students in comparison schools. These ECHS effects, combined with a pooled standard deviation of 180, 171, and 173 points for mathematics, science, and social studies, respectively, translate into small effect sizes of 0.13 standard deviations for TAKS-Math, 0.12 standards deviations for science, and 0.16 standard deviations for social studies. ECHS also had a positive effect on the TAKS-Math growth rate from eighth to tenth grade. The growth rate for TAKS-Math standardized scores was 0.02 points higher for ECHS students than their comparison school peers, who had a growth rate of 0.

Reflecting the positive results in ninth- and tenth-grade TAKS achievement, ECHS also had positive effects on the likelihood of passing all TAKS subjects in ninth and tenth grades compared with comparison schools. Ninth-grade nonrepeaters in ECHSs were twice as likely to pass both TAKS-Reading and TAKS-Math and ECHS tenth-graders were 2.3 times more likely to pass TAKS in all four subjects[53] than were their comparison school peers. The probability of passing both TAKS-Math and TAKS-Reading for an average ninth-grade nonrepeater is 80% in ECHSs versus 73% in comparison schools, and the probability of passing all core TAKS for an average tenth-grader is 68% in ECHSs versus 59% in comparison schools

No differences in eleventh-grade TAKS performance were evident between ECHS and comparison schools, and ECHS eleventh-graders had the same likelihood of passing all TAKS as their counterparts in comparison schools.

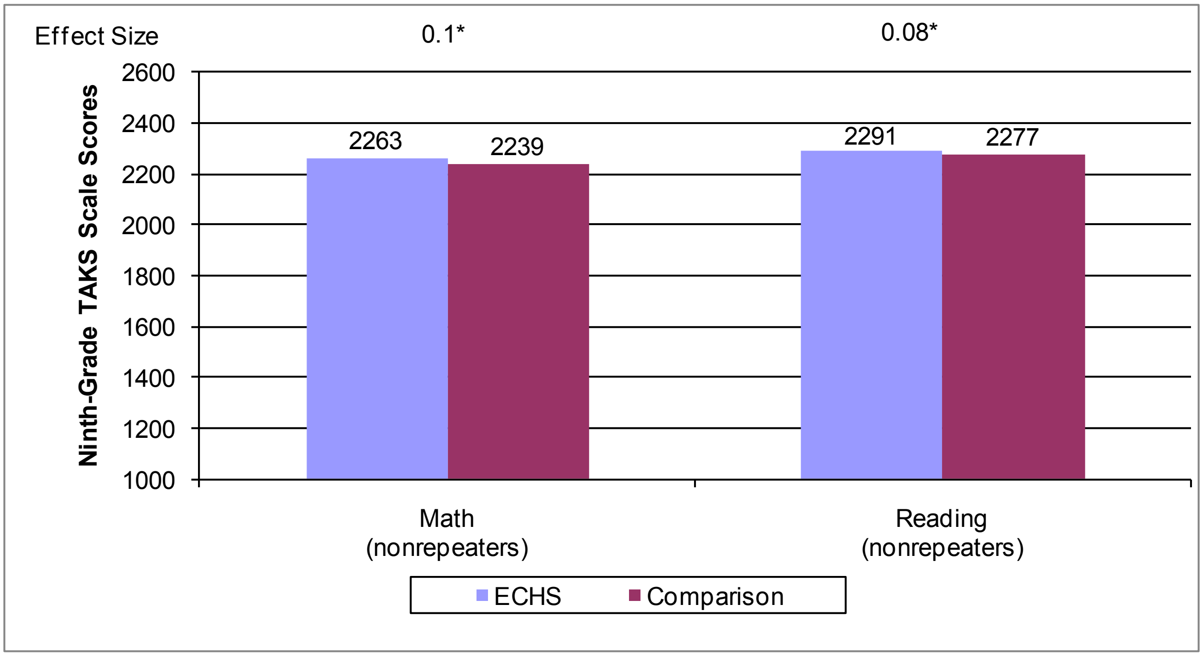
The positive results on ECHS ninth-grade and tenth-grade TAKS outcomes may indicate that ECHSs are successfully implementing an academic, college-going culture with serious attention to supporting students' achievement, particularly in the earlier grades to ready them for academic college-level courses in their junior and senior year. It is somewhat surprising that ECHSs serving eleventh-graders in 2008–09 did not perform better than their comparison school peers; however, that student cohort was the first one at the first ECHSs opened. The improvements with ninth- and tenth-grade may reflect both individual ECHSs serving later

52 The effect size was calculated by dividing the coefficient of the THSP or program indicator by the pooled within-group standard deviation of the outcome at the student level (What Works Clearinghouse, 2008). Note that both the *THSP effect* and the *effect size* are presented throughout the discussion of results. The former is the raw differences between students in THSP and comparison schools, whereas the latter puts all the raw differences on the same metric. Unlike THSP effects, effect sizes can be compared across different outcomes and indicate the strength of the intervention effect. Consistent with standard practice, the evaluation team considers an effect size of 0.20 as small, 0.50 as moderate, and 0.80 as large. Therefore, 0.10 and 0.08 are indeed small effect sizes (Cohen, 1988).

53 In the "Passing TAKS in four subjects" model, the dependent variable is dichotomous (equal to 1 if a student passed all four exams and 0 otherwise) rather than a continuous TAKS scale score. Consequently, the coefficient for such model is interpreted in terms of an odds ratio.

cohorts of student better and improved network supports for ECHS implementation over time (discussed in Chapter 4).

Exhibit 4-5
ECHS Effect on Ninth-Grade TAKS Scores in 2008–09



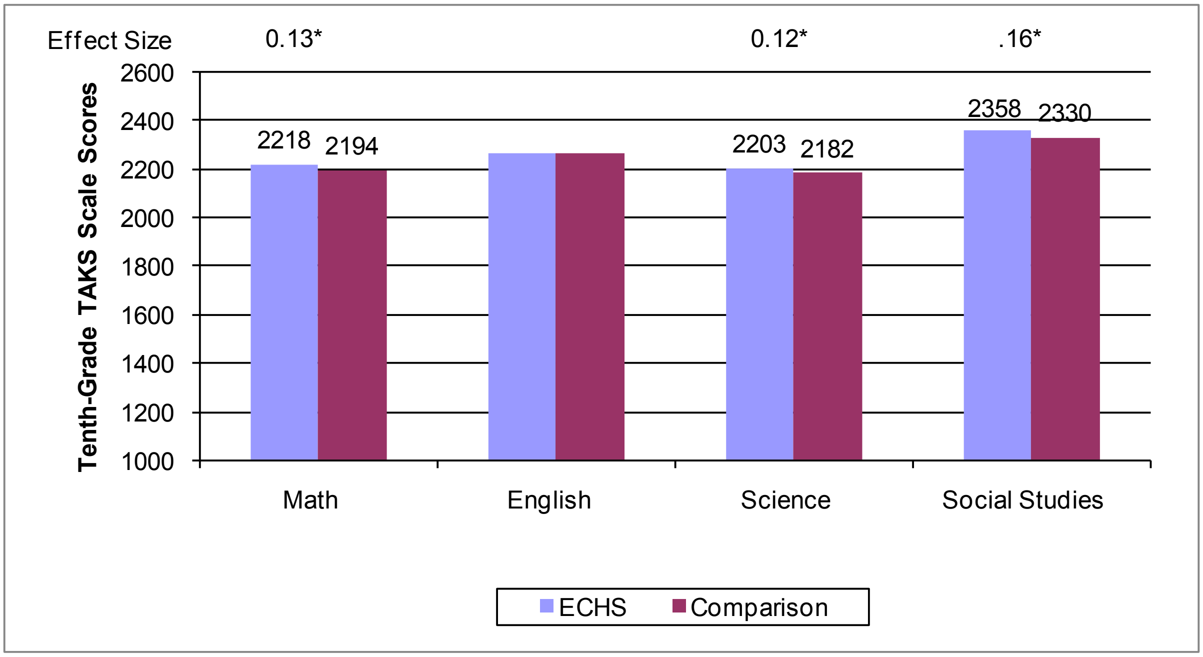
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*$p < .05$, ◊$p < .10$.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

2,109 students from 25 ECHS schools and 18,858 students from 109 comparison schools are included in the analyses.

Exhibit 4-6
ECHS Effect on Tenth-Grade TAKS Scores in 2008–09



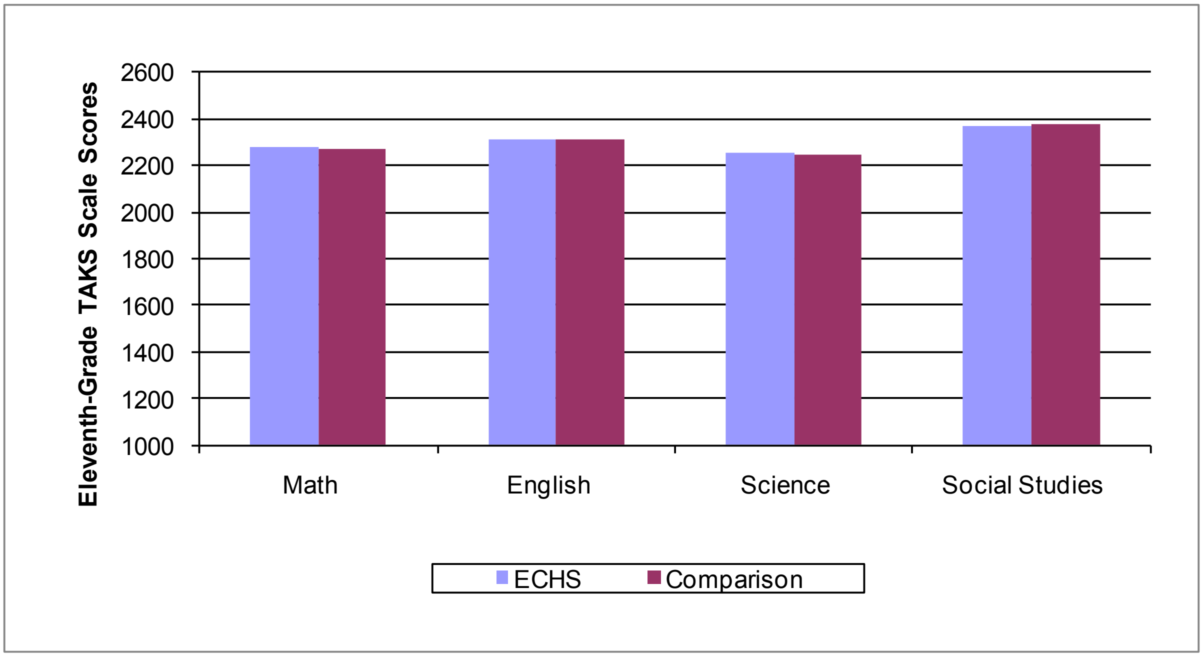
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*p < .05, ◊p < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

1,285 students from 17 ECHS schools and 11,123 students from 93 comparison schools are included in the analyses.

Exhibit 4-7
ECHS Effect on Eleventh-Grade TAKS Scores in 2008–09



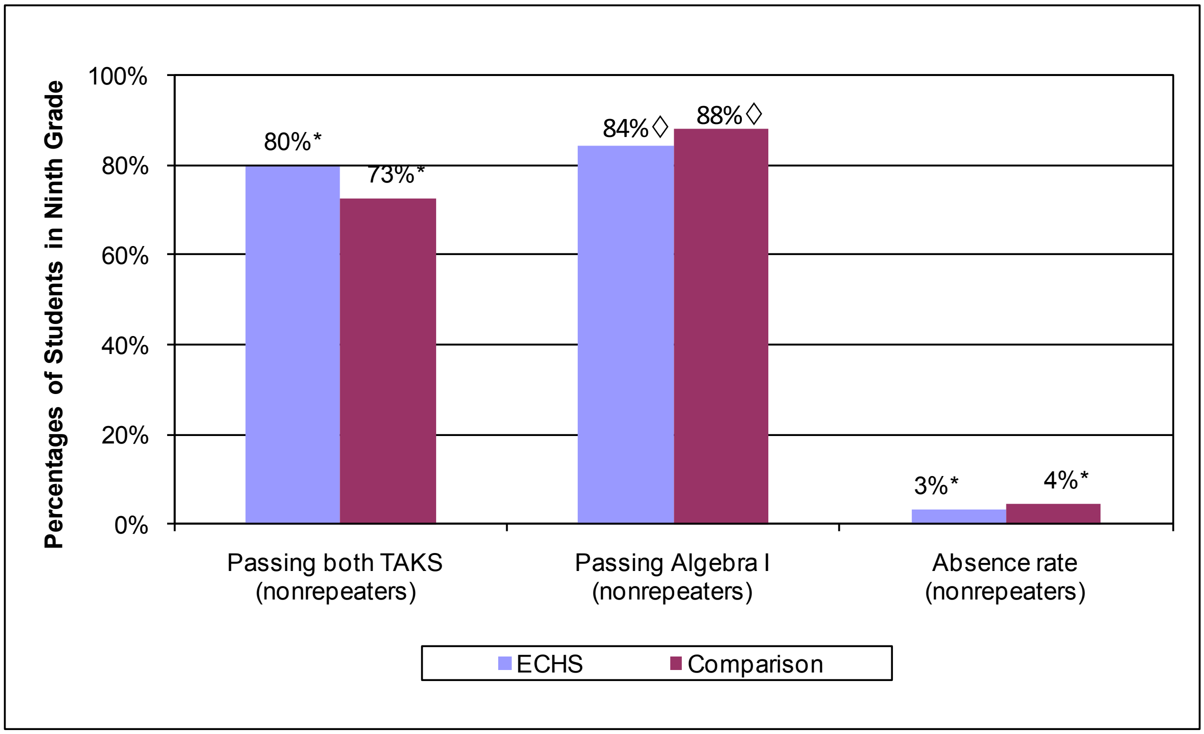
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*p < .05, ◊p < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

733 students from 8 ECHS schools and 6,278 students from 46 comparison schools are included in the analyses.

Exhibit 4-8
ECHS Effect on Ninth-Grade Outcomes Other than TAKS Scores in 2008–09



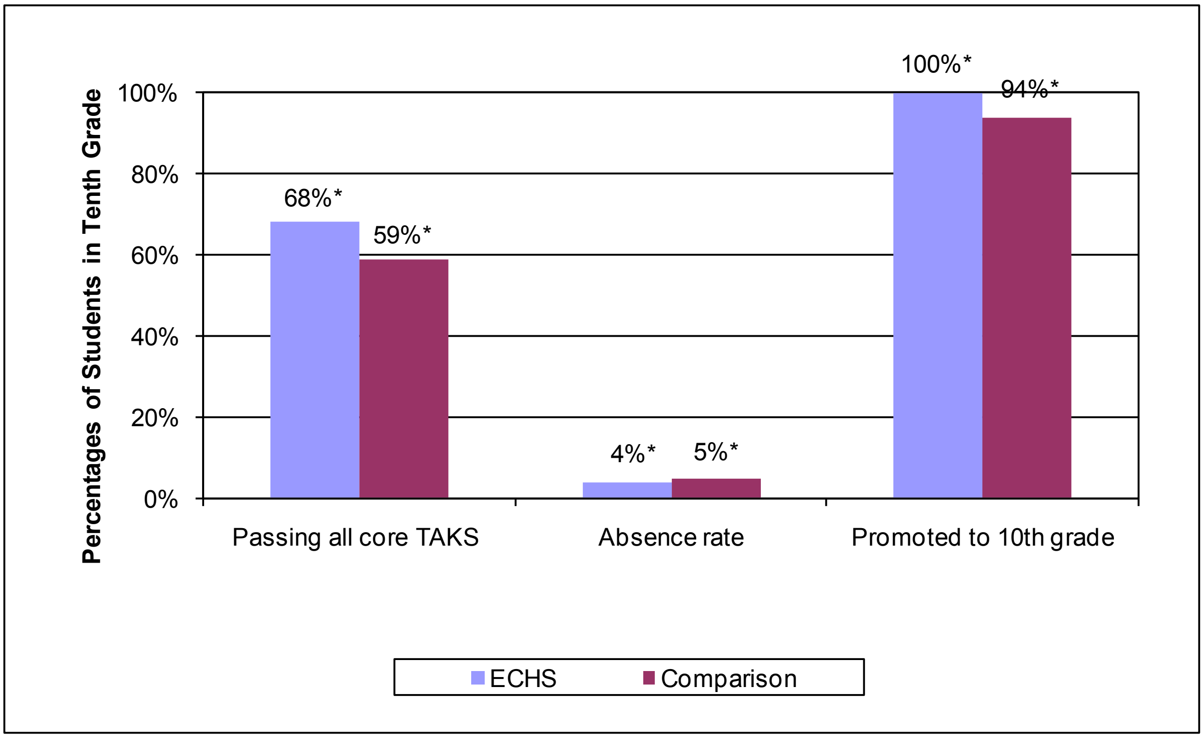
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*p < .05, ◊p < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

2,109 students from 25 ECHS schools and 18,858 students from 109 comparison schools are included in the analyses.

Exhibit 4-9
ECHS Effect on Tenth-Grade Outcomes Other than TAKS Scores in 2008–09

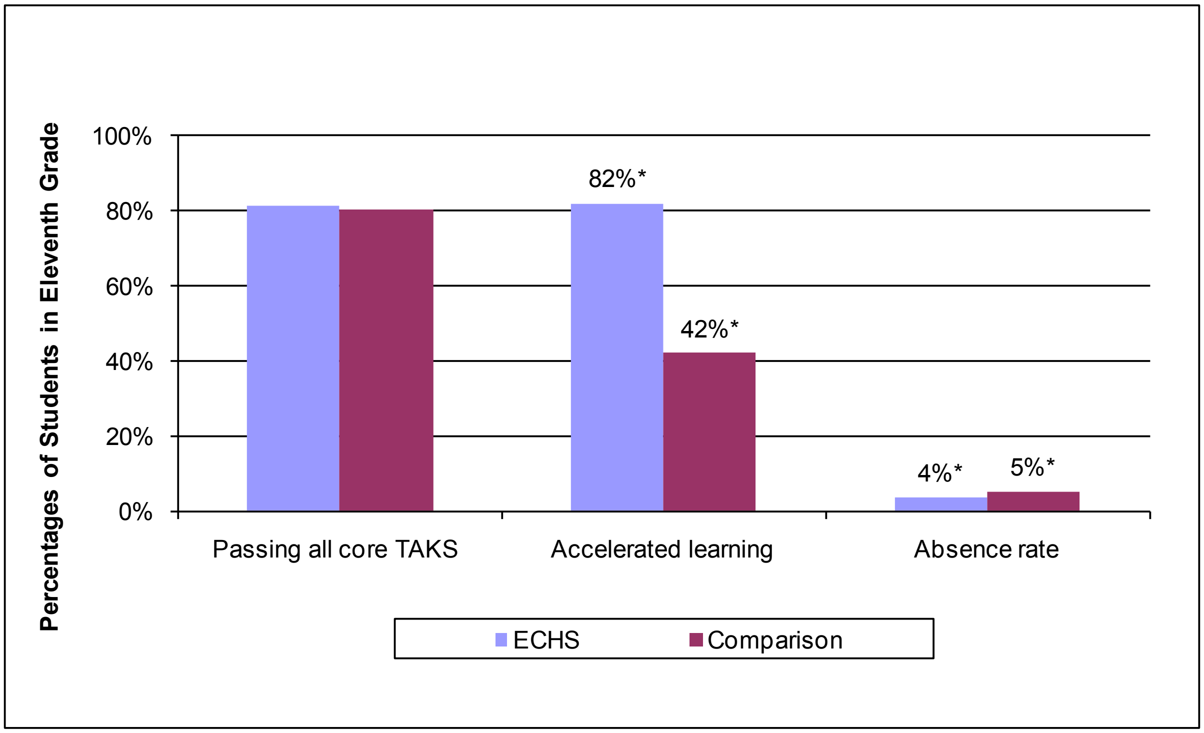


Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*$p < .05$, ◊$p < .10$.

1,285 students from 17 ECHS schools and 11,123 students from 93 comparison schools are included in the analyses.

Exhibit 4-10
ECHS Effect on Eleventh-Grade Outcomes Other than TAKS Scores in 2008–09



Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.
*$p < .05$, ◊$p < .10$.
733 students from 8 ECHS schools and 6,278 students from 46 comparison schools are included in the analyses.

Attendance

The ECHS program had a positive effect on attendance for ninth-grade nonrepeaters and for tenth- and eleventh-graders. Ninth-grade nonrepeaters and tenth- and eleventh-graders in ECHSs had a lower likelihood of being absent than their peers in comparison schools (Exhibits 4-8 to 4-10). The probability of being absent for an average ninth-grade nonrepeater is 3% in ECHSs versus 4% in comparison schools, and 4% in ECHSs versus 5% in comparison schools for both tenth- and eleventh-graders. The higher attendance rates for ECHS students likely reflect both the academic culture of the schools and students' focus on going to college, the reason many ECHS students chose to enroll there. As with the other small schools under THSP, ECHS staff also attribute the small school size for contributing to their ability to know their students, motivate them to come to school, and follow up on them if they are absent.

Other Outcomes

Ninth-grade nonrepeaters in ECHSs had a marginally significant ($p < .10$) lower likelihood (67%) of passing Algebra I in ninth grade than their peers in non-THSP schools (Exhibit 4-8). The probability of passing Algebra I in ninth grade for an average ninth-grade nonrepeater is 84% in ECHSs schools versus 88% in comparison schools. It is unclear why ECHS students would have a lower likelihood of passing Algebra I. One possible explanation is that because the dataset does not capture course completion data beyond the 180-day instructional year, any credits earned in Algebra I during an extended school year at ECHSs would be missed.

ECHS ninth-graders had much higher likelihood (14.5 times) of being promoted to the tenth grade than comparison school peers (Exhibit 4-9). The probability of being promoted to tenth grade for an average student is 100% in ECHSs versus 94% in comparison schools. ECHS also had a positive effect that eleventh-graders are 15 times more likely to participate in accelerated learning courses such as AP, IB, or dual credit than peers in comparison schools (Exhibit 4-10). The probability of participating in accelerated learning for an average student is 82% in ECHSs versus 42% in comparison schools. This much higher likelihood is consistent with the chief ECHS strategy, to expose students and help them succeed in college-level classes during high school.

Longitudinal Comparison of ECHS Effects

The 2008–09 outcomes analysis provides a snapshot capturing the cumulative effect of ECHS on student outcomes. Likewise, the first annual report (Young, et al., 2010) provided a snapshot of the ECHS effect on student outcomes in the previous year. Two approaches to comparing the 2007–08 and 2008–09 results can trace the performance of ECHSs over time: (1) looking at how ninth-graders in one year fare compared to ninth-graders in the next year and similarly looking at how tenth-graders in one year do compared to tenth-grades in the next year (i.e., cross-sectionally); (2) examining how students in the same cohort perform over the years, i.e., as ninth-graders in 2007–08 and then as tenth-graders in 2008–09. The first approach can indicate whether ECHSs improve in serving students at specific grade levels, and the second approach sheds light on when during a typical student progression through high school ECHS has effects on student outcomes and whether the effects are sustained over time. Both kinds of comparisons are presented below.

Comparing Different Cohorts of Students

A positive trend appears when considering the statistically significant ninth- and tenth-grade outcomes in 2007–08 and 2008–09. For ninth-grade nonrepeaters, ECHS schools had a positive effect on TAKS-Math, TAKS-Reading, and absence rate, a great improvement from 2007–08 when ECHS had no effects on these outcomes.

ECHS had a positive effect on tenth-grade TAKS-Math, TAKS-Social Studies, passing all TAKS subjects, and being promoted to tenth grade in both 2007–08 and 2008–09, suggesting that the ECHSs were able to sustain their students' achievement vis à vis the comparison schools. From 2007–08 to 2008–09, ECHS also improved in comparison to matched schools in TAKS-Science and attendance.

These comparative results suggest sustainability and improvement in student outcomes for ECHS schools. These observations may be a start of a trend where ECHS schools serve each successive cohort of students entering the school better than the prior cohort, as compared to comparison schools. Note that more ECHSs were included in the 2008–09 outcomes analysis than in the 2007–08 analysis. Therefore the improvement in 2008–09 may be a combination of both stronger practice in ECHSs beginning implementation in prior years and better performance vis à vis comparisons among the schools beginning implementation in 2008–09.

Comparing Same Cohorts of Students over Time

The comparison of students in the same cohort over time presents a similar upward trend as the above discussion. ECHS tenth-graders outperformed their comparison school peers in 2008–09 in TAKS-Math, whereas they had not done so as ninth-graders the year before. The lack of an ECHS effect on TAKS-Math growth rate from eighth to tenth grade (discussed above) given its positive effect on tenth-grade TAKS-Math in 2008–09 may possibly be attributed to the lack of ECHS effect in ninth grade during the prior year, which in turn highlights the improvement of ECHS in serving students over time. ECHS also had a positive effect on tenth-grade attendance in 2008–09 versus no such effect on ninth-grade attendance rate in 2007–08. These results provided evidence that ECHS schools can sustain or improve student outcomes over time.

Conclusion

Over the last year, the ECHS network has worked to provide clarity about the model and offer assistance to help schools implement the core elements. TEA and CFT have collaborated to increase the amount of support that all designated schools can receive. At this point, our site visit data suggest that ECHSs located in urban areas were offering more supports for both students and teachers. Despite variation in how the four ECHSs were implementing all of the core elements, they had all enrolled students in college classes, though at this stage in their development it is premature to determine if students will be able to graduate with 60 credits.

However, early outcomes data showed that attending an ECHS had other positive effects on student performance. The ECHS program had positive effects on TAKS performance in almost all core subject areas as well as passing all TAKS in general for ninth-grade nonrepeaters and tenth-graders in comparison to students in matched schools. Ninth-grade nonrepeaters and tenth- and eleventh-graders were also more likely to have higher attendance than students in matched schools. ECHS also had positive effects on promotion to the tenth grade and taking accelerated learning courses in eleventh grade.

While the ECHSs' eleventh-graders performed similarly to comparison school peers on TAKS outcomes, one must keep in mind that those students were the first to attend ECHSs in Texas. The more positive results among ninth- and tenth-graders in 2008–09 TAKS outcomes may be a promising indicator that as those original schools matured, they improved in using the ECHS model to meet their students' needs. At the same time, the ECHSs that opened during the two subsequent years have contributed to the positive ninth- and tenth-grade results, which may indicate a general improvement in the ECHS program overall, including ECHS' student recruiting strategies, and the supports schools receive.

Largely because the ECHS model involves students taking two years of college classes, it is a very expensive program to sustain. With Cycle 1 schools in their first year without grant funding, it is still too early to decipher what sustainability issues will arise for ECHSs in Texas. As part of their grant, CFT-funded schools were required to develop a sustainability plan that covered operations and budget for six years. At this point, ECHS program officers have not yet heard schools report that they cannot financially continue to support the model. As more schools no longer receive grant funding, it will be important that successful strategies to ensure sustainability are shared within the network. Along with the need for sustained funding sources to cover expenses such as tuition and textbooks, findings from the national ECHSI suggest other challenges to sustainability that require monitoring by the evaluation team, including prohibitive state policies and leadership turnover. In order to thrive, ECHSs need a supportive policy environment and district and higher education partners' continued commitment to the ECHS in the face of frequent leadership changes.

In addition to school-level sustainability concerns, TEA is developing a sustainability strategy for the entire ECHS network. Options may include developing and providing products and resources that would only be offered to designated schools if grant funds are available or as fee-for-service. The ECHS program officer at TEA is contemplating implementing televised information sessions for people interested in starting an ECHS. They would be designed for non-grantees who want to learn the ECHS design, and what resources are available, prior to applying for a grant. In addition, the ECHS program officer is considering taking some ideas from the HSRR network and offering a coaching consultation as part of the grant application process during which time they would get feedback on documentation like the MOU.

It is clear from the changes that TEA and CFT program officers, managers, and coaches have already made to their support structures and from their ideas for the future that they conceive of the ECHS network as one that should constantly be reviewed and adapted to best serve the needs of the schools. Even though there is a clear ECHS model, TEA is aware of the need for flexibility as schools negotiate how best to implement the core elements within their unique contexts. With the improved monitoring of model implementation and consistency of professional development, schools should be more knowledgeable about the ECHS model and should have more support to implement it with fidelity.

Chapter 5
High School Redesign Initiative

Key Findings

- Schools in the HSRR, HSTW, HSRD, and DIEN programs sought to improve instruction and support teachers and students while facing multiple demands and constraints.

School Reform Implementation

- The majority of schools visited under the High School Redesign initiative programs emphasized improving students' TAKS results; few schools expressed the explicit goal of developing students' college readiness.
- To improve instructional rigor, schools implemented specific instructional strategies, expanded curriculum and advanced course offerings, and raised student workload expectations.
- Improving curricular relevance for students remained a challenge.
- Supports for teachers to use data to inform instructional decisions varied and as a result, so did the extent of data use.
- Schools put structures in place to support students, including SLCs to strengthen student-teacher relationships and tutorials to bolster student learning.
- Teachers received time to collaborate, but few schools provided support for using that time to advance teacher learning.
- PD opportunities varied in the extent to which they strategically aligned to a school's instructional reform strategy.
- Stable and distributed leadership with broad-based teacher buy-in and efforts to integrate multiple reform efforts promoted sustained reform work.

Supports from Networks and Other External Providers

- Schools received supports from TA providers in curriculum, instruction, and leadership, but experienced challenges because some PD was disjointed or inapplicable and because some TA providers and consultants failed to follow up.

Student Outcomes

- Programs under the High School Redesign initiatives yielded the following outcomes compared to matched schools:
  - HSRR ninth-graders had a higher likelihood of being promoted to tenth grade.
  - HSTW ninth-grade repeaters had a higher likelihood of passing both TAKS-Math and Reading.
  - Ninth-grade repeaters' in HSRD schools had lower TAKS-Reading scores and HSRD tenth-graders had a lower attendance rates.
  - Ninth-grade repeaters in DIEN schools had a higher likelihood of passing Algebra I.
- On all other ninth-, tenth-, and eleventh-grade outcomes, students in High School Redesign initiative schools and comparison schools performed similarly.

Introduction

The High School Redesign initiative supports the redesign of existing comprehensive high schools.[54] The initiative was created to transform low-performing high schools into places that provide personal attention and guidance for all students, offer students a challenging curriculum with real-life applications, and encourage all students to succeed. Multiple THSP programs fall under the High School Redesign initiative: HSRR, HSTW, HSRD, and DIEN. Although HSRR is the only grant program that specifically focuses on AU schools, all of the programs share similar goals and elements. Additionally, because all of the grant programs target traditional, comprehensive high schools, they have experienced some common successes and challenges in reform implementation. Therefore, this chapter presents findings on implementation for HSRR, HSTW, HSRD, and DIEN together, noting program-specific issues as appropriate. The chapter is based on site visit data from spring 2009, as well as program-specific effects on student outcomes.

High School Redesign Initiatives

The programs under the High School Redesign initiatives have awarded grants to multiple cohorts of schools ("cycles"), with each cohort beginning implementation in a different year. Over time, programs adjusted criteria and processes to improve their support of school reform. Thus school implementation needs to be understood in the context of the evolving grant programs.

HSRR

For high schools rated AU by the Texas accountability rating system, the HSRR program provides resources to build the schools' capacity to implement innovative, schoolwide initiatives designed to improve student performance. The grant program broadly targets major areas related to student learning, teaching, leadership, and parental support (Exhibit 5-1).[55]

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54 "Comprehensive" high schools refer to the traditional American high school, one that typically offers a wide range of academic and elective courses, athletics, and other extracurricular activities.

55 For more information about program goals and Cycle 4 (2007-10), see http://maverick.tea.state.tx.us:8080/Guidelines/non-eGrants%20Documents/429-08/Program-Guidelines.pdf.

Exhibit 5-1
HSRR Program Goals

Correct the specific area of unacceptable performance identified in the school accountability data tables
Demonstrate innovative management and instructional practices
Develop district leadership capacity
Develop leadership capacity among principals and other school leaders
Improve instructional capacity and effectiveness
Increase overall student achievement
Raise academic standards and expectations for all students
Improve overall climate and culture

TEA funded 67 grantees, with 64 that began implementation between 2005 and 2009 (i.e., during the first five cycles of the grant) and three beginning implementation in 2010.[56] In addition, 10 schools received funding from April 2010 through February 2012 (Cycle 6). This latest round of funding included six AU middle schools for the first time to link redesign at high schools with reforms at their feeder middle schools.

HSTW

The HSTW program supports schools to implement the national HSTW model designed by the Southern Regional Education Board (SREB). HSTW principles (its "Key Practices") focus participating schools' reform strategies on improving instruction in academic and CTE courses to raise overall student achievement. The principles also emphasize creating a culture of high expectations and continuous improvement (Exhibit 5-2).[57]

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56 Cycles 1 and 2 were part of a separate evaluation. That report can be found at http://ritter.tea.state.tx.us/opge/progeval/HighSchoolCollege/HSRR_Final_Report.pdf

57 TEA Request for Application 701-07-105. For a description of the SREB model, visit http://www.sreb.org/Programs/HSTW/publications/2005Pubs/05V07_enhanced_design.pdf. For additional information about key practices see http://ritter.tea.state.tx.us/opge/disc/calendar/434-10/Part2.pdf Retrieved March 10, 2010.

Exhibit 5-2
HSTW Key Practices

High expectations: Setting higher expectations and getting more students to meet them
Career/technical studies: Increasing access to intellectually challenging career/technical studies, with major emphasis on using high-level math, science, language arts, and problem-solving skills in the modern workplace and in preparation for continued learning
Academic studies: Increasing access to academic studies that teach essential concepts from the college-preparatory curriculum by encouraging students to use academic content and skills to address real-world projects and problems
Programs of study: Having students complete a challenging program of study with an upgraded academic core and a major
Work-based learning: Giving students and their parents the choice of a system that integrates school-based and work-based learning that spans high school and postsecondary studies, and that is planned by educators, employers, and employees
Teachers working together: Having an organization, structure, and schedule that affords academic and career/technical teachers the time to plan and deliver integrated instruction aimed at teaching high-level academic and technical content
Students actively engaged: Getting every student involved in rigorous and challenging learning
Guidance: Involving all students and their parents in a guidance and advisement system that ensures the completion of an accelerated program of study with an in-depth academic or career/technical major
Extra help: Providing a structured system of extra help to enable students who may lack adequate preparation to complete an accelerated program of study that includes high-level academic and technical content
Keeping score: Using student assessment and program evaluation data to continuously improve the school climate, organization, management, curricula, and instruction to advance student learning and to identify students who meet both curriculum and performance goals.

Twenty HSTW schools were funded from 2006 through 2009 (Cycles 1 and 2), with an additional 10 funded from 2009 through 2011 (Cycle 3). Eligible districts (for Cycle 3) are public school districts and open-enrollment charter schools with one of the following:

- A stage 3 or 4 intervention level for CTE under the TEA Performance Based Monitoring Analysis System, or
- One or more high school campuses that meet at least one of the following criteria: (1) In each of the prior three school years, at least 55% of students were identified as economically disadvantaged and, in the prior year only, at least 45% were identified as being at risk of dropping out of school; (2) the campus was rated AU in 2008 under the state accountability rating system; or (3) the campus would have been rated AU if the school leaver provision had not been in place in the 2008 state accountability rating system.[58]

[58] After Hurricanes Katrina and Rita, Texas schools enrolled a high percentage of highly mobile students. TEA recognized that the influx of these students would lead to artificially high dropout rates, negatively affecting the

In 2008–09, 18 schools that began implementation in 2006 or 2007 (Cycle 1 or Cycle 2) also received continuation grants by demonstrating progress in implementing the HSTW model. Of these 18 continuation schools, nine received additional funding to implement Making Middle Grades Work (MMGW), a program in which HSTW principles are implemented at HSTW feeder schools.[59]

HSRD

The HSRD program provides coaching and technical support for high schools to reorganize into SLCs, such as schools within schools, career academies, or smaller, autonomous schools. HSRD grants are targeted at historically underperforming schools in urban areas (specifically, Austin, San Antonio, Fort Worth, and Ysleta in El Paso) to improve outcomes for traditionally underserved ethnic and socioeconomic groups.

Six campuses were funded by HSRD for four years and began implementation in 2006–07. According to the program request for proposal, by reorganizing into SLCs, HSRD schools offer students the opportunity to engage in challenging and meaningful coursework while receiving the personal guidance and attention necessary for academic success. Under HSRD, schools aim to improve student engagement, academic achievement, attendance and graduation rates, and discipline.

The HSRD schools implement a modified version of the national HSTW model. According to the program officer, the HSRD schools focused first on making curriculum relevant to students and developing teacher-student relationships as "a base that you build on." Under the grant, the schools are also expected to focus on instructional rigor, extensive common planning time, and common standards in other practices such as homework and grading.

DIEN

Related to HSRD, the DIEN program began in 2007–08 with four high schools in HISD.[60] The four HISD schools received funding for only two years, which ended in summer 2009. Like HSRD schools, DIEN schools implement a modified version of HSTW. The program sought to further develop school leadership and practices that intensify academic rigor, student-teacher relationships, and educational relevance for all students. The DIEN schools also received leadership support from an executive principal located at the district.[61]

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schools' accountability ratings. Also, to allow schools and districts time to adjust to the new dropout definition and leaver codes, TEA issued the "school leaver" provision, which gives schools and districts a reprieve from having their grades seven through eight dropout rate and grades nine through 12 completion rate count toward the state accountability ratings. Because TEA has continued to identify schools and districts that would have received an AU rating, a school that would have received this rating had the school leaver provision not been in place is still eligible for an HSTW grant.

59 For more information about Making Middle Grades Work, visit http://www.texashstw.org/mmgw.html and http://www.sreb.org/page/1080/making_middle_grades_work.html

60 In 2008–09, one school that had previously participated opted out of the DIEN program because its accountability rating improved.

61 DIEN school principals continued to report to their respective regional superintendent, who was their direct supervisor, but an executive principal provided additional support for the school principals.

Reform Implementation Findings for High School Redesign Initiative Programs

Goals for HSRR, HSTW, HSRD, and DIEN differ somewhat in their specific emphases but not greatly in principle or major reform strategies. Because the programs have a common focus on reforming existing comprehensive high schools, the grantees share a similar context that conditions how the reforms have played out. Therefore, the evaluators examined the THSP schools together that were implementing the four High School Redesign initiative program models, with key differences among the program models and implementation at the schools noted, as well as factors that helped explain the differences.

The common elements across the programs included:

- Improving instruction through high expectations for students, enhancing rigor and relevance for students, and increasing teachers' use of formative assessment
- Supporting instruction and student success through SLCs, a focus on relationships, student supports, and teacher learning opportunities.

Although the grant programs and their associated TA emphasized these strategies, schools faced multiple demands, incentives, and constraints. The evaluation found that THSP schools implemented the intended reform strategies to varying degrees and that schools differed in their implementation of a given strategy.

As mentioned earlier, the results discussed in this chapter are based on spring 2009 site visits to seven HSRR, four HSTW, one HSRD, and two DIEN schools. Reform implementation began at 11 of the 14 schools in 2007–08. The other three (two HSTW and one HSRD) began implementation in 2006–07 and were first visited in spring 2008; as a result of the data collected at that time, they were selected for the repeat visit. This section discusses the range of implementation of reforms in instructional climate, classroom attributes, and organizational strategies to support students and teachers.

Instructional Climate and Classroom Attributes

All the High School Redesign Initiative programs seek to strengthen instruction to improve student achievement. Particularly for the HSRR model, in which all schools were rated AU before the program was implemented, raising student achievement was paramount. To varying degrees, each model calls for (1) raising standards and expectations for all students by creating challenging experiences in and outside the classroom, (2) increasing instructional rigor, (3) improving relevance, and (4) extending teacher use of data or formative assessment results to tailor instruction. The four instructional attributes made up the core elements for the changes taking place at the redesigned high schools visited. And although not all of the schools were equally successful at implementing change in each of the four areas, all had identified measures that school leaders hoped would improve the instructional climate and classroom practices.

High Expectations

All of these program models emphasized the development of high expectations for student learning as a critical to school reform. However, only a few of the redesigned schools visited had explicitly articulated high expectations. For the most part, the school' expectations (particularly those classified as AU) centered on passing TAKS. That focus essentially became a primary goal, rather than a step toward better preparation for college and career. For example, in seeking to raise passing rates on the math and science TAKS at one HSTW school, TAKS performance became the standard of success at the school at the expense of other academic expectations stemming from the HSTW principles (e.g., teaching a college preparatory curriculum, and applying academic skills to real-world problems). Although the THSP initiative clearly seeks to prepare students for college and careers, the accountability context for many of the redesigned high schools places primacy on test scores and, given limited resources, human capital, and time, leaves little room for strategies beyond TAKS. The focus on TAKS preparation may limit opportunities for students' to take more rigorous courses and may limit the time teachers have for emphasizing higher expectations.

Despite the focus on TAKS, some redesigned high schools visited expressed the need to prepare students for college. Given the state requirement to offer college credit opportunities,[62] college readiness at these schools centered on ensuring that students passed the college placement tests needed to enroll in dual credit courses or having students develop the skills needed for success in upper-level courses. At a number of schools, teachers stated their belief that every student can be successful, can graduate from high school, and can achieve postsecondary success. The reform goals at one such HSRR school—although still, by necessity, focused on improving accountability rankings—aimed to create students who performed at their highest level and had the confidence to succeed outside of the school environment.

At a few schools where the reform efforts were more thorough and in-depth, instilling high expectations for students had become a part of school culture. At one HSTW school in its third grant year, the teachers addressed academic opportunities for the entire student body, not just specific populations. As discussed in the next section, at this and a number of the redesigned high schools, high expectations for students also focused on improving instructional rigor.

Instructional Rigor

Each of the redesigned high school programs specifies improving instructional rigor in the classroom as a key component of reform. All define "rigor" as engaging students in challenging coursework; however, definitions vary in specificity across the program models. The HSRD program's definition cites "challenging coursework," and the HSRR program calls for raising standards and expectations for all students. The HSTW model is more specific, requiring student access to "essential concepts from the college-preparatory curriculum" and "upgraded academic core and a major," with expectations for real-world applications.

Given program priorities, all of the HSRR, HSTW, HRSD, and DIEN schools visited sought to improve instructional rigor. The schools used three approaches to do so: in the first, all of the HSRD and DIEN schools and at least half of the HSRR and HSTW schools were implementing specific instructional approaches, including literacy across content areas, project-based learning, and critical thinking skills. For example, one school focused on increasing rigor by improving teachers' instructional skills and knowledge, and had teacher teams collaboratively examine the degree of rigor in their unit assessments and then map their lessons to the unit assessment.

In the second approach, at least two-thirds of the redesigned high schools implemented or expanded their curricula, including adding dual-credit and pre-AP/AP courses and TAKS

62 State policy requires all high schools to provide students with the opportunity to earn 12 semester hours in college credits.

preparation as discussed above. At schools where AP strategies were used as a learning experience to improve rigor, school faculty perceived students being more college-ready. Several schools had implemented CSCOPE, a curriculum management system, as a strategy for improving instructional rigor. In relying on CSCOPE for instructional rigor, those schools did not examine in-depth what constituted rigor beyond that application.

The first approach involved altering teachers' instructional practices, and the second viewed rigor in terms of educational programming, raising the overall quality of available courses (see the textbox for an example of a school that successfully implemented both approaches). In contrast, some schools followed a third method where the work demanded of students increased, but that increase did not necessarily translate to more rigorous, cognitively challenging work.

Although the redesigned high schools acknowledged the importance of increasing instructional rigor, focus on TAKS was pervasive and received high priority at a majority of the visited schools. Teachers reported that they had little choice in this regard, given limited instructional time, students' pressing academic needs in some cases, and overall accountability pressures. As discussed, teachers reported that their instruction targeted basic skills, many of which are tested on TAKS. As one teacher described,

> Our district struggles with math TAKS scores... and the curriculum as a whole suffers because we are trying to get over this hurdle of TAKS. When you are teaching Algebra II, I can look back at the content that I taught before TAKS and so much is left out because we are trying to get over this hurdle. As a math teacher I want to teach my kids Algebra II, but the pressure is to make them pass this test. So the curriculum suffers.

In most cases, improving instructional rigor was further challenged by a lack of a clear vision of what constitutes high-quality instruction. As discussed above, schools did not address rigor in the classroom uniformly, and the definition of rigorous instruction was left to individual teachers. At one HSTW school, teachers attributed the absence of a clearly articulated and shared definition of rigor to a school pattern of abandoning improvement strategies before the school and district could determine, communicate, understand, and adopt common meaning. (Exhibit 5-3 describes one school's efforts to raise expectations and rigor for their students.) These examples suggest the need for a clear vision of instructional rigor, uniform schoolwide approaches, and allowance of enough time for teachers to become adept at and comfortable with putting rigorous instruction into practice.

Exhibit 5-3
High Expectations and Instructional Rigor at One High School

> At one school in the third year of its grant, teachers reported that they used creative and differentiated instructional strategies that addressed all learning styles and multiple ability levels. To support instructional improvement, the teachers received significant PD and sought new, engaging techniques. This school used multiple strategies to improve instructional rigor, including a "four by four" curriculum before the state policy mandate was instituted; AP and dual-credit courses; elimination of all lower level courses, with virtually all students expected to take pre-AP, AP, or dual credit classes; and college-level textbooks in every subject area.

Curricular Relevance

As with instructional rigor, the redesigned high school programs placed differing emphases on making the curriculum relevant for students and had varying levels of success in doing so. The HSRD and DIEN programs urge schools to engage students in meaningful coursework, which, broadly interpreted, encompasses relevance. In comparison, the HSTW model specifies relevance as it relates to the real world, the future, and careers; for example, creating learning experiences where students apply academic content and skills to real-world problems and projects, providing students with access to career/technical studies, integrating work-based learning into the classroom, and engaging students in academic and career/technical studies.

The redesigned high schools visited recognized the importance of relevance in the classroom as a means of engaging students, and consequently of improving learning. Like efforts at defining instructional rigor, however, schools left it up to teachers to bring relevance to the classroom. This situation was evident even for the majority of the HSTW schools; despite that model's greater specificity for the meaning of relevance, the site visit data suggested that HSTW schools had made no more progress on integrating relevance into the classroom than had schools from other programs.

Three of the redesigned high schools visited had attempted to integrate relevance more systematically. For example, those schools wanted to help students build 21st-century work skills and thus viewed the use of technology in instruction as important. One school bought technology such as smartboards and calculators and trained teachers in their use. Two schools also emphasized schoolwide priorities for linking academic content to real-life activities. At one school, teachers defined relevance as "bringing real world events into the classroom" and "making the material applicable to … [students'] everyday life." Among these schools, relevance was integral to the overall reform vision. As one principal indicated, "Today's learners can't be taught like we were. They have to know why the info is important to them and how it relates to them."

In addition to connecting content with examples from real life, the schools viewed integrating CTE with core academic content as a potential strategy for making students' education more relevant. Only a few schools, however, had established formal connections between CTE and core classes. At one DIEN school, the science and CTE teachers worked together to highlight science concepts in the applied courses, with the science teachers helping refresh CTE instructors' knowledge of the science content. Teachers at one HSTW school opted for the opposite approach—integrating CTE applications in core academic classes—because CTE teachers were unprepared to teach the core content. In addition to lack of comfort or skills in integrating CTE and core academics, teachers in 12 schools lacked the time needed to collaborate because their planning time was typically spent in grade-level or department meetings. To the extent that integrating CTE and core academic content becomes a more prevalent strategy to make the curriculum more relevant and accessible to students, both CTE and core academic teachers may need subject matter PD and extra time to collaborate.

The challenges facing schools in strengthening instructional rigor also applied to improving relevance. Some schools cited both a lack of time for teachers to learn how to bring more relevance to their instruction and a shortage of class time to "cover the relevance piece." School leaders' and teachers' lack of a shared vision about high-quality instruction led to inconsistent assumptions about the meaning of instructional relevance and instructional rigor. Finally, teachers noted that focusing on TAKS and improving students' basic academic preparation consumed resources that might otherwise have been directed to improving classroom instruction.

Using Data to Inform Instruction

The redesigned high school grant programs all emphasize the importance of teachers' use of data to inform instruction as part of the schools' reform strategies. The HSRR program specifies that, in improving instructional leadership, skills and knowledge for acquiring, managing, and interpreting data by teachers, principals, and other school leaders should be enhanced. The HSTW model identifies formative assessment as a critical element of classroom practices, including giving students frequent feedback and using data to support a culture of continuous improvement to advance student learning. Similarly, the HSRD and DIEN programs build on the HSTW model in highlighting the role of data use.

Despite uneven guidance for using data across the grant programs, the use of formative assessments to help teachers tailor their instruction is well-accepted as a central part of school reform nationally and among the THSP schools overall. To varying degrees, all of the redesigned high schools visited were using data to support instructional decisions—from simply providing access to data, to schoolwide processes and expert support for teachers in analyzing, reflecting on, and using data to modify their instruction.

Teachers and principals at nearly all of the redesigned high schools visited reported having access to data, particularly from standardized tests. In addition, many of the schools reported using local benchmark tests, and some reported using classroom observations as data on the nature of instruction. Because most of the redesigned high schools were concerned with raising student achievement, teachers in these schools used data to determine which students needed additional support throughout the year and in preparing for TAKS in particular. For example, schools used benchmark data to identify struggling students, who then received additional tutoring or support in pull-out groups during the day.

In addition to identifying students for targeted academic support, some schools had more elaborate structures in place to assist teachers in translating data analysis into instructional changes. At those schools, the leaders placed a priority on using data in instructional decisionmaking; teachers modified their instructional strategies addressing students' instructional needs revealed in the data, monitoring student mastery, and beginning to develop a culture of assessment-driven instruction. One HSRR school exemplified a schoolwide climate of data-based instruction, an expectation set by the principal and other school leaders. According to multiple teachers and administrators at that school, "Assessment drives instruction." The school conducted campus benchmark assessments in the core subjects every three weeks, and teachers shared their data with peers during their PLC meetings. At intervals throughout the year they also conducted district benchmark tests, the results of which teachers also analyzed in their PLCs. At a DIEN school, the principal instilled the expectation that teachers use data to drive instruction; she held "10-minute meetings" with each content teacher at the beginning of the year to examine TAKS results for every student in each teacher's six periods. Before the meeting, teachers prepared a plan to address the instructional needs the data revealed; for the rest of the year the principal monitored teachers' progress with specific students. (Exhibit 5-4 details an HSRR school's support for using data.) In schools that lacked these supports and expectations, teachers used data less frequently and with more limited implications, suggesting that simply having access to data, although necessary, is insufficient for establishing continuous improvement practices and culture.

Exhibit 5-4
Using Data at an HSRR School

At this HSRR school, instructional coaches led teachers through a structured process for analyzing data. First, teachers looked at past TAKS scores as indications of a need for improvement. Second, teachers analyzed the results from the common assessment they created to identify topics that students found problematic. Third, the teachers compared state standards with items on the TAKS test to note differences and to identify what needed to be taught in addition to the TAKS items. Teachers also adjusted the rigor of their end-of-unit tests by examining state standards and reviewing student test results.

Supporting Student Success

For the redesigned high schools to implement their reforms successfully, improve instruction, and raise student achievement, both students and teachers need direct support. Schools pursued a variety of strategies to support students academically and socially, including forming SLCs, strengthening student and teacher interactions, and building a system of academic and social-emotional supports for individuals. Both the HSTW and, to a lesser degree, HSRD programs specifically identify the need for a structured system to provide extra help for students so that they can succeed in the challenging coursework and varied learning experiences that those programs also call for.

Improving Student-Teacher Relationships

To varying degrees, all of the redesigned high schools visited were implementing strategies to improve school climate by strengthening teacher-student relationships. The school staff believed that teachers who know their students well can connect with them better, motivate them, and find ways of scaffolding content for students to relate to. Traditionally, teachers have concluded that an ability to connect with students is innate: one either "has it" or does not. The significance of building relationships as a reform goal lies in recognizing that building relationships can, in fact, be a defined process and be influenced by schoolwide strategies. Although teachers' understanding of young people may vary, they can nonetheless learn to connect with youth, given enough time, resources, and advice.

To deepen the relationships between students and teachers, schools often implemented structural supports. For example, some schools honed in on the crucial transition to ninth grade.

At one HSTW school, the ninth-graders took all of their classes in one wing of the school and had teachers and guidance counselors who were dedicated specifically to them. The ninth-grade teachers and guidance counselors thus came to know the new students, who were sheltered from the older students. By building these teacher-student relationships early in the students' high school career, the school hoped to increase ninth-graders' comfort and success, and thereby reduce drop outs. This approach expanded teachers' role in supporting students beyond teaching core content. A guidance counselor observed, "As a counselor, I believe teachers do the most counseling because the teachers see them every day and the kids trust them." Other schools instituted advisory programs, a scheduled class for students typically with small class sizes to allow teachers to mentor students, to check in with them about personal circumstances that might affect their schoolwork and to discover interests that they could develop further through coursework. Schools varied in terms of whether advisory followed a curriculum and how often the small classes met (from weekly to monthly or less frequently). Across these efforts, teachers were required to play this new role of mentor and counselor, roles for which they said they were not necessarily prepared.

Schools focused more on instituting internal structural supports than on building outside relationships. The redesigned high schools visited rarely described strategies for engaging parents; however, parent outreach may be a promising activity for schools to explore. In one example, to recover dropouts and reduce ninth-grade failure, an HSRR school established four community liaison positions responsible for outreach to parents and students who had dropped out or who had excessive absences. In addition, teachers were expected to make home visits as necessary. Before the school year began, the entire high school faculty visited every enrolled student's household to urge parents to ensure that their children were present on the first day of school. The response was quite positive, with a large percentage of students in attendance who had been missing the previous year, which dramatically reduced their dropout rates. The general lack of attention to parent engagement, however, demonstrates how difficult this task is and suggests the need for more time, support, or PD in this area.

Implementing SLCs

The redesigned high schools implemented SLCs as another strategy for fostering teacher-student relationships and for creating a more tailored and supportive learning environment. SLCs constitute a structural change for a school. With this approach, a comprehensive high school is divided into smaller organizational units, typically featuring a career path or other theme (e.g., health sciences) that guides a student's course of study. The schools visited had implemented SLCs—also called "academies"—for multiple purposes, including promoting strong teacher-student relationships, increasing student engagement in learning through career academies, and enhancing relevance by linking the curriculum to career pathways. Schools with SLCs varied in regard to whether teachers were assigned to a single SLC and whether students took all or some of their courses through their respective SLC.

The HSRR, HSTW, HSRD, and DIEN schools that implemented SLCs did so with varying degrees of success. For example, at a DIEN school, staff devoted considerable effort each year to identifying students who had a genuine interest in the theme of a particular SLC and in assigning new students to SLCs on the basis of those interests. For a new maritime academy, the school recruited students from its feeder middle schools. The principal explained,

> We want these kids to be interested in the maritime industry. If they are not interested, we don't want them. We want them to grow with us and for the

> next four years, they will be following the industry. When they graduate, they can have a job at the port.

The maritime academy's students will take their core courses together, as well as electives relevant to the maritime theme, and completed internships at the local port. This school's SLC approach formed a coherent program and was one of the more successful examples among the schools visited.

At the other end of the spectrum, one DIEN school had begun implementing SLCs to which core academic teachers were assigned and which students ostensibly chose. Teachers reported that students generally did not have strong motivations for choosing any particular SLC and were sometimes assigned to one. Although teachers met in their academies during the first year of implementation, those meetings ended when teachers and school leaders perceived little benefit compared with departmental meetings. By the second year, the academies existed in name only. One teacher said,

> I'm not aware of particular expectations [for teachers in academies], it just seems to be sort of a way to organize the school and to divvy up responsibilities between [assistant principals]. You're in [an academy] because … [of] your assistant principal. There's not a lot of collaboration … [to achieve] the sort of things we would dream would be possible with SLCs.

The experiences of the schools visited in 2008–09 indicated that reorganizing a school into SLCs/academies is difficult, and required breaking or altering teachers' long-established departmental ties (Siskin, 1994; Stodolsky & Grossman, 1995). Following through with reorganization takes leadership commitment, which turnover at the redesigned high schools may diminish. At one HSRR school, the school organized into "houses" (synonymous with SLCs) during the first year of implementation. But a new principal who took over before the second year decided that focus on content through subject and departmental teams should be the priority for improving school performance. As a result, teachers no longer met in their houses.

SLC implementation results in challenges that other reforming schools have encountered and with which THSP schools also struggle. The logistics of assigning courses to teachers complicates SLC implementation. For many schools, certain courses such as AP classes or electives cannot be offered strictly within each SLC because the school does not have enough teachers qualified for that subject or because any given SLC does not have enough students for a full class. SLCs in the same school may also develop—perhaps intentionally—different cultures that may accentuate differences in students' experiences and foster competition among the SLCs.

Although HSRR, HSTW, HSRD, and DIEN schools implemented SLCs with varying degrees of success, the positive examples that emerged suggest that SLCs have value as a reform strategy. However, realizing SLC potential may require articulation of how they will benefit teachers and students and of how teachers need to collaborate on instruction across disciplines. School leaders may also need to maintain SLC meetings as a priority as high school teachers identify most strongly with their subject matter teams (Siskin, 1994; Stodolsky & Grossman, 2003).

Academic Supports

Because strong student-teacher relationships and SLCs alone are insufficient to ensure student success, all of the redesigned high schools visited also featured academic supports to decrease gaps in learning for those students most at risk of failing. The most common supports were geared toward increasing students' success on TAKS, a central goal of the grantees, and included before- and after-school tutoring, TAKS preparation courses, and credit-recovery programs. Those supports were particularly important because students with insufficient credits to stay on track toward graduation are at higher risk of dropping out, and because students who have enough credits but have not passed the exit-level TAKS in eleventh grade are ineligible for graduation. Schools provided targeted supports for those students to pass the eleventh-grade TAKS in their senior year as well. Where supports went beyond TAKS preparation, schools focused on college and career readiness through career counseling, preparation for college placement tests for dual-credit courses, specific college preparatory classes, and study supports such as Advanced Via Individual Determination (AVID).[63]

Although all of the redesigned high schools visited offered academic supports and most had experimented with different ways for improving student-adult relationships, only a few had a coherent strategy in place to provide the comprehensive support that undergirds a climate for learning. Faculty at those schools were united in believing that supports are critical for building relationships and for effecting positive student outcomes and that, given those relationships, teachers should monitor struggling students more closely. Greater integration of the academic and other supports that schools provide and an expanded notion of supports are areas that schools could implement more consistently.

Supporting Teacher Learning

It is highly unlikely that schools will attain sustained higher student achievement without concerted effort to improve instruction and classroom interactions. The grant programs under the High School Redesign initiative highlight the importance of supporting teachers to improve their practices. In the HSRR, HSTW, HSRD, and DIEN programs, school reform strategies have emphasized teacher collaboration and additional PD, with emphasis on instructional coaching also becoming more prevalent. For teachers asked to change their instruction, opportunities to learn and practice the new skills are needed, just as they are for students as they acquire new knowledge. Nonetheless, because few redesigned high schools had explicitly defined high-quality instruction or key instructional strategies, teacher collaboration and PD were aligned with instructional improvement.

Teacher Collaboration

Supporting teacher collaboration requires more than just providing time for teachers to meet. School leadership needs to provide teachers with guidance for interactions during these meetings to ensure that the time is used effectively. All of the visited HSRR, HSTW, HSRD, and DIEN schools provided common planning time for teacher collaboration in their subject-specific or departmental teams. The teachers used this time to plan lessons, review assessment results, and discuss instructional strategies to address students' needs. Subject teams also met

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63 AVID is a college readiness program targeted at underrepresented students. Participants typically enroll in academically challenging classes such as AP and receive academic supports such as tutorials and planning through an AVID class.

with instructional coaches (if they were part of the school's support structure) during the team meetings. However, only a handful of schools provided teachers with the guidance and structures needed to effect real instructional change or professional growth.

In the schools that did so, school leaders viewed the collaboration time as a means for focusing on common instructional needs and standards, and for stimulating teacher learning from and with their peers. For example, under a schoolwide strategy at one DIEN school, teachers addressed the same learning objectives and developed the common assessments (usually at the end of a unit). Teachers of the same course coordinated its curriculum, followed similar pacing, and administered the same assessments to facilitate discussions about lesson plans, instructional strategies, and data analysis.

Achieving focus for the collaboration time was very intentional on the part of the school leaders. They had learned early on that simply providing time was insufficient for enabling teachers to follow the school planning and assessment process, and thus provided coaching on how to use that time to further the school's improvement goals. According to the school improvement facilitator,

> If it is a real [collaboration] meeting, if you [teacher team] were meeting objectives, you should be sitting down together to share student work, sitting down together to design lessons, coming up with common assessments that you are going to use, … com[ing] back and see[ing] what did and didn't work. This is what you were supposed to be doing in the … meetings. Once [teachers] realized that they weren't doing that [at the beginning], it wasn't hard [to improve the meetings]. [Teachers] realized that it works to share.

Two other schools (under HSRD and HSRR) also provided clear guidance to teacher teams. At those schools, teachers used the time to plan lessons, review data, and solve problems. Guidance generally came from instructional coaches or administrators, who worked with the subject teams to focus the meetings on instruction. Where schools had explicit expectations for how teachers used their meeting time, more teachers emphasized the importance of analyzing data and planning instruction on the basis of their analysis.

Without explicit guidance, collaboration time may focus on instruction, but much is often devoted to logistics. Although infrequent, the time might even devolve in unproductive ways. In one case, a teacher at a DIEN school stopped attending team meetings because she viewed them as "gripe sessions"; at two HSRR schools, collaboration time did not focus on instruction; and at another HSRR school, some teachers viewed the common planning periods as a "waste of time." Teachers' time is limited, and arranging master schoolwide schedules to accommodate common planning time is difficult. Thus, these examples illustrate that attempts to use teacher collaboration time as a reform strategy involve explicit thinking about the objectives of that time, the ways in which teachers will use that time to meet those objectives, and supports such as coaching to guide them in new processes and practices. Other research underscores the need to establish teacher norms around sharing instructional practices and assessment data and sufficient trust in colleagues to reveal concerns and potential weaknesses (Bryk & Schneider, 2002; Little, 1990; McLaughlin & Talbert, 2001; Young, 2006)—norms that underlie the collaborative activities that the THSP schools seek to pursue.

In addition to general collaboration, which occurs most commonly in subject teams, the THSP grant programs also envision cross-content collaboration to support teachers in making connections between the content they teach and that of other disciplines. Cross-disciplinary approaches arguably reflect 21st-century work demands, which require multidisciplinary approaches to solving complex problems (Karoly & Panis, 2004). Specifically, HSTW defines the key practice of "Teachers working together" as providing "cross-disciplinary teams of teachers time and support to work together to help students succeed in challenging academic and career/technical studies," with career/technical studies defined as "high-demand fields that emphasize the higher-level academic and problem-solving skills needed in the workplace and in further education" (SREB, 1999–2010).

Site visit data revealed that creating cross-disciplinary opportunities was challenging. None of the HSRR, HSTW, HSRD, or DIEN schools visited offered consistent cross-departmental opportunities for teacher collaboration around instruction. Examples of coordination between teachers in different subject areas occurred idiosyncratically rather than as a result of school-led efforts. For instance, one DIEN school that had started implementing academies (SLCs) initially asked teachers to meet in their interdisciplinary academy teams. By spring 2009, however, in their second year of implementation, the meetings rarely occurred; teachers found their departmental/subject-specific teams more relevant for their work and had not found compelling reasons for continuing to meet across disciplines. Similarly, one HSTW school had formed interdisciplinary teams, but they met infrequently, and the principal reported that those efforts were not well organized enough to establish true interdisciplinary practices.

In AU schools and among HSRR schools, pressures to improve student performance in content-specific achievement and the associated workload militated against the additional effort needed to work across content areas. For schools that need to improve subject-specific TAKS scores for accountability purposes, cross-disciplinary approaches are not an obvious way to do so. That point was evident from school leaders' descriptions of school reform priorities: they consistently pointed to improving achievement in the content areas in which their schools failed to meet Adequate Yearly Progress (AYP) or the areas that caused their AU status. Indeed, a new HSRR principal suspended cross-subject team meetings in their second year of implementation because he viewed content-specific instructional coaching as more effective for improving TAKS results. The AU schools' dilemma of whether to spend time on content-specific strategies to raise student achievement in the subject tests contrasted with the T-STEM model. That model promotes integration across STEM areas through problem-based learning as central to making the curriculum rigorous and relevant to work and college.

Professional Development

The HSRR, HSTW, HSRD, and DIEN grant programs all underscore the importance of providing PD for teachers. In contrast to teacher collaboration, which is targeted at teacher learning and embeds PD in teacher work, school leaders and teachers at the THSP redesigned high schools generally conceived of PD as topic-specific workshops, seminars, or conferences that occur as distinct activities outside of instruction or its preparation. Among the schools visited, teachers received PD across multiple topics, some specifically linked to their improvement goals and others selected to coincide with teachers' interests.

Several redesigned high schools exemplified the strategic use of PD aligned with school improvement goals. At five of the HSRR schools, teachers received PD to implement the CSCOPE curriculum, which is aligned with TEKS and was adopted to improve student achievement in core content areas. One DIEN school strongly emphasized literacy strategies across the curriculum. A site-based literacy specialist met regularly with every subject team to model literacy strategies for consistent schoolwide implementation; to discuss how literacy could be integrated into math, science, and social studies lessons; and to address the instructional challenges that teachers who were not trained in literacy instruction face.

In contrast, at some HSRR, HSTW, HSRD, and DIEN schools, PD opportunities were tied more loosely—or not at all—to the school's reform agenda. For example, teachers at one HSRR school received trainings in AP, in the use of technology in instruction, in CSCOPE implementation, and in data use; however, the teachers reported that the trainings were not sufficiently comprehensive and that they wanted more support in implementing the newly adopted CSCOPE curriculum in particular. PD topics of broader interest at the high schools included trainings on teaching students in poverty, analyzing TAKS and benchmark data, and aligning lessons with TEKS.

Some schools let teachers choose PD based on their personal interests. For example, an HSRR school's district encouraged and paid for teachers to attend PD of their choice with the proviso that they not take time out of instruction to do so. Teachers at that school could also opt out of attending PD. In such cases, PD was not used as a reform strategy targeted at school improvement goals per se, even though the PD may have been engaging for individual teachers. Moreover, although offering a variety of PD may reflect the diverse needs and interests of teachers, allowing multiple PD choices may detract from a sharp focus on instructional improvement and a school's key priorities. Teachers in one HSRD school, for example, reported that the PD associated with their school's many initiatives required too much time away from the classroom and that the amount of information offered was too overwhelming to integrate into instruction effectively.

In thinking through the strategic use of PD, school leaders should weigh school priorities and student learning needs; teachers' capacity to put into practice reform activities such as new curriculum, pedagogical approaches, assessments, or data analysis; the risks inherent in a broader or a narrower focus; and teachers' engagement in the PD offered. Given limited time and resources, the trade-offs may necessitate difficult choices. For example, one HSRR school focused on math as the area requiring the most improvement and had a curriculum specialist provide PD in this area; it did not provide teachers in other content areas with common planning time or consultants' services. That imbalance left teachers in the other areas feeling unsupported, and the faculty did not have a sufficiently strong understanding of school goals and common focus to mitigate those feelings.

Coaching as a Reform Strategy

Instructional coaching is not an explicit strategy in the HSRR, HSTW, HSRD, or DIEN programs; however, it was a key strategy for seven of the schools visited. Instructional coaches were either on the school staff, or external consultants were hired to work with subject-matter teams to enhance performance. As a professional learning strategy, coaching differs from collaboration time and PD in several ways. As discussed, collaboration time can be unstructured, focusing on logistics that help teachers with the burden of preparation but not necessarily or explicitly furthering professional learning. PD traditionally has taken place outside the classroom, and is offered as one-time workshops that are typically decontextualized from teachers' specific classrooms and has little or no associated follow-up. Instructional coaching is presented as the antidote: it is grounded in classroom instruction, teacher-specific, integrated into teachers' work, and ongoing.

Instructional coaching in the HSRR, HSTW, HSRD, and DIEN schools visited did not necessarily take place in teachers' classrooms; it did focus, however, on instruction in high-need content areas, with content experts working in a subject-team setting. For example, one HSRR school had math and science coaches who worked with the subject-specific teams to map the curriculum to TEKS, develop common assessments, and analyze data. Using data was a central theme for the math and science coaches.

Instructional coaches were also instrumental in developing effective teacher teams. In the sample schools, the coaches reinforced guidelines about how teachers should use their collaboration time and monitored those meetings to ensure that they remained focused on instruction. One instructional coach at an HSRR school indicated that her principal directed her to work with teachers on prioritizing their teaching through data analysis:

> [The principal wants to know] what curriculum decisions do we need to make on campus based on actual data? Are we spinning our wheels teaching what we don't need to teach? .… We're not just going to hammer [the content] all in at the end [right before exams]. We're going to follow data…. He told us he wants a common assessment every two weeks. Teachers look at data every two weeks, … use data to write lesson plans and a unit assessment based on data.

Instructional coaching, although not universally available in the THSP schools, increasingly constitutes a key reform strategy. The examples in the redesigned high schools visited indicated that coaching may be more effective than teacher collaboration or PD alone and is a strategy worth pursuing.

School Leadership

Among the HSRR, HSTW, HSRD, and DIEN schools visited, school leadership was influential in how the school implemented and sustained its reforms. Stability, broad-based teacher buy-in, distributed leadership, and the ability of school leadership to integrate multiple efforts and align them with district initiatives affected the sustainability of school reforms.

Schools that experience leader turnover may lose their primary champion for reforms. Without stable leadership or broad-based teacher buy-in, it is difficult for reforms to persist. As described earlier, turnover among school leaders led one HSRR school to abandon its academy structure. Another HSTW school, which was selected for a second site visit on the basis of its apparently promising practices in curriculum and instruction, had lost much of its focus on those reforms when the school leaders who introduced the changes left the school. One HSRR school had experienced chronically unstable school leadership, with 10 principals in 13 years. The principal at the time of the visit had little administrative experience and had not been able to further the school reform agenda. At one HSRD school that experienced principal turnover, staff understanding of and focus on the reforms had become diluted over time. However, the most recent principal was making significant efforts to reestablish a clear, shared reform vision and to build teacher buy-in for reforms instituted before his arrival.

Schools that have been able to sustain the reforms over time had stable leadership and/or shared leadership responsibilities among the school staff. One HSTW school had sustained and evolved its reform strategies for more than 10 years, and despite the departure of the initial school leadership and many of the teachers, the current staff members understood and supported the improvement strategies. Subsequent leaders pursued the reforms, and the school climate and practices reflected the HSTW model. Staff members inducted new teachers into these practices by indicating that that was the way the school did business. The success of this HSTW school underscores the importance of garnering broad-based, enduring support among teachers and other stakeholders in the school community. At that school, teachers wrote the original grant that brought them the HSTW model and resources. Another HSRR school was able to implement its reforms relatively successfully because school leaders had strong teacher buy-in, even though it had not pursued its reform strategies as long as the HSTW example had. The school leaders worked with the staff to define the reform goals and sought their input on strategies for reaching those goals. In the process, teachers and school leaders developed a common understanding of their mission and commitment to improving teaching. In contrast, although another HSRR school had put in place numerous activities targeted at meeting its reform goals, teachers lacked opportunities to learn how the different efforts were supposed to fit together. They reported a lack of coherent schoolwide planning to merge their curriculum, technology, and PD activities.

Finally, school leadership can play a crucial role in integrating school-based reforms through district initiatives. When this integration was relatively seamless, teachers did not perceive that school priorities competed or conflicted with one another. Moreover, when school reform strategies dovetailed with district initiatives, reforms at the school level proved more sustainable. As in the 2008 findings, the spring 2009 data collection suggested that schools in need did not have the capacity to attempt too many reform strategies at once—they prioritized their efforts and in a majority of cases, district initiatives took priority, and schools implemented only those aspects of the reform model that aligned with district efforts. Although integrating school and district efforts makes it difficult to disentangle THSP-specific reforms, the evaluators concluded that schools tended to sustain their reforms when they were aligned with district priorities and resources.

Although it is too early to tell whether the schools visited will successfully sustain their reform strategies, some school leaders were integrating their reform activities with those of the district, suggesting the potential for sustainability. At an HSRR school, the district superintendent actively worked with the school leadership to create school-based instructional coaches and district-based curriculum specialists who supported each other in defining instructional improvement strategies at the school. At an HSTW school, rated AU, the district helped the school create a coherent approach through integrating its campus intervention team (CIT) with HSTW objectives, with one person serving both as HSTW coordinator and CIT liaison.

School leadership is often the factor that observers cite to explain both success and failure, as do the examples above. However, policy definitions of school leadership are ambiguous. Leadership is commonly assumed to be embodied in the school principal, with principal certification programs thus focusing on the skills and knowledge necessary for an individual to lead a faculty and manage school operations. At the same time, the concept of school leadership also incorporates notions of distributed leadership (Spillane, 1998), which has proven crucial for the THSP sites that have sustained their reforms. Distributed leadership locates the responsibility of leading a school across various roles beyond the formal individual leader, arguably institutionalizing broader-based buy-in and knowledge that can withstand turnover. Among school leadership capacities, providing instructional leadership and using data are central to improvement. All of these conceptions of school leadership are present in the original THSP theory of change but they are not explicitly integrated and articulated across the THSP initiative as a whole. TA provided by the networks has often included consulting for school leaders (described in the next section). Those activities have often focused on the needs of the individual leader in the particular school context; they are thus valuable in specific instances, but the examples of the effects of school leadership discussed in this section call for a more explicit strategy for building and sustaining that leadership in the service of school reform.

Supports from Networks and Other External Providers

The high schools under the High School Redesign initiative have pursued reforms, as described above, with the help of a number of external supports provided through the HSTW, HSRR, HSRD, and DIEN programs. The supports come from TA providers, including consultants and coaches funded by the grant, and from network leaders and staff at conferences and trainings. This section describes the supports each grant program typically provides, the actual supports visited schools received, and school staff perceptions of them.

Support Structures by Program

As THSP has evolved and as a result of working with their grantees, the programs under the Redesigned High School initiative have modified the school supports they provide. According to program officers, the changes were intended to ensure that TA and other supports are consistent and of high quality. Each model's support structures as of 2008–09 are described below.

HSRR

HSRR grantees receive TA from the Region 13 ESC, the statewide TA provider, and from grantee-selected TA providers. In 2008–09, TEA retooled the needs assessment and TA provider selection process. In prior years, HSRR grantees identified their TA provider in their application before conducting a needs assessment. In contrast, all HSRR grantees beginning with those in April 2009 (i.e., Cycle 5) receive support throughout the grant application process and participate in a needs assessment facilitated by Region 13 before they select a TA provider. All eligible AU schools are invited to one of four regionally based TA information sessions to learn about the grant program and associated services. Once schools are selected as grant recipients, Region 13 staff visit the school and collect quantitative and qualitative data through online surveys, classroom observations, and interviews with teachers, administrators, parents, and students to create a campus snapshot. The snapshot provides school districts and campuses with a "comprehensive, objective analysis of the current state of the school and its ability to meet the needs of the students it serves." Subsequently, the school leadership team receives several reports that include survey results, evidence of any best practices under way, and suggested areas on which to focus their improvement plan. In addition, each school participates in a data investigation group ("data dig") based on PEIMS and TAKS data. Over three days, Region 13 works with schools to align their campus improvement plan with the comprehensive needs assessment. According to a TA provider, "it is a facilitated process so the school can identify those areas … [that], if they could be addressed and addressed systematically, would have the greatest impact on student achievement and move the school forward."

Once schools complete their needs assessment, they select one or more TA providers whose expertise matches the school's identified needs (e.g., curriculum, instruction and assessment, leadership, campus culture and climate). Although schools have autonomy in selecting a TA provider, TEA now requires prospective TA providers to apply for preapproval and submit more extensive documentation about their identified areas of expertise. Additionally, Region 13 staff members host a webinar for TA providers so that "they have a clear understanding of what campuses and TEA expect of them as service providers." TA providers must also report monthly on their activities to Region 13, which allows for closer monitoring of how schools are being supported. As a Region 13 staff member indicated, the TA's goal is

> building a skills set [for school staff] [that reflects that] this is the way to do business now [in terms of] leadership practices, having learning communities, the way to examine student work. People need to be supported as they acquire these skills; it doesn't just happen.

Typically, the TA providers target school leaders and the school leadership team and the program expects them to offer job-embedded training.

Another new component to the support Region 13 provides is the use of case managers. The case managers, through site visits and phone calls, work with HSRR schools funded from 2009 through 2012 (Cycles 5 and 6) and are responsible for coordinating PD, helping schools gather evidence about implementing their reform plans, coordinating campus plans (for schools with multiple campus plans to submit), and assisting schools in developing a formative and summative evaluation.

In addition to the school-based support, principals and members of the school leadership team also may receive PD at offsite training or by phone. The PD focuses on leadership effectiveness, crucial conversations, the teacher leader academy, and tools for leading and assessing rigor. Principals and members of the school leadership team are also required to attend an annual high school summit hosted by Region 13 for HSRR and HSTW schools.

HSTW

Given the many HSTW principles that schools are expected to implement, grantees receive guidance and support from TEA and SREB. As noted in the first comprehensive annual report (Young, et al., 2010), consultants reported that it takes several years for a school to address all Key Practices. The principles that grantees prioritize and focus on also vary greatly. To address these issues, in 2009 TEA and SREB significantly revised the PD program for all schools in the HSTW Enhanced Network and collaborated to implement the revisions. TEA asked schools to focus their HSTW implementation on five of the 10 Key Practices to raise implementation consistency across grantees. Specifically, schools now must create focus teams for (1) programs of study, (2) increased expectations, (3) literacy across the curriculum, (4) guidance and advisement, and (5) transition to high school. The teams of teachers and school leaders are asked to identify issues and concerns related to these five key practices, read relevant literature, look at school data, and make decisions about how to improve these areas.

Overseen by a state director of HSTW, consultants contracted through SREB and funded by individual school grants provide the majority of PD for schools. The state director hosts an annual institute each summer for consultants that establishes that year's focus for their work with schools. Consultants are expected to visit each school eight to 10 times each year to support the school in implementing the Key Practices. With the new, narrowed focus on five principles and the creation of focus teams, the SREB consultants support and track the progress of the focus teams for TEA and are required to monitor the teams' level of engagement and success. For TEA to monitor their work, consultants submit semiannual reports on school progress using a rubric newly developed to increase consistency in the information shared with the state, and consultants also submit a log of their activities at each school to TEA.

Although the consultants are the primary source of support for schools, grantees also receive other on- and off-site TA. Other site-based supports include literacy training for all content areas and training for high school staff on integrating CTE in math and science in accordance with the new CTE standards[64] the state adopted in 2009. Off-site, TEA and SREB provide training and conferences for grantees, either in-person, online, or via video conference. For example, administrators and members of the leadership teams receive training on how to have crucial conversations with staff (e.g., talking when stakes are high), and guidance counselors receive training on developing an effective, comprehensive guidance program. Grantees are also required to attend the state HSTW conference, a three-day event over the summer that features nationally renowned speakers and focuses on relevant reform issues. The 2010 conference theme, for example, is "Redefining Transition: Supporting Learners from Middle School through High School." In addition to attending the state conference, grantees must also send members of the schools' leadership team to the national HSTW conference hosted by SREB.

According to one of the state leaders, all of these on- and off-site strategies should improve instruction and student achievement:

> [W]e're trying to approach it from different ways. That is what makes the difference… working with teachers on literacy, math, science, and social studies; pairing CTE and academic teachers; add[ing a] leadership strand to encourage walkthroughs [and] crucial conversations to get them to change behavior; hitting it from the guidance end, as well—guidance counselors working with students to see themselves differently to encourage the "three Rs" [rigor, relevance, and relationships].

Finally, in an effort to sustain the network, the state created an MOU for schools no longer receiving funding. Signed by the state, the district, and the school, the MOU defines how former grantees can continue to participate in the network and receive services and benefits. For instance, former grantees can continue to attend PD events and directly contract with Region 13 staff.

HSRD and DIEN

HSRD and DIEN schools receive customized support to implement their reform efforts. The CFT program officer and Region 13 ESC consultants work with the principals and leadership teams to develop school leadership capacity. SREB consultants also work with teachers, primarily in math and science, and monitor their implementation of the HSTW Key Practices. This coaching resembles what HSTW grantees receive, but the consultants visit the HSRD schools more frequently. As the HSRD program phases out, the amount of support schools receive via coaching, mentoring, or leadership training has decreased from approximately 100 days per year in prior years to 25–30 days for the 2009–10 school year. Four

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64 To support the implementation of the new CTE standards, the state created Achieve Texas, a new education initiative to prepare students for secondary and postsecondary opportunities, career preparation, and advancement. This initiative uses the 16 federally defined Career Clusters of the States' Career Clusters initiative (http://www.careerclusters.org) as the foundation for restructuring how schools arrange their instructional programs. For more information, visit http://ritter.tea.state.tx.us/curriculum/achievetexas/index.html

of the HSRD schools still receive funds from CFT, and they contracted with HSTW to receive support for 2009–10. DIEN schools also received other supports for systemic change, including an in-depth needs assessment by CFT during their first grant year to identify common needs and specialized assistance from an executive principal.

To improve the effectiveness of their collective TA efforts, CFT, SREB, and the Region 13 ESC communicate regularly to discuss the grantee schools' progress, challenges, and successful strategies.

Supports Received by Visited Schools

Although the schools visited received their grant funding before many of the changes in support structures described above, their experiences with network activities and TA providers provide context for why those changes were made. The schools reported receiving a wide variety of TA related to implementing reforms on their campuses. For example, SREB consultants helped guidance counselors and CTE teachers at an HSTW school implement the Achieve Texas' 16 career clusters, and a local ESC helped an HSRR school change its culture. Most commonly, however, schools reported receiving TA in curriculum and instruction and in leadership development, as discussed below.

Compared with schools funded under HSTW, HSRD, or DIEN grant programs, HSRR school leaders and teachers generally had a more difficult time in identifying supports their HSRR grant directly provided. Nonetheless, most seemed to believe that the support they received was in keeping with the goals of the HSRR program. Because all these schools were AU, they received multiple grants and hosted a variety of TA providers who worked with the principal and teachers. As a result, teachers from the HSRR schools often discussed the diverse support that they received from their district, their regional ESC, the Dana Center, and other external support providers, without distinguishing whether it was funded by the HSRR grant. In future years, as noted above, Region 13 will help HSRR principals coordinate and integrate the TA they receive from multiple sources to maximize the value of outside assistance.

Curriculum and Instruction

Several of the redesigned high schools visited reported that they had received TA focused on instructional issues, helping teachers improve rigor and relevance in the core and noncore classes. For example, at one HSTW school, the SREB consultant, who visited the school two to three times each month, gave the teachers an instructional rubric and provided PD on PBL, an instructional strategy that teachers began to use more frequently. At several other HSTW schools, SREB consultants worked with teachers to align CTE classes with core academic classes to increase the rigor of the CTE classes (e.g., incorporating math activities and measurement standards in the CTE curriculum). At two DIEN schools, the consultants provided PD on math and literacy.

Because all of the HSRR schools were struggling, as defined by their eligibility for the HSRR grant, improving instruction was a common emphasis among their TA providers. For example, one HSRR school received TA on instructional training for teachers and assistance with curriculum and benchmark planning; another school brought in a framework for improving student performance through enhanced lesson planning. ESCs, as well as the Dana Center, also provided consultants and trainings to help HSRR schools implement the CSCOPE curriculum, which was designed by a consortium of ESCs and adopted by five of the seven HSRR schools visited to improve rigor and relevance in the classroom. In addition to CSCOPE, one regional ESC brought in external TA to help math and science teachers create PD plans.

Leadership Development

As in the 2007–08 school year, leaders and leadership teams continued to be a focus of TA at the schools visited. Specifically, school leaders at HSTW schools are required to attend the national HSTW conference facilitated by SREB, and the four DIEN school leaders received support from an executive principal in the district. The DIEN school leaders reported that the executive principal helped ensure that the schools had the resources they needed, and one principal valued the executive principal's knowledge about overcoming instructional pitfalls. She added that he had helped her to "reconcile the compliance side of administration with the creative side that deals with instruction," balancing the need to be both operations manager and instructional leader.

In another example, under one HSRR grant, the external TA provider helped the school board devise a set of goals for the district and provided a mentor for the principal. One leader at that school credited the Breaking the Ranks training, a three-day workshop focused on creating a data-driven school environment and empowering leadership through the use of data, as the basis for a schoolwide visioning process at the start of the 2008–09 school year that guided school reforms. The leaders at this school also attended various leadership conferences and seminars and received significant PD from their regional ESC.

Challenges to Providing Supports to Redesigned High Schools

More often than not, both school leaders and teachers found the supports provided by the programs under the High School Redesign initiative to be very useful, particularly in helping teachers incorporate new instructional strategies. One HSTW school described its SREB consultant as very skilled and a good source of training for teacher instruction, especially as it related to helping the school refine and update its curriculum, which it had designed and implemented several years before.

Challenges remain, however, to enhancing the effectiveness of the TA provided by the grant programs. Barriers cited by principals or teachers across the redesigned high schools visited included:

- Teachers' lack of time to attend the PD offered
- PD, including conferences by the network, that was disjointed, with strategies from various PD poorly aligned with each other
- Lack of follow-up by consultants to ensure that teachers put the training into practice
- Training and TA that was too basic and not applicable for the school.

The programs under the High School Redesign initiative have noted these challenges, particularly the lack of alignment between the various support providers. With plans to better assess school improvement needs, especially under the HSRR program, closer monitoring in general, and some efforts to prioritize reform activities such as the five initial teams at HSTW schools, network leaders hope that future TA will serve the grantees' reform efforts better. As an example of the potential benefit other schools may experience in the future, teachers at one HSRR school expressed satisfaction with their TA because the school succeeded in articulating and receiving desired supports that were aligned with its reform goals. Moreover, the school cited ongoing PD as one reason behind low teacher turnover. Future evaluation activities will examine changes in the network support structures.

Effects on Student Outcomes

This section presents the effects of each high school redesign initiative on TAKS and other student outcomes for ninth-, tenth-, and eleventh-grade students. Because HSTW and HSRD had grantees in 2006–07, those programs have all three grades in the analyses. HSRR and DIEN schools began implementation in 2007–08 or later and therefore have only ninth- and tenth-graders in the outcomes analyses. The effects of HSRR, HSTW, HSRD, and DIEN on student outcomes are presented below.

HSRR Effects on Student Outcomes

The researchers analyzed HSRR effects for two student samples:(1) tenth-graders in 15 HSRR schools that have been implementing the model for two years; and (2) ninth-graders at 28 HSRR schools that have been implementing the model for one or two years. The HSRR effects were estimated separately for ninth-grade nonrepeaters and repeaters[65] and tenth-grade former nonrepeaters[66] (simply referred to as tenth-graders hereafter).

In addition to looking at a snapshot of ninth-, tenth- and eleventh-grade student achievement between HSRR and comparison schools, the researchers also conducted growth modeling on TAKS standardized scores from eighth to tenth grade.[67] The analysis included ninth-graders in 2007–08 and tenth-graders in 2008–09 from 28 HSRR schools and their comparison schools. Growth modeling enables a comprehensive study of the HSRR effect on students' overall progress in math by examining students' growth trajectories after their schools began HSRR implementation and including students who were at the school for only the ninth or the tenth grade, thereby making full use of the available data. Unless otherwise stated, all results discussed below are statistically significant at the 0.05 significance level (i.e., $p < 0.05$).

TAKS-Mathematics, English, Science, and Social Studies Achievement

Exhibits 5-5 through 5-8 depict the effect of HSRR on various student outcomes across the three samples of first-time ninth-graders (nonrepeaters), ninth-grade repeaters and tenth-graders who have been in the same school for two consecutive years. HSRR and comparison school students performed similarly on TAKS in all subject areas as well as passing all TAKS for ninth- or tenth-graders. Furthermore, no statistically significant differences in TAKS-Math growth rate were evident between HSRR and comparison school students.

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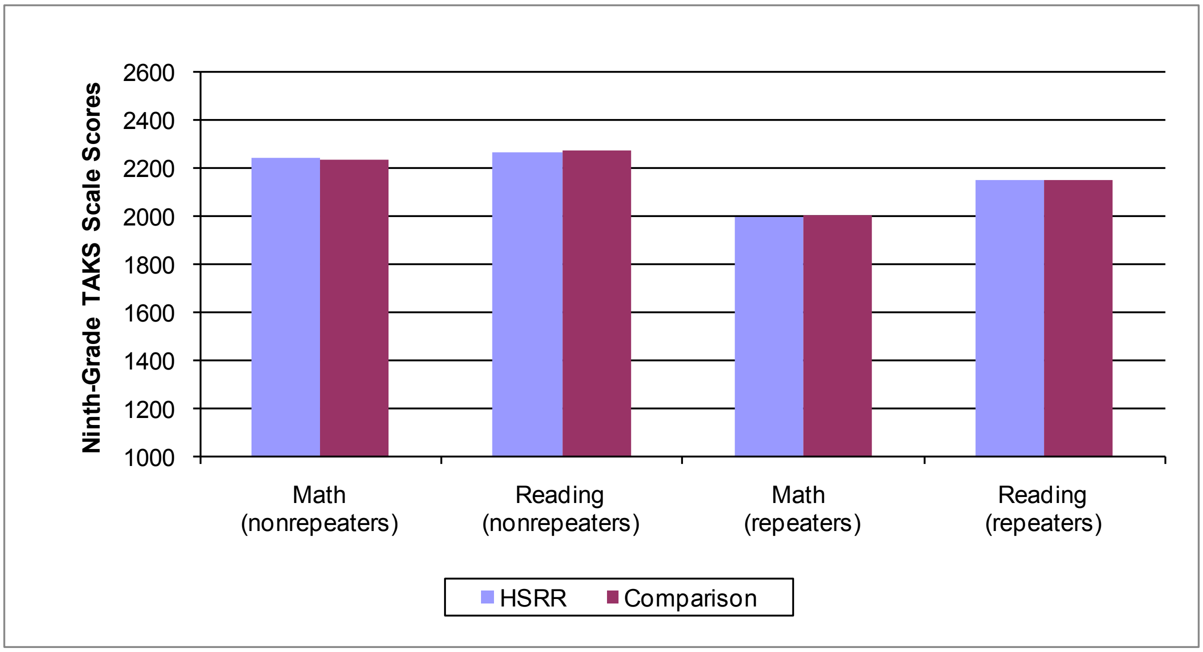
65 Ninth-grade repeaters and nonrepeaters were analyzed separately because their prior achievement indicators are not comparable and cannot be included in the same model. The prior year achievement indicator is eighth-grade achievement for nonrepeaters and ninth-grade achievement for repeaters. In addition, repeaters by definition have been exposed to the curriculum before, and being at risk, likely have different experiences at schools from nonrepeaters, e.g., are potentially less engaged or confident, or alternatively receive extra academic supports. Thus, HSRR is not expected to impact repeaters in the same way as nonrepeaters.

66 A large proportion (around 30%) of ninth-grade repeaters were promoted to their original cohort in the subsequent year and a larger proportion (around 50%) were promoted to their original cohort in two years. These ninth-grade repeaters do not belong to tenth grade in the following year or to eleventh grade in the year after. Therefore, repeaters are not included in tenth- and eleventh-grade analysis.

67 TAKS mathematics scores were standardized against the state average for eighth, ninth and tenth grade respectively. The standardized scores have a mean of 0 and a standard deviation of 1 for each grade.

It is important to keep in mind that the schools included in the evaluation have been implementing reforms for three years or less and that student achievement outcomes are unlikely to emerge so soon, especially at the large comprehensive high schools served by the High School Redesign initiative. Thus the lack of positive results to date on TAKS scores for HSRR schools does not yet indicate whether higher achievement versus comparison schools might emerge in the future. The similar results between HSRR and the matched comparisons may also be due to the state policy environment that exerts the same accountability pressures on THSP and non-THSP schools alike, and for comparison schools with AU status, Campus Intervention Teams and other resources may provide extra supports, allowing them to undergo their own reforms. Texas is a large state with many sources of TA and reform ideas and one cannot assume that the comparison schools are standing still in such a lively setting.

Exhibit 5-5
HSRR Effect on Ninth-Grade TAKS Scores in 2008–09



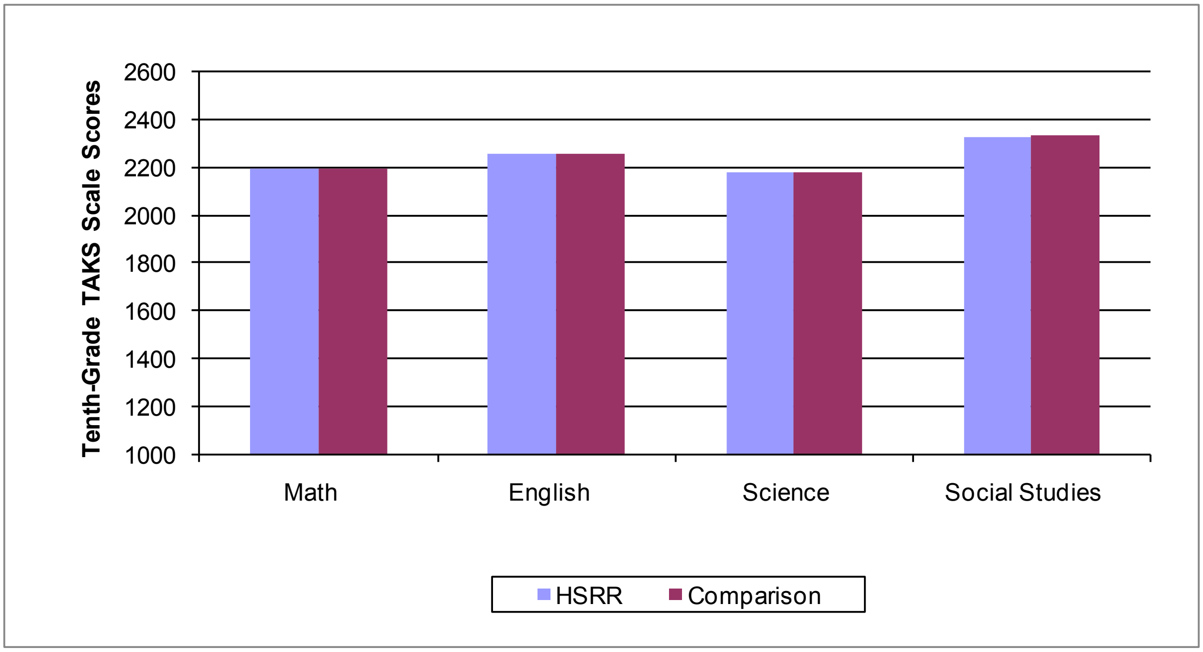
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*p < .05, ◊p < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

4,793 students from 27 HSRR schools and 33,373 students from 159 comparison schools are included in the analyses.

Exhibit 5-6
HSRR Effect on Tenth-Grade TAKS Scores in 2008–09



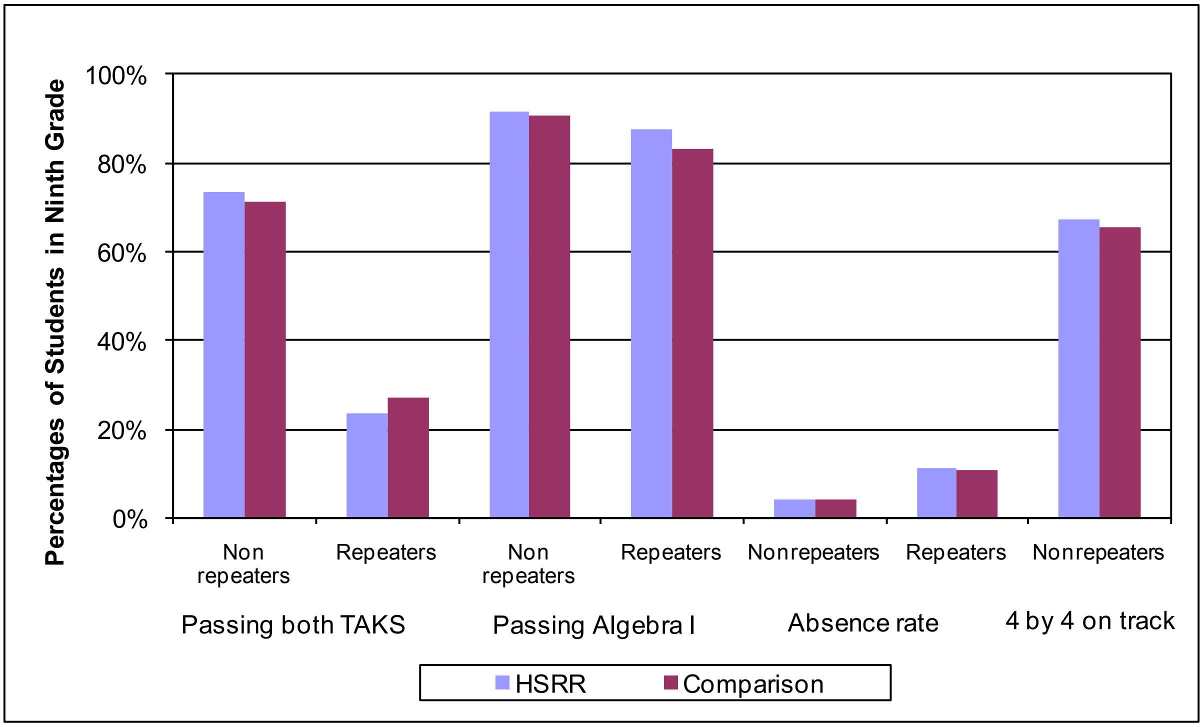
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*$p < .05$, ◊$p < .10$.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

2,837 students from 15 HSRR schools and 19,251 students from 87 comparison schools are included in the analyses.

Exhibit 5-7
HSRR Effect on Ninth-Grade Outcomes Other than TAKS Scores in 2008–09

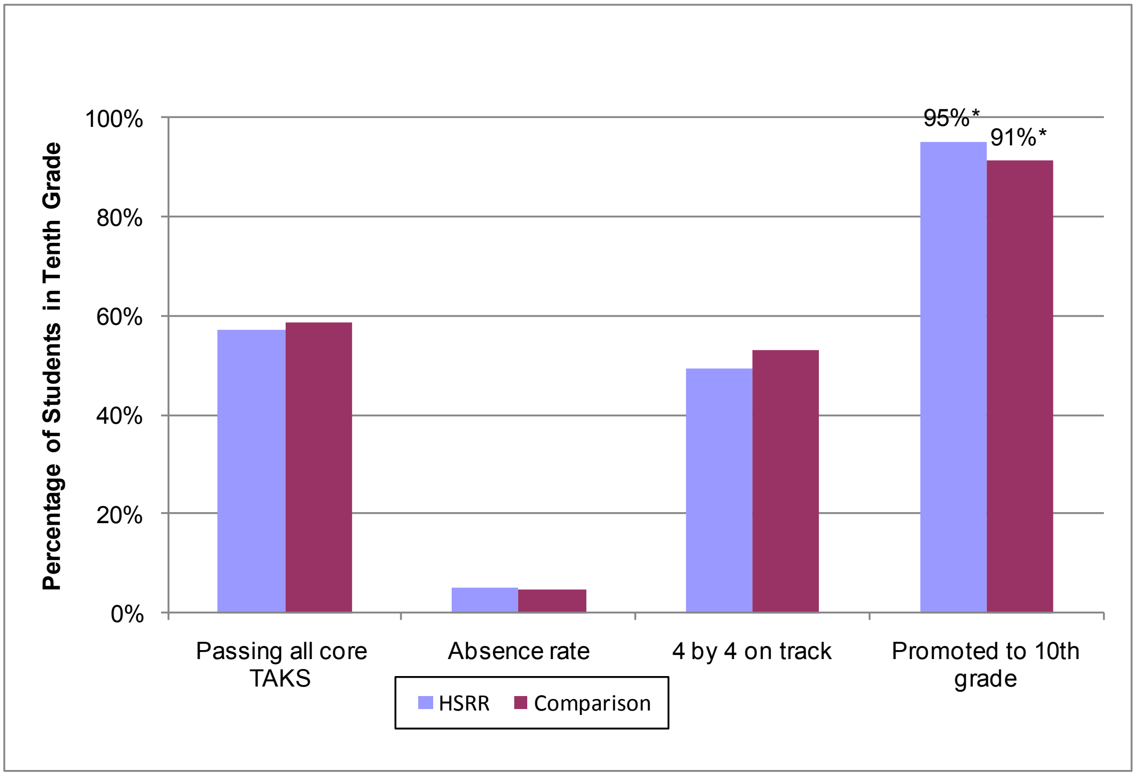


Notes: Values are shown for significant differences in outcomes.

**p* < .05, ◊*p* < .10.

4,793 students from 27 HSRR schools and 33,373 students from 159 comparison schools are included in the analyses.

Exhibit 5-8
HSRR Effect on Tenth-Grade Outcomes Other than TAKS Scores in 2008–09



Notes: Values are shown for significant differences in outcomes.

*$p < .05$, ◊$p < .10$.

2,837 students from 15 HSRR schools and 19,251 students from 87 comparison schools are included in the analyses.

Attendance

Ninth- and tenth-grade students in HSRR schools did not differ from their comparison school peers in attendance rate (Exhibits 5-7 and 5-8). As suggested in the T-STEM and ECHS chapters, attendance is a widely acknowledged precursor to student learning and site visit data indicate that THSP and non-THSP schools alike put a lot of energy into improving student attendance.

"Four by Four" on Track

HSRR ninth- and tenth-graders also did not differ from their comparison school counterparts in being on track with the "four by four" curriculum (Exhibits 5-7 and 5-8). This lack of difference potentially resulted because all schools were aware of the graduation requirements and have needed to implement strategies to ensure their 2007–08 ninth-graders and subsequent student cohorts are able to graduate with four courses in each of the four core academic areas.

Other Outcomes

HSRR had a positive effect on promotion to the tenth grade. Ninth-graders in HSRR schools are twice as likely to be promoted to the tenth grade as their comparison school peers (Exhibit 5-8). The probability of being promoted to tenth grade for an average first-time ninth-grader in HSRR schools is 95% versus 91% in comparison schools. It is difficult to interpret differences in the likelihood of promotion. Multiple explanations are possible. It might mean that HSRR schools are doing a better job of transitioning students into high school and supporting them in ninth-grade, or that more HSRR schools have a "no zero" policy so that students have the opportunity to make up missed or failed assignments, pass the course, and stay on track. Data from site visits to HSRR schools suggest these potential explanations, but the data are inconsistent. On the other hand, the higher likelihood of tenth-grade promotion might be a signal that HSRR schools promote more easily than comparison schools. However, because HSRR tenth-graders' TAKS performance is similar to their comparison schools' counterparts, it does not appear that HSRR tenth-graders are being promoted less prepared. No significant differences between HSRR schools and comparison schools were found in passing Algebra I by the ninth grade (Exhibit 5-7), again potentially because passing Algebra I is implied in the "four by four" requirement that affects all schools.

HSRR 2008–09 Outcomes Summary

HSRR first-time ninth-graders had a higher likelihood of being promoted to tenth grade, but no statistically significant HSRR effects were found on other ninth- and tenth-grade student outcomes investigated.

Longitudinal Comparison of HSRR Effects

The 2008–09 outcomes analysis provides a snapshot capturing the cumulative effect of HSRR on student outcomes. Likewise, the first annual report (Young, et al., 2010) provided a snapshot of the HSRR effect on student outcomes in the previous year. Two approaches to comparing the 2007–08 and 2008–09 results can trace the performance of HSRR schools over time: (1) looking at how ninth-graders in one year fare compared to ninth-graders in the next year (i.e., cross-sectionally); (2) examining how students in the same cohort perform over the years (i.e., as ninth-graders in 2007–08 and then as tenth-graders in 2008–09). The first approach can indicate whether HSRR schools improve in serving students at specific grade levels, and the second approach sheds light on when during a typical student progression through high school HSRR has effects on student outcomes and whether the effects are sustained over time. Both kinds of comparisons are presented below.

Comparing Different Cohorts of Students. HSRR had a marginally significant negative effect on TAKS-Reading for ninth-grade repeaters in 2007–08 but did not have any other significant effects on TAKS performance on ninth graders in 2007–08 or 2008–09. Thus there is no indication in these two years that HSRR schools have improved in serving subsequent cohorts of students as they pursued their reforms for another year.

Comparing Same Cohorts of Students over Time. No statistically significant HSRR effects were consistent between 2008–09 tenth-grade results and the ninth-grade results the year before. Thus the results do not suggest that HSRR schools are improving in how they serve students as they progress through high school.

HSTW Effects on Student Outcomes

The researchers analyzed HSTW effects for three student samples: (1) eleventh-graders in 14 HSTW schools that have been implementing the model for three years; (2) tenth-graders in 22 HSTW schools that have been implementing the model for two or three years; and (3) ninth-graders at 24 HSTW schools that have been implementing the model for one, two or three years. The HSTW effects were estimated separately for ninth-grade nonrepeaters and repeaters[68] and tenth- and eleventh-grade former nonrepeaters[69] (simply referred to as tenth- and eleventh-graders hereafter).

In addition to looking at a snapshot of ninth-, tenth- and eleventh-grade student achievement between HSTW and comparison schools, the researchers also conducted growth modeling on TAKS standardized scores in math from eighth to tenth grade.[70] The analysis included ninth-graders in 2007–08 and tenth-graders in 2008–09 from 22 HSTW schools and their comparison schools. Growth modeling enables a comprehensive study of the HSTW effect on students' overall progress in math by examining students' growth trajectories after their schools began HSTW implementation and including students who were at the school for only the ninth or the tenth grade, thereby making full use of the available data. Unless otherwise stated, all results discussed below are statistically significant at the 0.05 significance level (i.e., $p < .05$).

TAKS-Math, English/Language Arts, Science, and Social Studies Achievement

Exhibits 5-9 to 5-14 show the effect of HSTW on various outcomes across the four samples of first-time ninth-graders (nonrepeaters), ninth-grade repeaters, tenth-graders who have been in the same school for two consecutive years, and eleventh-graders who have been in the same school for three consecutive years. Ninth-grade nonrepeaters in HSTW and comparison schools did not differ in TAKS-Math or Reading achievement. Similarly, tenth- and eleventh-graders in HSTW and comparison schools did not differ in TAKS-Math, English/Language Arts, Science, and Social Studies achievement. HSTW had no effect on the likelihood of passing all TAKS subjects compared with the matched schools among ninth-grade nonrepeaters, tenth-graders, and eleventh-graders. Furthermore, no statistically significant differences between HSTW and comparison school students were evident in TAKS-Math growth rate.

Ninth-grade repeaters in HSTW schools had a higher likelihood of passing all TAKS than their peers in comparison schools.

68 Ninth-grade repeaters and nonrepeaters were analyzed separately because their prior achievement indicators are not comparable and cannot be included in the same model. The prior year achievement indicator is eighth-grade achievement for nonrepeaters and ninth-grade achievement for repeaters. In addition, repeaters by definition have been exposed to the curriculum before, and being at risk, likely have different experiences at schools from nonrepeaters, e.g., are potentially less engaged or confident, or alternatively receive extra academic supports. Thus, HSTW is not expected to impact repeaters in the same way as nonrepeaters.

69 A large proportion (around 30%) of ninth-grade repeaters were promoted to their original cohort in the subsequent year and a larger proportion (around 50%) were promoted to their original cohort in two years. These ninth-grade repeaters do not belong to tenth grade in the following year or to eleventh grade in the year after. Therefore, repeaters are not included in tenth- and eleventh-grade analysis.

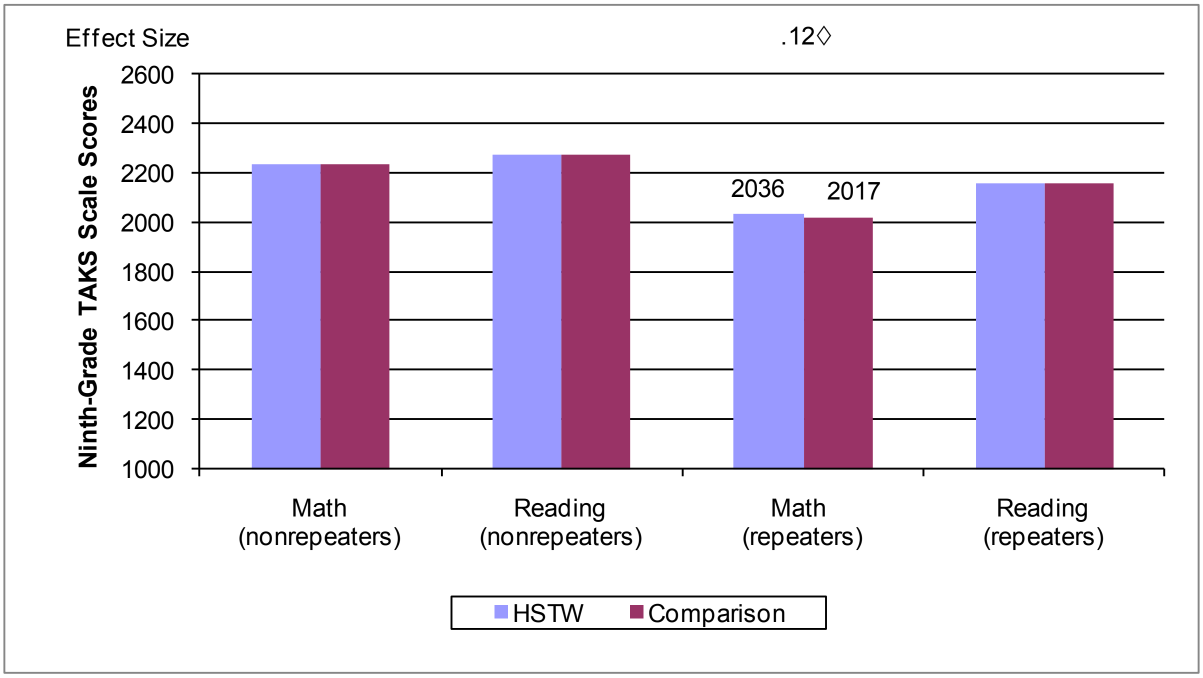
70 TAKS mathematics scores were standardized against the state average for eighth, ninth and tenth grade respectively. The standardized scores have a mean of 0 and a standard deviation of 1 for each grade.

The HSTW program, however, did have a marginally significant ($p < .10$) positive effect in TAKS-Math achievement among ninth-grade repeaters in 2008–09 (Exhibit 5-9). These students scored an average of 19 points higher on TAKS-Math than their comparison school peers. This HSTW effect, combined with a pooled standard deviation of 167 for ninth-grade repeater mathematics, translates into a small effect size of 0.12 standard deviations.[71] The HSTW program also had a positive effect on the likelihood of passing TAKS in both reading and mathematics for ninth-grade repeaters, who were 1.6 times more likely to do so than their comparison school peers (Exhibit 5-12). The probability of passing both TAKS-Math and TAKS-Reading for an average first-time ninth-grader is 36% in HSTW schools versus 29% in comparison schools.

Arguably, under state accountability policies, all schools face the same incentives to improve the performance of ninth-grade repeaters. These few results may indicate that perhaps the HSTW schools focused attention on the most at-risk students—those who have already failed ninth-grade—to try to get them back on track.

71 The effect size was calculated by dividing the coefficient of the THSP or program indicator by the pooled within-group standard deviation of the outcome at the student level (What Works Clearinghouse, 2008). Note that both the *THSP effect* and the *effect size* are presented throughout the discussion of results. The former is the raw differences between students in THSP and comparison schools, whereas the latter puts all the raw differences on the same metric. Unlike THSP effects, effect sizes can be compared across different outcomes and indicate the strength of the intervention effect. Consistent with standard practice, the evaluation team considers an effect size of 0.20 as small, 0.50 as moderate, and 0.80 as large. Therefore, 0.12 is considered a small effect size (Cohen, 1988).

Exhibit 5-9
HSTW Effect on Ninth-Grade TAKS Scores in 2008–09



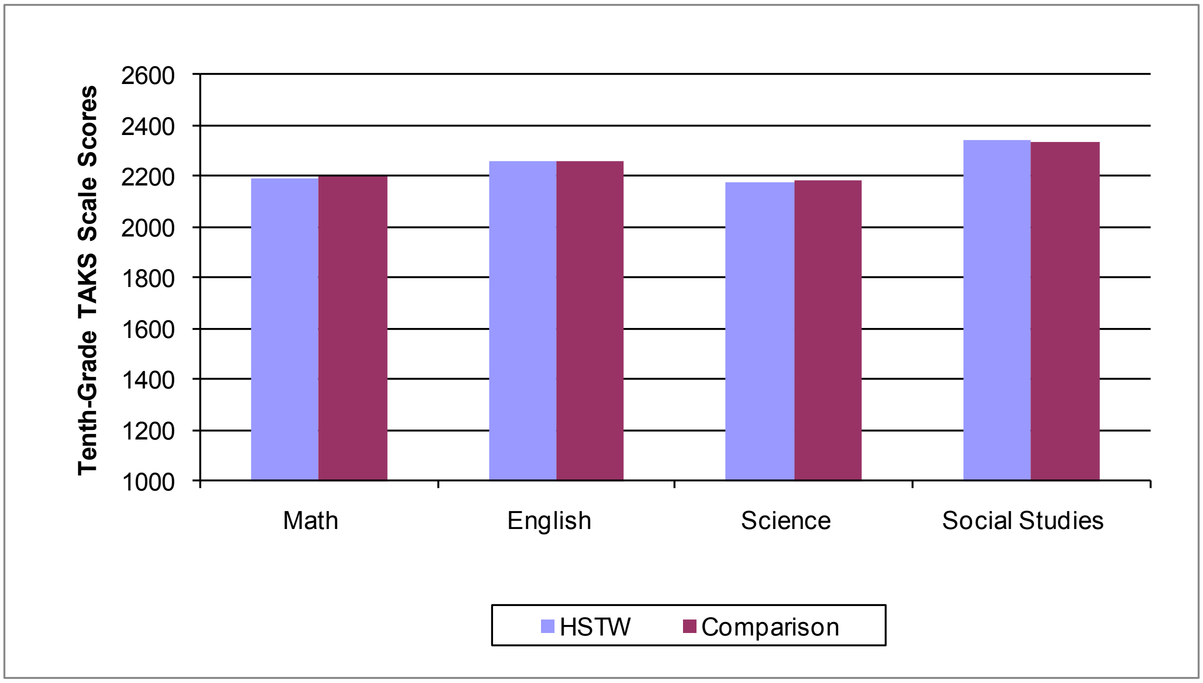
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*$p < .05$, ◊$p < .10$.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

6,348 students from 23 HSTW schools and 38,179 students from 129 comparison schools are included in the analyses.

Exhibit 5-10
HSTW Effect on Tenth-Grade TAKS Scores in 2008–09



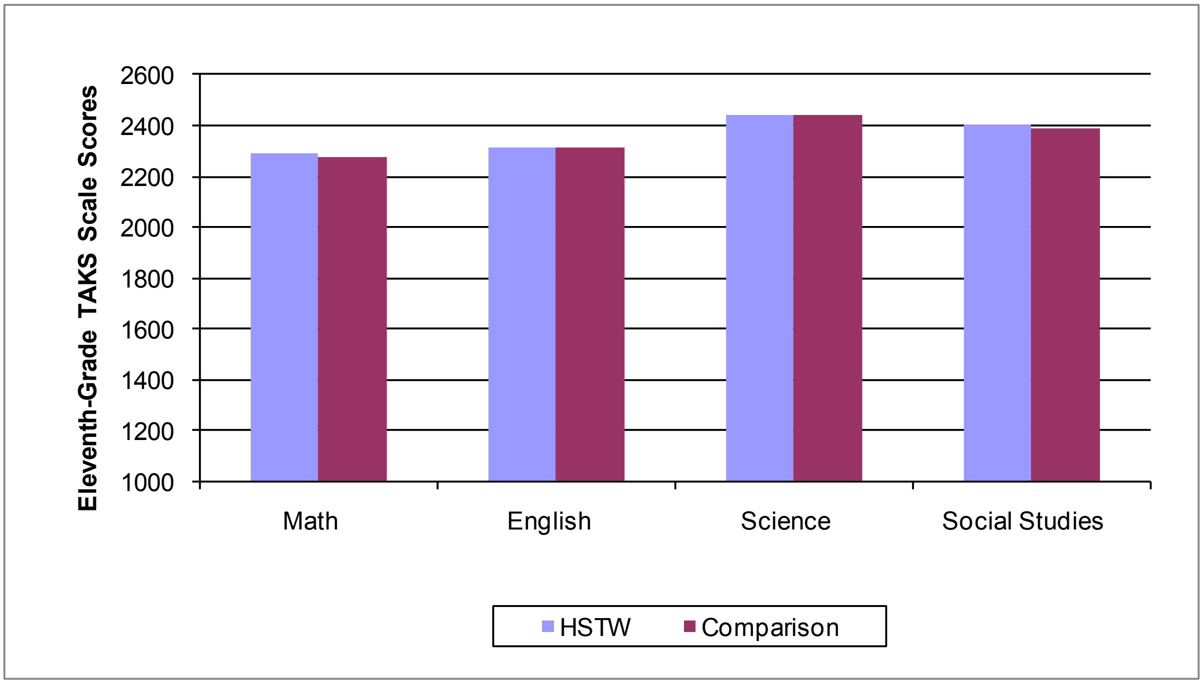
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

**p* < .05, ◊*p* < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

5,369 students from 22 HSTW schools and 17,057 students from 127 comparison schools are included in the analyses.

Exhibit 5-11
HSTW Effect on Eleventh-Grade TAKS Scores in 2008–09



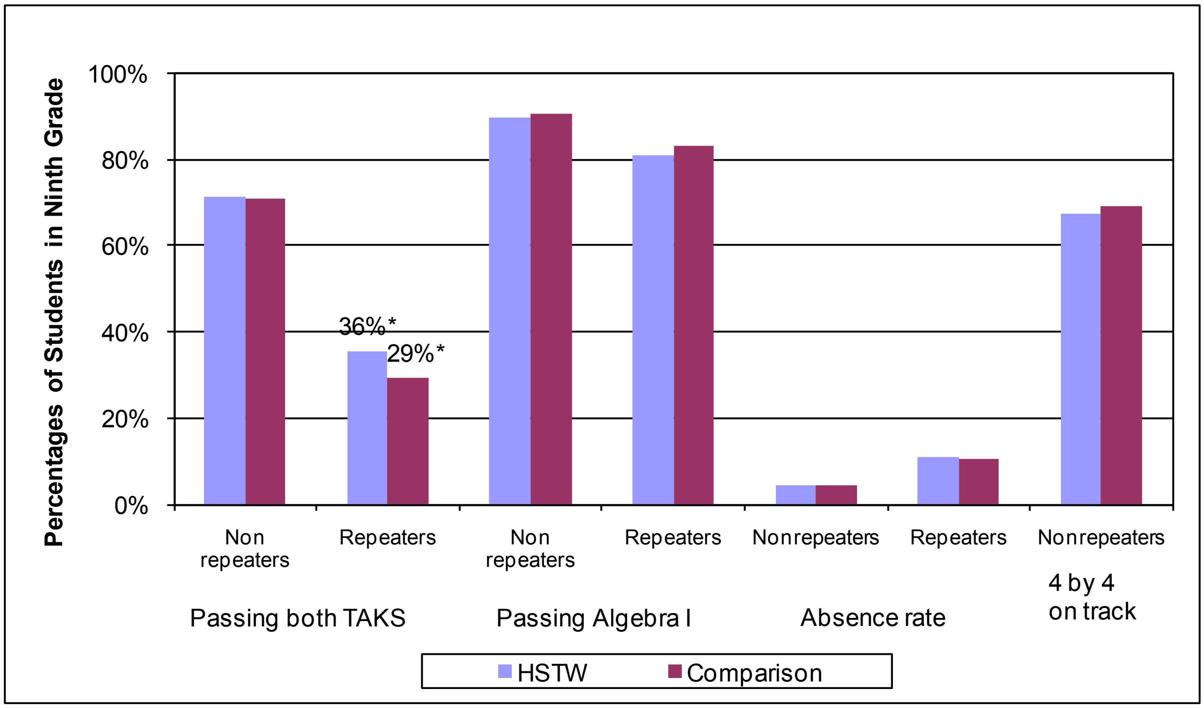
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*p < .05, ◊p < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

3,129 students from 14 HSTW schools and 17,390 students from 81 comparison schools are included in the analyses.

Exhibit 5-12
HSTW Effect on Ninth-Grade Outcomes other than TAKS Scores in 2008–09



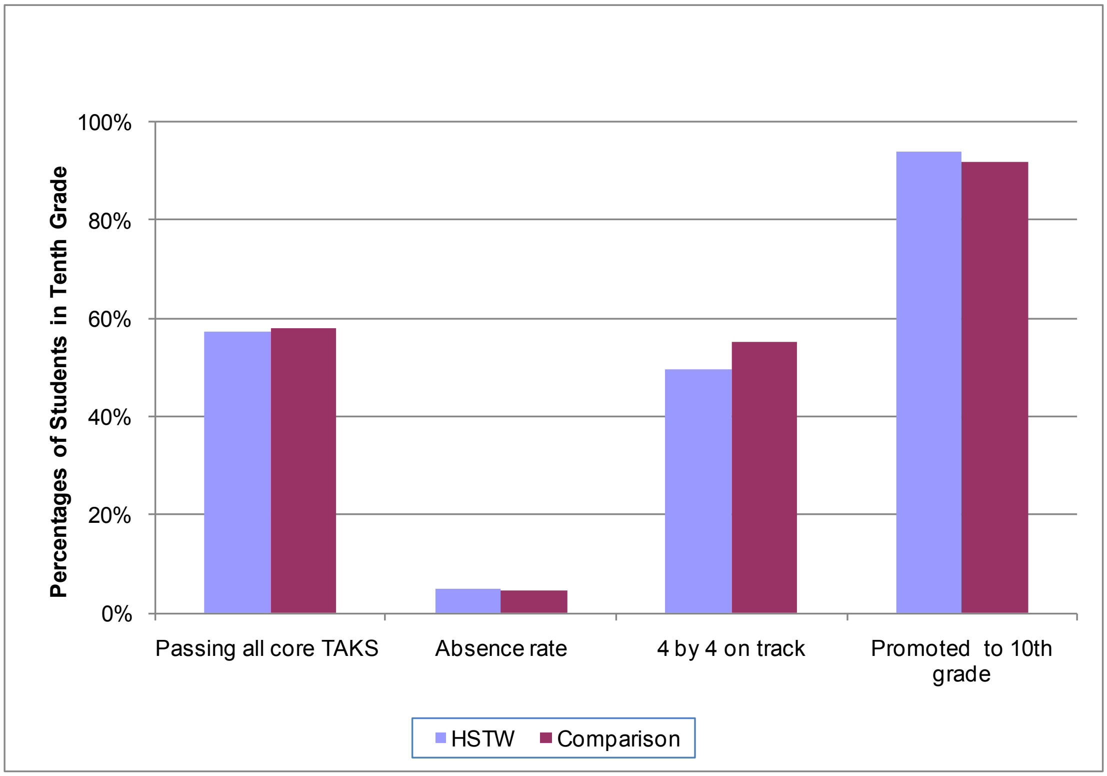
Notes: Values are shown on top of the bars for significant TAKS score differences.

*$p < .05$, ◊$p < .10$.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

6,348 students from 23 HSTW schools and 38,179 students from 129 comparison schools are included in the analyses.

Exhibit 5-13
HSTW Effect on Tenth-Grade Outcomes Other than TAKS Scores in 2008–09



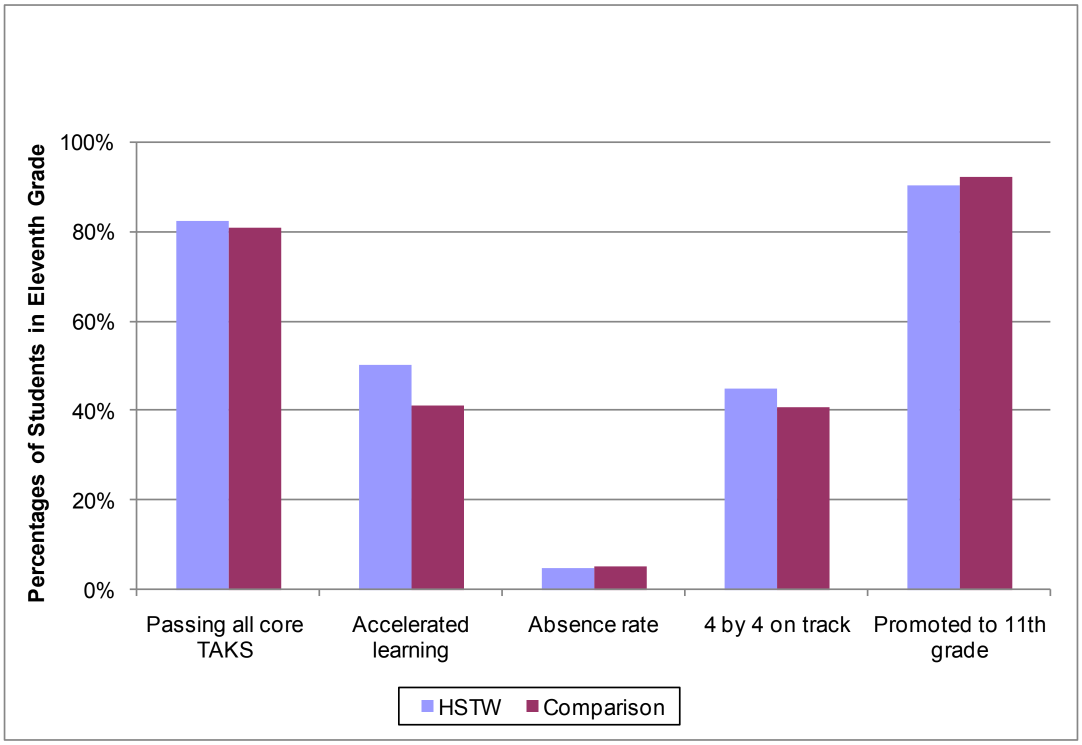
Notes: Values are shown on top of the bars for significant TAKS score differences.

**p* < .05, ◊*p* < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

5,369 students from 22 HSTW schools and 17,057 students from 127 comparison schools are included in the analyses.

Exhibit 5-14
HSTW Effect on Eleventh-Grade Outcomes Other than TAKS Scores in 2008–09



Notes: Values are shown on top of the bars for significant TAKS score differences.

**p* < .05, ◊*p* < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

3,129 students from 14 HSTW schools and 17,390 students from 81 comparison schools are included in the analyses.

Attendance

No statistically significant differences in attendance rate appeared between ninth- tenth- and eleventh-graders in HSTW schools and their peers in comparison schools (Exhibits 5-12 to 5-14). As stated with HSRR, it is likely that HSTW and comparison schools both placed an emphasis on improving attendance.

"Four by Four" on Track

Similarly, no statistically significant differences in being on track with the "four by four" curriculum were found between HSTW and comparison school ninth- and tenth-graders (Exhibits 5-12 to 5-14, again likely because all schools are subject to the "four by four" graduation requirement.

Other Outcomes

HSTW schools and comparison school students did not differ on their likelihood of passing Algebra I by the ninth grade, being promoted into the tenth grade, or participating in accelerated learning at eleventh grade (Exhibits 5-12 to 5-14). The cautions presented in the discussion of HSRR student outcomes applied here as well. With three or fewer years of implementing reforms at large comprehensive high schools, where established norms and practices among staff and students may take a long time to change, it may be too soon to tell whether HSTW will ultimately produce positive results versus the comparison schools.

HSTW 2008–09 Outcomes Summary

Ninth-grade repeaters in HSTW schools were more likely to pass TAKS in both mathematics and reading, but no statistically significant HSTW effects emerged among the other outcomes investigated.

Longitudinal Comparison of HSTW Effects

The 2008–09 outcomes analysis provides a snapshot capturing the cumulative effect of HSTW on student outcomes. Likewise, the first annual report (Young, et al., 2010) provided a snapshot of the HSTW effect on student outcomes in the previous year. Two approaches to comparing the 2007–08 and 2008–09 results can trace the performance of HSTW schools over time: (1) looking at how ninth-graders in one year fare compared to ninth-graders in the next year (i.e., cross-sectional); (2) examining how students in the same cohort perform over the years (i.e., as ninth-graders in 2007–08 and then as tenth-graders in 2008–09). The first approach can indicate whether HSTW schools improve in serving students at specific grade levels, and the second approach sheds light on when during a typical student progression through high school HSTW has effects on student outcomes and whether the effects are sustained over time. Both kinds of comparisons are presented below.

Comparing Different Cohorts of Students. HSTW had a marginally significant positive effect on TAKS-Math for ninth-grade repeaters in 2008–09 but did not have any other significant effects on ninth- and tenth-graders in either year. Thus there is no indication that HSTW schools improved in serving later cohorts of students.

Comparing Same Cohort of Students over Time. No statistically significant HSTW effects were found on any of the outcomes that were compared over time for the same cohort of students. HSTW schools appear to be serving students comparably to the matched schools as the student cohorts move through the high school grades. By the same token, HSTW is not improving achievement for those students, as compared to the matched schools.

HSRD Effects on Student Outcomes

The researchers analyzed HSRD effects for three student samples: (1) eleventh-graders in six HSRD schools that have been implementing the model for three years; (2) tenth-graders in six HSRD schools that have been implementing the model for two or three years; and (3) ninth-graders at the same six HSRD schools that have been implementing the model for one, two or three years. The HSRD effects were estimated separately for ninth-grade nonrepeaters and repeaters[72] and tenth- and eleventh-grade former nonrepeaters,[73] simply referred to as tenth- and eleventh-graders hereafter.

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72 Ninth-grade repeaters and nonrepeaters were analyzed separately because their prior achievement indicators are not comparable and cannot be included in the same model. The prior year achievement indicator is eighth-grade achievement for nonrepeaters and ninth-grade achievement for repeaters. In addition, repeaters by definition have been exposed to the curriculum before, and being at risk, likely have different experiences at schools from nonrepeaters, e.g., are potentially less engaged or confident, or alternatively receive extra academic supports. Thus, HSRD is not expected to impact repeaters in the same way as nonrepeaters.

In addition to looking at a snapshot of ninth-, tenth- and eleventh-grade student achievement between HSRD and comparison schools, the researchers also conducted growth modeling on TAKS standardized scores in math from eighth to tenth grade.[74] The analysis included ninth-graders in 2007–08 and tenth-graders in 2008–09 from the HSRD schools and their comparison schools. Growth modeling enables a comprehensive study of the HSRD effect on students' overall progress in math by examining students' growth trajectories after their schools began HSRD implementation and including students who were at the school for only the ninth or the tenth grade, thereby making full use of the available data. Unless otherwise stated, all results discussed below are statistically significant at the 0.05 significance level (i.e., $p < .05$).

TAKS-Math, English/Language Arts, Science, and Social Studies Achievement

Exhibits 5-15 through 5-20 illustrate the effect of HSRD on various TAKS outcomes across the four samples of first-time ninth-graders (nonrepeaters), ninth-grade repeaters, tenth-graders who have been in the same school for two consecutive years, and eleventh-graders who have been in the same school for three consecutive years. No significant differences between HSRD and comparison schools were apparent in TAKS-Math or Reading achievement for ninth-grade nonrepeaters. Tenth- and eleventh-graders in HSRD and comparison schools also performed similarly in all TAKS subjects. Furthermore, HSRD students did not differ from their comparison school peers in TAKS-Math growth rate. HSTW ninth-, tenth-, and eleventh-grade likewise did not differ from their comparison school peers on the likelihood of passing all TAKS subjects. As with HSRR and HSTW schools, HSRD schools had been implementing reforms for three years and it may be premature to expect any effects on student test scores.

> *Ninth-grade repeaters in HSRD schools had lower TAKS reading scores than their peers in comparison schools. Tenth-graders in HSRD schools had higher absence rates than their peers in comparison schools.*

The HSRD program had a marginally significant ($p < .10$) negative effect on the TAKS achievement among ninth-grade repeaters in 2008–09. They scored on average of 30 points lower on both TAKS-Math ($p < .10$) and Reading than their peers in comparison schools (Exhibit 5-15). These HSRD effects, combined with pooled standard deviations of 167 and 150 points for ninth-grade repeater mathematics and reading scores, respectively, translate into small effect sizes of 0.18 and 0.20 standard deviations for mathematics and reading respectively.[75] Although only marginally significant, these results are

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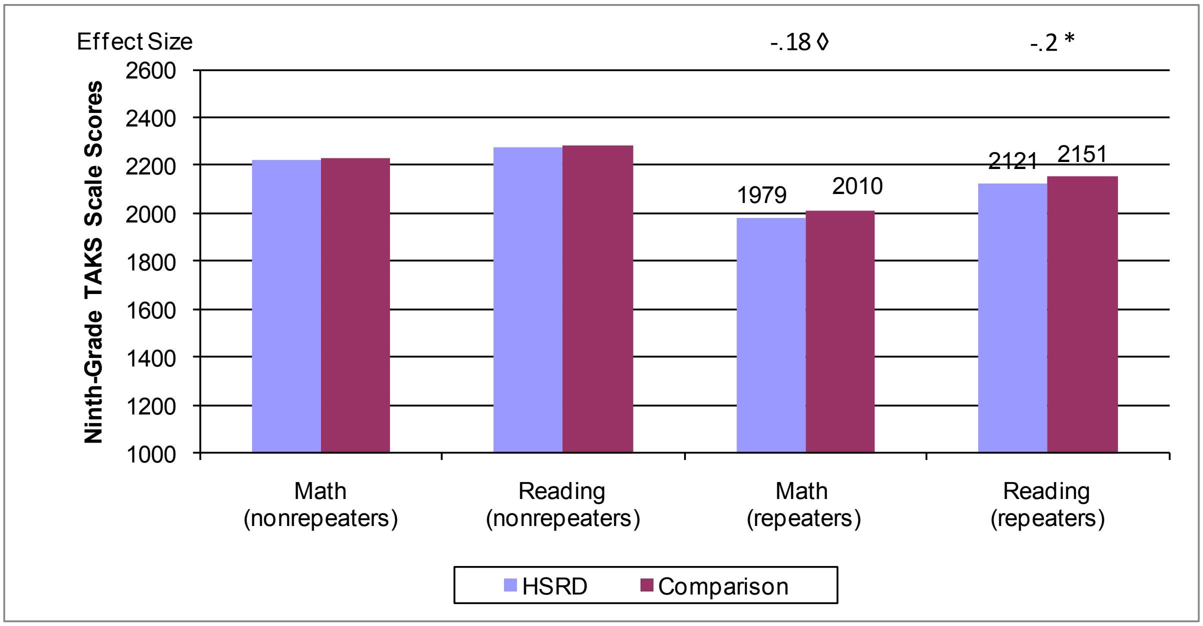
73 A large proportion (around 30%) of ninth-grade repeaters were promoted to their original cohort in the subsequent year and a larger proportion (around 50%) were promoted to their original cohort in two years. These ninth-grade repeaters do not belong to tenth grade in the following year or to eleventh grade in the year after. Therefore, repeaters are not included in tenth- and eleventh-grade analysis.

74 TAKS mathematics scores were standardized against the state average for eighth, ninth and tenth grade respectively. The standardized scores have a mean of 0 and a standard deviation of 1 for each grade.

75 The effect size was calculated by dividing the coefficient of the THSP or program indicator by the pooled within-group standard deviation of the outcome at the student level (What Works Clearinghouse, 2008). Note that both the *THSP effect* and the *effect size* are presented throughout the discussion of results. The former is the raw differences between students in THSP and comparison schools, whereas the latter puts all the raw differences on the same metric. Unlike THSP effects, effect sizes can be compared across different outcomes and indicate the strength of the intervention effect. Consistent with standard practice, the evaluation team considers an effect size of 0.20 as small, 0.50 as moderate, and 0.80 as large. Therefore, 0.18 and 0.20 are considered small effect sizes (Cohen, 1988).

unexpected. Even if large comprehensive high schools cannot be expected to change very quickly, one would expect them to perform as well as their comparison schools and not to lose ground. As stated earlier, the multiple reform initiatives and grant programs available to all schools likely means that comparison schools are also implementing improvement strategies.

Exhibit 5-15
HSRD Effect on Ninth-Grade TAKS Scores in 2008–09



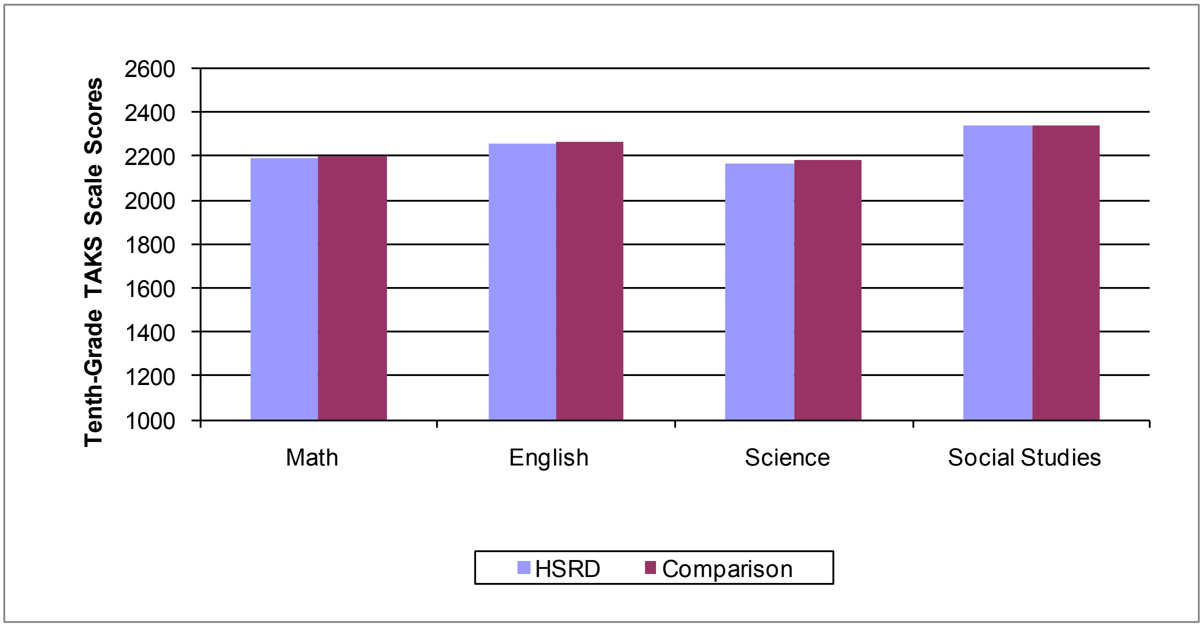
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*$p < .05$, ◊$p < .10$.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

1,978 students from 6 HSRD schools and 14,043 students from 33 comparison schools are included in the analyses.

Exhibit 5-16
HSRD Effect on Tenth-Grade TAKS Scores in 2008–09



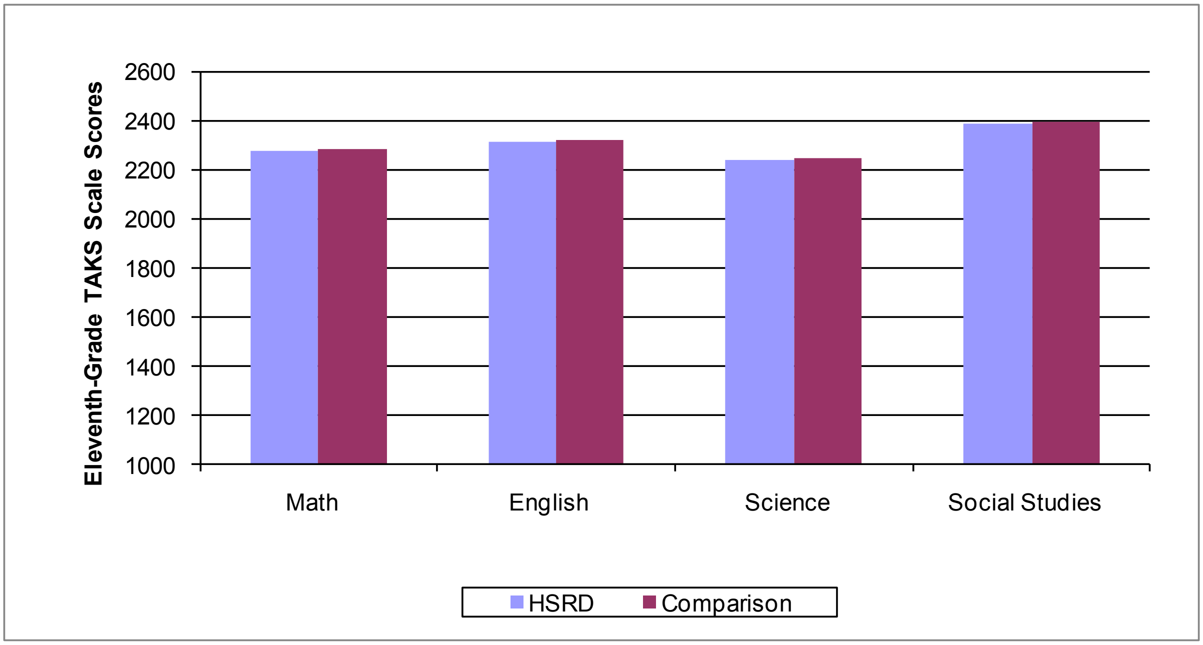
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*$p < .05$, ◊$p < .10$.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

1,598 students from 6 HSRD schools and 10,643 students from 34 comparison schools are included in the analyses.

Exhibit 5-17
HSRD Effect on Eleventh-Grade TAKS Scores in 2008–09



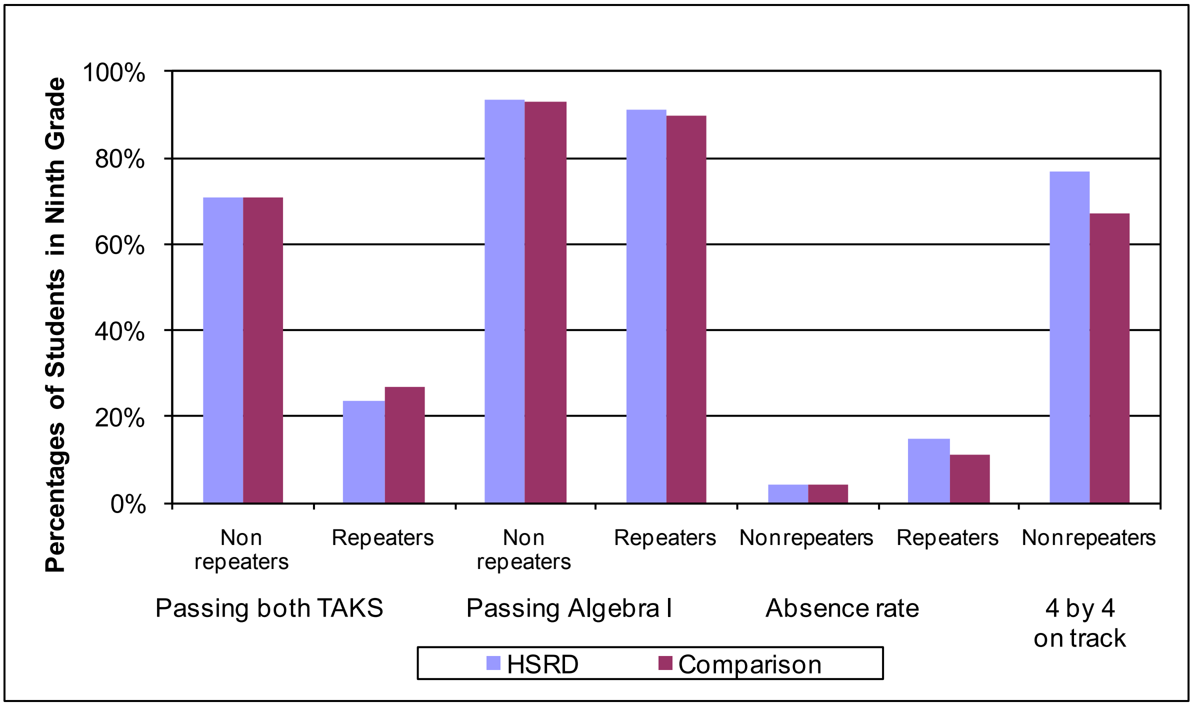
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*p < .05, ◊p < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

1,459 students from 6 HSRD schools and 9,298 students from 34 comparison schools are included in the analyses.

Exhibit 5-18
HSRD Effect on Ninth-Grade Outcomes Other than TAKS Scores in 2008–09

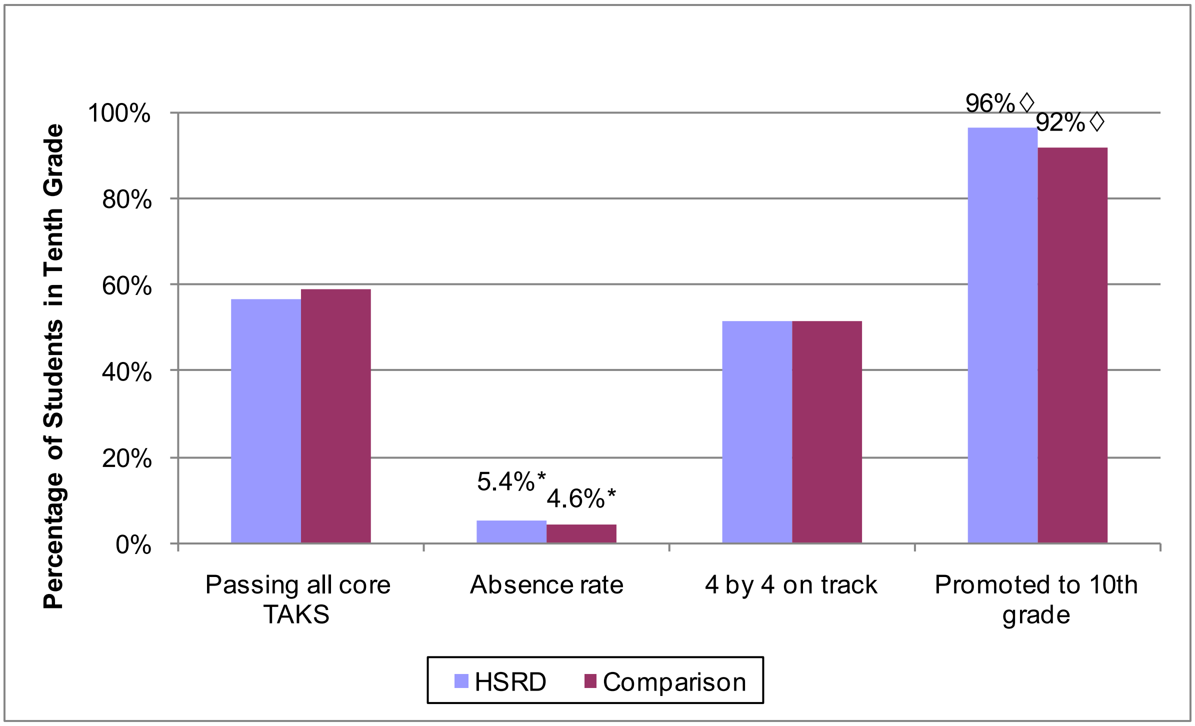


Notes: Values are shown on top of the bars for significant TAKS score differences.

*$p < .05$, ◊$p < .10$.

1,978 students from 6 HSRD schools and 14,043 students from 33 comparison schools are included in the analyses.

Exhibit 5-19
HSRD Effect on Tenth-Grade Outcomes Other than TAKS Scores in 2008–09

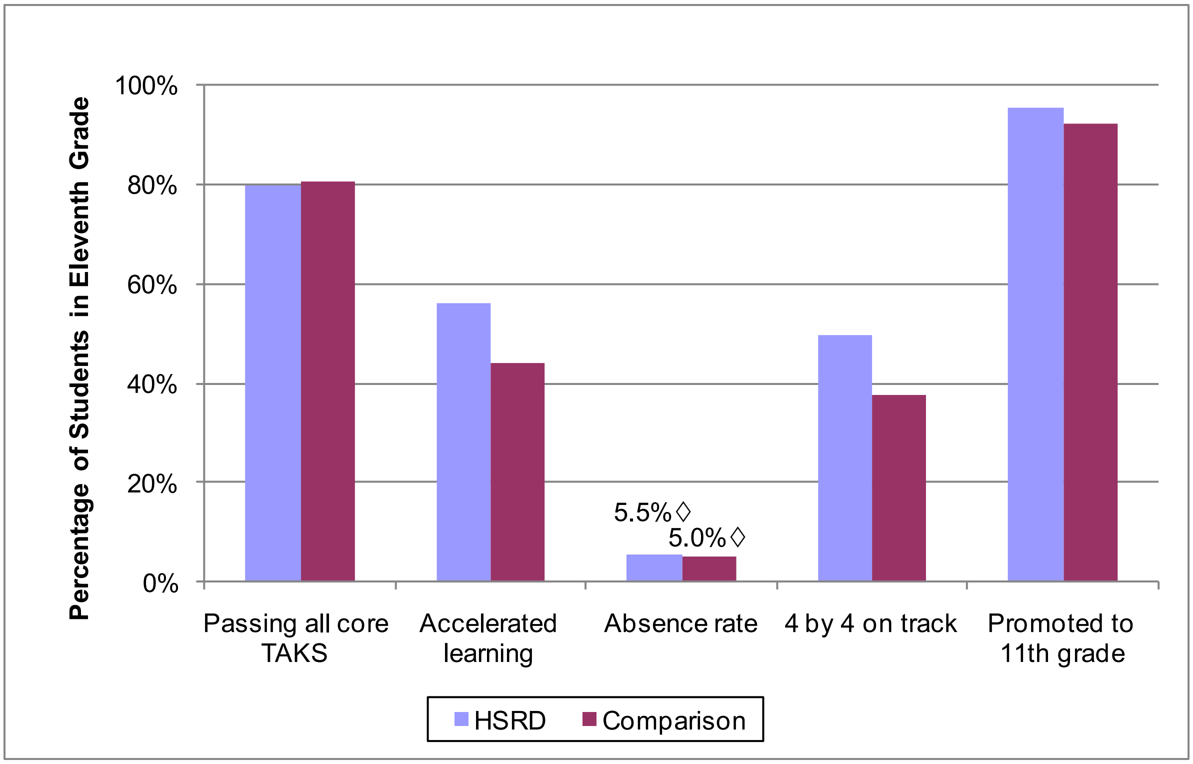


Notes: Values are shown on top of the bars for significant TAKS score differences.

*$p < .05$, ◊$p < .10$.

1,598 students from 6 HSRD schools and 10,643 students from 34 comparison schools are included in the analyses.

Exhibit 5-20
HSRD Effect on Eleventh-Grade Outcomes Other than TAKS Scores in 2008–09



Notes: Values are shown on top of the bars for significant TAKS score differences.

*$p < .05$, ◊$p < .10$.

1,459 students from 6 HSRD schools and 9,298 students from 34 comparison schools are included in the analyses.

Attendance

HSRD had a negative effect on attendance for tenth-graders and a marginally significant ($p < .10$) negative effect on attendance for eleventh-graders (Exhibits 5-19 and 5-20). Tenth-graders in HSRD had a higher likelihood (1.2 times) of being absent than their peers in comparison schools. The probability of being absent for an average tenth-grader is 5.4% in HSRD schools versus 4.6% in comparison schools. Eleventh-graders in HSRD had a marginally significant ($p < .10$) higher likelihood (1.1 times) of being absent than their peers in comparison schools. The probability of being absent for an average eleventh-grader is 5.5% in HSRD schools versus 5.0% in comparison schools. On the other hand, no statistically significant differences emerged in ninth-graders' attendance rate between HSRD and comparison schools (Exhibit 5-18 to 5-20).

"Four by Four" on Track

No statistically significant differences existed in being on track with the "four by four" curriculum for HSRD ninth- and tenth-grade students versus their comparison school peers (Exhibits 5-18 and 5-19).

Other Outcomes

HSRD had a marginally significant ($p < .10$) positive effect on promotion to tenth grade (Exhibit 5-19). Ninth-graders in HSRD schools are more likely (2.3 times) to be promoted to the tenth grade than their peers in comparison schools ($p < .10$). The probability of being promoted to tenth-grade is 96% in HSRD schools versus 92% in comparison schools. No significant differences between HSRD schools and comparison schools were found in passing Algebra I by the ninth grade or in participating in accelerated learning at eleventh grade (Exhibits 5-18 and 5-20).

HSRD 2008–09 Outcomes Summary

Ninth-grade repeaters at HSRD schools scored lower than comparison school peers on TAKS-Reading and tenth-graders had a lower attendance rate than those in comparison school. No statistically significant HSRD effects were evident on the other outcomes investigated.

Longitudinal Comparison of HSRD Effects

The 2008–09 outcomes analysis provides a snapshot capturing the cumulative effect of HSRD on student outcomes. Likewise, the first annual report (Young, et al., 2010) provided a snapshot of the HSRD effect on student outcomes in the previous year. Two approaches to comparing the 2007–08 and 2008–09 results can trace the performance of HSRD schools over time: (1) looking at how ninth-graders in one year fare compared to ninth-graders in the next year and similarly looking at how tenth-graders in one year do compared to tenth-grades in the next year (i.e., cross-sectionally); (2) examining how students in the same cohort perform over the years (i.e., as ninth-graders in 2007–08 and then as tenth-graders in 2008–09). The first approach can indicate whether HSRD schools improve in serving students at specific grade levels, and the second approach sheds light on when during a typical student progression through high school HSRD has effects on student outcomes and whether the effects are sustained over time. Both kinds of comparisons are presented below.

Comparing Different Cohorts of Students. The evaluation revealed few statistically significant results among ninth- and tenth-grade outcomes in 2007–08 and 2008–09 and among those, no consistent pattern in student outcomes emerges. Ninth-grade repeaters and nonrepeaters in 2007–08 had lower attendance and repeaters had marginally significant, lower TAKS-Math scores versus the comparison schools, which improved in 2008–09. HSRD tenth-graders had a lower likelihood than their comparison school peers of attending school in 2008–09, which was worse outcome than no effect in 2007–08. The higher likelihood of being promoted to tenth grade was higher in HSRDs than comparison schools in 2007–08 but not 2008–09. These comparative results do not suggest that HSRD sustained or improved in the outcomes examined.

Comparing Same Cohorts of Students over Time. The comparison of the same cohorts of students over time presents a more consistent pattern than the discussion above. HSRD tenth-graders in 2008–09 had lower attendance than comparison school peers, whereas attendance rate differences were marginally significant when those students were ninth-graders in 2007–08. This result indicates that students in HSRD schools consistently had lower attendance rates that similar students in comparison schools. HSRD effects on other outcomes were not statistically significant in both years. These findings suggest that HSRD is not improving the student outcomes examined for students as they move through high school.

DIEN Effects on Student Outcomes

The researchers analyzed DIEN effects for two student samples: (1) tenth-graders in four DIEN schools that have been implementing the model for two years; and (2) ninth-graders at the same DIEN schools that have been implementing the model for one or two years. The DIEN effects were estimated separately for ninth-grade nonrepeaters and repeaters[76] and tenth-grade former nonrepeaters,[77] simply referred to as tenth-graders hereafter. Because only four DIEN schools are represented in the samples, any estimated DIEN effect is likely not representative of future schools joining the program. Consequently, the estimated DIEN results should not be emphasized until further analyses confirm their validity. Unless otherwise stated, all results discussed below are statistically significant at the 0.05 significance level (i.e., $p < .05$).

In addition to looking at a snapshot of ninth-, tenth- and eleventh-grade student achievement between DIEN and comparison schools, the researchers also conducted growth modeling on TAKS standardized scores in math from eighth to tenth grade.[78] The analysis included ninth-graders in 2007–08 and tenth-graders in 2008–09 from the four DIEN schools and their comparison schools. Growth modeling enables a comprehensive study of the DIEN effect on students' overall progress in math by examining students' growth trajectories after their schools began DIEN implementation and including students who were at the school for only the ninth or the tenth grade, thereby making full use of the available data. Unless otherwise stated, all results discussed below are statistically significant at the 0.05 significance level (i.e., $p < .05$).

TAKS-Math, English/Language Arts, Science, and Social Studies Achievement

Exhibits 5-21 to 5-24 show the effect of DIEN on various TAKS outcomes across the three samples of first-time ninth-graders (nonrepeaters), ninth-grade repeaters and tenth-graders who have been in the same school for two consecutive years. No significant differences between DIEN and comparison schools were found in TAKS-Math or Reading for ninth-graders, or in TAKS-Math, Science or Social studies for tenth-graders.

The DIEN program, however, did have a marginally significant ($p < .10$) negative effect on the TAKS-English/Language Arts scale score for tenth-graders in 2008–09. Tenth-graders in DIEN schools on average scored 20 points lower on TAKS-English ($p < .10$) than their peers in comparison schools. This DIEN effect, combined with a pooled standard deviation of 124 points, translates into a small effect size of 0.16 standard deviations.[79]

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76 Ninth-grade repeaters and nonrepeaters were analyzed separately because their prior achievement indicators are not comparable and cannot be included in the same model. The prior year achievement indicator is eighth-grade achievement for nonrepeaters and ninth-grade achievement for repeaters. In addition, repeaters by definition have been exposed to the curriculum before, and being at risk, likely have different experiences at schools from nonrepeaters, e.g., are potentially less engaged or confident, or alternatively receive extra academic supports. Thus, DIEN is not expected to impact repeaters in the same way as nonrepeaters.

77 A large proportion (around 30%) of ninth-grade repeaters were promoted to their original cohort in the subsequent year and a larger proportion (around 50%) were promoted to their original cohort in two years. These ninth-grade repeaters do not belong to tenth grade in the following year or to eleventh grade in the year after. Therefore, repeaters are not included in tenth- and eleventh-grade analysis.

78 TAKS mathematics scores were standardized against the state average for eighth, ninth and tenth grade respectively. The standardized scores have a mean of 0 and a standard deviation of 1 for each grade.

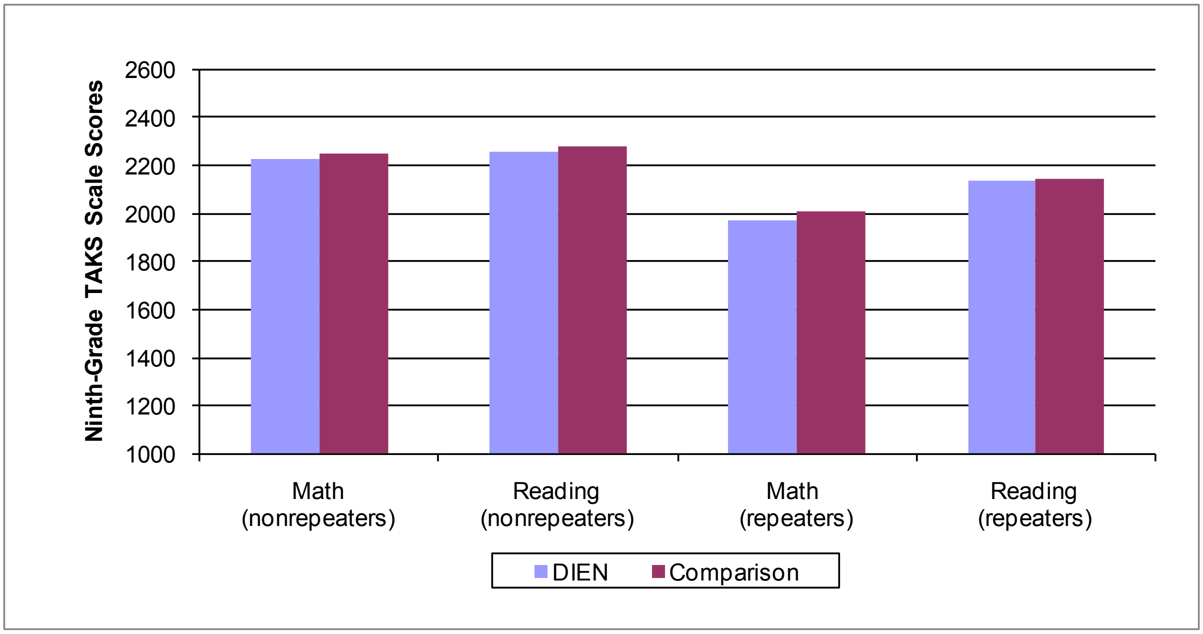
79 The effect size was calculated by dividing the coefficient of the THSP or program indicator by the pooled within-group standard deviation of the outcome at the student level (What Works Clearinghouse, 2008). Note

DIEN had a positive effect on the growth rate in standardized TAKS achievement in mathematics. Students in DIEN were 0.06 standardized points higher in TAKS-Math growth rate from eighth to tenth grade than their peers in comparison schools, who had a growth rate of 0.04 standardized points. DIEN also had a marginally significant ($p < .10$) negative effect on passing TAKS in both mathematics and reading for ninth-grade repeaters, who are 32% less likely to do so than their comparison school peers. The probability of passing both TAKS-Math and TAKS-Reading for an average ninth-grade repeater is 14% in DIEN schools versus 26% in comparison schools. No significant differences were found between DIEN and comparison schools on the likelihood of passing TAKS in both reading and mathematics for ninth-graders or passing TAKS in four core subjects for tenth-graders.

These TAKS results for DIEN schools versus comparisons suggest inconsistent focus across the math and reading, potentially reflecting a stronger effort at the DIEN schools to improve math achievement compared to other content areas. Ninth-grade repeaters, however, appear to need more attention. If they cannot pass both TAKS subjects in their second year as ninth-graders, they risk falling well behind, which increases the likelihood that they will drop out of high school altogether.

that both the *THSP effect* and the *effect size* are presented throughout the discussion of results. The former is the raw differences between students in THSP and comparison schools, whereas the latter puts all the raw differences on the same metric. Unlike THSP effects, effect sizes can be compared across different outcomes and indicate the strength of the intervention effect. Consistent with standard practice, the evaluation team considers an effect size of 0.20 as small, 0.50 as moderate, and 0.80 as large. Therefore, 0.16 is considered a small effect size (Cohen, 1988).

Exhibit 5-21
DIEN Effect on Ninth-Grade TAKS Scores in 2008–09



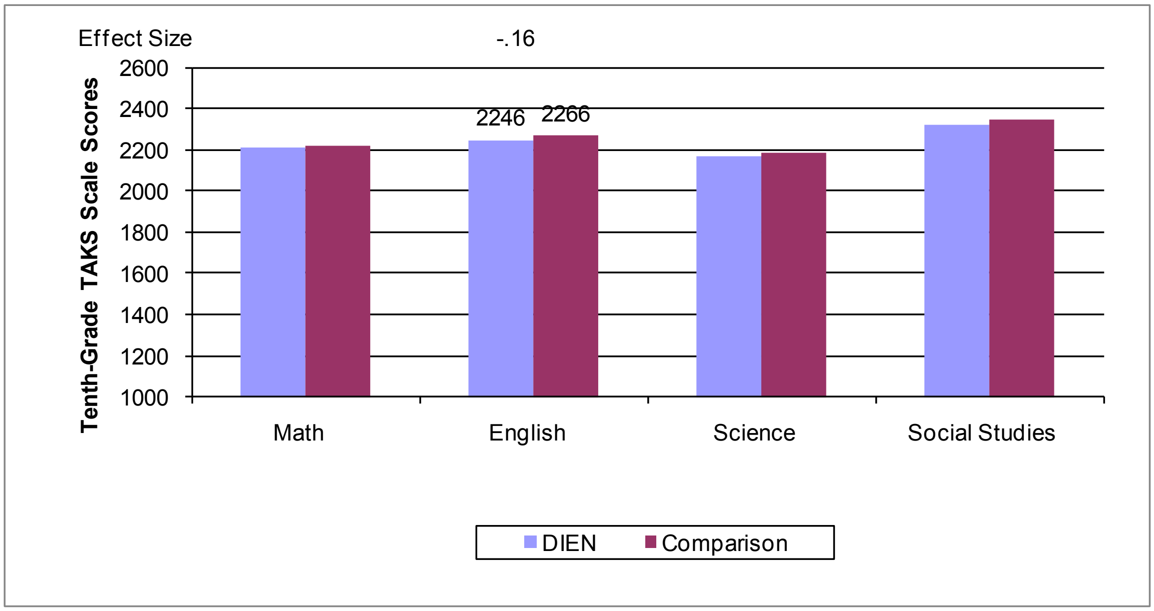
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*p < .05, ◊p < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

928 students from 4 DIEN schools and 9,390 students from 24 comparison schools are included in the analyses.

Exhibit 5-22
DIEN Effect on Tenth-Grade TAKS Scores in 2008–09



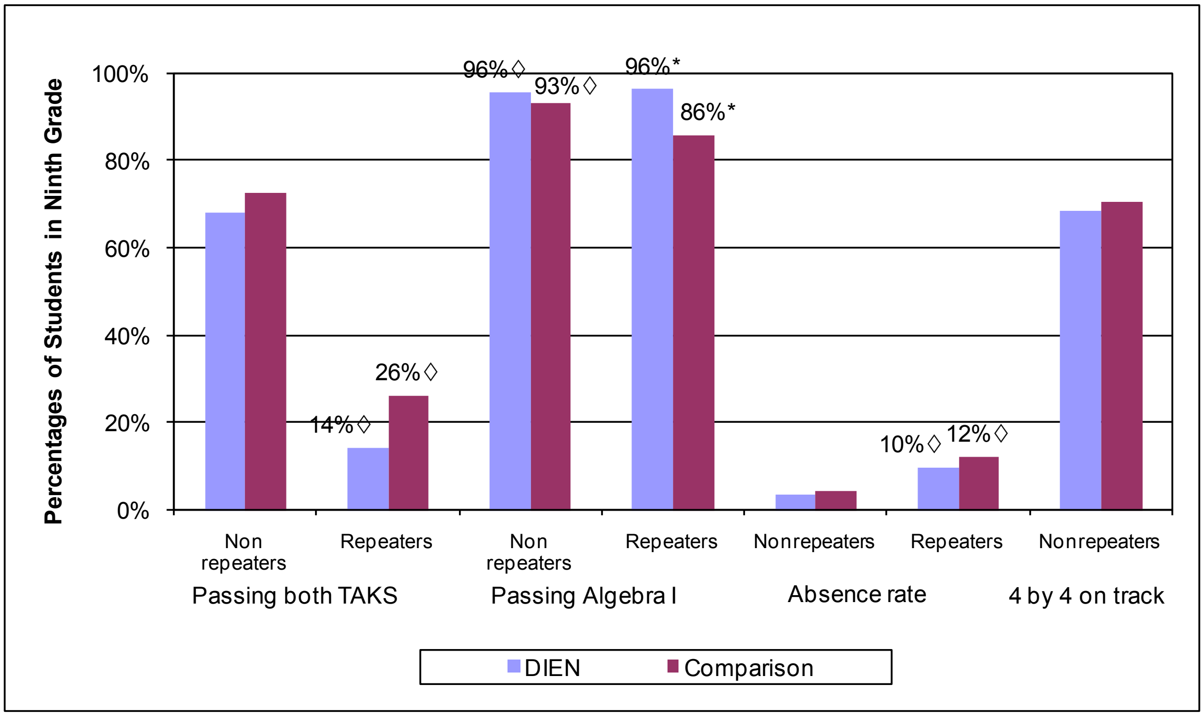
Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

**p* < .05, ◊*p* < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

714 students from 4 DIEN schools and 6,436 students from 21 comparison schools are included in the analyses.

Exhibit 5-23
DIEN Effect on Ninth-Grade Outcomes Other than TAKS Scores in 2008–09

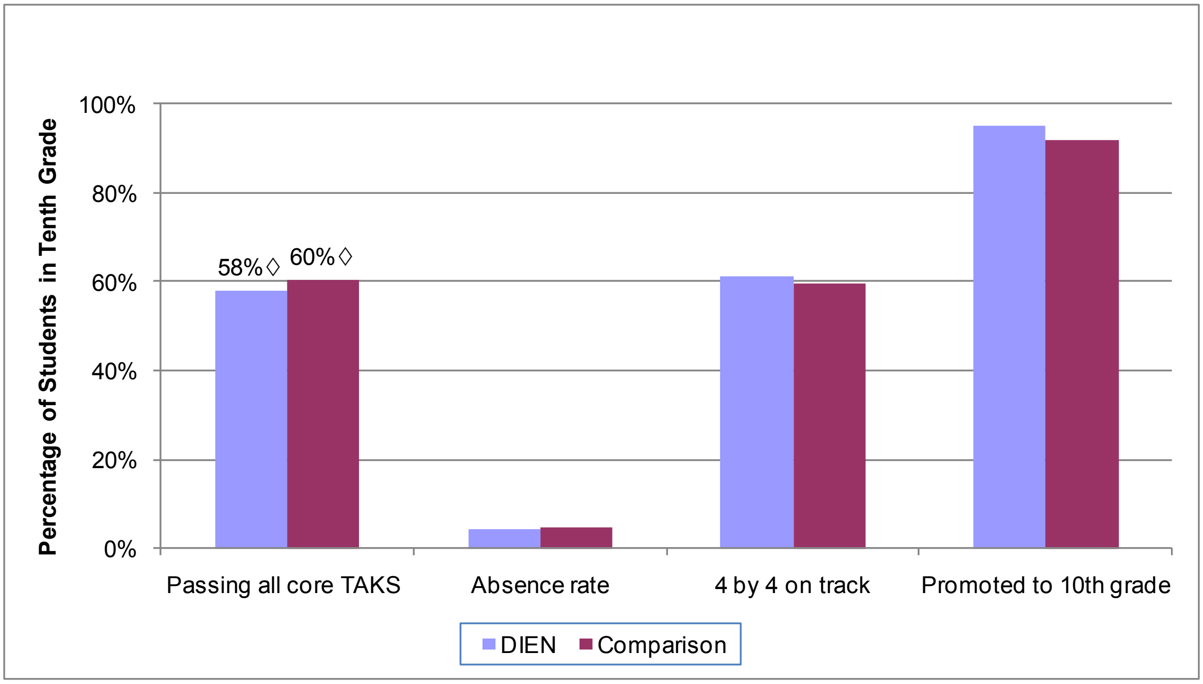


Notes: Values are shown on top of the bars for significant TAKS score differences.

*$p < .05$, ◊$p < .10$.

928 students from 4 DIEN schools and 9,390 students from 24 comparison schools are included in the analyses.

Exhibit 5-24
DIEN Effect on Tenth-Grade Outcomes Other than TAKS Scores in 2008–09



Notes: Values are shown on top of the bars for significant TAKS score differences.
*$p < .05$, ◊$p < .10$.
714 students from 4 DIEN schools and 6,436 students from 21 comparison schools are included in the analyses.

Attendance

DIEN had a marginally significant ($p < .10$) positive effect on attendance for ninth-grade repeaters (Exhibit 5-23). Ninth-grader repeaters in DIEN schools had a marginally significant ($p < .10$) lower likelihood (78%) of being absent than their peers in comparison schools. The probability of being absent for an average ninth-grader repeaters is 10% in DIEN schools versus 12% in comparison schools. Although DIEN ninth-grade repeaters have a lower absence rate than their comparison school peers, 10% is still high compared to other programs and is likely related to the ninth-grade repeaters' lower likelihood of passing both TAKS versus the comparison schools. There were no statistically significant differences in attendance rate for first-time ninth-graders or tenth-grade students in DIEN schools versus their peers in comparison schools.

"Four by Four" on Track

No statistically significant differences appeared between DIEN and comparison schools in their respective ninth- and tenth-graders' likelihood of being on track with the "four by four" curriculum (Exhibits 5-23 and 5-24). Again, these results are likely shaped by the state graduation requirement that affects all high schools.

Other Outcomes

DIEN had a marginally significant ($p < .10$) positive effect on passing Algebra I by ninth-grade for first-time ninth-graders and a significant positive effect for ninth-grade repeaters (Exhibit 5-23). Ninth-grade nonrepeaters in DIEN schools were 1.8 times more likely to pass Algebra I by ninth grade than students in non-THSP schools. The probability of passing Algebra I for an average ninth-grade nonrepeater is 96% in DIEN schools versus 93% in comparison schools. Ninth-grade repeaters in DIEN schools were 4.8 times more likely to pass Algebra I by ninth grade than students in non-THSP schools. The probability of passing Algebra I for an average ninth-grade repeater is 96% in DIEN schools versus 86% in comparison schools. These results appear consistent with the potential explanation that DIEN schools had a strong focus on math. DIEN appeared to boost the success in Algebra I for both ninth-grade repeaters and nonrepeaters.

> *Ninth-grade repeaters in DIEN schools had a higher likelihood of passing Algebra I than their peers in comparison schools.*

No significant differences between DIEN schools and comparison schools were found in promotion to the tenth grade (Exhibit 5-24).

DIEN 2008–09 Outcomes Summary

DIEN schools had a positive effect on passing Algebra I for ninth-grade repeaters, but no statistically significant DIEN effects were found on all other outcomes investigated. As we discussed previously, because there were only four DIEN schools included in the analysis, the results have very limited generalizability to any future DIEN schools should the program expand.

Longitudinal Comparison of DIEN Effects

The 2008–09 outcomes analysis provides a snapshot capturing the cumulative effect of DIEN on student outcomes. Likewise, the first annual report (Young, et al., 2010) provided a snapshot of the DIEN effect on student outcomes in the previous year. Two approaches to comparing the 2007–08 and 2008–09 results can trace the performance of DIEN schools over time: (1) looking at how ninth-graders in one year fare compared to ninth-graders in the next year (i.e., cross-sectionally); (2) examining how students in the same cohort perform over the years (i.e., as ninth-graders in 2007–08 and then as tenth-graders in 2008–09). The first approach can indicate whether DIEN schools improve in serving students at specific grade levels, and the second approach sheds light on when during a typical student progression through high school DIEN has effects on student outcomes and whether the effects are sustained over time. Both kinds of comparisons are presented below.

Comparing Different Cohorts of Students. The evaluation revealed few statistically significant results among ninth-grade outcomes in 2007–08 and 2008–09 and there does not seem to be a consistent trend. For ninth-grade outcomes, DIEN had a marginally significant positive effect on passing Algebra I for repeaters in 2007–08, which turned into a significant positive effect in 2008–09. In addition, DIEN had a marginally significant positive effect on passing Algebra I for nonrepeaters in 2008–09 versus no effect in 2007–08. On the other hand, DIEN had a positive effect on attendance in 2007–08 for repeaters, which turned into a marginally significant effect in 2008–09. Furthermore, DIEN had a marginally significant negative effect on tenth-grade TAKS-English in 2008–09 versus no effect in 2007–08. These comparative results suggest DIEN's sustainability and improvement in passing Algebra I but not in other outcomes.

Comparing Same Cohorts of Students over Time. The 2008–09 analysis found a marginally significant negative DIEN effect on tenth-grade TAKS-English, a slight worsening from no differences with comparison schools in ninth-grade TAKS-Reading the year before. There were no statistically significant DIEN effects on any of the other outcomes that were compared over years for the same cohort of students. There results do not indicate improvements in DIEN schools' serving the same cohort of students as they progress through high school.

In general, the redesigned high school programs yielded inconsistent results on TAKS-related outcomes. Whereas ninth-grade repeaters in HSTW schools performed better than those in comparison schools on passing both TAKS-Math and Reading, ninth-grade repeaters in HSRD performed below those in comparison schools in TAKS-Reading. On other TAKS outcomes for ninth-grade nonrepeaters, tenth-graders, and eleventh-graders, the programs performed similarly to the matched comparison schools.

Among the non-TAKS outcomes, the results for 2008–09 are also uneven, with only a few instances of differences between the High School Redesign initiative programs and the comparison schools. Ninth-grade repeaters in DIEN schools had a higher likelihood of passing Algebra I in their repeated year than did their peers in comparison schools, and HSRR students had a higher likelihood of being promoted to tenth grade. However, HSRD schools had a higher average tenth-grade absence rate than comparison schools. Across the other 2008–09 non-TAKS outcomes investigated for ninth-grade nonrepeaters and repeaters, tenth-graders, and eleventh-graders, the HSRR, HSTW, HSRD, and DIEN programs performed similarly to the comparison schools.

Conclusions and Implications

The grant programs under the High School Redesign initiative target traditional comprehensive high schools, which are similar in structure to the majority of high schools that Texas students attend. Although not all of the schools are AU, improving student performance is a primary goal for the grantees under those various programs. And in the words of one program officer, "[Schools that] are in unsuccessful situations are there for all sorts of different reasons. They don't need the same formula solution." Thus the grant programs' range in requirements may be appropriate for providing flexibility to address the schools' differing needs, while tightening needs assessment and accountability for TA to enhance the effectiveness of the grants.

Across the redesigned high schools visited in spring 2009, no patterns were distinguishable by grant program, suggesting that the specifics of the grant program supports and requirements were not stronger than the common context of the comprehensive high school and the challenges encountered in reforming existing structures and practices. The visited schools that had made the most progress in reform implementation had concentrated on instructional improvement, teacher PD, strengthening of teacher-student relationships, and use of data to determine students' needs. However, few schools had a clearly communicated and shared vision of high-quality instruction, without which teacher learning opportunities were not strategically aligned with instructional improvement. Especially among AU schools, state accountability policies focusing on passing TAKS reinforced the prevalence of TAKS preparation, whether across core areas or in the one or two weakest subjects. Limited time, energy, and resources among schools and their faculties meant that improving instructional practices and rigor beyond preparing students for TAKS received relatively short shrift.

Student supports are emerging as the distinguishing factor for schools that meet the needs of at-risk students and raise their performance and expectations to a college-ready level. The student supports at small schools and charter schools appear more comprehensive, resource-intensive, and integrated than the best examples in traditional high schools, and this difference may always be the case because of budget constraints. However, in almost all cases, teachers are on the frontlines of not one instruction as traditionally defined, but also as the key providers of student supports as envisioned in the reforms. The schools varied in the extent to which their teachers had been sufficiently prepared to take on that role. Moreover, in the redesigned high schools that did show promising practices in supporting students, teachers were provided with data and opportunities to interact with students that allowed them to know individuals as learners. And as some of the redesigned high schools demonstrated, if teachers are the primary deliverers of an advisory curriculum, they need to be trained extensively; most teachers have not had the preparation to be guidance counselors or to deal with the range of social issues that high school students often struggle with today.

Thus far, the various programs have had uneven effects on the outcomes examined in the evaluation. In general, the programs have not yielded improved results for TAKS-related outcomes. Whereas ninth-grade repeaters in HSTW schools performed better than those in comparison schools on both TAKS math and reading, ninth-grade repeaters in HSRD performed below those in comparison schools in TAKS reading. Among other outcomes, the programs did not have consistent and positive results. Ninth-grade repeaters in DIEN schools had a higher likelihood of passing Algebra I in their repeated year than did their peers in comparison schools, and HSRR students had a higher likelihood of being promoted to tenth grade. However, HSRD schools had a lower average tenth-grade absence rate than comparison schools. Across the other 2008–09 outcomes investigated for ninth-grade nonrepeaters and repeaters, tenth-graders, and eleventh-graders, the HSRR, HSTW, HSRD, and DIEN programs had no statistically significant effects.

Although several more years may need to pass before effects on student outcomes are observed, these results also speak to the difficulty of changing institutionalized practices in an organization as complex as a comprehensive high school. The large faculties, 100 teachers in many cases, offer a wide range of subject areas, teacher experience, and expertise. In communicating a reform effort's mission and goals and building teacher buy-in, school leaders, external TA providers, and grant program officers need to take into account this diversity. Despite school leaders' best efforts, the reforms under the High School Redesign initiative tended to be individual and piecemeal rather than coherent across the school, to a large extent because of the size and complexity of high school organizations. The increasing focus on instruction, PD, and student supports is thus likely to need more time and consistent implementation before yielding further improvement in outcomes. School and district leaders will need to judge carefully whether and how to deepen the reforms under way or risk instability by redefining or curtailing the reforms they deem insufficient.

Although the efforts are nascent, moving reforms down to middle school under the HSTW program acknowledges the need to begin raising student expectations and bolstering supports earlier in students' educational careers. Indeed, the trend is evident in the ECHS program and among the CMOs funded under NSCS, and certain districts have pursued greater alignment between THSP-funded high schools and their feeder middle schools, independent of the THSP supports. If students are ill-prepared for rigorous academics by the time they enter high school, little time remains for them to make up deficits and still proceed on a college preparatory track. Vertical alignment down through the lower grades and more robust supports at the high school level will merit continued attention in the evaluation.

A final reflection on the High School Redesign initiative programs raises questions about understanding implementation fidelity. Although this chapter has grouped together several programs because of their similarities in context and the nature of reforms among the grantees, one difference in program design is notable. HSRR, HSRD, and DIEN are grant programs, whereas HSTW, with its 10 Key Practices, is arguably more akin to a reform model. The HSRR, HSRD, and DIEN grants provide funds for schools to pursue improvement goals with guidelines centered on particular processes such as needs assessments and particular resources such as those TA providers offer. But those programs do not stipulate specific and extensive requirements for school organization, curriculum, and instruction as, for example, the T-STEM and ECHS programs do. In contrast to HSRR, HSRD, and DIEN, HSTW provides more specific guidance for grantees with its articulated 10 Key Practices, although it perhaps does not meet the specificity of a fully defined school model. Comparing the HSTW Key Practices early in this chapter with the ECHS Core Elements in Chapter 4 serves to highlight the differences in the language each uses. Adopters of the ECHS model "must" do many things to achieve validation. Grantees in the HSTW program, on the other hand, are guided by and encouraged to embrace the Key Practices, but there is no imperative to do so. By offering guidance rather than mandates, HSTW's leaders aim to provide schools with the latitude to fashion their own reform strategies. At the same time, the distinction between programs and models means that implementation fidelity may be more easily defined with models than with programs. Where programs have not required a specific set of reform strategies, grantees have followed a range of approaches to meet the program goals that may be very different (based on their school contexts) and yet not constitute a lack of implementation fidelity.

Chapter 6
New Schools and Charter Schools Program

Key Findings

- NSCS grantees are funded to replicate their CMO's respective school model, not an NSCS model per se.

School-Level Implementation

- Among the three CMOs and the replication sites studied in 2008–09, the schools offered students rigorous curricula and educational programming through academic standards exceeding TAKS, advanced curricula such as AP and IB, and graduation requirements exceeding those of the state.
  - Incoming students' poor academic preparation posed one of the main challenges to the schools' abilities to implement rigorous academics.
- The schools placed high priority on strong relationships between teachers and students to support the students academically and socially.
  - The small school structure facilitated teachers' knowledge of most, if not all, students in the school.
- Aligned with their missions to prepare students for college, the schools invested significantly in developing students' college knowledge and in providing concrete preparation strategies such as SAT tutorials, college tours, and seminars to draft personal statements and to complete admissions and financial aid applications.

CMO Scale-up

- Two of the CMOs expanded their central office capacity to operate a growing system of schools, whereas a third remained more decentralized.
  - As they established more schools, the CMOs continued to identify and define central services and the appropriate degree of school-level autonomy and central office monitoring.
- The CMOs focused on human capital development as the most critical factor to sustainability.

Student Outcomes

- NSCS ninth-, tenth-, and eleventh-graders outperformed their comparison school counterparts on all TAKS subjects, except for ninth-grade TAKS-Reading and tenth-grade TAKS-English/Language Arts.
- First-time ninth-graders in NSCS had a higher likelihood (2.6 times) of passing both TAKS-Reading and TAKS-Math, and NSCS tenth-graders were 3.7 times more likely to pass TAKS in all four subjects versus their comparison school counterparts.
- NSCS ninth-, tenth-, and eleventh-graders had higher attendance than their comparison schools peers.

Introduction

CFT created the NSCS initiative to fund the "best [school] models worth replicating." The program provides seed money to CMOs to cover start-up costs associated with developing new campuses and building the central office infrastructure to support an expanded system of schools.

The program began funding schools in 2005–06; however, the evaluation includes schools funded to open in 2006–07, 2007–08, 2008–09, or 2009–10.[80] The funded CMOs include both Texas-based and national models: Asia Society, IDEA Public Schools, the Knowledge is Power Program (KIPP), Uplift Education, and Youth Engaged in Service (YES) Prep Public Schools. Only IDEA, Uplift, and Yes Prep are included in the evaluation activities that involve collecting data directly from the schools. Thus the discussion of implementation and replication pertains only to those three CMOs. Asia Society and KIPP schools were included in the analysis of student outcomes because that analysis used state datasets and did not require additional data from the schools.

The purpose of the NSCS program—replication—differs significantly from the goals of the other THSP grant programs. Each of the selected CMOs was funded to replicate its school model because its established campuses had already demonstrated success. By definition, therefore, successful implementation under the NSCS program means that the CMO has been able to open new campuses characterized by the features of its school model. In contrast, the other THSP grant programs expect new schools or existing schools to follow a model or principles of school improvement that come from a source external to their district or CMO. The campuses opened under NSCS, then, are accountable to their CMO for fidelity to the CMO's own school model and not to a reform model from THSP per se.

Nonetheless, the CMO models selected for replication share characteristics that CFT has identified as critical to school and student success. According to NSCS program officers, these characteristics include a small-school design, a rigorous curriculum, personalized instruction, a college preparatory focus, and a human capital development strategy. Although the grant only requires the schools to serve high school grades, most of the funded school models serve grades six through 12 and some begin at the elementary level. The selected CMOs also had to have strong leadership and a "good leadership bench," in the words of one program officer (i.e., multiple individuals being groomed or ready to be school and teacher leaders). The CMOs were expected to develop their leadership capacity and pipeline further as they expanded the number of schools.

To support their expanding school networks, the funded CMOs were also required to have a plan for developing central office capacity. Although CMOs generally differ in the degree to which they centralize certain functions (e.g., human resources, budgeting, facilities management, student recruitment, curriculum and assessments), the NSCS program officers foresaw the need for funded CMOs to formalize procedures and define new roles to operate a larger system of schools.

80 The last of the NSCS grants under THSP were awarded in 2008–09, with those schools opening in 2009–10.

The CMOs Studied

The data in this chapter come from visits to three CMOs in the NSCS program. Two of the CMO networks of schools are urban and one is rural. As of 2009–10:

- Uplift Education operated seven schools in the Dallas metropolitan area.
- YES Prep Public Schools operated seven schools in the Houston area.
- IDEA Public Schools operated eight schools in the Rio Grande valley.

The CMOs specifically target communities in which the local district has struggled to meet the needs of its students, and they aim to provide an alternative for students and parents who are dissatisfied with the local schools. The three CMOs serve elementary and/or middle school grades and grow into the high school grades by adding a new cohort of students each year. Schools were included in the evaluation when they began serving ninth grade and higher.

In spring 2009, researchers interviewed CMO chief executives and directors responsible for curriculum and assessment, PD, and business development at the central offices of Uplift, IDEA, and YES Prep. Those interviews built on the first round of similar interviews conducted the previous school year. In addition, researchers visited two schools chosen at random that had opened under the NSCS program, one from YES Prep and the other from Uplift.[81] Site visits included interviews with principals, teachers of ninth-grade math, science, and English, and other administrators supporting teacher PD and student supports, as well as classroom walkthroughs. Site visits to two other CMO-operated schools funded under the T-STEM program served to augment the evaluation team's knowledge of the CMOs. [82]

Replication Sites' Implementation of Key Elements

CFT invested in the CMOs because the operators had demonstrated success with their founding schools. The payoff for this investment will depend on the CMOs' ability to establish the key elements of their models at the replicated sites, as well as developing the capacity to support a growing network of schools from a centralized base. This section discusses how the three CMOs visited in spring 2009 had implemented the key elements for which they were selected for replication by CFT—a rigorous curriculum, personalized and relevant instruction, and a college preparatory focus with appropriate student supports.

Rigorous Curriculum and Educational Programming

All three CMOs offer a college preparatory program targeted at traditionally underserved youth. They aim to have all their high school students graduate ready to enter, succeed in, and ultimately graduate from college. One CMO described its model as "to and through college." The CMOs pursued several strategies to establish and enforce rigor in the curriculum. They created high standards; used recognized, advanced curricula; and increased graduation requirements for their students over those in typical high schools.

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81 The evaluation design called for site visits to 50% of the grantees in the schools' second year of implementing reforms. Only YES Prep and Uplift had schools meeting that site visit criterion in 2008–09. Researchers conducted a site visit to one replication campus under IDEA in 2007–08 and, as they did for YES Prep and Uplift, interviewed IDEA CMO officers in both 2007–08 and 2008–09.

82 Examples in the rest of the chapter use pseudonyms for IDEA, Uplift, and YES Prep to protect respondents' confidentiality.

The three CMOs consistently set their curriculum standards and performance expectations high. Whereas the evaluation found that THSP schools with AU status tended to define rigor in terms of increasing the percentage of students passing TAKS, the three CMOs viewed TAKS as minimum standards and expected their students to meet higher ones—TEKS and beyond. In one case, Drive CMO established its own standards built on but exceeding TEKS. As one CMO officer said, "I trust our standards. They are higher than TEKS by far." To reinforce expectations, Drive also developed its own benchmark assessments for the core courses tied to its standards, thereby defining what students are expected to learn. At Aim CMO, leadership raised its expectations for student achievement from meeting TAKS to reaching commended status on TAKS. CMO leaders anticipated that the state-mandated EOCs on the horizon would continue to strengthen the rigor of their program:

> One of the things I really like about [EOCs] is that they expound the amount and depth of course materials that you need to understand…, whereas when you get kids just geared toward TAKS, they tend to think we stop in March [when the TAKS is given] when we don't. So…I like [EOCs] because [they] move us toward the college model.

All three CMOs also offered advanced curricula to increase overall academic rigor. Motion CMO offered AP courses at the high school level and began implementing an IB program. Motion also considered the curriculum as integrated from the middle grades through high school and thus supported their middle school teachers with pre-AP training to prepare students for the rigorous course of study in high school. Drive likewise offered AP classes in its upper grades; so that Drive students can take more advanced math in high school, the students take Algebra I in the eighth grade. Aim offers the IB program in its founding school and would like to offer it at all of its schools in the future to cement the rigor of its curricular program. Aim also planned to pilot dual-credit courses in 2009–10. Although other schools across the state offer AP, IB, and honors classes, and although all districts are required to offer students the opportunity to earn 12 semester credit hours of college credit in high school, the NSCS schools aimed to have all of their students participate in an advanced curriculum.

As the last component of their rigorous educational programs, Motion and Drive set graduation requirements that were more demanding than those required by the state. For example, students needed to be accepted into at least one four-year college before they could graduate, and at Drive students had to complete a work service component.

In pursing these strategies to advance curricular rigor, the CMOs faced a major challenge: The students they were drawing in were not necessarily well prepared from their prior schools. As a result, at least two of the CMOs explicitly sought to bring their students up to grade-level in reading in their first year at the school. The third CMO similarly acknowledged that entering students needed instruction in basic skills. That CMO pointed to students' lack of foundational knowledge as the main barrier to enforcing high standards and rigor. As one CMO leader indicated, one replication campus had "given us a chance to work in an even more significantly educationally underserved area" and that "the work is less about a particular model or curricular strategy and more about what do we know about taking kids who are that far behind and what needs to look different."

Personalized and Relevant Instruction

The NSCS grant identified personalized instruction as one of the aspects of effective schooling. Personalized instruction depends on teachers knowing their students as learners and as individuals. That knowledge can help teachers better connect subject matter with students' interests, goals, and needs, and tailor their pedagogy to meet students' varied learning styles. Two factors in particular influenced the extent to which the schools under these CMOs were able to personalize instruction for students—their small-school designs and their consistent use of data to understand student and teacher needs. Related to the idea of personalization, the emphasis that the schools placed on relevant curriculum also assisted in engaging students in their studies.

The three CMOs maintained small-school structures. Each grade at the replicated sites served approximately 100 or fewer students. School staff tended to rely on the small school structure to foster relationships with and knowledge of students. As one CMO director said, "The small school model is key to making sure that you're meeting the needs of those students on an individual basis. And in the small school, you can streamline your courses, shepherd them into not just the right courses but [also] right after-school activities."

To check their students' level of understanding and tailor their instruction, the three CMOs emphasized the need for teachers to review performance data and facilitated that effort. For example, the Drive central office convened subject matter teams across the campuses to discuss benchmark assessment results for each teacher, share strategies that had proved effective in particular classrooms, and address student needs. Drive's rubric for evaluating teachers placed greater value on student-centered rather than teacher-centered instructional approaches and stated that the teacher should "determine each student's level of mastery of daily objectives and provide learning opportunities that are differentiated based on performance." Similarly, Aim encouraged teachers to follow "pre-instruction, instruction, and post-instruction" procedures. During pre-instruction, teachers were expected to review student data to help them group students and accommodate their strengths and weaknesses. Teachers were supposed to come full cycle during the post-instruction phase by giving benchmark assessments, reviewing the data, regrouping students as necessary, and providing immediate feedback to students and parents.

Differentiating instruction was a skill that novice teachers needed support to develop and that posed a challenge to each of the CMOs. According to one of the Drive chief officers, the CMO realized that novice teachers may not, on balance, be as student-centered as they would like because as novices, they are concentrating on learning the curriculum and becoming comfortable with different pedagogies. Nonetheless, the CMO expected even novice teachers to experiment with varied approaches, including more student-centered instructional techniques. To that end, the instructional coaches working with novices provided feedback, tips, and strategies for teachers to use in developing instruction based on student needs. Such assistance notwithstanding, having such a large proportion of novice teachers systemwide imposed a heavy burden on the CMOs for preparing them to teach according to the instructional vision in their respective models (discussed later this chapter).

Personalizing instruction for students can entail making course content relevant to their interests, especially as content relates to potential careers. One of the CMOs has a central strategy to bring greater relevance to the curriculum. At Aim, CMO leaders wanted to institute the IB program at all its campuses because they viewed IB's real-world focus as being "all about relevance." Even before schools attained IB certification, the CMO wanted them to "develop the standards around relevance and inquiry, then develop that vocabulary with their staff and integrate it in a profile which is about the whole character/citizenship model." Those efforts are still underway. At Drive, students must complete a service component during the summers before their junior and senior years to gain real-world experiences that broaden their horizons and enhance their college application profile. And at all three CMOs, teachers, and school leaders sought to connect course content with students' lives. For example, an Aim leader indicated that one of its schools had placed special emphasis on making math relevant:

> [They] have some very focused math teachers… who communicate how math relates to everyday living as far as economics, jobs, just everything that touches their lives.… There's a lot of pressure here to implement rigor, but … [less] understanding of how to make that jump from TAKS to things that really matter.

For the most part, across the three CMOs, making students' high school studies relevant included reinforcing the importance of college to the students' futures and the need to meet college entrance requirements. This rationale assumes that the high school curriculum is relevant to students because they aspire to go to college. Thus, supports to encourage students' postsecondary aspirations, as discussed next, undergirded the schools' efforts to make a traditional college-bound curriculum meaningful to students.

College Preparation and Student Supports

The mission of all three CMOs is to make college a reality for students who otherwise would not be prepared or have the opportunity to attain a college education. Giving them access to rigorous curriculum was only one piece of the puzzle; students needed a wide range of supports to garner the cultural and social capital that students from families with college-going traditions typically have. As a result, the three CMOs took a broad view of what it means to prepare students for college. For them, college readiness included both academic preparation and knowledge of the application processes and college life, extracurricular experiences, and family support. Like the ECHS model, Motion and Drive targeted first-generation college-goers and made it a priority to provide the supports those students and their families needed.

The CMOs intentionally built academic supports, knowledge about college and careers, and family supports into their school models. Students' instructional day at the three CMOs was longer than that at regular schools, and some Saturday sessions were required as well. Teachers offered tutoring as needed to individual students, and at one CMO, teachers were available by cell phone in the evenings if students needed assistance with their homework.

The schools also helped students acquire knowledge about the path to college and to a career. Both Drive and Aim had advisory curricula beginning in middle school through the senior year. The curricula took students through assessments of their strengths and interests, career exploration, SAT preparation, drafting of personal statements, college and financial aid applications, and college tours. All Aim ninth-graders spend one week at a local university for college orientation, and counselors worked with students to find appropriate summer experiences and internships. The service component required of Drive students provided them with experiences they could highlight in applying to college. Finally, because Drive students must be accepted at a four-year college before graduation, in a few instances, students were supported for an additional half-year to improve their preparation and to reapply to colleges.

As part of this process, the CMOs also made concerted efforts to enhance parents' understanding of the schools' college preparation mission. To do so, the CMOs communicated with parents early on about the need for their children to attend longer instructional days and have homework in the evening; they also indicated that financial support might be needed to attend college and that children might move away from home to further their education. Teachers conducted home visits to get to know the families. Drive hosted evenings for families to make care packages for children who had already gone to college, thus maintaining relationships with Drive alumni. In 2008, Aim piloted a weekly parent education program on college readiness led by a bilingual staff member at one of its schools, and had plans to formally roll out the program in 2009–10 as a joint project with Motion.

Supports for students, moreover, extended beyond the high school years. Drive and Motion tracked all their alumni to make sure that they were persisting in and graduating from college. The Drive central office created an alumni network to support its graduates beyond high school. To further its alumni's transition to college, Drive partnered with multiple colleges so that their college counselors could identify and support entering Drive graduates as a cohort. These comprehensive student supports during high school and extending into the college years were both notable and rare among school systems in the state.

Growing and Sustaining the System

The three CMOs had plans to open two to four new schools each year from 2009–10 through 2011–12 or 2013–14. Two of the three CMOs reported waitlists of approximately 4,000 students each, which in one case was almost double the number currently served by its schools. The third CMO opened two schools in 2008–09 with plans for two more in 2009–10. With each school moving toward full enrollment, this system was expected to grow from 3,000 in 2008–09 to 4,500 students in 2009–10.

Although their growth goals were aggressive, one CMO leader indicated that the CMOs were striving for "responsible, quality growth." They aimed to maintain the core elements of their respective school models at the new campuses to ensure continuing high performance as a whole system. In doing so thus far, they faced challenges in several areas: human capital development, including leadership and teacher recruitment and training; fidelity and adaptation; expanded central office roles and responsibilities; and sustainability.

Human Capital Strategies

Each of the three CMOs views the quality of its staff as crucial to successfully serving its students. Each has built its own teacher training and leadership development programs to support relatively high proportions of novice teachers, implement a specific school model and culture, and expand a system of schools with growth opportunities for its staff.

Leadership Development

School leaders across the three CMOs had varying degrees of autonomy, but the central offices monitored all leaders' performance. The central offices supported their school leaders individually and also convened them periodically so that they could develop common understandings of their respective school models and learn from each other.

Across the three systems, CMO leaders provided individualized attention to each school and its principal. For example, Aim leaders met with school leaders to develop their goals and PD plan. Motion CMO leaders ranked their school leaders in terms of need on a weekly basis to select the leader they would spend the most time with that week. Similarly, the Drive CEO communicated frequently with school leaders to assist them in "focusing on the right things and delegating what they can." The CMO leaders also monitored the campuses by reviewing data, conducting walkthroughs and classroom observations, and providing timely feedback to the school leaders. For instance, Motion school leaders were expected to spend at least 60% of their time in the classroom monitoring teachers and providing feedback and remediation. According to a CMO executive, CMO leaders and principals met to discuss the importance of classroom observations:

> diagnosing what's wrong or right, identifying the right things to debrief, communicating that with the teacher, hearing how the teacher digests that and communicates back the solution, setting up the timeline for the solution, and watching them implement that. We're … specific and strategic about improving the teaching and intervening with the struggling schools.

Aim leaders conducted fall and spring "leadership walks" with each principal to examine the campus "through the lens of that leader's strengths." They also talked to the school leaders specifically about improvement plans based on data for each campus. Drive CMO leaders similarly conducted site visits, where they made "sure the campus looks good, that the school is being maintained, that classroom instruction looks good," and where they talked to teachers "to find out what works and what doesn't … [and] to front office staff about what's going on, what's not," thus obtaining different perspectives. To support school leaders in assessing their schools, Drive has a culture rubric that identifies the behavior it expects in class and on campus, such as respectful interactions between students and adults, teachers modeling professionalism, and students engaging and working effectively in their classes.

Using data was an explicit responsibility of school principals and a function that the CMOs supported extensively. At Motion, classes conducted benchmark testing on a regular basis, and school leaders analyzed the scores, both by individual student and grouped by teacher, to ensure that weak areas were addressed swiftly. They were also working to establish a continuous improvement process that could be built into a training protocol: "Use the data, diagnose the challenge, hypothesize solutions, work on it, re-evaluate it, and start again." The principal held weekly meetings with teachers to review data and make necessary changes. Nonetheless, CMO leaders acknowledged that they would like their schools to be more data-driven than they currently are. One indicated, "Often the data isn't all that insightful." They would like "more meaningful data [that] identifies which teachers are on track to hit goals … We need to be able to identify those who are off track and help them …. The data points us in the direction, but we need to know the exact problems." Similarly, Aim CMO leaders characterized their need to

> get beyond saying we're data-driven and figuring out exactly what that means and what the steps are to have an action data-driven process and what do you do after that data. We do district benchmarks [tests]—all … tools that we've shared around the district, but what do you do with [those tools] as a teacher?

Motion and Drive had made significant investments in new data systems, designed to provide a wide range of data to teachers and principals at their desks. The CMO leaders' reflections point to a heightened awareness in the charter school sector of the need to support leaders and teachers in broadening the data available and making greater sense of it.

Leadership development is a key systems process that CMOs needed in solidifying their growth strategies. Drive has maintained a strong stance that all prospective school leaders be homegrown. School and CMO leaders thus identified potential new leaders among teachers early in their tenure at Drive, discussed their professional goals, and charted their future developmental trajectories. With these career planning discussions, CMO leaders signaled that they value and reward professional growth. Growing their own school leaders has been one way to ensure that new schools follow the Drive model and principles: future new school leaders learn the model at an established Drive school. In 2008–09, Motion also moved to recruiting school leaders from within whenever possible, as CMO leaders believed that individuals were more successful as new Motion principals when they were a known entity. Motion hires each new principal one year in advance of becoming the principal of record. During the development year, the new principal is mentored by existing principals and administration, visits and observes existing campuses, and plans for the new school opening.

The CMOs also took advantage of principal training programs targeted at charter schools. Aim and Drive sent individuals to participate in the Sam Houston University program designed for aspiring charter school directors. According to Aim, the program was a "godsend" but still posed problems in that it was not local, required study in the summer when Aim needed its school leaders to open schools, and packaged principal certification with a master's program when some Aim attendees already had master's degrees. In addition to the Sam Houston program, Drive also partnered with another university to offer a joint MBA/MA program for prospective principals. The Drive leaders deemed that program attractive because participants will emerge with a business degree as well as an MA and will therefore be highly marketable—a key selling point for the high-caliber individuals Drive wants to cultivate and retain. Potential candidates, however, expressed concerns about the difficulties of continuing to work part-time at the school while pursuing an intensive graduate program.

From interviews with CMO leaders, then, it was apparent that by necessity they were proactive in identifying and nurturing new leaders. A commitment to open one or more new schools each year for a number of years is challenging and, as these leaders noted, requires constant effort to deepen the leadership "bench," with a new team ready to start a school on time. This pressure also extended to identifying teachers to staff both new and existing schools, as discussed next.

Teacher Recruitment and Development

The three CMOs hired extensively each year to fill newly opened schools and schools expanding to higher grades, as well as to replace teachers who left. According to CMO leaders, Motion had approximately a 23% turnover in 2007–08; roughly 13% were "forced" to leave and "10% were people we didn't want to lose." Even with additional planned supports to retain that 10%, the CMO leader reported that he expected 12 to 15% turnover in the following school year. According to the CMO leaders, turnover rates at Drive were similar at roughly 20%, with half of those losses being "regrettable." Drive had an average teacher tenure of approximately two to three years. Thus, the CMOs assumed that they would have to replace a substantial proportion of teachers each year, in addition to hiring for expansion.

Two of the CMOs drew heavily from Teach for America (TFA), mainly in recruiting novice teachers but also those with a few years of experience; the third CMO began partnering with TFA in 2009–10. According to one of the CMO chiefs, Drive attracts TFA teachers who have finished their initial commitment at another school and then go to the CMO as a "finishing" experience at a high-functioning school.

Nonetheless, the CMOs experienced difficulties in hiring the right staff, particularly teachers of math and science and those who can be certified at the college level to teach dual-credit courses. Operating in more rural areas with less labor market flow, Motion offers "substantial" signing bonuses for math and science teachers in particular and is recruiting "star performers" elsewhere who may not be actively seeking jobs but may be enticed to work at the CMO. Within their local labor market, Aim leaders viewed their lower salaries and longer work days compared to surrounding districts as a primary recruiting challenge. Aim was considering delivering certain content virtually because of its difficulties in hiring math and science teachers and teachers certified to teach dual-credit classes.

Perhaps most importantly, the CMOs sought individuals with the right dispositions to fit their high-expectations cultures. As an Aim executive explained, some initial hires were potentially strong educators, but their points of view were "pretty tailored to what they'd done before" and they were not willing to "think outside of the box" and work extra hours. To address these issues, Drive developed a profile of an ideal candidate based on attributes typical for teachers who have succeeded in the Drive environment. In using the profile, the CMO hoped to maximize its chances that new hires would thrive at Drive.

Given hiring levels and the lack of classroom experience among many new hires, each of the CMOs needed to support large numbers of novices annually. To do so, all developed their own training programs. Motion and Drive both offered one-week training institutes for novices in the summer, plus additional training for all teachers. Mentor teachers also assisted novices during the school year. The three CMOs provided instructional coaching and close monitoring by principals. Motion videotaped its most effective teachers in the classroom for use during trainings and with instructional coaches, and gave novices additional time to observe veteran teachers.

In a rapidly expanding system, however, scale poses a challenge in supporting novice teachers. Central office-based instructional coaches at Aim were stretched thin in 2007–08, and this CMO planned to move toward site-based coaches to improve coverage. A large cadre of coaches in 2008–09 was able to provide more support than in prior years, especially to novice teachers, spending more time observing classrooms, co-teaching, planning lessons, finding resources, and making sure that novice teachers' year-long instructional plans covered the necessary content. Along the same lines, Drive struggled to identify enough experienced teachers who could serve as mentors in the same content area as the novices. To overcome this challenge, Drive strengthened its relationships with like-minded schools in the area and recruited mentors from outside its system. Motion leaders also reported the need to provide extensive training to its new hires, but did not have the funds or staff depth to do so at the level they desired. One CMO leader said, "Everybody gets one solid week of training, and new teachers get another week of training and then observe veteran teachers for a week. [It] could be more robust but it's the best we can do with the dollars that we have." The individual further explained, "We haven't refined the teacher support model as much as we want. A lot of teachers don't achieve the goals, and if we were training and supporting better, they would. We're going to provide some real value added that will help them get there." In 2008–09, Motion moved to a more individualized plan for each teacher based on principals' observations and data review to target specific teacher needs.

In the past, most teacher training among NSCS schools took place before the school year, with some continuing support during the school year for novices from instructional coaches. More recently, systemwide PD during the school year for all teachers began to take hold, reflecting the importance of providing timely PD when teachers have opportunities to put new ideas into practice immediately. In 2008–09, Aim began holding monthly CMO-wide PD, spearheaded by the instructional coaches. The PD covered a range of topics such as a critical friends protocol (a structured process for providing feedback), the advisory curriculum, use of technology, and TAKS preparation. Campuses took turns hosting so that teachers could see similarities and differences across schools. As the CMOs attempt to provide PD that matches a central set of priorities, CMO leaders will need to overcome teacher perceptions that the PD is not applicable to their specific campus—the most common feedback about PD at the Aim schools visited. At Drive—following the CMO-wide meetings to develop subject-specific benchmark assessments and to discuss the assessment results—a full-day of PD focusing on subject-matter content was built into the 2009–10 calendar and will be led by content specialists. Among the Drive schools visited, school leaders and teachers generally agreed that more cross-campus collaboration would aid in consistent curriculum and instruction across the schools.

This shift to embed PD in the school year for all teachers may represent the next stage of development for the CMOs. As the CMOs invest even more in teacher training, they will need to extend their support infrastructures. Instructional coaches, for example, may need their own development plans. Aim leaders felt that its coaches could benefit from more training, and sent the coaches to Motion to observe a "clearly defined model where coaches were rigidly non-evaluative" and an "evidence-based coaching practice" where coaches use "more quantifiable data" in supporting teachers. In other words, as the CMOs further elaborate their vision and system of teacher support, they may need to build or refine other capacity such as collecting data for use in instructional coaching and in creating supports for teachers at different stages of development, including master teachers as well as the coaches themselves.

The CMOs also continued to address hiring challenges. A major concern at Motion was "cannibalizing" its own ranks—or quickly promoting talent from teaching to leadership positions to fuel growth. The talented individuals who were promoted generally left their original campus to help start a new one, thereby depriving the established campuses of its highest performers. In spring 2009, Motion leadership was grappling with how to develop a system in which teachers could be promoted and still remain in the classroom. Drive faced the same dilemma and was working on defining a career ladder for its strongest teachers. Explained one of the Drive chief officers:

> Many leading-edge education systems are trying to figure out what is it that's going to provide teachers with a pathway to stay in the classroom and assume more leadership [so they have a] whole career of development, rather than being a classroom teacher and that's it…. [We've] identified the personality type that's successful at YES. [They] tend to be very ambitious and driven…. They [are] … mission-driven, they understand giving back and social justice, but "just being a teacher" is not the end goal. So we're creating a technical track, addressing significant leadership positions for teachers still in the classroom.

Drive developed a career pipeline designed to retain talented individuals, challenge teacher leaders, and identify future school leaders. Teachers can serve as team leaders to convene systemwide subject-specific teacher teams for PD; become content specialists who design curriculum, PD, and assessments; or begin taking on responsibilities and training for principal certification to ultimately be a school director. Such career development for teachers is central to CMO's ability to sustain their growth over time.

For the CMOs in the NCSC grant program, efforts to recruit, develop, and retain strong teachers and efforts to identify and support new leaders for start-ups were interrelated. The more successful the systems were at building a strong, long-term teaching force, the deeper the "bench" would be from which to select and develop leaders to keep the systems growing and thriving. However, even as the CMOs set themselves up to lead and staff more schools, rapid growth and development raised issues of maintaining fidelity to the principles of the original charter school model.

Fidelity and Adaptation

Inherent in replication, as Motion, Aim, and Drive were funded to do, is the risk that the model evolves differently in different contexts or is "watered down" as the central office spreads supports over more schools and students. As one CMO leader colorfully put it, "How do you avoid crap at scale?"

Although replication is predicated on the assumption that a school model can be installed intact in new locations (e.g., much like large retail store locations), in practice none of the leaders at the three CMOs operated on that assumption. Aim CMO, in particular, emphasized the uniqueness of each campus instead of replicating identical schools. "District people want … to help campuses without campuses feeling like it's top-down." School-level autonomy that allows schools to make decisions quickly to serve their students better was a driving principle behind the charter school movement and among the NSCS grantees. For example, within three days after only 8% of their students passed the first benchmark test, one Aim school had hired tutors, pulled struggling kids from electives for extra tutoring, and changed to block periods mid-year. Drive also used each campus as a "lab" to innovate and hone new practices that other campuses could use. The CMO leaders—all of whom started charter schools because they wanted the autonomy to create school models that they believed would best meet student needs—were wary of infringing too much on that autonomy, even though they now headed systems of schools that their constituents and other observers expected to perform consistently.

Although the charter school principals exercised autonomy over daily activities at their schools, new schools were also held accountable for replicating core elements of their respective CMO's model. Accountability strategies varied across the CMOs but included frequent in-person and online check-ins with the CMO leader; learning walks with school leaders; central instructional coaches; benchmark assessments; and, with new data dashboards coming online, analyses of other data such as attendance and discipline. Drive also achieved informal accountability through frequent interactions among the home office staff and the school leaders and teachers. The CMO executives and directors routinely discussed their observations about each school with one another to inform their respective work with individual schools.

By their own assessment, Aim leaders fostered each campus' uniqueness, which resulted in widely varying practices across schools. For example, the schools initially had different curricula, school calendars, benchmark testing windows, and recruitment and retention processes. But the CMO began to feel the need for more central support and accountability when two of its new schools struggled in establishing the culture and functional features of the model. One of those schools was strategically important: Aim wanted to perform well there to demonstrate that it could move at-risk students to high achievement and be able cite that effort as the foundation for expanding into locales where at-risk youth currently attend underperforming schools. The CMO began giving greater guidance on certain aspects of individual schools as result.

As the CMOs expand, the contexts in which they operate will inevitably change, and what worked in the original school or even the first several schools may not be sufficient or appropriate in a new school. For example, teachers at a new Motion campus reported that they tried to implement techniques and strategies that had been successful at the founding location, but proved unsuccessful at the new site because the new school did not have the same level of teacher experience and established school culture. As the school systems grow, each CMO will need to evaluate and reevaluate the extent to which adaptation is necessary or even desirable to fit curriculum, behavioral expectations, and other school model components to each site's community, culture, and stage of development.

Building Central Office Responsibilities

One program officer characterized the CMOs' development in 2008–09 as the "push and pull between centralization and decentralization. They are all struggling with more principals, more layers…. As people want to try something new, how do they allow for that?" From the NSCS program officer's perspective, some degree of increasing centralization through more formalized systems was appropriate and necessary: "[Growing] out the organization chart… still has to be done because [they] are serving children in the public sector."

In further developing the central office functions, the CMOs formalized certain procedures that a few schools had used informally; they also developed central office capacity and redefined roles and functions. Many of these changes resulted from the need to provide adequate support and achieve greater consistency as the potential for variation widened with increased numbers of schools. For example, as the number of schools grew, Drive saw the need to monitor student progress more systematically and to engage teachers across the system in curriculum and assessment discussions. As a first step, they created the common assessments collaboratively with teachers (as noted above), who indicated the need for more curriculum support. As a result, the CMO created curriculum specialists and content team leader positions. Those individuals would help facilitate cross-campus teacher discussions about curriculum and instructional approaches and lead systemwide PD. Similarly, the CMO director of college partnerships spearheaded the revision and further development of the advisory curriculum, with each campus taking the lead for a different component and sharing its work throughout the system.

In response to its relatively decentralized system and inconsistency across its campuses, Aim hired a head chief of schools to develop a systems approach, shifting from five schools functioning as "mini-city states" to "working as a network." The central office acknowledged that organizational cohesion was lacking, which one leader described as the "issue of branding" and having a message that was "crisp and clear … [and] rolls across the whole organization." To begin developing systemwide goals and strategies, the chief of schools conducted needs surveys at each school so that the central office staff could understand school-specific challenges better.

Although all three CMOs needed to develop central office capacity, each did so differently. To facilitate its growth, Drive invested in individual and group coaching for the home office directors and staff. Explained one of the chiefs:

> [We've] devoted ourselves to the [organizational] coaching work, ensuring we have an aligned and shared vision and [that we are] communicating well…. [We're] better at strategic meetings because we've all bought into how we

> need to behave and work together…. [We've] brought several new members on to our teams, so it was important.

That kind of home office development was not universal across the three CMOs. In contrast, one of the chiefs at another CMO lamented that the home office was "woefully understaffed," needing more instructional coaches and an alumni director who could track graduates. Home office capacity building, then, was and continues to be a critical need under a replication strategy.

Implications for Sustainability

The preceding discussion highlights implications that may affect the CMOs' goals of scaling up to a system of high-quality schools that meet the needs of underserved students.

First, human capital fuels the growth for each of these systems. Keeping the leadership pipeline full is an imperative, as expressed by several CMO leaders. In the past, Drive launched a school only when a school leader groomed from its internal ranks was ready. Thus, in 2008–09, it chose not to start any schools rather than bring in an outsider who might fail to establish the Drive culture that CMO leaders viewed as crucial to subsequent success.

Second, the expanding systems need to be able to tap increasing numbers of teachers and support more novices each year. Reducing the number of new hires by addressing reasons for turnover and retaining those who are successful can help alleviate hiring and training pressures. As one CMO leader stated, "Typically the good [teachers] leave because the hours are too many or they go to grad school. We're trying to figure out how to fix that." The Drive career ladder may be a start, with perhaps a greater emphasis on recruiting those with three or so years of experience who want one more challenge before their next pursuit—if, indeed, CMO leaders are correct that many who are attracted to and succeed in these schools do not consider teaching as a lifelong career.

Fiscal issues, especially around facilities, will also be critical to a CMOs' sustainability, according to one program officer. Over the years, the charter schools movement has lobbied the Texas Legislature—five times according to one CMO development officer—for facilities funding equal to traditional schools, but to no avail. At least two of the CMOs have a capital campaign under way to raise the resources for their growth plans. Through its strategic planning process, Drive refined its financial model to enable schools at full capacity (i.e., all grades enrolled) to operate on their allotted state and federal funding alone. The CMO will thus need to raise capital only to start up new schools. As part of its financial model, Drive developed two approaches to reduce its facilities costs. First, in partnership with a local district, it might locate a charter school on a campus shared with an existing district high school, which reduces the facilities cost to "virtually none." Second, two new schools will be incubated on the same campus for their first two years, after which one of the schools will move to its permanent location in a predefined attendance zone, and a third new school will take its place for the next two years. The remaining original school will eventually take over the facilities as its permanent location. This model reduces start-up facilities costs by half for any given school and offers additional benefits such as co-principalships for collegial support and economies of scale for developing and mentoring the school co-principals.

As the CMOs' school systems expand, the tension between centralization and school-level autonomy is likely to persist. As one CMO leader put it:

> We didn't want to create another school district. We've learned a lot and gotten better at things, but there's no roadmap for … [creating] a great or even good school district at scale. We're trying to do something that's never been done before….

The role of the central office may need to evolve, particularly as the CMOs expand, and the community and student contexts of the new campuses vary more widely. Aim has already experienced increasing variation across its schools, and Drive is likely to do so as it experiments with accepting a new ninth-grade cohort into one of its schools (as opposed to accepting new cohorts of students only in the middle grades). As the range in student needs and performance potentially increases, CMOs may need to develop a more differentiated approach to supporting their campuses.

The last major implication for sustainability depends on the specific school models. For example, one of the Aim schools received a T-STEM grant, which according to CMO leaders dovetailed with its intention to move toward a focus on math, science, and technology. The CMO was interested in expanding T-STEM principles to other schools in its system, although it was also concerned about some of the costs of the model, such as team teaching. In another example, Drive's student support strategy is the product of many years, and over the years it has been able to track alumni through its graduate networks. As the number of graduates grows, tracking will become more difficult and time-consuming. Nonetheless, Drive stakes its claims on knowledge of whether its graduates go to and complete college, with college completion providing the CMO's ultimate accountability measure. Drive staff are aware of how successful the CMO is in accomplishing its mission because they have the requisite data . Moreover, they continue to seek feedback from graduates about how adequately they were prepared for college and adjust the curriculum and supports in response; for example, the CMO took to heart early graduates' input that they were not sufficiently prepared for college-level math. (Exhibit 6-1 describes Aim's efforts to build their central office capacity.) The CMOs will need to continue to reflect on the core elements and the guidelines they establish for campuses, and they may need to invest more to retain nonnegotiable elements or allow schools to make some modifications.

Exhibit 6-1
Building the Central Office, Developing a Systems Perspective

Uplift CMO illustrates how concerns about consistency and equity led to the creation of new systems to support a larger school network. As the Uplift system of schools grew, communication about CMO priorities and discussion around consistent educational programming across the schools demanded explicit leadership. In response, the CMO created a Chief of Schools position to build cross-school coherence and collaboration. With leaders from each of the schools, the CMO is developing plans for common weekly PD and a common course catalog aligned with the state course titles and descriptions. The catalog will establish what each course at a Uplift school should cover, lay out a course of study that ultimately leads to a distinguished diploma (based on the state definition) for Uplift graduates, and serve as the curriculum roadmap for new sites.

Support from CFT

Given the difficulty of replicating and sustaining their school models, CFT provided the funded CMOs with program supports as part of the NSCS program. These supports were intended to assist CMOs in their development, including start-up of replication sites, growth of each CMO's network of schools and central office, and overall sustainability. For individual CMOs, CFT provided consultants who visited replicated schools periodically to advise on start-up issues. They also held meetings with CMO leadership to discuss growth strategies and dilemmas, particularly those concerning the need to formalize certain systems and to balance centralization and decentralization.

CFT also initiated networking activities for the funded charter schools, including those under NSCS, T-STEM, and ECHS. In 2008–09, CFT convened a series of "C meetings" for the CEOs, CFOs, and chief development officers to participate in PD, share best practices, and engage in professional networking. Even though at least one of the CMOs had long-standing relationships in the national charter school movement, it indicated that collaborating with other charter groups and sharing best practices were benefits of the NSCS grant. Participants discussed problems and shared solutions with their counterparts. A CMO leader reported that CFT's most valuable assistance was putting her in contact with other charter schools and with content experts outside of the CMO's system, for example, an external T-STEM coach.

To help CMOs plan for growth and sustainability, CFT facilitated relationships between Motion and Yes Prep and the private Charter Schools Growth Fund (CSGF).[83] The NSCS program officer indicated that CSGF selected CMOs on the basis of their past performance and their need for further capacity-building in strategic planning. The CSGF provided CFO training, an extended strategic planning process focused on a sustainable financial model, and access to capital to fund expansion.

The networking and connections that CFT and others have facilitated for the three CMOs seem particularly important at this juncture because CFT funding and support for the NSCS program ended in 2009. The CMOs will thus be on their own in seeking peer group support and alliances, thought partners, and formal or informal TA. The relationships that they have established during the years of NSCS are likely to be important as their systems consolidate and mature.

NSCS Effects on Student Outcomes

The researchers analyzed NSCS effects for three student samples: (1) eleventh-graders in one NSCS that has been implementing the model for three years; (2) tenth-graders in eight NSCS that have been implementing the model for two or three years; and (3) ninth-graders at 10 NSCS that have been implementing the model for one, two or three years in 2008–09. The NSCS effects were estimated separately for ninth-grade nonrepeaters and repeaters[84] and tenth- and eleventh-grade former nonrepeaters[85] (simply referred to as tenth- and eleventh-graders

83 The CSGF supports CMOs that meet their application requirements with an extensive strategic business planning process that prepares them to raise capital for expansion. http://www.chartergrowthfund.org/

84 Ninth-grade repeaters and nonrepeaters were analyzed separately because their prior achievement indicators are not comparable and cannot be included in the same model. The prior year achievement indicator is eighth-grade achievement for nonrepeaters and ninth-grade achievement for repeaters. In addition, repeaters by definition have been exposed to the curriculum before, and being at risk, likely have different experiences at schools from nonrepeaters, e.g., are potentially less engaged or confident, or alternatively receive extra academic supports. Thus, NSCS is not expected to impact repeaters in the same way as nonrepeaters. However, the NSCS repeater analysis is not reported because the sample size is too small.

85 A large proportion (around 30%) of ninth-grade repeaters were promoted to their original cohort in the subsequent year and a larger proportion (around 50%) were promoted to their original cohort in two years. These ninth-grade repeaters do not belong to tenth grade in the following year or to eleventh grade in the year after. Therefore, repeaters are not included in tenth- and eleventh-grade analysis.

hereafter). Because only one NSCS is represented in the eleventh-grade student sample, any estimated NSCS effect for eleventh-grade outcomes is likely not representative of the larger program. Consequently, the eleventh-grade NSCS results should not be emphasized and should be interpreted with caution. Also, as noted in Chapter 2, the NSCSs are new small schools. They were matched closely to comparison schools on key indicators but not exclusively to newly opened non-THSP schools because so few opened in the same year as the specific NSCSs. Therefore, these results should be interpreted cautiously.

In addition to looking at a snapshot of ninth-, tenth- and eleventh-grade student achievement between NSCS and comparison schools, the researchers also conducted growth modeling on TAKS standardized scores in math from eighth to tenth grade.[86] The analysis included ninth-graders in 2007–08 and tenth-graders in 2008–09 from eight NSCSs and their comparison schools. Growth modeling enables a comprehensive study of the NSCS effect on students' overall progress in math by examining students' growth trajectories after their schools began NSCS implementation and including students who were at the school for only the ninth or the tenth grade, thereby making full use of the available data. Unless otherwise stated, all results discussed below are statistically significant at the 0.05 significance level (i.e., $p < .05$).

TAKS-Math, English/Language Arts, Science, and Social Studies Achievement

Ninth-grade nonrepeaters and tenth- and eleventh-graders in NSCS had higher TAKS scores in all subjects except ninth- and tenth-grade reading/English, higher likelihood of passing all TAKS, and higher growth rate in TAKS mathematics than their peers in comparison schools.

Exhibits 6-2 to 6-7 depicts the effect of NSCS on various TAKS outcomes among first-time ninth-graders (nonrepeaters), tenth-graders who have been in the same school for two consecutive years, and eleventh-graders who have been in the same school for three consecutive years.[87] The NSCS program had positive, significant effects on all TAKS subjects for ninth-grade nonrepeaters, and tenth- and eleventh-graders in 2008–09, with the exception of ninth-grade TAKS-Reading and tenth-grade TAKS-English/Language Arts. Ninth-grade nonrepeaters in NSCS schools scored, on average, 60 points higher on TAKS-Math than their peers in comparison schools. This NSCS effect, combined with a pooled standard deviation of 227 points, translates into a relatively small effect size of 0.26 standard deviations.[88]

As displayed in Exhibit 6-3, tenth-graders in NSCSs scored an average of 66 points higher on TAKS-Math, 45 points higher on TAKS-Science, and 41 points higher on TAKS-Social Studies, than similar students in comparison schools. These NSCS effects, combined with

86 TAKS mathematics scores were standardized against the state average for eighth, ninth and tenth grade respectively. The standardized scores have a mean of 0 and a standard deviation of 1 for each grade.

87 The number of ninth-grade repeaters is too small to perform valid NSCS effect analysis, therefore ninth-grade repeaters are omitted from the analysis.

88 The effect size was calculated by dividing the coefficient of the THSP or program indicator by the pooled within-group standard deviation of the outcome at the student level (What Works Clearinghouse, 2008). Note that both the *THSP effect* and the *effect size* are presented throughout the discussion of results. The former is the raw differences between students in THSP and comparison schools, whereas the latter puts all the raw differences on the same metric. Unlike THSP effects, effect sizes can be compared across different outcomes and indicate the strength of the intervention effect. Consistent with standard practice, the evaluation team considers an effect size of 0.20 as small, 0.50 as moderate, and 0.80 as large. Therefore, 0.26 is a fairly small effect size (Cohen, 1988).

pooled standard deviations of 180, 171 and 173 points for mathematics, science, and social studies, translate into effect sizes of 0.37, 0.26, and 0.24 standard deviations for mathematics, science, and social studies, respectively. NSCS had a positive effect on the standardized TAKS achievement growth rate in mathematics. NSCS students in NSCS achieved 0.20 standardized points higher in TAKS-Math growth than in comparison school peers from eighth to tenth grade, who had a growth rate of .02 standardized points. In ninth-grade TAKS-Reading and tenth-grade TAKS-English/Language Arts, NSCS students performed similarly to their comparison school counterparts.

Eleventh-graders in NSCS scored an average of 179 points higher on TAKS-Math, 138 points higher on TAKS-English, 110 points higher on TAKS-Science and 161 points higher in TAKS-Social Studies than students in comparison schools (Exhibit 6-4). These NSCS effects, combined with a pooled standard deviation of 183, 139, 137, and 158 points for mathematics, English, science, and social studies, translate into effect sizes of 0.98 standard deviations for mathematics, 0.99 for English, 0.81 for science, and 1.02, for social studies. These effect sizes are large in the context of education research. Note that the results are from only one NSCS and therefore are not generalizable to other NSCSs.

NSCS also had positive effects on students' likelihood of passing all TAKS subjects. First-time ninth-graders in NSCS had a higher likelihood (2.6 times) of passing both TAKS-Reading and TAKS-Math, and NSCS tenth-graders were 3.7 times more likely to pass TAKS in all four subject areas versus their comparison school counterparts.[89] The probability of passing both TAKS-Math and TAKS-Reading for an average first-time ninth-grader is 83% in NSCSs versus 74% in comparison schools. The probability of passing all core TAKS for an average tenth-grader is 74% in NSCSs versus 60% in comparison schools. In addition, descriptive statistics show that all 19 NSCS eleventh-graders passed TAKS in all four subject areas versus 87% of eleventh-graders at the comparison schools, suggesting a positive NSCS effect on passing TAKS in all four subjects among for eleventh-graders.

Overall, NSCS appeared to produce positive and relatively large TAKS results as compared to matched schools. These results may reflect the high academic expectations and instructional demands that were evident on most of the NSCS site visits. As small schools of choice, however, these results may also reflect the difference in motivation or academic orientation between NSCS students who choose to attend those schools and more typical high school students who must attend the local high school by default.

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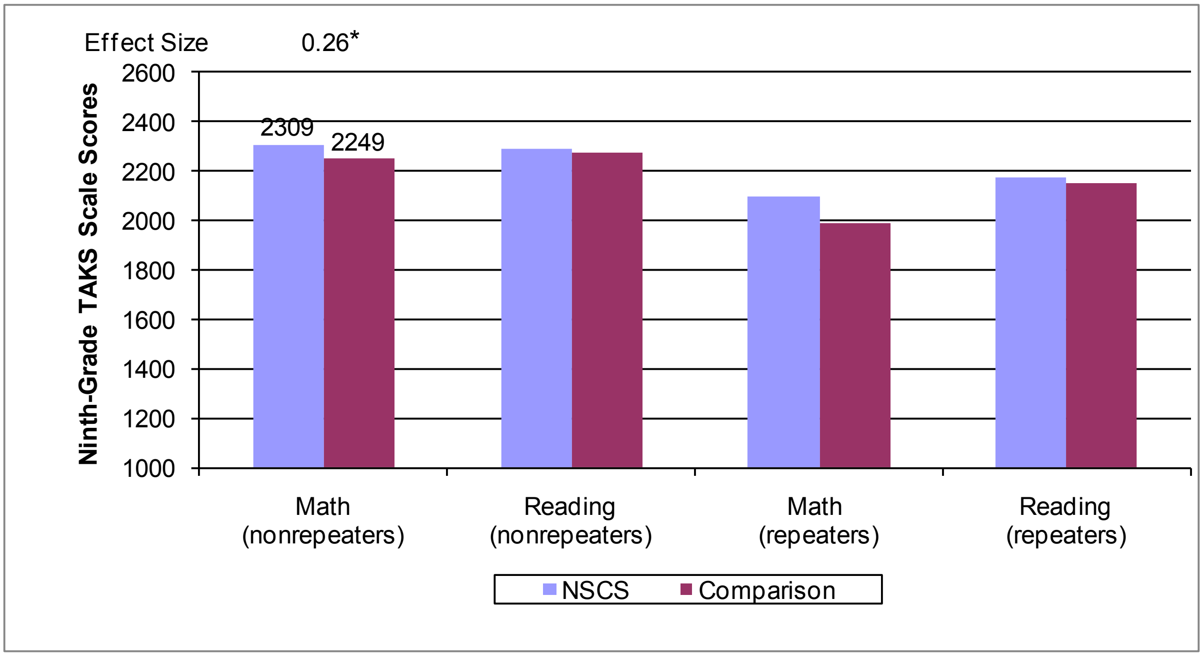
89 In the "Passing TAKS in four subjects" model, the dependent variable is dichotomous (equal to 1 if a student passed all four exams and 0 otherwise) rather than a continuous TAKS scale score. Consequently, the coefficient for such model is interpreted in terms of an odds ratio.

Exhibit 6-2
NSCS Effect on Ninth-Grade TAKS Scores in 2008–09

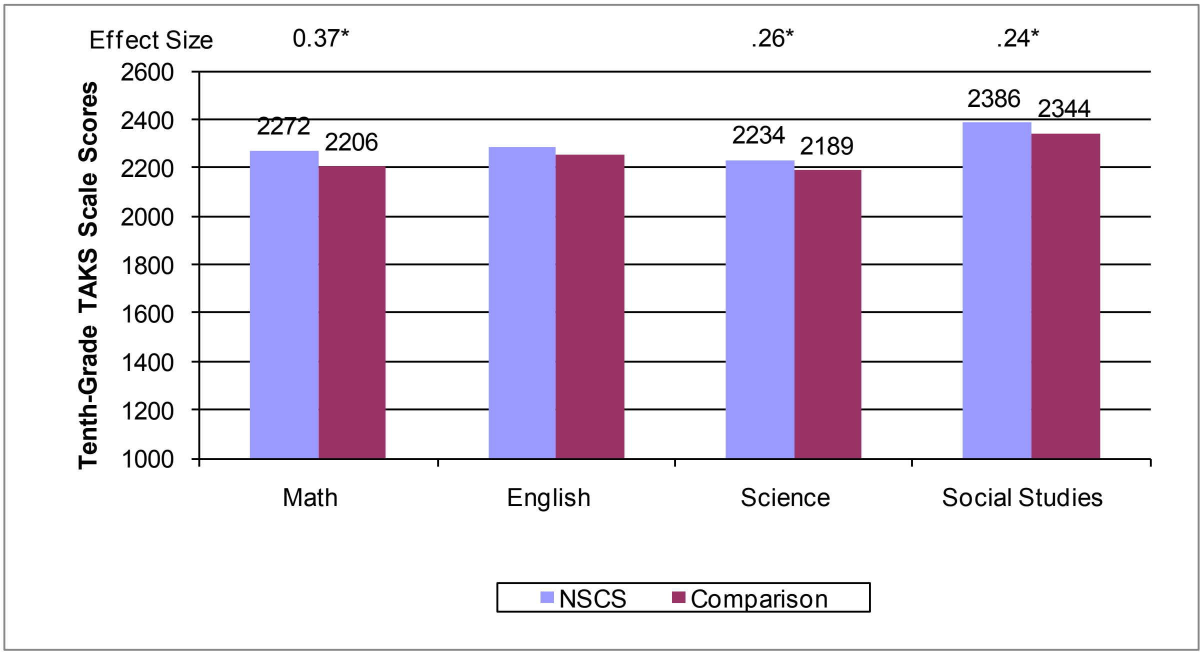


Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences. *$p < .05$, ◊$p < .10$.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

498 students from 10 NSCS schools and 2,139 students from 38 comparison schools are included in the analyses.

Exhibit 6-3
NSCS Effect on Tenth-Grade TAKS Scores in 2008–09

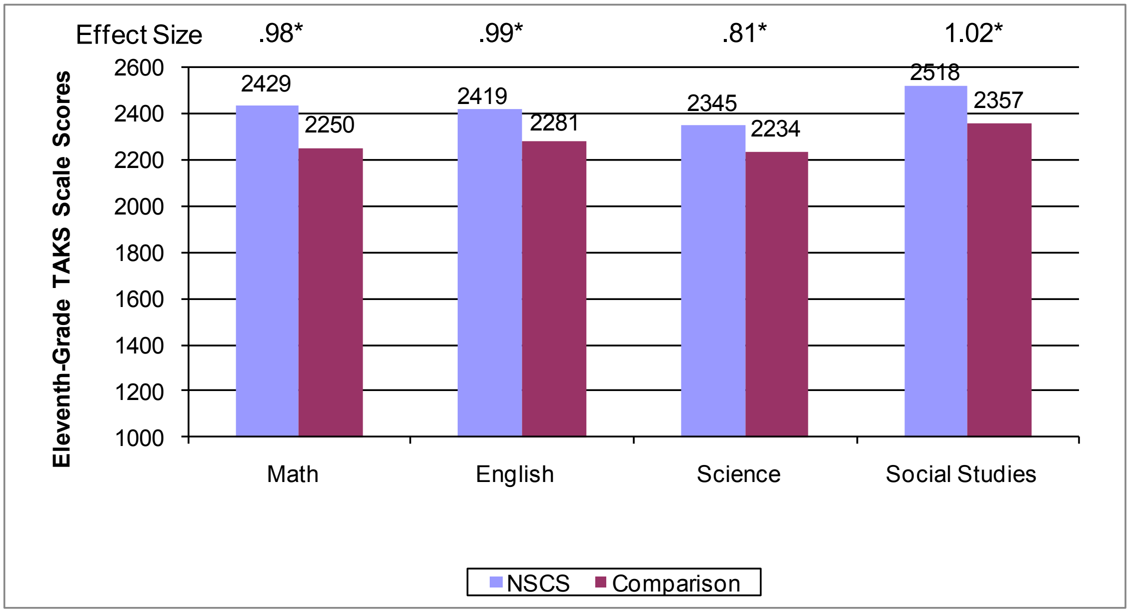


Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences. *p < .05, ◊p < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

271 students from 8 NSCS schools and 2,237 students from 43 comparison schools are included in the analyses.

Exhibit 6-4
NSCS Effect on Eleventh-Grade TAKS Scores in 2008–09

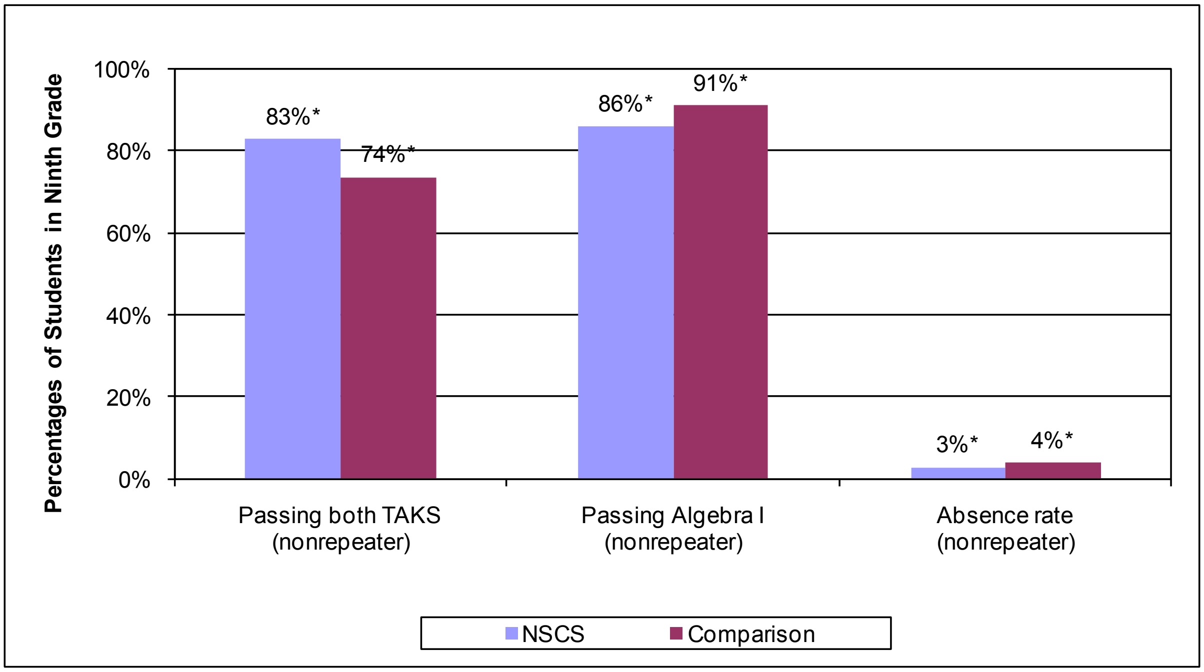


Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences. *p < .05, ◊p < .10.

TAKS passing rates are set at a scale score of 2100 and TAKS commended status is set at a scale score of 2400 every year for each TAKS subject in each grade.

20 students from one NSCS and 223 students from 6 comparison schools are included in the analyses.

Exhibit 6-5
NSCS Effect on Ninth-Grade Outcomes Other than TAKS Scores in 2008–09

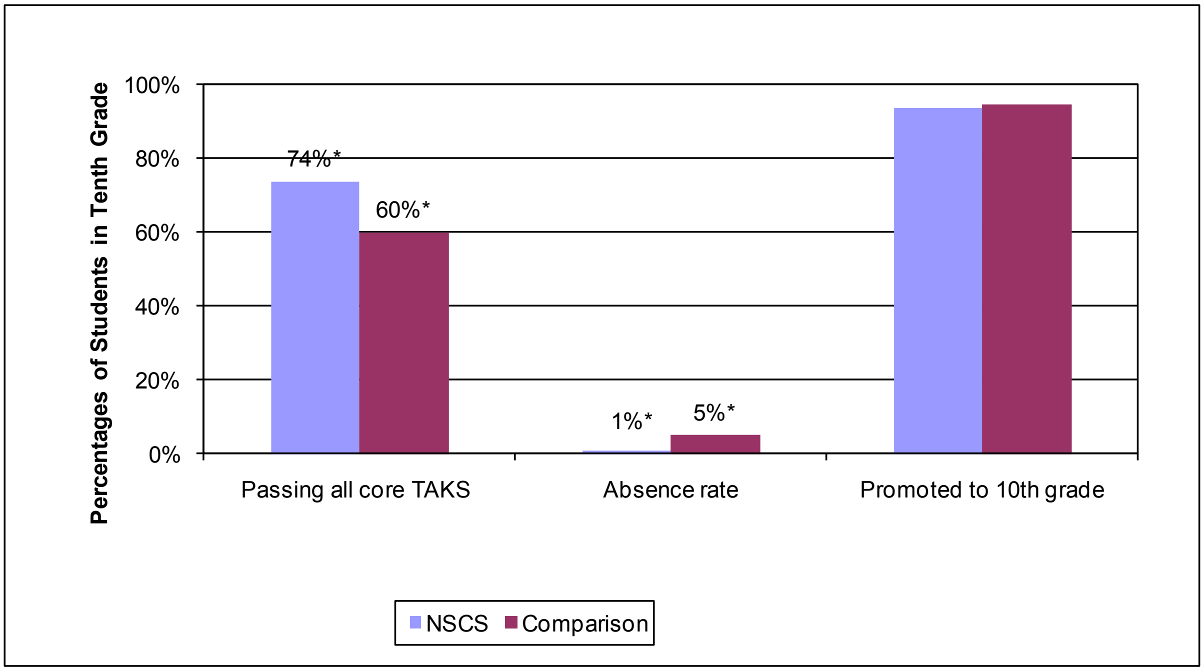


Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.

*p < .05, ◊p < .10.

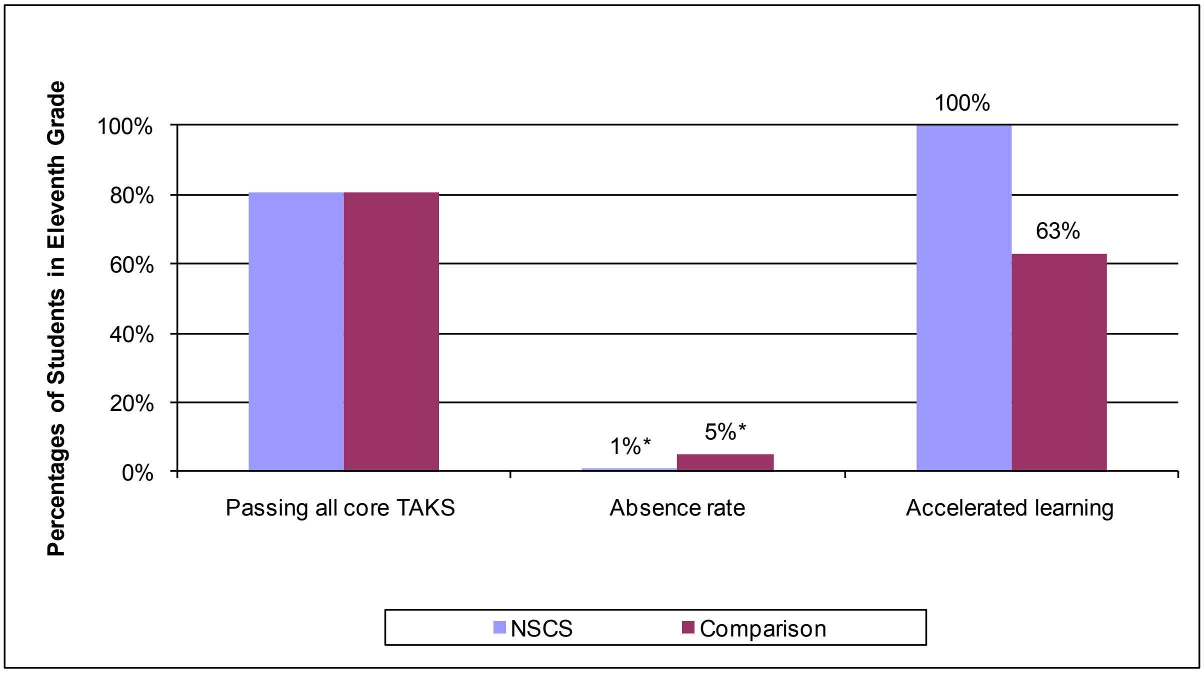
498 students from 10 NSCS schools and 2,139 students from 38 comparison schools are included in the analyses.

Exhibit 6-6
NSCS Effect on Tenth-Grade Outcomes Other than TAKS Scores in 2008–09



Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.
*$p < .05$, ◊$p < .10$
271 students from 8 NSCS schools and 2,237 students from 43 comparison schools are included in the analyses.

Exhibit 6-7
NSCS Effect on Eleventh-Grade Outcomes Other than TAKS Scores in 2008–09



Notes: Values are shown and effect sizes are labeled on top of the bars for significant TAKS score differences.
*$p < .05$, ◊$p < .10$.
20 students from one NSCS and 223 students from 6 comparison schools are included in the analyses.
The model for accelerated learning does not converge with NSCS due to perfect prediction (all NSCS students have a single value of 1). Therefore, the percentages shown are actual percentages instead of model-based percentages.

Attendance

NSCS students had better attendance results than comparison school students (Exhibits 6-5 to 6-7). First-time ninth-graders in NSCS had a marginally significant ($p < .10$) lower likelihood of being absent than their peers in comparison schools. The probability of being absent for an average first-time ninth-grader is 3% in NSCSs versus 4% in comparison schools. Tenth- and eleventh-graders in NSCS had significantly lower likelihoods of being absent than their peers in comparison schools. The probability of being absent for an average tenth-grader is 3% in NSCSs versus 4% in comparison schools. The probability of being absent for an average eleventh-grader is 1% in NSCSs versus 5% in comparison schools. Recall that the eleventh-grade results come from only one NSCS and therefore is not generalizable to the NSCS program.

Other Student Outcomes

NSCS had a negative effect on passing Algebra I for first-time ninth-graders (Exhibit 6-5). Ninth-grade nonrepeaters in NSCS had a lower likelihood (52%) of passing Algebra I than their peers on comparison schools. The probability of passing Algebra I for an average first-time ninth-grader is 86% in NSCS schools versus 91% in comparison schools. This finding is puzzling as most visited NSCSs targeted Algebra I for ninth-grade or lower. Again, one potential explanation may be that the dataset does not include course completion data outside of the

180-day instructional year and the credit earned during the extended year that most NSCSs have is not reflected in the data. Descriptive statistics show that all 19 NSCS eleventh-graders took accelerated learning courses versus only 63% of eleventh-graders in the comparison schools, suggesting a positive NSCS effect on that outcome. NSCS students did not differ from those at comparison schools on the likelihood of being promoted to the tenth grade.

Longitudinal Comparison of NSCS Effects

The 2008–09 outcomes analysis provides a snapshot capturing the cumulative effect of NSCS on student outcomes. Likewise, the first annual report (Young, et al., 2010) provided a snapshot of the NSCS effect on student outcomes in the previous year. Two approaches to comparing the 2007–08 and 2008–09 results can trace the performance of NSCSs over time: (1) looking at how ninth-graders in one year fare compared with ninth-graders in the next year (i.e., cross-sectional); (2) examining how students in the same cohort perform over the years, i.e., as ninth-graders in 2007–08 and then as tenth-graders in 2008–09. The first approach can indicate whether NSCSs improve in serving students at specific grade levels, and the second approach sheds light on when during a typical student progression through high school NSCS might have effects on student outcomes and whether the effects are sustained over time. Both kinds of comparisons are presented below.

Comparing Different Cohorts of Students

The evaluation revealed few statistically significant results among ninth-grade outcomes in 2007–08 and 2008–09 and among those, there does not appear a consistent trend. For first time ninth-graders, NSCS had a positive effect on TAKS-Math in 2008–09, an improvement from 2007–08 when NSCS had no effects on this outcome. However, NSCSs also had a negative effect on passing Algebra I for ninth-grade nonrepeaters in 2008–09, versus no such effect in 2007–08. NSCS had a positive effect on attendance for ninth-grade nonrepeaters in 2007–08, which turned into a marginally significant positive effect in 2008–09. These results do not present a clear pattern that NSCSs sustained or improved outcomes for subsequent cohorts of students.

Comparing Students in the Same Cohorts over Time

The comparison of the same cohorts of students over time presents a somewhat upward trend in outcomes. Tenth-graders in NSCSs outperformed their comparison school peers on TAKS-Math in 2008–09, whereas they had not done so as ninth-graders the year prior. The positive effect of NSCS on ninth-grade nonrepeaters' attendance in 2007–08 remained positive for tenth-graders in 2008–09. These results provide some evidence that NSCS schools sustain and improve student outcomes over time.

Conclusions and Implications

The three CMOs included in the 2008–09 data collection were relatively successful in implementing the key elements of their school models at replicated sites. Although the replication sites for two of the CMOs were more consistent in culture and processes than those of the third, as reported by teachers and CMO-level staff, the schools generally established rigorous curriculum through high content standards—based on TEKS and in some cases higher standards—and expected all students to take advanced courses such as AP. Because these CMOs pledged to serve high-needs students who were often inadequately prepared for challenging curriculum when they enrolled at the CMOs' schools, they faced the recurring challenge of bringing entering students up to grade level each year. At least two of the CMOs sought to do so in students' first year at the school. Moreover, two of the CMOs began serving students in the middle grade years, and one began in prekindergarten and kindergarten to maximize student achievement before the critical high school years. Nevertheless, leadership at one CMO expressed concern that students' poor academic preparation at prior schools limited the CMO in serving students in advanced courses.

To engage students in learning, CMOs also expected teachers to personalize instruction and make course content relevant. For the most part, the small-school structure facilitated teachers' relationships with and knowledge of students—as learners and within the context of their personal lives insofar as they affected school engagement and performance. All three of the CMOs were also developing ways to use data comprehensively to help teachers understand students' needs better and tailor instruction accordingly. Curricular relevance, however, was largely left to individual teachers, as was true in THSP schools across the various grant programs. The CMOs offer a college preparatory curriculum and its relevance is implicitly defined as what is necessary to enter and succeed at college.

The CMOs' models integrated extensive student supports to help students and their parents realize their college aspirations. In addition to extending the instructional day, the student support strategies sought to broaden students' knowledge of potential careers, of the college application and financial aid processes, and of what college life would be like. Curricula that combined advisory, career exploration, and college knowledge started in middle school, as did conversations between school staff and parents about having their children go to college. Although the three CMOs were at different stages in developing these strategies, their conception and implementation of student supports was far more comprehensive than those of most traditional high schools visited under the other THSP grant programs. At least one of the CMOs exemplified the cutting edge of taking responsibility for its high school graduates by building partnerships with colleges that enabled its students attending the same college to build a support network and to receive assistance from college counselors.

All of the CMOs either tracked their alumni or were trying to marshal the resources to do so. The two CMOs that had done so make it the specific responsibility of their counselors to collect data on each alumnus' higher education status. Such efforts underscored the need for a data system that spans at least grades nine through the fourth year of college. In preparing students for college, schools need data about whether their students enroll and persist in postsecondary education; if not, they need a feedback mechanism that informs the high school about how its programming could be improved to meet graduates' needs better. Such extensive postsecondary tracking is rare in most districts and, given present financial constraints, is likely infeasible in the short-term. The National Student Clearinghouse attempts to provide such data for students who attend college out of state, but high schools do not universally access that information. THECB tracks students at state colleges, but it is unclear whether schools receive that information consistently. And neither the National Student Clearinghouse nor THECB provides feedback on students that indicates how well high schools prepared them for various aspects of college. One of the CMOs illustrated the value of such information by using alumni feedback to strengthen its math curriculum.

Replication among the three CMOs illustrated the necessity for human capital strategies that sustain and manage leadership development, and hire, train, and retain teachers, as well as building other central office capacities to serve additional schools. The CMOs varied in articulating their leadership development strategies, with a stronger tendency to grow leaders from within their ranks to ensure that new schools are led by individuals familiar with the school model and culture. With rapid expansion, however, CMOs ran the risk of "cannibalizing" existing campuses to provide experienced leaders and teachers for new schools. Across the CMOs studied, high proportions of novice teachers made teacher training a large-scale effort annually—an effort that will continue to expand as the CMOs open more replication sites. The need to train many novices each year will also be a function of the schools' ability to retain successful teachers. Although plans were at different stages of development, the CMOs were attempting to improve retention through more intensive teacher supports and a differentiated career ladder that built in formal teacher leadership roles for effective teachers.

Human capital issues are likely to remain at the forefront of CMO efforts to expand. These CMO systems are currently still small enough to embody a real human dimension to human capital development. CMO leaders can keep a relatively close eye on how all building-level leaders and staff are doing, take an interest in keeping teachers both satisfied and growing professionally, and be alert to natural leadership talent. Whether that level of human connection can be sustained by creating additional dedicated structures and systems will be worth assessing in the future.

The CMOs' expansion strategies will in all likelihood continue to raise centralization versus decentralization concerns. As they replicate, CMOs must balance their belief in school-level autonomy with the need for consistent systems. As CMOs move to new geographic locations, start serving students with different needs, or alter their school models, they will need to rethink how centralized systems fit the new circumstances. The implications for sustainability, therefore, at the least include continued reflection on the organizational learning and improvement that the CMOs demonstrated in these early stages of expansion.

The range of centralization approaches that the CMOs pursue could provide lessons that span the charter and noncharter sectors. Large urban districts such as Houston are experimenting with decentralization strategies to help meet school needs, but with mixed results thus far. In Houston, the decentralized regions created "mini-bureaucracies" that did not fulfill the goals of decentralization and, according to district interviews, the system had to be reorganized. Without some degree of a unified central policy, consistency and equity in learning opportunities and resource allocations could be at risk.

The NSCS program conceived under THSP ended with the last schools funded in 2008–09. CFT provided important networking activities for the three CMOs and will continue to convene charter schools across all of its THSP grant programs, including T-STEM and ECHS. The new Texas Charter School Network created in 2009 will represent charter school interests with state policymakers and legislators. The Charter School Network is still establishing priorities and deciding what activities to pursue; whether networking activities among the NSCS-funded CMOs in particular can be sustained and supports CMO leaders in facing common issues associated with growth remains to be seen.

Finally, the student outcomes analysis results indicated that, on balance, NSCS grantees were making a significant and positive effect on their students' achievement. NSCS students performed higher than comparison school students on TAKS in all subject areas for all three grade levels, except ninth- and tenth-grade reading/English. Accordingly, NSCS also had positive effects on passing all TAKS in general for students in the three grades. NSCS' positive effect on TAKS math growth suggests sustained improvement in student achievement.

Moreover, NSCS had a positive effect on attendance among tenth- and eleventh-graders. On the other hand, ninth-grade nonrepeaters had a lower likelihood of passing Algebra I than did their comparison school peers, but the reasons for that outcome were unclear. Given significant or marginally significant positive effects for all the other academic indicators investigated, the lack of positive NSCS effects on ninth- and tenth-grade TAKS reading/English and the negative NSCS effect on passing Algebra I by ninth grade may warrant further inquiry to understand underlying factors.

Although the effect sizes for eleventh-grade outcomes were substantial, the results were based only on 19 eleventh-graders in one NSCS and their peers in comparison schools. The results for the eleventh-graders thus cannot be generalized to the broader NSCS student population, although that one NSCS seems to have had strong positive effects on all student outcomes.

Chapter 7
District Leadership and Support for Reform

Key Findings

- Districts continued to play a pivotal role in shaping reform efforts at the school level.
- District leaders' thinking about school improvement appeared to be evolving, with greater emphasis on achieving coherence across reform efforts and building district-wide capacity at the district and school levels.
- The definition of rigor at the school level was increasingly shaped by districts' upgrading curricula, establishing standards-based assessments, providing supports to both principals and teachers, and demanding greater accountability for what is taught in classrooms.
- Districts served functions similar to those provided by external networks by bringing staff together to learn from one another and from outside experts.
- Maintaining the appropriate balance between district-wide mandates and providing schools with sufficient flexibility for successful reform model adaptation remained a challenge for districts.
- Because high school reform efforts occur under broader district reform priorities, district engagement will be critical if external network providers want greater fidelity in school-level implementation.

Introduction

Districts continued to play a significant role in driving reforms among most of the THSP and non-THSP schools that researchers visited in 2008–09. As discussed in the first comprehensive annual report (Young, et al., 2010), district leaders provide schools with a bridge to broader education reform initiatives and specific strategies designed to improve student learning. Districts can both facilitate and impede the changes schools are attempting to implement by defining a vision for reform that may or may not be aligned with reform models, by supporting curriculum development and the professional learning of staff to improve their instructional practice, and by mandating certain activities.

This chapter presents findings about THSP initiatives targeted at building district capacity to support school reform initiatives. It also discusses broader district efforts to develop greater coherence among school-level reforms and to improve instructional quality. To align reform efforts better, some districts placed a greater emphasis on a systematic kindergarten through twelfth-grade approach to reform; in such cases, high school reform efforts were but one element. Districts were also engaged in efforts to increase the rigor of curriculum and instruction and to increase school accountability for implementing established requirements or what has been termed locally as "nonnegotiables." The first section discusses the support districts received through the THSP Education Leadership Initiative (ELI). A description of district efforts to build capacity to improve instructional quality follows. Data for this chapter were drawn from spring 2009 interviews with district staff in the three districts receiving THSP district leadership support; district and school staff in 17 additional districts and THSP program officers.

THSP District Leadership Support

In recognition of the critical role that high-quality leaders play in the success of school reform efforts, THSP launched the multifaceted ELI in 2006. The $3.6 million program was jointly funded by BMGF and the Wallace Foundation, and conducted in partnership between CFT and TEA. The goal of the ELI was to change schools both by engaging the support of the district and by providing assistance to district and school leaders. The bulk of the funding was directed at (1) strengthening the link between the leadership development and increased student performance through pilot high school principal certification programs and (2) providing tiered support to enhance the capacity of three districts ready for transformation—HISD, DISD, and SAISD. THSP supports for these three districts were aligned with the readiness of each district to advance their reform activities. Key readiness factors included a vision for reform, a completed self-assessment identifying district needs to achieve its goals, community and board involvement, and stable leadership.

During the 2007–08 school year, THSP supports for the three THSP District Leadership Development (DLD) program districts, HISD, DISD, and SAISD, included district staff mentorships, school board training, reviews by outside consultants, and facilitation of meetings to discuss reform topics. ELI supported an additional activity, facilitated meetings of the Big 8 Urban Superintendents Council (Big 8 Council)[90] that convened superintendents and selected staff from eight of Texas' largest school districts three to four times a year. CFT provided tools,

[90] The Big 8 districts, together serving more than 640,000 students, include Austin, Corpus Christi, Dallas, El Paso, Fort Worth, Houston, San Antonio, and Ysleta independent school districts (ISDs).

experts, and informational materials, and the executive director for THSP at CFT was responsible for the logistics of each meeting.

In the 2008–09 school year, the Wallace Foundation's and BMGF's funding for CFT leadership activities ended. The CFT program officer for educational leadership continued to provide some assistance to DISD and SAISD administrators, but at a much reduced level. Funding for the third and final year for four of the five Pilot High School Certification grantees was distributed, and that program was also discontinued. Facilitated meetings of the Big 8 council continued, but with a new emphasis on data systems fueled by a sizable BMGF grant. These activities are discussed below.

Types of District Leadership Support

The THSP strategies to build district capacity and engage district leaders in reform efforts have evolved over time. Through an extensive planning process, CFT leadership identified four key components of its education leadership strategy:

- State certification programs (e.g., for principals and teachers)
- Teacher effectiveness (e.g., teacher effectiveness measures)
- Performance management (e.g., monitoring performance data for decisionmaking)
- Learning systems (e.g., creating exemplar schools and districts for statewide national expansion).

Rather than funding leadership supports in individual districts, the focus of CFT leadership activities had shifted by spring 2009 to two of these components: state certification programs for principals and teachers[91] and performance management. Congruent with CFT's focus on performance management, the data diagnostic project arose from a new grant from BMGF. This additional funding at the end of 2008 fueled CFT's work with the Big 8 districts and a CMO to advance the effective and timely use of data at the district, school, and classroom levels through district networking. The focus on improving district data systems also reflects the new federal emphasis on assisting states and districts to collect and analyze data that will aid instructional decisionmaking—moving from being data-rich and information-poor to having relevant and timely data that go beyond compliance reporting. While the ELI program narrowed to these two components, CFT's program officer for education leadership continued to serve as a mentor to administrators in DISD and SAISD as time permitted. CFT education leadership funds also supported ongoing principal training for SAISD.

Improving District Data Systems

During the 2008–09 school year, CFT received a $2.9 million BMGF grant to work with the Big 8 Council and IDEA Public schools (a CMO) to examine their current data/information systems and to determine what information teachers need to improve student learning at the classroom level. The districts' pilot work was expected to serve as a learning lab to inform urban school systems across the state and nation. In addition, DISD received a $3.8 million grant from

[91] Practitioners' feedback indicated that CFT should focus on state IHE preparation programs. CFT staff supported legislation to hold principal and teacher preparation programs accountable for how well their graduates improved student achievement (SB174) and to revise the principal recertification process. CFT and TEA staff collaborated to bring together staff who administered principal and teacher preparation programs to discuss the implications of these legislative changes (e.g., what criteria should be used to evaluate programs).

BMGF to develop a college readiness indicator system (CRIS). The district system builds on the college readiness indicators that TEA requires districts to report on annually as part of AEIS (e.g., advanced course/dual enrollment completion, AP/IB results), as well as their collaborations with Harvard and the Chicago Consortia to determine which key data to track.

Under the grant, each of the Big 8 districts reviewed their data systems (e.g., data collection, storage, use) in comparison to best practices. The needs assessment was designed to assist districts in developing a plan to use data more effectively in informing instructional decisionmaking and improving student outcomes. For example, consultants assigned to each district assessed their technology capacity. Several districts developed their own data dashboards and shared the development process to further the group's knowledge of the critical data elements needed to advance student learning. One superintendent characterized the process as research in progress:

> Our goal for this year, and [CFT] is helping us out a lot with that, is finding a way to collect and analyze data that would ultimately result in changing practices that lead to improved student performance .… So what are the critical data pieces that we need to collect that really make any difference? … I would use the word scorecard; … [Learning] what are all of our scorecards and within those scorecards which is that piece of data that's really information-rich. … From a technical standpoint, how are we collecting … [data], how we're reporting it, and now from a leadership standpoint, what are we interested in looking at?

District leaders hoped that the diagnostic and technical assistance would improve their activities under way and hasten the desired outcomes.

District Networking

The data diagnostic project enabled participating districts to interact and learn from one another. Like the opportunities that external networks create for schools to come together, THSP district leadership resources increased support for networking among districts. Such partnering—both among districts and with other entities—to solve complex problems is increasing with the support of private foundations and other reform organizations.

One THSP program officer indicated that the data diagnostic project allowed CFT to work with a broader range of district staff than at past Big 8 meetings and at a much deeper level across districts. Even though some district staff members were initially unclear about the project's goals, all participated because they saw the value of this work. For the program officer, one of the most important lessons was the advantages that deliberate networking among districts brings to the implementation process. The program officer concluded that CFT's work with networks of schools or the Big 8 Council created peer accountability, peer support, and greater validation for project or initiative goals, which was more effective at bringing reforms to scale within a district than attempting to do so legislatively or through competitive grants. Networking districts has allowed CFT both to harvest good information that keeps participants engaged, thereby creating greater sustainability, and enhance participants' sense of ownership over the work. CFT was considering expanding the Big 8 Council to improve its geographic representativeness and help achieve greater scale in disseminating lessons on effective data use. The current project's major limitations are its diagnostic nature and lack of money for district to implement suggested changes in their data systems. To address these needs, CFT staff intended to write a business plan for each district for use in soliciting additional funding; CFT was also identifying projects and potential funding sources for this new work.[92]

Partnering across districts has also gained traction through the development of the Texas Consortium on School Research (TCSR), which brings together researchers and practitioners from 19 Texas school districts.[93] TCSR is modeled on the Consortium on Chicago School Research, which is also collaborating on the Texas effort. TCSR's goal is for member districts to work together in building their research capacity to address issues critical to improvement efforts, and to share knowledge and experiences. The first topic of interest is college readiness, particularly for student populations whose high school graduation and college success rates have traditionally been low.

In addition to this district leadership development supported directly by THSP grant programs, the everyday leadership activities among districts that have schools participating under THSP grants can greatly influence the schools' reforms. These issues are described next. The districts visited in 2009 range from large urban districts to small rural districts, and they varied in the types and level of reform under way. Nevertheless, several themes emerged: changes occurred in some district leaders' thinking about high school reform; district capacity needs to enhance the quality and rigor of teaching and to identify "nonnegotiables" concerning curriculum and data use were evident; and, like external networks, bringing schools and staff together to learn from one another can be powerful.

District Roles in Reform Implementation

The districts visited during the 2008–09 school year were increasingly building capacity for instructional improvement, which served to tie them more directly to school activities. Districts were influencing school definitions and assumptions about rigor by upgrading district curricula; establishing districtwide standards-based assessments; requiring school leaders to focus on instructional quality through the use of classroom "learning walks" or walkthroughs; placing school-based instructional coaches or academic deans in schools; and providing enhanced curricular materials and PD to teachers. Districts also continued to address the challenge of maintaining an appropriate balance between central office mandates and providing schools with sufficient flexibility to adapt reforms to their school contexts. The findings in this section draw from the 20 districts visited.

Systemic Approach to Reform

Prior research suggested that THSP reforms were more likely to prove effective in schools when they were aligned with district reform initiatives, given school staff's sense of accountability for meeting district goals. District goals generally tended to align with THSP reform goals (i.e., college readiness, increased rigor, higher expectations for all students). Thus schools tended to subsume THSP-related reforms under district priorities (Young, et al., 2010). In 2008–09, district contexts continued to shape school practices significantly. Researchers also found that some district leaders' thinking about school improvement had changed. District

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92 The data diagnostic project planning grant ended in June 2010. Six of the Big 8 districts, plus two additional districts, are participating in another BMGF-sponsored grant to conduct statewide matching of students so the districts can participate in the National Student Clearing House's tracking of all high school graduates who attend postsecondary institutions.

93 Among the 19 districts are six of the Big 8 council (excluding San Antonio and Ysleta ISDs).

leaders, to be sure, appreciated the additional resources and expertise afforded by external reform models; at the same time, however, they increasingly focused on achieving coherence across reforms. In particular, the three large THSP DLD districts were less inclined to implement different reform models unless they were closely aligned with district initiatives or activities. A district administrator stated, "We are no longer seeking grants for new, different types [of] programs. Our focus now is how can we get more money to do what we're doing better." This administrator's views reflect what research is increasingly showing, that successful districts are putting in place a coherent systemwide approach to reform[94] (e.g., Rothman, 2009; Snipes, Doolittle, & Herlihy, 2002; Togneri & Anderson, 2003).

Employing a systemic approach to reform guided by a clear theory of action is a characteristic of high-performance systems and reflects several of the leadership attributes described in the district leadership literature review completed for this evaluation (Padilla, et al., 2008). Systems change or systemic reform requires coordination and alignment of all the elements of the larger education system. For the three DLD districts, it means addressing high school reforms through a kindergarten through twelfth-grade lens. These district leaders argued that preparing students for high school success must begin before they reach ninth grade and that all students would benefit from high-quality instruction and school leadership, combined with monitoring to ensure that best practices are implemented at all schools (i.e., increased accountability). As one administrator stated,

> I've seen over and over again that you have students entering ninth grade three to four years behind and we expect high schools to fix it, and have the students graduate in four years. That's virtually impossible to accomplish. So our whole focus has been … [on] a systemic model…

The DLD districts also believed that investments in district capacity building are necessary to build solid educational practices and to monitor school quality. District efforts to build better coherence can also help schools struggling with balancing multiple demands, a challenge that researchers continued to observe in 2009 visits.

To achieve their goals, the three DLD districts were undertaking a multifaceted, interrelated approach to reform. They were improving their kindergarten through twelfth-grade curriculum (e.g., each district had a curriculum audit and aligned formative assessments with content standards); reevaluating support systems for all schools; improving their capacity to provide timely data so that school staff can make adjustments that better meet students' instructional needs; and launching programs to improve the leader and teacher expertise at all grade levels. District administrators embraced those THSP reform efforts that were closely aligned with district goals, but they viewed others more circumspectly. For example, THSP reforms that promote rigorous instruction and a college-going culture (e.g., the ECHS and T-STEM models) were cited by district staff as a key element of their district's high school reform efforts, even though administrators preferred locally developed reform models because they were aligned with district instructional standards.

The challenge of introducing a reform that is not well-aligned with a district's organizational structure or reform vision was illustrated by CFT leadership supports to develop

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94 A coherent system-wide approach refers to the alignment of all elements of the education system to achieve a common goal—that is, an aligned and comprehensive set of strategies that are mutually supportive.

opportunity zone schools in HISD.[95] The district was approached by funders to create an opportunity zone comprising four of the district's lowest-performing schools; by adopting a modified version of the HSTW model those schools could opt out of certain district policies and procedures, and receive substantial TA through an executive principal. Despite these reform efforts, existing district priorities and programs in the four high schools took precedence over the initiative. The executive principal of the opportunity zone schools tried to work within these limits, providing substantial TA to individual schools, but had little power to effect long-term systemic reform. District reporting structures continued to hold all schools, including those in the opportunity zone, accountable to their original executive principals and regional superintendents, restricting the flexibility that was intended to be a key strategy for the reform. The lack of school autonomy from district priorities, the grant's short duration, and, in the end, different ideas about how best to reform the schools prevented significant reform in the opportunity zone. Hence, in 2009, CFT and HISD jointly decided not to implement the zone for a third year. Nonetheless, according to the executive principal, focus on teaching and learning at three of the four opportunity zone schools was enhanced by the grant supports.

In contrast, a small, nonrural district pursued its HSRR grant by addressing how the grant could benefit its existing context and goals. The district favored the HSRR grant because the model allows for adaptation, as opposed to rigid, prescriptive implementation. The district promoted best practices derived from the HSRR model (e.g., PLCs, extensive use of data to drive instruction) and made them key components of the its comprehensive reform efforts in all of its high, middle, and elementary schools.

Like this small district, the Boone ISD (whose name is a pseudonym; see Exhibit 7-1), a large urban district, undertook a comprehensive approach to building districtwide capacity. This district illustrates how systemic change can provide a new and improved supporting context for high school reform. Boone ISD was able to implement a coherent districtwide curriculum, vision of instruction, and data use for several reasons. First, it instituted these changes in practice across all its schools, not just the schools that received THSP grants. Second, the district reviewed its practices and continued to revise structural and instructional elements of the system as leaders worked toward a more coherent vision for instructional reform. District and school staff members also engaged in many conversations about the new practices to learn how they were being implemented. Third, the district focused on building leadership capacity at both the district and school levels to support teachers better.

95 Under the DIEN program begun in 2007–08, CFT funded four high schools in HISD to use the HSTW model to further develop school leadership and practices to intensify academic rigor, student teacher relationships, and educational relevance for all students.

Exhibit 7-1
Systemic Changes in Boone ISD

Boone ISD is a large urban district with a history of declining enrollment, increasing numbers of at-risk students, and a high dropout rate. The district closed six schools at the end of 2007–08 because of declining enrollment and faced a shrinking budget even as the poverty level of its student population continued to increase. A new superintendent arrived in 2006–07 who worked to reorganize the district's administrative structure, implement instructional and curricular reforms, use data-driven decisionmaking and accountability, and achieve greater efficiencies.

Reform Goals

In 2008–09, the district administration sought to improve the quality of teaching at all grade levels, the quality of instructional leadership offered by principals and other administrators, and accountability. The superintendent believed that implementing research-based practices embodied in the district's curriculum guides and adopted programs would improve teaching quality and thereby increase student achievement. He also placed greater emphasis on system evaluation through the increased use of data to monitor programs, smarter uses of district resources, and tracking of student performance to help teachers modify their instruction accordingly.

Strategies

The district leadership forged coherent strategies in curriculum and instruction and data use. One of the new superintendent's first steps in 2006–07 was a curriculum audit and a staffing and community-based study to determine district needs. These reviews revealed the existence of operational silos throughout the district office and the need to communicate a consistent message across all departments and schools. As a result, the district has streamlined its practices and the guidelines it provides to all schools.

After the audit, district leaders developed a curriculum guide that aligned better with district benchmark assessments administered every nine weeks and provided examples of how to differentiate instruction. The curriculum and instruction department reorganized, acquired new leadership, obtained training on formative assessments, and reached a consensus about instructional requirements. Teachers helped develop the curriculum guides. The district hoped that teachers' participation in the process would enhance their knowledge and ownership of the new curriculum.

With the curriculum guides in place, the district focused on improving school staff capacity to increase instructional rigor, and on providing district and school staff with improved data to monitor student performance and program quality. The district began with developing school-level leaders, who were expected to share what they learned in district trainings with their staffs. In 2008–09, guided by training from a well-respected leadership training program, principals met monthly in their "communities of practice" to discuss what high-quality teaching and learning should look like. Groups of principals also attended an institute addressing their needs at a distinguished university.

Principals, assistant principals, and campus instructional coordinators (CICs) were trained to conduct classroom learning walks and had to conduct 25 per week. Principals piloted the use of an electronic monitoring tool on those walks for use in assessing the quality of instruction and in providing feedback to teachers about how they could improve their instruction. The superintendent and regional superintendents engaged in discussions with principals about their classroom observations. School leaders were expected to use data from the walks to identify teacher's instructional needs and then to guide the school-based PD delivered by the CICs. To provide teachers with data that they could use to guide instruction, the district administered formative mini-assessments every three to four weeks.

Exhibit 7-1 (concluded)
Systemic Changes in Boone ISD

As part of the district's efforts to use data more effectively, it refocused its Research, Evaluation, and Accountability Office to link formative and summative data. Office staff members created a data dashboard with indicators that tracked the district's progress on raising academic performance. Dashboard development was facilitated by the data-focused activities of the Big 8 Council, which had discussed advancing effective data use at all levels and having technical consultants work with individual districts. District staff tackled the challenges of how to assemble the data, how to monitor progress toward goals, and how to provide school staff with data about their current students. The district created campus data teams responsible for becoming familiar with available data and alerting staff to the resources available. The five- to six-member data teams included the CIC, counselor, and teachers strong in subject matter content and with leadership roles in the school. The data teams were trained to query and retrieve data from the research office and were required to create campus data rooms where data reports on current students were posted for teachers. The district expected staff to use these data to monitor student progress and to engage in discussions about particular student needs. Further, the district viewed data as a way to enable critical conversations between principals and teachers:

> Our focus really has been and will continue to be having those really critical conversations with not only individual teachers, but faculties as a whole. The observations that you're seeing by your mini-walkthroughs… and as you look at the data, you need to have those conversations about what you're seeing versus what your expectations are.

All principals were required to read a book about how to use data to improve teaching and learning, and the area executive directors coached principals on using data to guide critical conversations with teachers.

The district worked with several external vendors, including program officers and TA providers for the THSP grants in the district, an ESC providing professional development for teachers, and an education consulting group that, among its other activities, collaborated with district staff to develop instructional and program monitoring tools. As part of the emphasis on monitoring program implementation, the superintendent also met with program vendors each quarter.

Preliminary Outcomes

The superintendent concluded that the district had "matured as an organization" and was on its way to becoming a learning organization focused on continuous improvement. An external advisor concurred, reporting that this district had made greater progress in a shorter period than some other districts he had worked with. District administrators saw growth in principal leadership, with one indicating that,

> I just finished 14 reviews, and I see changes like day and night, even with people I've been supervising for seven or eight years in this role. Our conversation is not about all the mini-things going on in campus, it's 98% [concerned with] instruction and that's my big 'aha.'"

Improving Curriculum and Instruction

Districts, like external networks, focused on college readiness. In particular, they recognized the need to enhance teaching quality and instructional rigor to prepare students adequately for the demands of college work. To support curricular and instructional improvements, several districts focused on human capital development for both teachers and principals. Some districts used outside expertise to achieve their reform goals; for example, one small district considered teacher PD a key element in its reform strategy. The district supported workshops and presentations by a wide range of experts. It viewed the significant improvements in teachers' skills, teacher accountability, and high level of teacher collaboration and support as resulting from teacher PLCs piloted at its high school that was implementing HSRR. Teachers met daily in their PLCs. This collaboration was a clear expectation set by the principal, who attended weekly PLC meetings as did district administrators. In their PLCs, the teachers reviewed data, determined the most effective means for meeting instructional objectives, and identified students needing assistance. Principals conducted a minimum of 20 walkthroughs each week to evaluate teaching rigor and relevance, and then provided feedback to teachers at their PLC meetings.

One large district was engaged in a systemwide effort to reform instruction, which did not meet TEKS standards. District administrators developed a matrix to evaluate the rigor of instruction across schools in the district, and helped teachers understand the standards, objectives, and level of rigor district leaders wished to see. Each major core content area had a program director who was assigned to a certain grade level. Every campus had a skill specialist for language arts and math, and ostensibly science as well. Program directors and skill specialists worked with teachers to make their assessments more rigorous and increase the rigor and relevance of their instruction.

Several districts aimed to increase their principals' capacity to serve as instructional leaders and to improve instructional rigor. In some cases, leadership training was extended to campus instructional teams. These activities included additional PD opportunities in and outside the district, the development of PLCs, collaboration with and support from district administrators, and the development of principal certification programs. Exhibit 7-2 provides an example of these types of activities.

Exhibit 7-2
Principal Leadership Training in a Small District

District administrators viewed supporting school leadership as a central role of the district. They emphasized personal growth and development at the leadership level and measured that growth by analyzing data, student outcomes, and summative personal evaluations. At the school level, a team of experienced educators with expertise in data and urban systemic issues "walk[ed] side-by-side" with the principal, assisting with walkthroughs, data analysis, problem solving, and planning. This team initially met with school leadership teams every other week, and then once a month. District staff members frequently collaborated with principals by attending PLC meetings, conducting two to three campus visits each week, and meeting regularly with principals and their school staff to discuss instructional issues. Principals were also encouraged to pursue external PD opportunities and supported in doing so.

Fidelity and Accountability

The tension between centralization and decentralization among CMOs as discussed in Chapter 6 was also present in traditional school districts. Researchers found some districts espoused "nonnegotiables" concerning: (1) what is taught in classrooms (i.e., the district's outline for curricular scope and sequence requirements), and (2) the use of data to tailor instruction to meet student needs (i.e., by differentiating instruction) and identifying at-risk students. One of the goals driving greater centralization was increasing the coherence of teaching and learning across all district schools to ensure that every student received high-quality instruction. Using data to inform decisionmaking was part of the larger effort to instill a culture of continuous improvement at all levels of the system. The use of data to make district-, school-, and classroom-level decisions also increased as districts improved their data systems, which provided staff with more timely data, a greater range of data, and ways to combine data that allowed staff to investigate education quality issues.

Despite requiring schools to use data to inform instructional decisionmaking, school staff appeared to lack some of the requisite skills and support structures, as suggested by their requests for additional PD. Other research on data-driven decisionmaking suggests that school staff require PD on how to interpret data and use that information to refine their teaching (typically not a part of preservice training), tools to help them analyze data, and adequate time to review data in a collaborative setting (Means, Padilla, & Gallagher, 2010).

Districts described an increased emphasis on holding schools and teachers accountable for outcomes, as well as for fidelity of the implementation of programs or specific practices. Even in decentralized districts, "nonnegotiables" had been established, particularly around the use of district-adopted curriculum and data use to drive instruction. As noted above, several districts used classroom learning walks and data analysis to improve instructional rigor and programming. In one of those districts, the superintendent held "checkpoint" meetings every six weeks, after district assessments were administered, to discuss the implications of the results with the district curriculum and instructional team, principals, and school academic teams. High school teachers received training that focused on how to analyze assessment data by TEKS and how to build TEKS-centered curriculum. The district's instructional leadership team and school principals also received training to implement monthly learning walks using a formal rubric.

Another district-instituted a value-added approach to analyzing assessment results, which changed the focus from looking at the percentage of students passing TAKS to one of improving the growth of every student. Growth data made it easier to differentiate schools that had achieved progress from those that had flat scores despite high passing rates. As a result, the number of schools in the district that were designated as exemplary significantly increased, and the district exceeded the state's college- and career-ready goals for all student groups. The district's teacher incentive fund was also tied to the value-added data for each teacher. The district hoped that the incentive pay program would result in staff members' increased use of the value-added data and reinforce the shift in emphasis from how to increase TAKS passing rates to a focus on student growth.

Districts as Networks

The districts served functions similar to those offered by external networks by providing TA and coaching to individual schools, as well as by bringing staff together to learn from one another and from outside experts. Districts developed or participated in a range of partnerships to support their reform efforts through collaborations with external partners. Large districts like DISD, HISD, and SAISD relied on these networking activities. District leaders focused resources on developing strong school leaders, enhancing instructional rigor to ensure that all students were college- and career-ready, and using data to guide performance management and accountability activities. For example, HISD partnered with Harvard University to develop its Aspiring Principals' Institute to create principals who could turn around low-performing schools. As of June 2009, approximately 25 graduates had been placed in leadership roles in HISD schools since the program's inception in 2008 (about 8% of the principals in the district). The program included a six-week summer academy, one week of which is spent at Harvard. Following their academy training, participants served a one-year residency on a secondary school campus. Throughout the year, Harvard faculty members visited the district to work with participants. Given the cohort nature of the program, school leaders will establish over time strong personal and professional relationships. The district also sponsored an annual summer leadership institute that brought together principals, members of their administrative team, and teacher leaders to address the same issues. In 2008–09, HISD revamped its principal meetings to enhance school leaders' learning and to focus on using assessment data and high-quality interventions for students who were not progressing according to indicators established by the district. At SAISD, the district contracted with an education consulting group to develop a monitoring tool to guide principals' instructional walks and to improve the quality of the district's alternative education programs.

Partnering or taking advantage of outside expertise to support district reform efforts was also evident in more than just the largest districts. To increase instructional rigor, a number of districts adopted the CSCOPE curriculum. Some of the smaller districts also contracted with outside entities such as the Dana Center at UT, Austin to provide teacher PD as part of their CSCOPE adoption. A small, relatively rural district adopted the T-STEM and HSRR reform models, which offered the financial and technical resources to launch its districtwide math and science improvement efforts. District leadership believed these models would modernize teachers' thinking about using technology and data in instruction, and help them break out of traditional pedagogy to engage students better. The district's strategy to achieve its goals entailed creating a school that developed best practices for the whole district, while building district capacity in curriculum, instruction, and PD to spread curricular reform ideas across schools. The T-STEM grant served to leverage technology in instruction, as well as raise districtwide awareness of math performance. Using the grant, the district carved out district-level positions for science and math specialists to serve all of its schools. The district has also entered into an MOU with a university-based program to create a pipeline for trained high school math and science teachers and to spread project-based learning practices at the high school level.

Conclusions and Implications

Although district leadership issues continued to be a focus of THSP, strategies to build district capacity evolved in 2008–09 to an emphasis on performance-management activities. Such activities encompassed improving districts' integration of their multiple initiatives, promoting data use, and expanding the data infrastructure at the Big 8 Districts through a data diagnostic planning grant from BMGF. One of the lessons from the project is the power of collaboration to help districts learn from one another and to engage administrators more deeply in the process. That engagement can help sustain districts' new practices after the seed funding expires. Networking schools and districts emerged as a mechanism for capacity building that both THSP and districts were adopting. THSP efforts to establish a PLC of large districts (and possibly an expanded group to achieve greater regional representation), combined with the TCSR, may prove important in future district capacity building.

Working with TA providers and on their own, districts have ramped up efforts to build district- and school-level capacity. Yet unlike Boone ISD, which reorganized and refocused its priorities to become more efficient in carrying out reforms, some districts continue to be constrained by issues such as leadership turnover, small size, or inefficient structures (also discussed in last year's report). Financial straits caused some districts to scale back their staffs, which hurt their efforts to provide leadership and support for reform. However, districts appeared to pursue greater coherence in their reform initiatives even in light of such constraints.

High school reform efforts, including those related to THSP, continue to fall under—and in many cases be dominated by—overarching district strategies. District efforts to enhance coherence at the school level have been influenced by the desire to improve school supports and to ensure high-quality instruction for all students. Building more central supports is facilitated by some common practices across schools, such as using similar benchmark assessments. Such common data allows district staff to analyze the data and identify areas in which all schools need assistance or to differentiate the types of assistance schools need. Requiring teachers to follow the district scope and sequence and to inform their instruction with data are additional levers that districts used to bring about coherence and accountability at the school level. But maintaining the appropriate balance between central office mandates and providing schools with sufficient flexibility to successfully adapt reforms for their contexts appeared to remain a challenge for districts—an issue that THSP program and external network staff face as well.

A number of districts played a stronger role in mediating reform efforts by influencing school definitions of instructional rigor through districtwide assessments and principal and teacher PD activities. This district role underscores the need to actively engage district leaders in sustaining and leveraging THSP reform activities. Across the various THSP reforms, districts explicitly endorsed schools participating in T-STEM or ECHS models because of their focus on rigorous instruction and a college-going culture, although the degree to which they supported those endorsements with resources and expertise varied. For THSP programs addressing comprehensive high schools, district support varied and, in almost all cases, district strategies took priority. As a result, engaging districts may prove critical if leaders of external reform networks want to achieve greater fidelity in schools' implementation of core elements (discussed in greater depth in the next chapter). Finally, districts' different approaches to improving high school performance suggest that a context-specific strategy to engage districts in reform may be necessary for THSP.

Chapter 8
Conclusions and Implications

Introduction

This report, the second from the evaluation of THSP, presents the results of 2009 data collection and analyses, including the results from the state's 2009 TAKS and other student outcomes. THSP is testing several approaches to high school reform, involving both the redesign or restructuring of existing comprehensive high schools and the establishment of new small high schools. These approaches entail schools' adopting the principles and requirements of multiple specified models. The evaluation is looking for links between the implementation of high school models or grant-based intervention programs and demonstrated changes in specified student outcomes over time.

It is worth noting here that in spring 2009, the THSP Alliance, which includes the public and private funders of the multiple THSP programs, adopted a new strategic plan to guide its activities and investments going forward. The data reported here represent the final year in which the Alliance operated under its original guidelines.

This chapter summarizes the 2008–09 analyses and highlights the relationships between quantitative and qualitative data sources and analyses that seem most salient and thus worthy of further investigation and emphasis in ongoing THSP activities. The investments in THSP models and programs have been large, and the length of time between the investments and results is no doubt frustrating for policymakers and funders. However, the evaluation team cautions that THSP remains a work in progress, and the evaluation reports interim findings to encourage continued efforts and highlight areas where changes in direction may enhance the ultimate effects of THSP. The discussion that follows indicates implications for various levels of the state education system and in some cases suggests actionable items that the Alliance could consider to strengthen the long-term effects of THSP.

Student Outcomes and the THSP Models and Programs

The evaluation team analyzed student outcome data covering one to three cohorts of students over a one- to three-year period of model or program implementation, depending on when a given school began serving ninth-graders (i.e., in 2006–07, 2007–08, or 2008–09). Although a few schools had begun to serve eleventh-graders in 2008–09, the results for that grade must be viewed as tentative because they include a small number of schools and students.

Several salient indicators emerged from the student outcomes analyses. First, as the initial results suggested in the evaluation's first summary report, two complete years of data analysis now strengthen the possibility that new small schools (T-STEM, ECHS, and NSCS) outperform their comparison schools more so than existing larger comprehensive high schools do. Although the effect sizes are quite small, they are statistically significant and consistent in succeeding years for variables such as passing TAKS-Math, the percentage of ninth-graders passing both TAKS-Math and Reading, passing TAKS-Science in tenth grade, and passing TAKS in all four core subject areas in tenth grade. These are promising findings about the effects of the small school models, but the fact remains that a very small proportion of Texas high school students have a small school experience. The vast majority of students continue to attend large, comprehensive high schools. Thus, ways must be found to eliminate the new small school/large school student outcomes gaps. The answer does not lie solely in restructuring or redesign to create smaller units in large schools. T-STEM, ECHS, and NSCS also arguably offer more rigorous academic programs to all their students. It is therefore encouraging that at least some of the large schools participating in THSP programs are now starting to focus on curriculum and teaching.

A second pattern that may be emerging from the student outcomes analysis is an effect based on the number of years a school or program has been operating. The pattern suggests that a school that has been implementing a particular model or program for three years has increased positive effects for students, compared with schools where model implementation has lasted for two years or less. For example, THSP schools three years into implementation had larger, more positive results in TAKS-Reading for ninth-grade nonrepeaters and in TAKS-English and TAKS-Social Studies for tenth-graders. These effects are suggested by the data for multiple programs, including T-STEM academies, ECHSs, and NSCSs. This finding may seem to be common sense, but the pattern has been confirmed with quantitative data, lending credence to the evaluation team's cautions about making final judgments about implementation or impact too soon since few THSP school are at full implementation maturity.

Third, the 2008–09 student outcomes analyses uncovered a data issue with respect to adequately identifying whether students in all of the THSP models and programs were on track to complete the "four-by-four" curriculum, which the state has set as a benchmark for a strong high school education for all students. It appears that courses completed and credits earned beyond the regular 180-day instructional year, (i.e., during summer, if schools operate on a traditional school calendar) do not become part of the course enrollment data sets on which TEA and many researchers rely. Thus the analysis for this variable likely undercounts the number of students who complete one course in each core subject area in a 12-month period. The majority of T-STEM academies, ECHSs, and NSCSs appear to require an extended instructional year with an extra summer session. The evaluation team therefore concluded that any analysis of the on-track to graduate with the "four-by-four" curriculum outcome would not accurately reflect those schools' progress on this measure vis-à-vis comparison schools. The "four-by-four" outcome was reported only for HSRR, HSTW, HSRD, and DIEN, for which the missing summer course enrollment data do not disproportionately affect the THSP schools or their comparisons.

Finally, where outcomes for THSP schools appeared positive compared to matched non-THSP schools, the effect sizes (as noted above) were statistically small: virtually none reached a level of sufficient robustness where one might seriously consider saying that a model or program must incorporate some element or elements that are making a large difference. In other words, no silver bullet has yet emerged from THSP, making continued documentation of contextual and implementation information vital to explaining the modest effects that have surfaced, particularly among the small-school models. It is reasonable to expect that two more years of implementation and outcome data will be needed before any definitive effects can be confidently asserted.

Policies, Governance, and Human Capital

Most chapters in this report describe the implementation status for the multiple school models and grant programs that make up the THSP. Much information is included in those chapters to inform program-specific decisions. But it is the goal of this chapter to highlight aspects of the quantitative and qualitative analyses that cut across the grant programs to which stakeholders in Texas secondary school reform should pay particular attention. This section hones in on issues that fall within the purview of state and local policymakers, as well as the THSP public/private alliance.

THSP not only includes programs to develop new high school models and programs to improve struggling comprehensive high schools, but also focuses on ensuring that the state has the educational leadership required to ensure that those models and programs succeed. Leadership development is a major need in the quest for high school improvement—a need that encompasses school and district administrator development, distributed leadership, a teacher career ladder, and, in the evaluation team's view, differentiated counseling expertise.

The small school models (T-STEM, ECHS, and NSCS) have particularly urgent needs for accomplished and compelling leaders. Because these models continue to open new schools, they have a constant requirement to find, hire, and rapidly develop both teachers and leaders. Cognizant of this demand, NSCS CMOs are establishing their own leadership development strategies to staff their replication schools. The T-STEM and ECHS models tend to recruit leaders and teachers with reputations for excellence from nearby school districts, sometimes drawing leaders out of retirement to launch an innovative school. Human capital needs are not limited to the small-school models, however. Leadership turnover is a significant issue in large districts. Several of the urban districts with HSRR, HSRD, or HSTW grants have established their own programs to develop high-quality school leaders for struggling large schools. To the extent that these new leaders oversee THSP implementation, their competence and effectiveness will be important to its eventual success. In future years, it may make sense to develop a school leader survey that delves into their philosophies and strategies for supporting excellence in education, the findings from which could then be correlated with student outcomes.

Among both the small and large schools visited in 2009, some sought to involve skilled and ambitious teachers in sharing school leadership responsibilities with administrators. These expanded leadership teams are in keeping with increasing national interest in new rules for teacher hiring, rewards for teaching in schools with the most challenging students, and incentives for better student outcomes. Some Texas districts have received state and federal grants to implement experiments with such human resources (HR) reforms, but THSP grants do not appear to be explicitly linked to grants from programs such as the Texas District Awards for Teacher Excellence (DATE) or the federal Teacher Incentive Fund. How, then, might high school reform and reform in HR practices be linked more intentionally? Synergies between grant programs could enhance the overall effects on student outcomes detected by the THSP evaluation.

Guidance counseling is a special case among schools' human capital needs. On the assumption that more supports will enable more students to graduate from high school college- and career-ready, THSP is explicitly interested in the academic, social, and emotional supports that high schools can provide for students. Nationally, counselors' case loads are already extraordinarily large and growing, as they are in Texas and THSP high schools. This situation probably needs a policy solution. Several THSP models and programs are trying to extend supports for students by having advisory classes; however, such classes are typically overseen by teachers, many of whom feel unprepared for this role. To increase teacher confidence and competence and to augment the struggling guidance system, the state could consider adding one or more specific endorsements to teacher or counselor licenses that teachers could earn through relatively short courses of study at IHEs or perhaps at ESCs. One endorsement might be for overseeing advisory classes. Another might add a youth development endorsement to a regular school counseling Masters degree, given that all secondary schools grapple with inadequate staffing to support students beyond basic academic counseling. (This approach might also be considered for licensing teacher leaders who support administrators, as described above.) To the best of the evaluation team's knowledge, no other state has enacted any innovative solutions to the guidance counseling overload problem. Thus, this area is one where Texas might consider solutions that are on the cutting edge of high school reform.

As in prior years, the site visits in 2009 suggested that districts and CMOs continue to play important roles in high school reforms by defining and overseeing the reform or replication goals and implementation strategies undertaken by THSP schools. Overall, district administrators seemed to have a better understanding in 2009 than they did in 2008 about making reform efforts more coherent so that schools were not stretched and confused about priorities. Within the site visit sample across THSP programs, district and school-level leaders in a number of cases collaborated closely to ensure quality through joint school walkthroughs and oversight of PLC activities. These active district-school collaborations may be important to the success of high school reforms and merit more intense scrutiny in future years of the evaluation.

As a final point in this section, interviews with district and school leaders, as well as THSP leaders, suggested that high school is too late in the education career of students to compensate for an inadequate academic preparation and to equip them for college or career by the time they graduate. The inclusion of middle school grades by several THSP models and programs in overall planning and implementation scope is eminently sensible. So too is the idea of relabeling THSP to encompass more grades, with more time to engage and convince students that high school graduation is a minimum for success in adult life. To the extent that THSP guidelines limit prospective grantees to proposing reforms in grades nine through 12 only, the guidelines may inadvertently restrict the ultimate effectiveness that THSP might gain from preparatory work in the middle grades.

Teaching and Learning

In the first annual report, the evaluators found that TAKS and the state accountability system dominated what was happening in most THSP grantee schools, especially those rated AU. Site visit data for 2008–09 indicated a greater emphasis on TEKS; that is, schools paid increased attention to the broader array of essential skills that students should have, in contrast to preparing them for passing the state assessments. The switch in emphasis from TAKS to TEKS is promising, but it still suggests that schools tend to focus attention on content in the traditional disciplines—what should be taught and what will be tested. That accountability focus is not entirely in the spirit of the reforms that THSP seeks, which are predicated on producing high school graduates who can generalize from specific knowledge to unique applications in the classroom and in the real world.

Exposure to rigorous and meaningful content, however, does not guarantee that learning will take place. To improve student learning, it is probably more important to focus on issues of instruction. Schools have received help with aligning their curricula with state standards, and content is now fairly fixed. But how does one differentiate instruction to deliver the curriculum to many kinds of learners? Teaching repertoires in the schools visited were typically traditional and limited, particularly so in comprehensive high schools under HSRR, HSTW, HSRD, and DIEN grants. Often in large schools, the typical departmental organization keeps the focus on content rather than instruction. Schools eligible for certain HSRR grants because of their AU status tended to focus even more narrowly on the content area that was responsible for their poor accountability rating and therefore most in need of improvement.

Nevertheless, some THSP schools evidenced greater emphasis on diversified instructional approaches. For example, the T-STEM blueprint emphasizes the use of PBL and interdisciplinary instructional strategies. During the 2007–08 site visits, the evaluators saw little evidence that the new T-STEM academies were employing both PBL and interdisciplinary approaches. The exceptions were academies that had adopted the New Tech program, which is built on PBL and interdisciplinary curriculum, and thus their staff participated in the requisite training from New Tech. By the 2008–09 visits, more of the T-STEM academies appeared to be experimenting with PBL, usually in a limited way but with growing confidence. It is also encouraging that by summer 2009, one T-STEM school—Manor New Technology High School—had established itself as a demonstration center for PBL and interdisciplinary team teaching. Teams of educators from other schools across the state are welcome to visit for two-hour, no-cost study tours or for more interactive four- or five-hour fee-based sessions at the school. The THSP Alliance should consider encouraging high schools considered exemplars to adopt similar open-door practices, especially because that strategy holds promise for spreading innovations beyond the THSP grantee pool.

The T-STEM blueprint is the only THSP model that specifies adopting PBL and interdisciplinary instruction. Other grantee schools, however, are interested in moving in that direction. For example, at least one HSTW school received PD on PBL from its assigned SREB consultant. Individual ECHSs and charter schools may also have adopted diversified instructional approaches. The Early College network in particular has been providing its schools with professional development focused on six techniques for improving classroom instruction (see Chapter 4). Nonetheless, T-STEM stands out as the THSP model with the clearest and most systemic vision for instruction.

Networks

The first annual report highlighted the ECHS networking activities at national and state levels as the most robust among the THSP models and programs. As the network sections of the program-by-program chapters in this report suggest, the evaluation team documented demonstrable progress in 2008–09 in building networks for all THSP grantees. T-STEM centers were more developed and active in supporting the T-STEM academies (as well as other clients). CMOs strove to keep their schools connected to the home office and to each other. Further, CFT, SREB, and Region 13 increased the scope and effectiveness of their efforts to support comprehensive high schools involved in the various restructuring and redesign grant programs. This strengthened networking is a positive story.

Nonetheless, cross-fertilization of ideas and practices across networks continued to be limited. The clearest examples of sharing were between the T-STEM network and the ECHS network (which now solidly supports both TEA- and CFT-funded schools). TEA took the lead in establishing an annual "designation" process (i.e., certification that a school is, in good faith, implementing or has plans to implement all elements of the model) for all ECHSs in Texas. The T-STEM program is modeling its own designation process after this practice—a clear case of cross-program learning. Further, local awareness of possible synergies between the T-STEM and ECHS models may signal a new trend. A few schools that received grants to implement one model or the other have begun to identify themselves by both names (e.g., T-STEM/ECHS), although neither THSP nor policymakers have made formal attempts to blend the T-STEM blueprint with the ECHS core principles.

The THSP networks have continued to strengthen their work with their schools during the 2009–10 school year. However, a crucial sustainability issue looms. Some networks such as ECHS and T-STEM continue to incorporate new THSP grantees in the network while continuing to work with established schools even after their THSP grant funding has expired. Other networks such as HSRR and HSTW can only adequately support currently funded grantees. How then can former grantees stay connected to a reform-minded community of support going forward? Additionally, how might non-grantees connect to some of the ideas and resources available through THSP?

The most cost-effective approach for institutionalizing and sustaining networks may be a technology-based one, for example, a web-based community for all former and current HSRR grantees. Such a website might feature tabs for resources, new ideas, and success stories, as well as a chat room for problem-solving. The site could also have public and private components, with only grantees allowed to participate in discussions on the password-protected portion, but with all schools in Texas having access to the public portion. Such a website currently exists for other THSP networks such as T-STEM.

The THSP Alliance plays an important role in fostering sensible sustainability plans for all of its investments. The evaluation team suggests that now may be the appropriate time to generate cutting-edge networking ideas that can keep high school reform efforts vibrant and generative statewide. Alliance members have wondered since the outset whether THSP might have a "multiplier" effect. Technology-based networking could enhance the possibility that it will.

We end this chapter with implications that the 2008–09 evaluation findings may have for multiple stakeholders in the THSP public/private alliance.

Implications

Through the 2008–09 school year, the effects of the THSP investments in high school models and intervention programs on student outcomes were limited. Tracking of those outcomes thus needs to continue for at least two more years before real conclusions can be drawn.

In the meantime, however, sensible or even radical changes to support implementation need to be considered. Several of the points made in this chapter suggest implications for actions that the THSP Alliance, TEA and CFT program officers, and leaders of the various THSP networks might explore. The actions are not necessarily simple, and some would require extensive collaboration with policymaking bodies in the state such as the THECB, systems of higher education, the State Board of Education, and the state legislature.

Courses of study to add endorsements to state education licenses for teacher leaders or youth development guidance specialists, for example, would require extensive policy discussions, the agreement of multiple state education policymaking bodies, and considerable work to develop the certification programs. Such programs would not require degree-granting authority and thus might be offered outside the higher education systems. In addition, moving in this direction would place Texas at the forefront nationally with respect to solving systemic problems that all states are experiencing regarding high school reform leadership and student supports. Many issues would need to be addressed, including support for endorsement candidates and compensation for those who receive the endorsements. Nevertheless, these important issues merit discussion.

With regard to the pool of TA and PD providers who support THSP grantees, it is not clear whether enough experts in diversifying instructional strategies exist to meet the needs of THSP grantees, particularly among the programs that are dealing with struggling urban high schools. These schools need intensive assistance with strategies to engage bored and turned-off students. Program officers need to expand their familiarity with potential TA/PD providers who can support the reform work at the schools they oversee. National organizations such as the Association for Supervision and Curriculum Development, the Education Commission of the States, and the Alliance for Excellent Education may be helpful in this process.

As suggested, networks may best be sustained through online communities. Ultimately, that approach may be more cost-effective than the more site-based and hands-on strategies currently offered to THSP grantees. In addition, an online strategy could keep cohorts of grantees connected with reform discussions beyond their two- or three-year grant periods. As far as the evaluators are aware, no current state funding is available to establish online high school reform communities, so pursuing this idea would require new legislative proposals or outside funding. Program officers and network organizers would need to be involved in specifying such online forums.

To conclude, at the end of the second year of the evaluation, this multifaceted approach to high school reform through a public-private alliance and with a range of reform models and programs has begun to have positive effects, albeit modest ones and for specific models rather than across the board. The challenge for the THSP public/private alliance and allied organizations is to continue to nurture the small successes and refine strategies that result in larger outcomes. At present, investments in establishing new small schools through the T-STEM, ECHS, and NSCS programs appear to have been the most successful. However, the vast majority of Texas high school students attend larger all-purpose, well-established high schools that are far more difficult to change. THSP—and the nation—has yet to find a consistent formula to generate successful reform of these mainstream schools.

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Appendix A. Comparative Outcomes Analysis

Overview

This evaluation study was based on comprehensive and rigorous mixed-methods to develop an understanding of the implementation and outcomes of THSP and its various programs. The data collection strategy integrated robust qualitative and quantitative methods to capture perspectives at multiple levels of the educational system, investigating implementation and facilitating factors and barriers, and to analyze the effects of THSP reforms on THSP schools in comparison to rigorously matched non-THSP schools. Data collection activities included site visits to THSP participating schools and districts and to comparison schools; interviews with external intermediaries (e.g., network leaders, policymakers), and collection of TEA school and student characteristics including demographic information and outcomes. Analysis of implementation and outcome data will seek to describe implementation of reform at the participating schools; identify differences related to the type of program being implemented at the school; examine the role of the district in implementing school reform; and investigate policy factors that impacted the school reform taking place in Texas.

This appendix details the design of and procedures for comparative outcomes analysis looking at outcomes for students at THSP schools compared to students at non-THSP schools. As we describe below, propensity score matching was used to create a pool of non-THSP schools for comparison purposes in determining the effect of THSP schools on a variety of student outcomes.

Matching Procedure

To ensure that THSP schools and non-TSHP schools have similar demographic composition and achievement indicators, we applied a two-stage matching strategy combining propensity score matching and specific characteristics matching to find comparable schools for the THSP schools. To start, we posited a selection model to estimate what types of schools are likely to participate in the THSP initiative, using school-level information from the AEIS data. Based on the estimated propensity model, we calculated a propensity score (logit) of participating in the THSP initiatives for each school based on a set of school characteristics.

We next selected a comparison group who are very similar to each THSP school on a number of key school and district characteristics. Exhibit C-1 and C-2 presents the selection criteria on variables that were used to choose comparison schools for pre-existing schools and newly opened schools respectively. The variables are listed in order of priority that we used for matching. Order of priority was determined by balancing achievement and structural measures that researchers deemed important indicators of a school culture of achievement. We followed the criteria in the majority of cases. However, for THSP schools that do not have enough comparison schools due to differences in grade span, urbanicity, or total enrollment, we relaxed the criteria to obtain a sufficient number of comparison schools.

For some THSP schools, it is impossible to find a comparison group of more than six schools that satisfy the criteria for all the listed variables. We therefore proceeded to find matches starting with the top priority on the variable list until the number of comparison schools dropped close to six. We then matched the THSP school with six comparison schools that have the closest propensity scores (1-to-*k* nearest neighbor matching). This procedure enabled us to acquire six comparison schools[1] that are as similar as possible[2] to the THSP school on most important school characteristics, as well as on the combination of variables used in propensity score modeling. In addition, each comparison school is uniquely matched to a THSP school and no THSP schools share the same comparison school.

Exhibits C-3 to C-5 present detailed information on THSP schools funded in 2006–07, 2007–08 and 2008-09, respectively, and on their matching status in this analysis.

Student Outcomes Analysis

To address the nested nature of the data, we applied the same two-level hierarchical linear model with student and school levels to study each of the continuous student outcomes, such as TAKS reading and math scores. For dichotomous outcome variables, such as passing Algebra I at ninth grade, we used a two-level hierarchical model with a logit link function. For all the models, we used the same set of student and school-level predictors where possible.[3] To estimate THSP effects at the same level of student characteristics, we applied grand-mean centering for all student level predictors as well as continuous school-level predictors. The three-level growth model for TAKS math achievement from eighth grade to tenth grade is slightly different, where we

1 While all THSP schools funded in 2006-07 and 2007-08 were each matched to six comparison schools, due to the diminishing pool of possible matches, some THSP schools funded in 2008-09 were matched to less than six comparison schools.

2 What Works Clearinghouse standard 2.0 (2008) specifies that treatment and comparison groups are equivalent if their differences on the characteristics are less than 0.25 of a standard deviation (standard deviation is defined as the standard deviation of the pooled sample). In addition, the effects must be statistically adjusted for baseline difference in the characteristics if the difference is greater than 0.05 of a standard deviation. In this study, the evaluation team follows the above WWC procedures. THSP schools and the matched comparison schools are less than 0.25 standard deviations away on most school characteristics. The analysis also statistically controlled for the differences that are greater than 0.05 of a standard deviation. Therefore, the evaluation team is confident to say that THSP and matched comparison schools are very similar.

3 Although THSPE specifies the use of five ethnicity categories, the Native American (NA) indicator is excluded from the HLM models. The number of NA students in these analyses was quite small, and including them had no impact on the HLM. In order to increase the power of the analyses, evaluators eliminated predictors that did not impact any of the HLM models, as was the case with the NA ethnicity category.

converted TAKS math scores at each grade level into Z scores and included a measurement level model below the student level model . The models are described below.

HLM for continuous student outcomes is shown below.

Student-level model:

$$
\begin{aligned}
Y_{ij} = \; & \beta_{0j} + \beta_{1j}\,(\text{Reading\_g8})_{ij} + \beta_{2j}\,(\text{Math\_g8})_{ij} \\
& + \beta_{3j}\,(\text{Science\_g8})_{ij} + \beta_{4j}\,(\text{Social\_g8})_{ij} \\
& + \beta_{5j}\,(\text{Female})_{ij} \\
& + \beta_{6j}\,(\text{African-American})_{ij} + \beta_{7j}\,(\text{Hispanic})_{ij} + \beta_{8j}\,(\text{Asian})_{ij} \\
& + \beta_{9j}\,(\text{English learner})_{ij} + \beta_{10j}\,(\text{Immigrant})_{ij} \\
& + \beta_{11j}\,(\text{At risk})_{ij} + \beta_{12j}\,(\text{Economically disadvantaged})_{ij} \\
& + r_{ij}
\end{aligned}
$$

School-level model:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}\,(\text{Program L})_j + \gamma_{0m}\,(\text{Program L \& Comparison})_j + \gamma_{0k}\,(\text{kth school level predictor})_j + u_{0j}$$

$$\beta_{pj} = \gamma_{p0} \qquad \text{for } p > 0.$$

Where

Y_{ij} is the value of the outcome variable for student *i* in school *j*.

β_{0j} is the expected value of the outcome variable for school *j*, controlling for student and school level variables.

β_{pj} is the effect of the pth predictor on the outcome for school *j*, controlling for student and school-level variables. This effect is constrained to be the same (γ_{p0}) across schools.

γ_{00} is the average outcome, controlling for student and school-level variables.

γ_{01} indicates the effect of Program L (e.g., TSTEM) on the student outcome versus its own comparison group, controlling for student and school-level variables.

γ_{0k} is the effect of the *k*th predictor on the outcome, controlling for student and school-level variables.

r_{ij} is the unique effect of student *i* in school *j* on outcome, which is assumed to be normally distributed with a mean of 0 and a homogenous variance δ^2 across schools.

u_{0j} is the unique effect of school *j* on the outcome. It is assumed to be normally distributed with a mean of 0 and a homogenous variance of τ_{00}. A significant τ_{00} would indicate that the difference in the outcome between the students varies across schools.

Hierarchical model with logit link function for dichotomous outcomes , with passing algebra 1 in ninth grade as an example, is shown below.

Student-level model:

$$\eta_{ij} = \beta_{0j} + \beta_{1j}(\text{Reading\_g8})_{ij} + \beta_{2j}(\text{Math\_g8})_{ij}$$
$$+ \beta_{3j}(\text{Science\_g8})_{ij} + \beta_{4j}(\text{Social\_g8})_{ij}$$
$$+ \beta_{5j}(\text{Female})_{ij}$$
$$+ \beta_{6j}(\text{African-American})_{ij} + \beta_{7j}(\text{Hispanic})_{ij} + \beta_{8j}(\text{Asian})_{ij}$$
$$+ \beta_{9j}(\text{English learner})_{ij} + \beta_{10j}(\text{Immigrant})_{ij}$$
$$+ \beta_{11j}(\text{At risk})_{ij} + \beta_{12j}(\text{Economically disadvantaged})_{ij}$$

School-level model:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{Program L})_{j} + \gamma_{0m}(\text{Program L \& Comparison})_{j} + \gamma_{0k}(k\text{th school level predictor})_{j} + u_{0j}$$

$$\beta_{pj} = \gamma_{p0} \quad \text{for } p > 0.$$

Where

η_{ij} is the log-odds of passing algebra 1 for student *i* in school *j*.

β_{0j} is the expected log-odds of passing algebra 1 for school *j*, controlling for student and school-level variables.

β_{pj} is the effect of the *p*th predictor on log-odds of passing algebra 1 for school *j*, controlling for student and school-level variables. This effect is constrained to be the same (γ_{p0}) across schools.

γ_{00} is the average log-odds of passing algebra 1, controlling for student and school-level variables.

γ_{01} indicates the effect of Program L (e.g., TSTEM) on the log-odds of passing algebra 1 versus its own comparison group, controlling for student and school-level variables.

γ_{0k} is the effect of the *k*th predictor on the log-odds of passing algebra 1, controlling for student and school-level variables.

u_{0j} is the unique effect of school *j* on the outcome. It is assumed to be normally distributed with a mean of 0 and a homogenous variance of τ_{00}. A significant τ_{00} would indicate that the difference in the outcome between the students varies across schools.

Hierarchical growth model of TAKS math standardized achievement is shown below. We present the base model and the full model separately for better clarity.

Base model

Measurement level model:

$$Y_{tij} = \pi_{0ij} + \pi_{1ij}\,(\text{academic year})_{tij} + e_{ijk}$$

Student level model:

$$\pi_{0ij} = \beta_{00j} + r_{0ij}$$

$$\pi_{1ij} = \beta_{10j} + r_{1ij}$$

School level model:

$$\beta_{00j} = \gamma_{000} + u_{00j}$$

$$\beta_{10j} = \gamma_{100} + u_{10j}$$

Where

Y_{tij} is the achievement at time t for student i in school j. Time t takes on three values: 0 for year 0607 at grade 8, 1 for year 0708 at grade 9, and 2 for year 0809 at grade 10.

π_{0ij} is the initial achievement of student i in school j.

π_{1ij} is the achievement growth of student i in school j during the academic year.

β_{00j} is the mean achievement at time t for school j.

γ_{000} is the grand mean of initial achievement.

γ_{001} is the grand mean of the achievement rate during the academic year.

u_{00j} and u_{10j}, are the random effects for the intercept and slope (delete the random terms of sleep if not significant)

Full Model

Measurement level model:

$$Y_{tij} = \pi_{0ij} + \pi_{1ij}\,(\text{academic year})_{tij} + e_{ijk}$$

Student level model:

$$\pi_{0ij} = \beta_{00j} + \beta_{0kj}\,(\text{kth student level covariate}) + r_{0ij}$$

$$\pi_{1ij} = \beta_{10j} + r_{1ij}$$

School level model:

$$\beta_{00j} = \gamma_{000} + \gamma_{001}(\text{Program L})_j + \gamma_{00m}\,(\text{Program L \& Comparison})_j + \gamma_{00l}\,(\text{lth school level covariate}) + u_{00j}$$

$$\beta_{10j} = \gamma_{100} + \gamma_{10l}\,(\text{Program L})_j + \gamma_{10m}\,(\text{Program L \& Comparison})_j + u_{10j}$$

$$\beta_{10j} = \gamma_{100} + \gamma_{101}\text{THSP} + u_{10j}$$

Where

γ_{001} is the difference between THSP and non-THSP schools in intercept. We expect non-significant γ_{001} because THSP schools and comparison schools are very similar on outcome after matching.

γ_{101} is the effect of Program L (e.g., TSTEM) on the students' mathematics growth rate versus its own comparison group.

Because of limited sample size, there is not enough statistical power to include all available school-level variables in the analyses. We therefore included school-level variables we are most interested in, and that are not aggregated student demographics because we already included student demographics at the student-level model. The school-level variables we included in the final models are urbanicity, accountability rating (entered as a set of categorical variables, with Academically Acceptable as the reference category), percentage of mobile students, percentage of special education students, and percentage of teachers in their first year of teaching, with an additional percentage of passing algebra 1 before ninth grade for the passing algebra 1 analysis.

Appendix B. Qualitative Methods

Site Visits and Other Interviews

One of the core research activities in the first year of the evaluation was the conduct of site visits at a sample of THSP schools as well as at non-THSP comparison schools. The site visits were intended to serve a number of purposes—provide in-depth information on schools implementing various reform models in order to enable us to examine process and outcomes of educational change promoted by THSP initiatives, identify factors that led to success or posed challenges, and identify patterns for further exploration and examination in coming years of the evaluation). The site visit data complemented the survey data in identifying and examining key themes, as well as generated findings on how implementation transpired on the ground. In this first year of the evaluation, site visits were conducted at a sample of Cohort 1 (those funded in 2006–07) schools following a structured set of protocols for interviewing district staff, school staff, and support providers from each of the corresponding partners. Teachers and guidance counselors from THSP and non-THSP schools received gift certificates for their participation. In addition, non-THSP schools received additional incentives to host the site visit.

In this section, we describe (1) protocol development—both identification of respondents and development of the instruments, (2) school selection, (3) school contact, (4) school visit procedures, and (5) analytic methods.

Protocol Development

The semistructured protocols used for the site visits featured a common set of questions representing the overall theory of change, plus questions that reflect reform components specific to the elements underlying each model.

Identifying Respondents. Although a core of respondent types were common to all site visits (see Exhibit B-1), we also tailored the site visit protocols to the specific reform model and the local context. Thus, for example, ECHS sites necessarily include interviews with the higher education partners, and charter school operators are key informants for charter expansion models.

Exhibit B-1
Sample Respondent Types for Site Visits and Other Interviews

Level	Sample Respondent Types
District	Administrators for: • Curriculum and instruction • Professional development • Assessment • Accountability
School	• Principal/assistant principals • Teachers • Instructional coaches/professional developers • Students
External Intermediaries	As applicable: • Professional development partners/technical assistance providers • Higher education partners • Curriculum partners • Charter operators • Community activists
State Level	• Policymakers • Program officers and leaders

Instrument Development. The common interview topics were keyed to the major components of the THSP conceptual framework and were informed by data collection instruments from prior studies of high school reform. Tailored questions were developed to address issues specific to reform models. At the end of this chapter, Exhibit B-3 details sample interview and focus group topics by type of respondent, and Exhibit B-4 provides illustrative examples of questions tailored to the specific reform models.

School Selection

The schools selected for site visits were selected from schools that began implementation in the 2006–07 academic year, in order to focus these initial site visits on schools that had been implementing the THSP reforms for at least 1 year, giving the schools some time to put into place certain reform structures and practices. TEA provided the research team with a list of 27 schools from which 17 were selected for a site visit. Fifteen of these schools were selected from a stratified random sample based on grant programs. Two schools were added to ensure coverage of program models of interest. In addition, we randomly selected six comparison schools to visit—roughly 25% of the THSP sample—drawn from the schools matched to THSP schools for the comparative student outcomes analysis. See Exhibit B-2 for the number of schools visited by reform model.

Exhibit B-2
Site Visit Sample by THSP Program

THSP Program	Site Visits Conducted in 2007-08
School and District Site Visits	
T-STEM	5
HSTW	8
NSCS	2
HSRD	5 (principal interviews only)*
Total THSP schools	15 (plus 5 principal interviews)
In-Depth District Interviews	
Dallas ISD	X
Houston ISD	X
San Antonio ISD	X
Comparison Schools (non-THSP)	6

*Data collection at HSRD schools consisted of one principal interview only as the decision to include them in the evaluation occurred after site visiting began.

Setting Up and Conducting the Visits

Study leaders began the school contact process by notifying districts and school sites of their participation in the THSP evaluation both during an initial THSP conference and with a follow-up letter and informational packet in the fall of 2007. Site visitors began scheduling their visits in January of 2008. Contact protocols were followed for either THSP or non-THSP contact procedures. Once a school contact was established, an interview schedule template was sent to the school for purposes of scheduling the visit.

Depending on school size, we assigned one senior or two researchers (one senior and one junior) to each site. All site visitors were trained to ensure data collection consistency. Each visit took approximately 1.5 days on site and involved interviews with a subset of the following respondents: (1) school (e.g., principal and guidance counselor) and district (e.g., superintendent and/or assistant superintendent, administrators for secondary education, assessment and evaluation, and curriculum and instruction) leadership; (2) a sample of at least six teachers, two each from English language arts (ELA), mathematics, and science, and (3) respondents from relevant intermediaries (e.g., school-based instructional coaches or professional developers). The visitors also conducted focus groups with additional teachers in the core subjects in large schools, and with students. In addition, researchers examined relevant documents such as grant applications, school improvement plans, strategic plans, professional development plans, and formative data reports to supplement the interview data. Each interviewee was provided with information about the study, had confidentiality procedures explained to them, and was asked to sign a consent form. All interviews and focus groups were digitally recorded to back up the notes taken in real time. All interview and focus groups files were logged and kept in a secure, central repository at SRI.

Within- and Cross-Site Analyses

Analysis occurred both at the within-site level as well as at the cross-site level in order to best understand factors at individual schools as well as factors common across schools and programs participating in the THSP initiative. After each school visit, visitors completed a structured debriefing form for each site. Debriefing forms were developed for each school reform model to include analyses specific to the model. The debriefing forms were organized around analytic categories reflecting key components of the THSP conceptual framework such as school and district context, school organization, normative climate, classroom attributes, and student experiences. Completing the debriefing forms represented within-site analysis, triangulating across all interviews, focus groups, and documents for that site. All completed debriefing forms were entered into Atlas.ti, a qualitative data software tool. The major topics for the debriefing guide constituted the descriptive codes for sorting qualitative data across cases.

Examining the data by key topics was the first step in cross-site analysis. Researchers determined emerging analytic themes, noting differences in these themes among models and between THSP sites and the comparison schools.

Exhibit B-3
Sample Core Topics for Site Visit Protocols

Sample Core Topics	District Administrators	Principals	Instructional Coaches/ Professional Developers	Teachers	Students	External Intermediaries
District and External Supports						
Nature of district reform leadership	x	x	x	x		x
District policy supports for and barriers to school-level reform	x	x	x	x		x
Role and effectiveness of the network	x	x	x	x		x
Role and effectiveness of external support providers	x	x	x	x		x
School Organization x						
Nature of school leadership	x	x	x	x		x
Supports for leadership development	x	x	x	x		x
Nature of and structures for distributed leadership	x	x	x	x		x
Teachers' professional learning needs and professional development supports			x	x		x
Normative Climate						
High expectations, i.e., expectations for achievement and educational attainment		x	x	x	x	x
Personalization, nature of relationships between teachers and students		x		x	x	
Degree of respect, responsibility, and relational trust		x		x		
Professional learning community, nature of collaboration		x	x	x		

Exhibit B-3 (concluded)
Sample Core Topics for Site Visit Protocols

Classroom Attributes						
Curriculum and instruction: changes in rigor		x	x	x	x	x
Curriculum and instruction: attempts to improve relevance to students		x	x	x	x	x
Use of formative assessments and other data to inform instruction		x	x	x		
Student Experiences						
Student engagement in learning, monitoring progress				x	x	
Perceived changes in student engagement in academics		x		x	x	x
Changes in educational aspirations				x	x	
Access to and participation in AP, IB, AVID, college coursework		x		x	x	
Access to and participation in internships/work study		x		x	x	
Reform Progress						
Challenges in implementation, understanding of and implementation fidelity to the school model	x	x	x	x		x
Sustainability of reforms	x	x	x	x		x

Note: This exhibit is for illustrative purposes only. Each respondent was asked about topics applicable to his or her role.

Exhibit B-4
Sample Tailored Topics for Specific Reform Models

Reform Model	Sample Tailored Protocol Topics
T-STEM Academies	Student access to advanced mathematics and science courses Partnerships providing school capacity and real-world connections in mathematics, science engineering, and technology Teacher capacity and training in mathematics, science, engineering, and technology
ECHSs	Student access to academic courses at the college level Academic and social supports available for traditionally underserved students to attend college courses District/school and higher ed partnership to develop curricula and programs
Charter School Expansions/Start-Ups	Distribution of decisionmaking power between school leadership and charter operators Scaling up of practices from one or few schools to many Student and community needs served by charter, demand for education program offered by charter school
Redesigned High Schools	Student personalization afforded by smaller learning communities Nature of teacher collaboration in small learning communities (SLCs) SLCs' facilitation of changes in instruction
Redesigned District	Coherence in district reform strategy District policies and capacity to support school reform Consistency in reforms across schools

Appendix C. School Matching Criteria and THSP Schools Included in Outcomes Analyses

Exhibit C-1
Selection Criteria for Variables Used for Matching Existing THSP Schools Funded in 2006–07, 2007–08, or 2008–09

Variable	Matching Criteria
Grade span	Exact matching
Campus rating	Exact matching
TAKS mathematics passing rates	Within 15% difference
TAKS reading passing rates	Within 12% difference
Urbanicity	Exact matching
Enrollment	Within 500 difference
Title 1 status	Exact matching
Percentage African-American and Hispanic students	Within 40% difference

Exhibit C-2
Selection Criteria for Variables Used for Matching Newly Opened THSP Schools Funded in 2006–07, 2007–08, or 2008–09

Variable	Matching Criteria
Grade span	Exact matching
Aggregated Grade 8 TAKS mathematics passing rates	Within 15% difference
Aggregated Grade 8 TAKS mathematics passing rates	Within 12% difference
Urbanicity	Exact matching
Enrollment	Within 500 difference
Title 1 status	Exact matching
Percentage African-American and Hispanic students	Within 40% difference

Exhibit C-3
THSP Schools Funded in 2006–07 and Included in Student Outcomes Analyses

	Campus name	District name
Early College High Schools		
	Hidalgo Early College High School	Hidalgo ISD
	University Preparatory High School Program	Flour Bluff ISD
	ECHS at Brookhaven College	Carollton-Farmer's Branch ISD
	Collegiate High School	Corpus Christi ISD
	Trini Garza Early College High School at Mountain View College	Dallas ISD
	East ECHS	Houston ISD
	Laredo ECHS at TAMIU	Laredo ISD
	Mission ECHS	Socorro ISD
High Schools That Work		
	Barbara Jordan High School	Houston ISD
	Birdville High School	Birdville ISD
	Diboll High School	Diboll ISD
	Galena Park High School	Galena Park ISD
	Haltom High School	Birdville ISD
	Iowa Park High School	Iowa Park ISD
	Law Enforcement-Criminal Justice High School	Houston ISD
	Los Fresnos High School	Los Fresnos CISD
	Lubbock-Cooper High School	Lubbock-Cooper ISD
	Mabank High School	Mabank ISD
	Mount Pleasant High School	Mount Pleasant ISD
	Reagan High School	Houston ISD
	Richland High School	Birdville ISD
	Wheatley High School	Houston ISD
High School Redesign		
	Akins High School	Austin ISD
	Bel Air High School	Ysleta ISD
	Dunbar High School	Fort Worth ISD
	Houston High School	San Antonio ISD
	Lanier High School	San Antonio ISD
	Northside High School	Fort Worth ISD
New Schools/Charter Schools		
	Peak Advantage	Uplift CMO
TSTEM		
	New Deal High School	New Deal ISD
	YES Prep - Southeast	YES Prep CMO

Notes: All schools in this table first received funding in 2006–07.
Each school is matched to six comparison schools.

Exhibit C-4
THSP Schools Funded in 2007–08 and Included in Student Outcomes Analyses

	Campus name	District name
District Engagement		
	Austin High School	Houston ISD
	Furr High School	Houston ISD
	Jones High School	Houston ISD
	Worthing High School	Houston ISD
Early College High School		
	Legacy Early College High School: Hutto High School	Hutto ISD
	Legacy Early College High School: Taylor High School	Taylor ISD
	Panola Charter School	Panola Charter
	Progreso High School	Progreso ISD
	Bryan Collegiate High School	Bryan ISD
	Clear Horizons Early College High School	Clear Creek ISD
	Early College High School	Harlingen CISD
	Victory Early College HS	Aldine ISD
	Valle Verde Early College High School	Ysleta ISD
High Schools That Work		
	Burton High School	Burton ISD
	Graham High School	Graham ISD
	J M Hanks High School	Ysleta ISD
	Kermit High School	Kermit ISD
	La Villa High School	La Villa ISD
	Pasadena Memorial High School	Pasadena ISD
	Sam Rayburn High School	Pasadena ISD
	South Grand Prairie High School	Grand Prairie ISD
	Stars High School	Waco ISD
	West Orange-Stark High School	West Orange Cove CISD

Exhibit C-4 (continued)
THSP Schools Funded in 2007–08 and Included in Student Outcomes Analyses

High School Redesign and Restructuring	
Blue Ridge High School	Blue Ridge ISD
Cotulla High School	Cotulla ISD
Crockett High School	Crockett ISD
Hargrave High School	Huffman ISD
Harlandale High School	Harlandale ISD
Everman (Joe C. Bean) High School	Everman ISD
John Tyler High School	Tyler ISD
Kenedy High School	Kenedy ISD
L.G. Pinkston High School	Dallas ISD
Manor High School	Manor ISD
Moody High School	Corpus Christi ISD
Pampa High School	Pampa ISD
PSJA North High School	Pharr-San Juan-Alamo ISD
Sealy High School	Sealy ISD
Shepherd High School	Shepherd ISD
New Schools/Charter Schools	
Mathis High School for International Studies (Asia Society)	Houston ISD
Sharpstown International High School (Asia Society)	Houston ISD
IDEA Frontier College Prep	IDEA CMO
IDEA Quest College Prep	IDEA CMO
Hampton Preparatory (South Dallas UPLIFT)	Uplift CMO
Summit International Preparatory School	Uplift CMO
YES Prep - Southwest	YES Prep CMO
T-STEM	
Berkner High School	Richardson ISD
Emmett Conrad High School	Dallas ISD
KIPP Academy Middle School and High School	KIPP
Lee High School	North East ISD
Turner High School	Carrollton-Farmer's Branch ISD
Rapoport Academy-Quinn Campus	Rapoport Charter
Moody High School	Corpus Christi ISD
Harmony School of Excellence	Harmony CMO
Harmony Science (El Paso)	Harmony CMO
Harmony Science (Fort Worth)	Harmony CMO
Harmony Science (San Antonio)	Harmony CMO
Manor New Technology High	Manor ISD
Waxahachie Global High	Waxahachie ISD

Notes: All schools in this table first received funding in 2007–08.
Moody High School has a T-STEM school-within-a-school and supports the remainder of the student population with an HSRR grant.
All schools listed, except Taylor and Hutto High Schools, are matched with six comparison schools. Because Taylor High School and Hutto High School feed into the same Legacy Early College High School, each is matched with three comparison schools.

Exhibit C-5
THSP Schools Funded in 2008–09 and Included in Student Outcomes Analyses

Campus Name	District Name	N of matches
New Schools/Charter Schools		
YES-East End Campus	YES Prep CMO	5
KIPP Austin College Preparatory High School	KIPP Austin College Prep, Inc	3
Early College High School		
Travis ECHS	San Antonio ISD	2
Houston Academy for International Studies (Asia Society)	Houston ISD	6
Cedar Hill ECHS	Cedar Hill ISD	5
Frenship Collegiate Preparatory High School	Frenship ISD	6
North Houston ECHS	Houston ISD	3
Brownsville ECHS	Brownsville ISD	4
Northwest ECHS	Canutillo ISD	5
Kathlyn Joy Gilliam Collegiate Academy	Dallas ISD	5
High School Redesign and Restructuring		
Willis High School	Willis ISD	6
Taft High School	Taft ISD	6
Somerville High School	Somerville ISD	6
Somerset High School	Somerset ISD	6
Pasadena High School	Pasadena ISD	6
Lexington High School	Lexington ISD	6
Hull-Daisetta High School	Hull-Daisetta ISD	6
Hardin High School	Hardin ISD	6
Greenville High School	Greenville ISD	6
Grand Prairie High School	Grand Prairie ISD	6
Crosbyton High School	Crosbyton CISD	6
Coldspring High School	Coldspring-Oakhurst CISD	6
Atlanta High School	Atlanta ISD	6
T-STEM		
DaVinci School for Science and the Arts (2x)	El Paso	5
HARMONY SCIENCE ACAD - BEAUMONT	Harmony CMO	4
HARMONY SCIENCE ACAD - LUBBOCK	Harmony CMO	4
HARMONY SCIENCE ACAD-WACO	Harmony CMO	4
Williams Preparatory	Uplift CMO	4
Pharr-San Juan Alamo TSTEM/ECHS at South Texas College	Pharr-San Juan-Alamo ISD	3
El Paso TSTEM ECHS @ Transmountain	El Paso ISD	5
Fruitvale High School	Fruitvale ISD	6
Ball High School	Galveston ISD	6
Valley View High School	Valley View ISD	6
Lee Academy of Science and Technology (Rick Hawkins HS prior to 2009)	School of Excellence in Education	6
Longview High School	Longview ISD	6
Lasara High School	Lasara ISD	6
Harmony Science Academy - North Austin	Harmony CMO	4
Harmony Science Academy - Dallas	Harmony CMO	4
Harmony Science Academy - Houston	Harmony CMO	5

Note: All schools in this table first received funding in 2008–09.

Appendix D. Baseline Data for 2006–07, 2007–08, and 2008–09 THSP Schools

Exhibit D-1

Baseline School Information (2005–06) for THSP Existing Schools Funded in 2006–07, Their Matched Comparison Schools, and Non-THSP Schools in Texas

Mean (SD)	THSP All	Comparison Schools	Non-THSP All	T-STEM	HSTW	HSRD	ECHS
N of schools	24	144	1196	2	14	6	2
Number of ninth-grade students	427.7	449.0	272.5	77.5	435.6	526.5	426.0
	(234.6)	(259.6)	(312.0)	(38.9)	(244.9)	(159.6)	(230.5)
School size	1,342.1	1,404.5	899.9	419.5	1,367.8	1,621.3	1,247.5
	(669.6)	(764.6)	(921.8)	(337.3)	(682.6)	(559.0)	(618.7)
Small (% of schools)	4.2	13.9	45.0	50.0	0.0	0.0	0.0
Serving grades 9-12 (% of schools)	91.7	95.8	76.0	50.0	92.9	100.0	100.0
Serving grades below 9 (% of schools)	8.3	4.2	24.0	50.0	7.1	0.0	0.0
Rural (% of schools)	20.8	23.6	63.7	50.0	28.6	0.0	0.0
Title I (% of schools)	62.5	56.3	53.1	50.0	57.1	83.3	50.0
Student-teacher ratio	14.4	15.3	12.9	11.4	14.6	15.1	14.0
	(2.1)	(8.0)	(4.4)	(2.5)	(2.0)	(1.7)	(3.3)
African-American students (%)	16.5	17.4	11.4	4.1	15.2	28.3	2.8
	(24.2)	(23.4)	(17.2)	(0.4)	(19.2)	(37.6)	(3.9)
Hispanic students (%)	52.4	45.4	32.4	66.7	43.6	65.2	61.7
	(33.3)	(33.8)	(27.7)	(38.0)	(29.5)	(38.0)	(54.2)
Economically disadvantaged students (%)	62.2	54.5	45.4	64.2	57.8	72.7	60.1
	(23.7)	(25.8)	(22.1)	(14.3)	(25.0)	(19.4)	(42.0)
Limited English proficiency students (%)	7.1	7.3	4.6	0.0	6.3	9.3	13.9
	(7.3)	(7.6)	(6.2)	(0.00)	(5.8)	(6.8)	(17.5)
Special education students (%)	13.5	13.1	13.6	11.3	14.0	14.7	8.7
	(6.2)	(4.4)	(5.2)	(12.9)	(6.1)	(5.5)	(2.7)
Mobile students (%)	20.7	21.2	18.4	12.6	18.3	29.7	18.6
	(9.2)	(7.3)	(8.4)	(7.7)	(8.0)	(8.5)	(0.00)
Teachers in first year of teaching (%)	6.2	6.3	8.0	12.0	5.2	6.9	5.5
	(4.5)	(4.2)	(7.8)	(14.7)	(2.8)	(3.4)	(0.2)
Average years experience of teachers	12.0	12.4	12.4	8.9	12.9	11.3	11.1
	(2.3)	(2.2)	(2.8)	(6.0)	(1.7)	(1.3)	(2.7)
Average teacher base salary ($)	43,464.1	43,359.6	40085.6	39,094.5	44,127.1	44,311.0	40,651.5
	(3,925.2)	(3,882.9)	(4490.0)	(3,093.6)	(4,434.5)	(2,208.6)	(542.4)

Exhibit D-1 (continued)

Baseline School Information (2005–06) for THSP Existing Schools Funded in 2006–07, Their Matched Comparison Schools, and Non-THSP Schools in Texas

Mean (SD)	THSP All	Comparison Schools	Non-THSP All	T-STEM	HSTW	HSRD	ECHS
Achievement Indicators							
Accountability rating (% of schools)							
Exemplary	4.2	0.0	1.1	50.0	0.0	0.0	0.0
Recognized	4.2	8.3	20.2	0.0	7.1	0.0	0.0
Academically Acceptable	79.2	79.2	72.2	50.0	78.6	83.3	100.0
Academically Unacceptable	12.5	12.5	6.5	0.0	14.3	16.7	0.0
Attendance rate (%)	94.0	94.2	95.1	96.2	94.3	92.0	95.3
	(2.0)	(2.0)	(1.7)	(1.8)	(1.7)	(1.5)	(0.4)
Ninth-graders passing TAKS reading (%)	87.5	87.0	91.0	97.5	90.1	78.5	87.0
	(8.2)	(8.1)	(8.9)	(3.5)	(6.4)	(6.2)	(5.7)
Ninth-graders passing TAKS math (%)	54.2	54.2	61.6	81.0	56.7	38.5	57.0
	(19.1)	(18.8)	(18.6)	(19.8)	(18.2)	(11.6)	(4.2)
Students taking SAT or ACT (%)	62.4	62.4	66.4	83.4	56.0	67.7	70.6
	(19.5)	(15.2)	(21.0)	(33.1)	(14.0)	(25.6)	(6.4)
SAT/ACT takers scoring better than 1110/24 (%)	14.0	17.1	21.8	15.9	15.7	8.5	16.9
	(11.0)	(13.0)	(16.1)	(12.0)	(12.2)	(6.5)	(15.2)
Students graduating with recommended diploma (%)	78.2	75.9	69.8	92.0	76.8	74.2	87.0
	(10.1)	(12.2)	(17.9)	(11.3)	(9.2)	(8.6)	(9.8)

Notes: Baseline statistics reflect demographic characteristics in the year prior to implementation.

Means and standard deviations are presented for continuous variables. Values reported for dichotomous variables represent the percentages.

Data Sources: Academic Excellence Indicator System (AEIS), TAKS, and PEIMS data for 2005–06.

Exhibit D-2

Baseline School Information (2006–07) for THSP Existing Schools funded in 2007–08, Their Matched Comparison Schools, and Non-THSP Schools in Texas

Mean (SD)	THSP All	Comparison Schools	Non-THSP All[1]	T-STEM[2]	HSTW[3]	DIEN	HSRR[2]	ECHS[3]	NSCS
N of schools	41	240	1200	6	10	4	15	4	2
Number of ninth-grade students	379.1	434.6	271.8	473.2	407.2	402.3	364.5	183.0	412.5
School size	1,132.2	1339.0	904.9	1,347.0	1,294.4	1,177.8	1,075.9	570.8	1,131.0
	(877.3)	(982.3)	(917.4)	(1,106.0)	(1,251.2)	(456.2)	(715.7)	(329.1)	(775.0)
Small (% of schools)	26.8	19.2	44.3	16.7	50.0	0.0	13.3	75.0	0.0
Serving grades 9-12 (% of schools)	95.1	95.0	75.3	83.3	90.0	100.0	100.0	100.0	100.0
Serving grades below 9 (% of schools)	4.9	5.0	24.8	16.7	10.0	0.0	0.0	0.0	0.0
Rural (% of schools)	34.1	37.9	62.9	0.0	40.0	0.0	46.7	50.0	50.0
Title I (% of schools)	61.0	54.2	54.3	66.7	60.0	100.0	53.3	25.0	100.0
Student-teacher ratio	13.8	14.0	12.7	12.1	13.9	16.1	13.6	14.4	14.7
	(3.3)	(3.0)	(3.5)	(5.0)	(4.3)	(0.7)	(2.3)	(2.5)	(1.5)
African-American students (%)	19.4	16.9	11.6	18.3	14.9	46.7	18.0	11.8	17.2
	(22.4)	(20.1)	(17.0)	(11.7)	(20.3)	(40.6)	(21.7)	(8.1)	(23.5)
Hispanic students (%)	51.6	47.3	33.7	54.5	51.0	51.4	50.3	43.4	73.0
	(32.3)	(30.5)	(27.8)	(28.2)	(33.7)	(40.1)	(33.8)	(40.9)	(21.9)
Economically disadvantaged students (%)	58.7	53.4	46.0	65.8	48.7	75.0	57.2	55.0	73.0
	(20.9)	(21.5)	(21.9)	(20.2)	(17.7)	(11.3)	(22.0)	(29.5)	(0.4)
Limited English proficiency students (%)	8.5	7.3	4.7	14.5	6.5	8.0	7.3	8.4	10.8
	(9.4)	(7.8)	(6.4)	(17.8)	(6.8)	(6.4)	(6.0)	(12.5)	(12.5)
Special education students (%)	13.3	12.5	13.1	9.2	12.9	17.2	14.6	11.7	12.2
	(4.2)	(4.4)	(5.0)	(3.4)	(3.9)	(5.7)	(2.9)	(5.1)	(1.6)
Mobile students (%)	25.5	21.9	19.0	21.0	27.4	32.8	22.2	28.8	28.8
	(13.7)	(10.7)	(8.7)	(1.6)	(20.4)	(7.6)	(5.5)	(24.7)	(19.1)
Teachers in first year of teaching (%)	10.8	9.5	8.3	16.7	7.1	6.3	11.7	10.4	14.3
	(9.6)	(6.9)	(8.5)	(18.8)	(6.1)	(4.6)	(7.2)	(10.1)	(7.0)
Average years experience of teachers	11.6	12.1	12.4	8.1	12.5	13.9	11.9	11.6	10.4
	(2.7)	(2.7)	(2.9)	(3.2)	(1.9)	(1.5)	(2.1)	(3.4)	(0.0)
Average teacher base salary ($)	44,665.1	44877.1	43239.3	44,177.2	43,500.6	50,472.3	44,976.7	40,888.8	45,553.5
	(4,195.5)	(4015.5)	(4485.9)	(6,631.6)	(3,747.8)	(1,483.0)	(2,602.9)	(3,208.5)	(3,937.9)

Exhibit D-2 (continued)

Baseline School Information (2006–07) for THSP Existing Schools funded in 2007–08, Their Matched Comparison Schools, and Non-THSP Schools in Texas

Mean (SD)	THSP All	Comparison Schools	Non-THSP All[1]	T-STEM[2]	HSTW[3]	DIEN	HSRR[2]	ECHS[3]	NSCS
Achievement Indicators			100.0						
Accountability rating (% of schools)									
Exemplary	0.0	1.7	1.7	0.0	0.0	0.0	0.0	0.0	0.0
Recognized	4.9	3.3	14.3	33.3	0.0	0.0	0.0	0.0	0.0
Academically Acceptable	73.2	80.4	78.7	50.0	80.0	75.0	93.3	50.0	0.0
Academically Unacceptable	17.1	13.8	5.3	16.7	10.0	25.0	6.7	25.0	100.0
Attendance rate (%)	92.5	93.8	94.9	94.6	91.0	90.8	93.4	92.6	92.0
	(4.7)	(2.5)	(1.9)	(2.9)	(8.6)	(1.1)	(2.0)	(2.0)	(1.0)
Ninth-graders passing TAKS reading (%)	79.4	83.1	89.4	87.7	75.9	74.3	79.8	82.0	74.0
	(15.2)	(10.4)	(9.3)	(10.7)	(27.8)	(6.2)	(5.8)	(11.5)	(2.8)
Ninth-graders passing TAKS math (%)	51.1	53.8	64.3	64.3	53.8	36.5	52.0	44.3	35.0
	(15.9)	(17.0)	(18.2)	(21.4)	(16.1)	(5.1)	(10.9)	(18.8)	(1.4)
Students taking SAT or ACT (%)	57.1	63.2	75.1	64.7	56.5	61.6	56.9	44.1	67.0
	(19.4)	(19.3)	(170.1)	(12.3)	(24.3)	(13.7)	(16.3)	(30.9)	(5.6)
SAT/ACT takers scoring better than 1110/24 (%)	12.9	17.6	20.5	32.7	10.7	2.9	13.0	17.6	7.0
	(11.0)	(13.2)	(14.8)	(14.9)	(7.8)	(1.0)	(9.3)	(14.5)	(1.7)
Students graduating with recommended diploma (%)	73.9	75.0	73.9	73.4	71.6	82.2	76.2	57.0	86.8
	(19.4)	(15.0)	(16.7)	(12.5)	(26.1)	(7.3)	(11.0)	(35.0)	(1.2)

Note: Baseline statistics reflect demographic characteristics in the year prior to implementation.

Means and standard deviations are presented for continuous variables. Values reported for dichotomous variables represent the percentages.

Data Sources: Academic Excellence Indicator System (AEIS), TAKS, and PEIMS data for 2006–07.

[1]Regular Instructional public schools serving ninth grade

[2]One THSP campus receives funding for both T-STEM and HSRR. Because the TSTEM program serves a subset of students through a "school within a school," campus descriptives are included under HSRR only.

[3] Two HSTW and two ECHS schools are missing data for 2006–07, so statistics presented reflect 2005–06. A subset of these schools falls under alternative schools, which are not rated using the standard formula, so campus ratings are missing for these schools.

Exhibit D-3
Baseline School Information (2007–08) for THSP Existing Schools Funded in 2008–09, Their Matched Comparison Schools, and Non-THSP Schools in Texas

Mean (SD)	THSP All	Comparison Schools	Non-THSP All[1]	T-STEM[2]	HSRR	ECHS
N of schools	21	126	1331	6	13	2
Number of ninth-grade students	246.7	333.7	256.0	1.2	6.5	280.5
School size	892.3	963.2	574.5	1041.2	830.2	850.0
	(817.0)	(919.8)	(497.9)	(1002.9)	(774.1)	(970.2)
Small (% of schools)	76.2	64.3	46.1	83.3	69.2	100.0
Serving grades 9-12 (% of schools)	90.5	95.2	72.0	100.0	84.6	100.0
Serving grades below 9 (% of schools)	9.5	4.8	28.0	0.0	15.4	0.0
Rural (% of schools)	66.7	70.6	57.8	50.0	84.6	0.0
Title I (% of schools)	61.9	68.3	68.3	83.3	53.8	50.0
Student-teacher ratio	12.0	13.2	12.9	11.0	12.7	8.8
	(4.2)	(2.6)	(11.8)	(3.2)	(4.8)	.
African-American students (%)	16.5	12.3	11.9	20.0	13.8	23.2
	(15.9)	(13.0)	(16.7)	(22.8)	(11.3)	(25.9)
Hispanic students (%)	43.0	37.2	39.7	53.6	38.8	38.3
	(35.0)	(27.8)	(30.2)	(39.0)	(36.1)	(19.1)
Economically disadvantaged students (%)	57.5	50.0	54.5	66.9	54.6	48.4
	(18.2)	(19.0)	(24.7)	(21.4)	(14.0)	(33.4)
Limited English proficiency students (%)	6.0	4.5	12.1	9.0	5.2	1.9
	(7.8)	(5.6)	(16.6)	(12.8)	(5.1)	(1.6)
Special education students (%)	12.9	11.6	12.7	14.7	13.0	6.5
	(7.1)	(4.9)	(7.8)	(10.9)	(4.5)	(7.8)
Mobile students (%)	29.1	17.6	19.4	38.7	27.2	12.3
	(25.4)	(6.1)	(13.0)	(31.4)	(23.7)	(1.6)
Teachers in first year of teaching (%)	14.1	9.8	8.4	26.4	9.7	6.4
	(16.7)	(11.4)	(10.0)	(26.6)	(8.0)	(4.8)
Average years experience of teachers	10.5	11.7	12.1	10.1	10.6	11.8
	(4.8)	(3.2)	(3.1)	(7.1)	(3.8)	.
Average teacher base salary ($)	40380.3	42967.9	44238.6	38767.2	41365.0	38243.0
	(4053.0)	(4019.4)	(4885.2)	(4557.7)	(3813.9)	.

Exhibit D-3 (continued)

Baseline School Information (2007–08) for THSP Existing Schools Funded in 2008–09, Their Matched Comparison Schools, and Non-THSP Schools in Texas

Mean *(SD)* *N*	THSP All	Comparison Schools	Non-THSP All	T-STEM	HSRR	ECHS
Achievement Indicators						
Accountability rating (% of schools)						
Exemplary	0.0	10.3	5.0	0.0	0.0	0.0
Recognized	38.1	31.7	20.3	66.7	30.8	0.0
Academically Acceptable	42.9	56.3	67.2	16.7	46.2	100.0
Academically Unacceptable	4.8	1.6	4.8	0.0	7.7	0.0
Attendance rate (%)	93.6	94.7	95.8	93.4	93.3	96.4
	(1.6)	(1.5)	(1.8)	(1.3)	(1.5)	(0.6)
Ninth-graders passing TAKS reading (%)	83.0	88.1	88.7	84.2	80.4	96.5
	(14.0)	(6.6)	(12.4)	(6.8)	(16.4)	(0.7)
Ninth-graders passing TAKS math (%)	56.0	61.0	65.2	56.7	51.2	85.0
	(17.0)	(12.4)	(18.7)	(9.9)	(16.6)	(2.8)
Students taking SAT or ACT (%)	63.8	68.4	66.7	72.6	60.1	68.4
	(17.7)	(18.5)	(21.2)	(27.3)	(13.2)	.
SAT/ACT takers scoring better than 1110/24	15.9	23.3	20.5		5.8	46.2
(%)[b]	(20.6)	(16.2)	(14.9)	N/A	(5.0)	.
	4	39	310		3	1
Students graduating with recommended	74.9	73.7	76.2		66.5	100.0
diploma (%)[b]	(36.9)	(17.5)	(16.1)	N/A	(40.3)	.
	4	39	343		3	1

Notes: Baseline statistics reflect demographic characteristics in the year prior to implementation.

Means and standard deviations are presented for continuous variables. Values reported for dichotomous variables represent the

Data Sources: Academic Excellence Indicator System (AEIS), TAKS, and PEIMS data for 2007–08.

[1]Regular Instructional public schools serving ninth grade

[2] For T-STEM schools, variables SAT/ACT takers scoring better than 1110/24 and Students graduating with recommended diploma are missing.

Exhibit D-4
Baseline School Information for New Schools and Their Matched Comparison Schools

Mean (SD)	Schools Funded in 2006–07 THSP All	ECHS	NSCS	Comparison Schools	Schools Funded in 2007–08 THSP All	T-STEM	ECHS	NSCS	Comparison Schools	Schools Funded in 2008–09 THSP All	T-STEM	ECHS	NSCS	Comparison Schools
N of schools	7	6	1	42	16	6	5	5	96	20	11	7	2	84
Number of ninth-grade students	96.3	105.2	43.0	146.7	72.1	46.8	96.0	82.7	271.4	69.3	54.5	90.3	77.0	302.7
School size	117.0	105.2	188.0	443.5	268.9	327.3	126.8	340.8	271.4	216.0	278.8	99.3	279.0	1135.7
	(34.2)	(15.1)	.	(200.9)	(146.3)	(159.7)	(46.1)	(97.3)	(164.5)	(174.2)	(190.2)	(7.7)	(260.2)	(1088.4)
Small (% of schools)	28.6	16.7	100.0	33.3	62.5	50.0	60.0	80.0	70.8	75.0	81.8	71.4	50.0	45.2
Serving grades 9-12 (% of schools)	85.7	100.0	0.0	85.7	56.3	33.3	100.0	40.0	56.3	60.0	36.4	100.0	50.0	58.3
Serving grades below 9 (% of schools)	14.3	0.0	100.0	14.3	43.8	66.7	0.0	60.0	43.8	40.0	63.6	0.0	50.0	41.7
Rural (% of schools)	0.0	0.0	0.0	2.4	18.8	33.3	20.0	0.0	89.6	0.0	0.0	0.0	0.0	0.0
Title I (% of schools)	0.0	0.0	0.0	28.6	25.0	50.0	0.0	20.0	28.1	20.0	27.3	14.3	0.0	26.2
Student-teacher ratio	19.0	19.4	17.1	13.0	15.6	16.1	13.9	16.8	15.1	15.2	14.7	16.6	12.9	12.7
	(3.9)	(4.1)	.	(3.2)	(4.8)	(7.0)	(1.3)	(3.9)	(14.7)	(2.8)	(1.7)	(3.4)	(4.7)	(4.9)
African-American students (%)	5.5	5.2	7.4	14.7	18.5	10.2	17.4	29.5	6.3	17.1	14.7	24.1	5.6	23.0
	(6.2)	(6.8)	.	(17.4)	(23.2)	(7.7)	(21.9)	(34.8)	(10.3)	(21.8)	(15.7)	(31.4)	(0.4)	(21.3)
Hispanic students (%)	86.8	87.0	85.6	34.9	54.1	48.0	56.0	59.7	38.4	67.5	61.0	70.8	92.3	37.0
	(6.9)	(7.5)	.	(28.4)	(27.4)	(26.8)	(27.2)	(32.8)	(22.9)	(28.7)	(25.6)	(34.9)	(0.9)	(24.2)
Economically disadvantaged students (%)	81.0	81.4	78.2	37.7	55.1	47.0	61.6	58.4	42.9	72.4	65.8	78.0	88.7	44.3
	(10.2)	(11.1)	.	(21.8)	(21.6)	(22.8)	(28.1)	(12.0)	(20.2)	(19.5)	(18.3)	(20.3)	(11.5)	(26.9)
Limited English proficiency students (%)	3.3	3.7	1.1	1.5	5.1	2.6	1.3	11.9	4.6	7.6	10.3	5.0	1.6	4.6
	(4.1)	(4.3)	.	(2.8)	(6.5)	(2.5)	(1.6)	(7.8)	(7.2)	(13.4)	(17.5)	(4.9)	(2.3)	(7.4)
Special education students (%)	0.4	0.3	0.5	6.7	8.5	8.9	9.1	7.5	10.9	3.6	3.9	2.6	5.7	19.0
	(0.5)	(0.5)	.	(5.9)	(4.0)	(5.3)	(2.0)	(4.3)	(5.1)	(2.9)	(2.9)	(3.0)	(2.5)	(28.4)
Teachers in first year of teaching (%)	21.1	21.5	18.2	6.5	29.1	39.4	13.2	32.5	9.6	27.4	31.6	18.1	39.3	13.5
	(12.6)	(13.7)	.	(5.6)	(21.1)	(26.8)	(15.2)	(7.8)	(9.2)	(20.9)	(17.2)	(24.0)	(25.8)	(20.7)
Average years experience of teachers	8.5	9.6	2.0	13.6	9.3	10.1	10.4	6.8	11.8	5.3	2.9	9.2	3.8	9.8
	(4.2)	(3.4)	.	(4.3)	(3.1)	(3.9)	(0.8)	(2.9)	(4.0)	(4.1)	(2.1)	(3.9)	(1.2)	(4.7)
Average teacher base salary ($)	46,649.4	47,859.8	39,387.0	47,354.8	43501.2	44044.3	46007.0	39554.3	43224.8	44037.6	39857.7	48599.0	48972.5	45989.5
	(4,181.3)	(2,945.0)	.	(6,405.8)	(6174.8)	(7136.3)	(3342.6)	(6806.5)	(4271.1)	(5599.9)	(4280.8)	(2236.0)	(688.0)	(6512.4)

Exhibit D-4 (continued)

Baseline School Information for New Schools and Their Matched Comparison Schools

Mean (SD)	Schools Funded in 2006–2007				Schools Funded in 2007–08					Schools Funded in 2008–09				
	THSP All	ECHS	NSCS	Comparison Schools	THSP All	T-STEM	ECHS	NSCS	Comparison Schools	THSP All	T-STEM	ECHS	NSCS	Comparison Schools
Achievement Indicators[1]														
Eighth-graders passing TAKS reading (%)	96.9	97.6	92.1	95.5	92.7	95.8	97.7	84.0	93.1	98.7	99.3	98.8	94.7	95.5
	(2.8)	(2.0)	.	(4.0)	(9.3)	(5.4)	(2.5)	(11.7)	(6.7)	(2.2)	(1.7)	(1.9)	(2.2)	(6.5)
Eighth-graders passing TAKS math (%)	85.5	87.0	76.3	86.5	82.7	88.1	91.5	67.5	80.7	87.1	87.2	88.1	83.1	78.2
	(7.1)	(6.4)	.	(10.0)	(13.0)	(9.5)	(6.5)	(6.5)	(11.3)	(10.6)	(10.4)	(12.7)	(9.9)	(18.6)

Notes: Baseline statistics reflect demographic characteristics in the first year of implementation for new schools (or schools new to serving the ninth grade). Some of these new schools were funded in 2005–06.

Means and standard deviations are presented for continuous variables. Values reported for dichotomous variables represent the percentages.

[1] New schools do not have prior year achievement data nor prior year campus rating because campus rating is based on achievement data. For these schools, eighth-grade TAKS scores provide an achievement baseline.

Data Sources: Academic Excellence Indicator System (AEIS), TAKS, and PEIMS data for 2006–07, 2007–08, and 2008–09.

Exhbit D-5
Ninth-Grade Nonrepeater Information for THSP Schools Beginning Implementation in 2006-07, 2007-08 or 2008-09 and Their Matched Comparisons

Mean (SD)	T-STEM[1]	HSTW	HSRD	HSRR[1]	DIEN	NSCS	ECHS	THSP Overall	Comparison Schools
N of schools	30	23	6	27	4	10	25	124	682
N of students	1413	5867	1869	4885	836	504	2128	17438	159619
At a school funded in 2006-07	114	3911	1869	0	0	46	876	6816	44256
At a school funded in 2007-08	625	1956	0	3148	836	338	538	7377	68467
At a school funded in 2008-09	674	0	0	1737	0	120	714	3245	46896
Sample Demographics									
Female (%)	47.4	49.8	52.2	50.3	49.6	53.6	56.4	50.9	50.6
Male (%)	52.6	50.2	47.8	49.7	50.4	46.4	43.6	49.1	49.4
White (%)	19.1	31.1	5.7	26.2	1.1	3.4	10.7	21.4	30.6
African-American (%)	12.2	9.4	15.1	14.1	36.1	12.3	13.7	13.4	16.0
Hispanic (%)	63.3	57.6	78.5	59.0	62.4	82.9	72.7	63.4	49.7
Other ethnicity (%)	5.4	1.9	0.6	0.7	0.4	1.4	3.0	1.8	3.7
Economically disadvantaged (%)	65.7	67.6	85.3	71.6	93.2	83.9	77.3	73.3	58.4
Limited English proficiency (%)	6.9	7.6	9.9	9.2	11.2	14.5	7.9	8.7	7.4
At risk (nonrepeaters only) (%)	27.4	43.9	59.3	51.7	72.8	43.1	28.2	45.8	43.5
Immigrant (%)	2.3	1.9	1.4	1.9	1.3	2.6	1.7	1.9	2.0

Exhibit D-5 (continued)
Ninth-Grade Nonrepeater Information for THSP Schools Beginning Implementation in 2006-07, 2007-08 or 2008-09 and Their Matched Comparisons

Mean (SD) *N*	T-STEM	HSTW	HSRD	HSRR[a]	DIEN	NSCS	ECHS	THSP Overall	Comparison Schools
Student Prior Achievement									
Eighth-grade TAKS reading score	2402.0	2352.8	2304.9	2329.6	2246.1	2372.2	2412.9	2347.9	2368.0
	(172.1)	(177.5)	(175.7)	(181.1)	(164.2)	(171.9)	(168.8)	(180.6)	(183.6)
	1413	5867	1869	4885	836	504	2128	17438	159619
Eighth-grade TAKS math score	2296.8	2236.8	2182.4	2200.5	2119.1	2252.0	2315.9	2230.2	2244.9
	(183.8)	(180.8)	(172.8)	(177.4)	(141.1)	(172.5)	(181.6)	(184.0)	(189.8)
	1413	5867	1869	4885	836	504	2128	17438	159619
Student Outcomes									
Passed Algebra I by Ninth Grade (%)	91.6	86.1	88.4	84.0	84.3	76.3	91.1	86.6	86.1
	1413	5867	1869	4885	836	504	2128	17438	159619
Percentage of days absent	2.7	4.5	5.7	5.3	5.3	2.6	2.2	4.4	4.3
	(3.1)	(5.7)	(7.8)	(6.6)	(6.5)	(2.8)	(2.7)	(5.9)	(5.2)
	1413	5867	1869	4885	836	504	2128	17438	159619
Ninth-grade TAKS reading score	2295.6	2263.8	2232.5	2232.9	2187.1	2298.2	2329.2	2259.9	2274.7
	(160.8)	(167.5)	(150.7)	(148.8)	(132.9)	(163.6)	(175.1)	(163.5)	(170.9)
	1403	5777	1823	4803	822	503	2108	17175	157522
Ninth-grade TAKS math score	2306.8	2228.9	2149.8	2187.1	2111.9	2304.5	2328.0	2223.9	2235.5
	(214.0)	(220.5)	(192.9)	(210.5)	(183.4)	(206.3)	(208.5)	(219.3)	(228.0)
	1402	5762	1825	4770	811	498	2105	17110	156493
On track in "four by four" (%)	77.3	69.8	66.0	66.6	58.4	54.8	70.9	68.5	69.3
	1413	5867	1869	4885	836	504	2128	17438	159619

Notes: The sample consists of students who were at the same school for 70% of the academic year (126 days).
Means and standard deviations (in parentheses) are presented for continuous variables. Values reported for dichotomous variables represent percentages.
Data source: PEIMS data from 2005 through 2009.
[1] Moody HS students enrolled in the T-STEM program are included in the T-STEM descriptives; all other Moody students are included in HSRR descriptives.

Exhibit D-6

Ninth-Grade Repeater Information for THSP Schools Beginning Implementation in 2006–07, 2007–08 or 2008–09 and Their Matched Comparisons

Mean (SD) *N*	T-STEM[1]	HSTW	HSRD	HSRR[1]	DIEN	ECHS	THSP Overall	Comparison Schools
N of schools	6	22	6	23	4	2	65	363
N of students	18	556	158	455	111	16	1320	12944
At a school funded in 2006-07	6	445	158	0	0	15	624	4639
At a school funded in 2007-08	11	111	0	334	111	1	574	7212
At a school funded in 2008-09	1	0	0	121	0	0	122	1093
Sample Demographics								
Female (%)	38.9	41.7	41.8	40.4	40.5	56.3	41.3	41.2
Male (%)	61.1	58.3	58.2	59.6	59.5	43.8	58.7	58.8
White (%)	11.1	17.4	1.3	10.3	0.0	6.3	11.3	12.3
African-American (%)	11.1	9.4	23.4	19.3	37.8	0.0	16.8	19.8
Hispanic (%)	77.8	71.6	74.7	69.5	62.2	93.8	70.8	66.7
Other ethnicity (%)	0.0	1.6	0.6	0.9	0.0	0.0	1.1	1.1
Economically disadvantaged (%)	88.9	82.4	93.7	85.9	88.3	100.0	85.8	80.2
Limited English proficiency (%)	11.1	12.9	19.6	20.7	18.0	25.0	16.9	17.3
Immigrant (%)	0.0	1.6	1.9	3.1	0.0	0.0	2.0	1.9

Exhibit D-6 (continued)

Ninth-Grade Repeater Information for THSP Schools Beginning Implementation in 2006–07, 2007–08 or 2008–09 and Their Matched Comparisons

Mean (SD) *N*	T-STEM	HSTW	HSRD	HSRR[a]	DIEN	ECHS	THSP Overall	Comparison Schools
Student Prior Achievement								
Prior year ninth-grade TAKS reading score	2175.2	2155.9	2091.7	2106.9	2102.8	2151.8	2127.3	2134.0
	(178.6)	(158.9)	(150.3)	(142.7)	(130.2)	(104.7)	(151.8)	(150.6)
	18	556	158	455	111	16	1320	12944
Prior year ninth-grade TAKS math score	2098.8	2011.0	1957.2	1949.9	1956.5	1968.2	1979.9	1967.4
	(270.4)	(157.7)	(137.7)	(138.7)	(168.6)	(111.2)	(154.7)	(148.1)
	18	556	158	455	111	16	1320	12944
Student Outcomes								
Passed Algebra I by most recent ninth-grade year (%)	83.3	76.3	90.8	83.0	91.4	93.8	82.0	78.8
	18	556	158	455	111	16	1320	12944
Percentage of days absent	4.0	10.7	15.6	13.2	12.5	13.9	12.2	10.9
	(1.9)	(10.1)	(11.9)	(11.3)	(12.9)	(7.2)	(11.1)	(10.4)
	18	556	158	455	111	16	1320	12944
Ninth-grade TAKS reading score	2226.2	2166.8	2105.2	2129.5	2137.2	2188.0	2145.6	2151.6
	(90.7)	(172.0)	(139.8)	(146.8)	(121.1)	(93.3)	(156.4)	(149.5)
	18	432	130	373	55	13	1025	10783
Ninth-grade TAKS math score	2205.4	2057.3	1974.1	1969.1	1970.0	1990.9	2013.2	2009.2
	(212.1)	(171.3)	(151.3)	(164.6)	(117.8)	(164.0)	(172.9)	(168.2)
	18	383	118	330	42	13	908	9995
On track in "four by four" (%)	27.8	22.8	13.9	17.4	19.8	0.0	19.5	19.1
	18	556	158	455	111	16	1320	12944

Notes: The sample consists of students who were at the same school for 70% of the academic year (126 days).

Means and standard deviations are presented for continuous variables. Values reported for dichotomous variables represent the percentages.

Data source: PEIMS data from 2005 through 2009.

[1] Moody HS students enrolled in the T-STEM program are included in the T-STEM descriptives; all other Moody students are included in HSRR descriptives.

Exhibit D-7
Tenth-Grade Former Nonrepeater Information for Schools Beginning Implementation in 2006–07 or 2007–08

	Promoted to Tenth Grade in 2009							Not Promoted to Tenth Grade in 2009				
	T-STEM	HSTW	HSRD	NSCS	ECHS	THSP Overall	Comparison Schools	HSTW	HSRD	ECHS	THSP Overall	Comparison Schools
N of schools	14	22	6	8	17	85	493	18	6	2	57	364
N of students	684	4992	1502	256	1287	11912	86949	449	120	12	984	9055
At a school funded in 2006-07	105	3304	1502	30	796	5737	35836	342	120	12	480	3772
At a school funded in 2007-08	579	1688	0	226	491	6175	51113	107	0	0	504	5283
Sample Demographics												
Female (%)	48.4	52.1	50.6	62.1	57.7	52.2	51.7	44.5	36.7	58.3	41.2	41.9
Male (%)	51.6	47.9	49.4	37.9	42.3	47.8	48.3	55.5	63.3	41.7	58.8	58.1
White (%)	22.5	33.3	5.5	4.3	14.5	22.4	30.7	18.5	2.5	0.0	10.2	14.5
African-American (%)	10.2	9.6	15.9	20.3	7.8	13.3	14.4	8.7	20.8	0.0	15.2	17.3
Hispanic (%)	61.3	54.8	77.5	73.4	74.8	62.3	51.3	71.7	75.8	100.0	73.8	67.0
Other ethnicity (%)	6.0	2.3	1.1	2.0	3.0	2.1	3.6	1.1	0.8	0.0	0.8	1.2
Economically disadvantaged (%)	62.0	60.9	80.9	79.3	75.8	69.3	56.4	82.9	93.3	91.7	86.0	79.0
Limited English proficiency (%)	2.5	5.4	9.1	10.2	4.4	6.3	6.1	12.5	17.5	25.0	16.4	16.1
At risk as ninth-grader in 2007 (%)	37.7	48.5	62.4	64.8	33.4	52.9	50.9	95.1	92.5	100.0	95.8	97.5
Immigrant (%)	0.1	0.5	0.3	0.0	0.4	0.5	0.5	0.9	1.7	0.0	1.1	0.8

Exhibit D-7 (continued)
Tenth-Grade Former Nonrepeater Information for Schools Beginning Implementation in 2006–07 or 2007–08

Mean (Standard Deviation) *N*	Promoted to Tenth Grade in 2009							Not Promoted to Tenth Grade in 2009				
	T-STEM	HSTW	HSRD	NSCS	ECHS	THSP Overall	Comparison Schools	HSTW	HSRD	ECHS	THSP Overall	Comparison Schools
Student Prior Achievement												
Eighth-grade TAKS reading score in 2006	2361.7	2317.1	2260.2	2304.8	2370.7	2304.8	2322.3	2195.6	2139.1	2109.7	2162.7	2174.6
	(164.3)	(168.4)	(181.9)	(168.2)	(157.7)	(174.2)	(177.2)	(166.6)	(190.5)	(130.2)	(177.3)	(177.0)
	684	4992	1502	256	1287	11912	86949	449	120	12	984	9055
Eighth-grade TAKS math score in 2006	2288.2	2215.0	2146.2	2176.9	2288.5	2202.2	2216.4	2079.8	2011.2	2020.5	2049.0	2048.8
	(182.8)	(169.0)	(163.1)	(148.4)	(173.7)	(174.6)	(179.7)	(137.6)	(123.4)	(128.8)	(131.6)	(126.6)
	684	4992	1502	256	1287	11912	86949	449	120	12	984	9055
Student Outcomes												
Passed Geometry or Algebra II by tenth grade (%)	85.8	92.7	95.1	75.4	79.0	89.5	91.5	61.2	70.8	66.7	65.1	58.0
	684	4989	1502	256	1287	11906	86930	446	120	12	979	9021
Percentage of days absent	3.2	4.1	5.5	2.8	2.5	4.3	4.0	11.8	17.2	15.2	13.3	11.1
	(3.3)	(4.5)	(6.7)	(3.7)	(3.1)	(5.2)	(4.6)	(11.6)	(14.2)	(11.1)	(12.9)	(11.1)
	684	4992	1502	256	1287	11912	86949	449	120	12	984	9055
On track in "four by four" (%)	73.2	72.3	64.2	61.3	64.6	55.5	62.2	0.7	1.7	0.0	0.7	0.5
	684	4989	1502	256	1287	11902	86891	445	118	12	971	8977
Tenth-grade TAKS reading score	2290.3	2262.1	2225.2	2264.1	2299.5	2253.8	2263.6	N/A	N/A	N/A	N/A	N/A
	(116.8)	(121.4)	(130.4)	(96.9)	(111.3)	(122.8)	(124.4)	N/A	N/A	N/A	N/A	N/A
	682	4960	1490	255	1281	11830	86292	N/A	N/A	N/A	N/A	N/A
Tenth-grade TAKS math score	2280.9	2191.3	2130.2	2247.0	2279.1	2187.3	2200.0	N/A	N/A	N/A	N/A	N/A
	(184.8)	(173.3)	(166.3)	(167.8)	(167.3)	(178.3)	(181.6)	N/A	N/A	N/A	N/A	N/A
	678	4935	1482	256	1282	11773	85919	N/A	N/A	N/A	N/A	N/A
Tenth-grade TAKS social studies score	2390.1	2340.1	2277.5	2361.7	2408.1	2327.5	2341.6	N/A	N/A	N/A	N/A	N/A
	(154.0)	(172.5)	(166.8)	(146.6)	(154.6)	(172.9)	(173.8)	N/A	N/A	N/A	N/A	N/A
	676	4882	1456	254	1276	11655	85239	N/A	N/A	N/A	N/A	N/A
Tenth-grade TAKS science score	2245.7	2174.0	2103.8	2203.4	2247.3	2163.7	2186.2	N/A	N/A	N/A	N/A	N/A
	(162.2)	(164.7)	(160.9)	(157.3)	(151.1)	(168.9)	(173.5)	N/A	N/A	N/A	N/A	N/A
	674	4885	1463	255	1276	11667	85385	N/A	N/A	N/A	N/A	N/A
Passed all four tenth-grade TAKS (%)	76.9	57.9	43.3	71.1	80.6	56.4	59.5	N/A	N/A	N/A	N/A	N/A
	671	4810	1432	253	1269	11503	84168	N/A	N/A	N/A	N/A	N/A

Notes: The sample consists of students who were at the same school 70% of the academic year (126 days).
Means and standard deviations are presented for continuous variables. Values reported for dichotomous variables represent the percentages.

Data source: PEIMS data from 2005 through 2009.

Exhibit D-8

Tenth-Grade Former Repeater Information for Schools Beginning Implementation in 2006–07 or 2007–08

	Promoted to Tenth Grade in 2009							Not Promoted to Tenth Grade in 2009				
	T-STEM	HSTW	HSRD	NSCS	ECHS	THSP Overall	Comparison Schools	HSTW	HSRD	ECHS	THSP Overall	Comparison Schools
N of schools	5	19	6	2	2	51	364	6	3	0	19	185
N of students	11	432	44	2	6	792	7367	49	4	0	87	997
At a school funded in 2006-07 (%)	27.3	82.6	100.0	0.0	100.0	51.8	40.1	91.8	100.0	0.0	56.3	35.6
At a school funded in 2007-08 (%)	72.7	17.4	0.0	100.0	0.0	48.2	59.9	8.2	0.0	0.0	43.7	64.4
Sample Demographics												
Female (%)	45.5	42.6	40.9	50.0	50.0	43.9	41.8	20.4	25.0	0.0	23.0	39.0
Male (%)	54.5	57.4	59.1	50.0	50.0	56.1	58.2	79.6	75.0	0.0	77.0	61.0
White (%)	18.2	13.9	4.5	50.0	0.0	10.6	13.4	0.0	0.0	0.0	2.3	8.6
African-American (%)	0.0	10.9	31.8	0.0	0.0	19.2	17.2	2.0	0.0	0.0	10.3	16.4
Hispanic (%)	81.8	74.3	63.6	50.0	100.0	69.7	67.9	98.0	100.0	0.0	87.4	73.6
Other ethnicity (%)	0.0	0.9	0.0	0.0	0.0	0.5	1.5	0.0	0.0	0.0	0.0	1.3
Economically disadvantaged (%)	81.8	75.5	90.9	50.0	66.7	80.1	74.9	85.7	100.0	0.0	87.4	79.8
Limited English proficiency (%)	9.1	11.1	18.2	0.0	33.3	11.1	14.4	20.4	50.0	0.0	21.8	19.3
At risk as ninth-grader in 2007 (%)												

Exhibit D-8 (continued)

Tenth-Grade Former Repeater Information for Schools Beginning Implementation in 2006–07 or 2007–08

Mean (Standard Deviation) *N*	Promoted to Tenth Grade in 2009							Not Promoted to Tenth Grade in 2009				
	T-STEM	HSTW	HSRD	NSCS	ECHS	THSP Overall	Comparison Schools	HSTW	HSRD	ECHS	THSP Overall	Comparison Schools
Student Prior Achievement												
Eighth-grade TAKS reading score in 2006	2249.9	2155.1	2098.5	*	2073.8	2136.9	2142.6	2109.1	*	0.0	2081.8	2086.6
	(138.3)	(147.7)	(117.8)		(111.6)	(139.1)	(147.1)	(155.6)			(152.3)	(149.8)
	11	432	44		6	792	7367	49			87	997
Eighth-grade TAKS math score in 2006	2047.9	2017.8	1899.2	*	1955.7	1996.4	1992.6	1972.3	*	0.0	1942.3	1935.2
	(112.4)	(157.9)	(122.7)		(164.2)	(148.4)	(145.3)	(161.1)			(155.3)	(137.2)
	11	432	44		6	792	7367	49			87	997
Student Outcomes												
Passed Geometry or Algebra II by tenth grade (%)	72.7	62.0	59.1	*	50.0	60.8	59.2	53.1	*	0.0	39.5	40.7
	11	432	44		6	790	7343	49			86	980
Percentage of days absent	5.5	9.4	13.3	*	9.1	10.3	9.4	12.4	*	0.0	18.8	17.0
	(6.8)	(8.9)	(13.5)		(3.5)	(10.0)	(9.4)	(10.1)			(16.1)	(15.4)
	11	432	44		6	792	7367	49			87	997
On track in "four by four" (%)	36.4	23.8	29.5	*	16.7	11.1	12.7	0.0	*	0.0	0.0	0.5
	11	432	44		6	790	7329	48			83	957
Tenth-grade TAKS math score	2111.4	2030.6	1963.6	*	*	2020.1	2019.0	2148.2	*	0.0	2100.9	2024.9
	(113.8)	(118.5)	(90.4)			(115.1)	(126.8)	(147.7)			(157.0)	(125.1)
	9	231	24			394	2960	10			13	92
Tenth-grade TAKS reading score	2236.0	2159.8	2106.5	*	*	2152.6	2148.2	2190.5	*	0.0	2164.9	2162.0
	(99.2)	(114.0)	(99.1)			(113.4)	(119.3)	(141.3)			(132.8)	(108.9)
	9	243	28			421	3226	11			15	91
Tenth-grade TAKS social studies score	2261.9	2168.2	2137.1	*	*	2161.2	2181.4	2336.8	*	0.0	2271.3	2198.2
	(176.4)	(159.9)	(126.7)			(155.1)	(160.0)	(245.2)			(243.4)	(162.3)
	9	222	19			370	2856	9			12	90
Tenth-grade TAKS science score	2143.0	2004.1	1944.5	*	*	1999.2	2030.1	2064.7	*	0.0	2024.5	2050.7
	(158.8)	(148.3)	(112.9)			(142.2)	(142.8)	(127.9)			(139.3)	(155.8)
	9	224	22			378	2885	9			12	93
Passed all four tenth-grade TAKS (%)	33.3	15.5	5.6	*	*	14.4	14.8	37.5	*	0.0	27.3	16.7
	9	213	18			348	2629	8			11	72

Notes: The sample consists of students who were at the same school on the12th day (in August) and during TAKS testing (in April).

Means and standard deviations (in parentheses) are presented for continuous variables. Values reported for dichotomous variables represent the percentages.

All starred (*) cells have been omitted to comply with privacy guidelines under FERPA.

Data source: PEIMS data from 2005–08.

Exhibit D-9
Information for Students Included in Growth Modeling for Schools Beginning Implementation in 2006–07 or 2007–08

	T-STEM	HSTW	HSRD	HSRR	DIEN	ECHS	NSCS	Comparison Schools
N of schools	14	21	6	15	4	16	8	490
N of students	764	5973	1933	3278	923	1386	322	114857
Sample Demographics								
Female (%)	47.8	51.2	49.6	49.0	50.7	56.6	58.1	50.9
Male (%)	52.2	48.8	50.4	51.0	49.3	43.4	41.9	49.1
White (%)	23.4	29.6	5.2	19.8	0.9	12.6	5.0	27.8
African-American (%)	11.4	10.9	17.4	16.8	37.6	7.8	20.8	15.9
Hispanic (%)	59.6	57.2	76.2	62.3	61.1	76.7	72.4	53.0
Other ethnicity (%)	5.6	2.3	1.1	1.1	0.4	2.9	1.9	3.3
Economically disadvantaged (%)	66.6	68.3	86.0	77.5	94.7	79.4	80.4	63.1
Limited English proficiency (%)	3.3	7.6	12.0	9.4	12.7	7.1	16.1	8.6
At Risk (%)	32.6	44.2	62.5	59.8	69.6	29.3	39.1	48.6
Immigrant (%)	0.3	1.4	1.9	2.2	1.6	1.4	0.6	1.6
Student Math Achievement								
Eighth-grade TAKS math score	2284.4	2198.4	2130.8	2150.6	2109.4	2275.1	2169.0	2194.0
	(185.0)	(170.3)	(163.2)	(170.1)	(137.8)	(178.5)	(148.5)	(180.7)
	749	5705	1834	3164	851	1335	299	109207
Ninth-grade TAKS math score	2311.2	2194.4	2105.8	2131.7	2094.6	2310.0	2200.7	2188.4
	(227.8)	(214.4)	(194.7)	(220.2)	(174.7)	(216.3)	(197.9)	(232.5)
	764	5973	1933	3278	923	1386	322	114857
Tenth-grade TAKS math score	2282.8	2187.3	2128.8	2150.0	2127.3	2277.0	2245.9	2198.1
	(183.9)	(174.2)	(164.1)	(174.5)	(154.1)	(168.7)	(169.1)	(182.5)
	688	4932	1525	2578	671	1233	274	86588

Notes: Means and standard deviations are presented for continuous variables. Values reported for dichotomous variables represent the percentages.

Data source: PEIMS data from 2005 through 2009.

Exhibit D-10
Eleventh-Grade Former Nonrepeater Information for Schools Beginning Implementation in 2006–07

	Promoted to Eleventh Grade in 2009							Not Promoted to Eleventh Grade in 2009				
	T-STEM	HSTW	HSRD	NSCS	ECHS	THSP Overall	Comparison Schools	HSTW	HSRD	ECHS	THSP Overall	Comparison Schools
N of schools	2	14	6	1	8	31	179	11	6	1	19	140
N of students	80	2755	1340	19	711	4905	30888	366	112	15	498	2932
Sample Demographics												
Female (%)	61.3	54.4	52.7	78.9	58.5	54.7	52.8	41.0	38.4	40.0	40.4	38.8
Male (%)	38.8	45.6	47.3	21.1	41.5	45.3	47.2	59.0	61.6	60.0	59.6	61.2
White (%)	6.3	38.8	6.0	0.0	7.7	24.7	31.3	16.4	1.8	0.0	12.4	14.9
African-American (%)	0.0	11.6	16.0	0.0	2.7	11.3	14.7	6.8	15.2	0.0	8.4	14.2
Hispanic (%)	92.5	46.8	76.3	100.0	87.1	61.6	50.0	76.0	83.0	100.0	78.5	68.7
Other ethnicity (%)	1.3	2.8	1.6	0.0	2.5	2.4	4.0	0.8	0.0	0.0	0.6	2.2
Economically disadvantaged (%)	78.8	59.3	83.2	100.0	84.4	69.9	59.3	84.2	91.1	100.0	86.3	81.8
Limited English proficiency (%)	1.3	5.3	8.5	10.5	3.9	6.0	5.3	15.6	27.7	20.0	18.3	18.8
At risk as ninth-grader in 2007 (%)	45.0	55.7	68.2	84.2	44.9	57.5	57.1	99.7	100.0	93.3	99.6	98.2
Immigrant (%)	1.3	1.7	2.8	5.3	3.5	2.3	1.9	5.7	9.8	6.7	6.6	7.6

Exhibit D-10 (continued)
Eleventh-Grade Former Nonrepeater Information for Schools Beginning Implementation in 2006–07

Mean (Standard Deviation) *N*	Promoted to Eleventh Grade in 2009							Not Promoted to Eleventh Grade in 2009				
	T-STEM	HSTW	HSRD	NSCS	ECHS	THSP Overall	Comparison Schools	HSTW	HSRD	ECHS	THSP Overall	Comparison Schools
Student Prior Achievement												
Eighth-grade TAKS reading score in 2006	2379.9	2311.1	2253.2	2235.9	2363.3	2303.7	2321.2	2176.7	2076.5	2148.8	2153.2	2151.0
	(165.9)	(193.1)	(194.0)	(161.8)	(177.8)	(194.1)	(201.3)	(184.3)	(175.0)	(253.2)	(188.8)	(188.5)
	80	2755	1340	19	711	4905	30888	366	112	15	498	2932
Eighth-grade TAKS math score in 2006	2366.3	2210.5	2155.0	2179.7	2253.2	2203.9	2214.7	2077.4	1997.4	2000.1	2057.3	2052.2
	(182.5)	(178.9)	(169.8)	(149.6)	(171.1)	(179.4)	(181.1)	(139.4)	(130.7)	(117.3)	(140.7)	(136.4)
	80	2755	1340	19	711	4905	30888	366	112	15	498	2932
Eighth-grade TAKS science score in 2006	2199.2	2142.6	2063.6	2125.5	2165.2	2125.2	2138.4	1992.0	1904.4	1900.5	1969.9	1968.8
	(171.9)	(209.6)	(190.2)	(158.1)	(194.0)	(205.2)	(209.3)	(186.0)	(164.0)	(199.6)	(185.2)	(180.1)
	80	2755	1340	19	711	4905	30888	366	112	15	498	2932
Eighth-grade TAKS social studies score in 2006	2453.8	2301.4	2245.7	2228.8	2342.1	2294.2	2311.2	2182.1	2124.7	2126.5	2167.7	2160.8
	(165.6)	(178.7)	(158.3)	(170.8)	(170.9)	(176.0)	(183.9)	(159.2)	(139.5)	(121.8)	(155.7)	(150.5)
	80	2755	1340	19	711	4905	30888	366	112	15	498	2932
Student Outcomes												
Percentage of days absent	3.1	4.3	6.0	1.0	2.9	4.5	4.5	8.7	15.2	9.8	10.2	11.6
	(3.4)	(5.4)	(6.9)	(1.0)	(3.7)	(5.7)	(5.1)	(7.8)	(14.2)	(5.0)	(9.9)	(12.0)
	80	2755	1340	19	711	4905	30888	366	112	15	498	2932
Enrolled in AP, IB, or dual credit course in 2009 (%)	70.0	44.6	49.4	100.0	86.2	52.6	44.6	N/A	N/A	N/A	N/A	N/A
	80	2754	1340	19	711	4904	30878	N/A	N/A	N/A	N/A	N/A
Eleventh-grade TAKS English score	2356.1	2314.3	2275.1	2417.2	2358.8	2311.2	2316.5	N/A	N/A	N/A	N/A	N/A
	(107.4)	(141.7)	(126.9)	(141.9)	(134.7)	(139.0)	(138.4)	N/A	N/A	N/A	N/A	N/A
	80	2681	1311	19	700	4791	29970	N/A	N/A	N/A	N/A	N/A
Eleventh-grade TAKS math score	2420.2	2294.1	2226.9	2417.9	2334.7	2284.3	2281.8	N/A	N/A	N/A	N/A	N/A
	(166.0)	(177.8)	(170.9)	(175.2)	(168.7)	(179.2)	(183.2)	N/A	N/A	N/A	N/A	N/A
	79	2670	1303	19	698	4769	29877	N/A	N/A	N/A	N/A	N/A
Eleventh-grade TAKS social studies score	2457.2	2398.3	2346.2	2478.2	2417.8	2388.3	2394.3	N/A	N/A	N/A	N/A	N/A
	(135.7)	(157.3)	(147.4)	(146.6)	(141.7)	(154.5)	(158.4)	N/A	N/A	N/A	N/A	N/A
	80	2664	1297	19	698	4758	29843	N/A	N/A	N/A	N/A	N/A
Eleventh-grade TAKS science score	2311.9	2241.4	2201.8	2312.7	2281.1	2237.8	2247.8	N/A	N/A	N/A	N/A	N/A
	(112.3)	(129.5)	(129.2)	(96.6)	(128.3)	(131.7)	(136.7)	N/A	N/A	N/A	N/A	N/A
	80	2665	1300	19	695	4759	29840	N/A	N/A	N/A	N/A	N/A
Passed all four eleventh-grade TAKS (%)	97.5	83.5	71.8	100.0	91.7	81.8	81.4	N/A	N/A	N/A	N/A	N/A
	79	2623	1275	19	688	4684	29399	N/A	N/A	N/A	N/A	N/A

Notes: The sample consists of students who were at the same school 70% of the academic year (126 days).
Means and standard deviations are presented for continuous variables. Values reported for dichotomous variables represent the percentages.
Data source: PEIMS data from 2005 through 2008.

Exhibit D-11
Eleventh-Grade Former Repeater Information for Schools Beginning Implementation in 2006–07

	Promoted to Eleventh Grade in 2009						Not Promoted to Eleventh Grade in 2009				
	T-STEM	HSTW	HSRD	ECHS	THSP Overall	Comparison Schools	HSTW	HSRD	ECHS	THSP Overall	Comparison Schools
N of schools	1	8	6	1	16	140	6	3	1	11	73
N of students	2	154	37	12	205	1935	15	7	1	24	242
Sample Demographics											
Female (%)	100.0	44.8	40.5	50.0	44.9	41.4	20.0	28.6	100.0	20.8	36.4
Male (%)	0.0	55.2	59.5	50.0	55.1	58.6	80.0	71.4	0.0	79.2	63.6
White (%)	0.0	22.1	0.0	0.0	16.6	14.5	26.7	14.3	0.0	20.8	7.9
African-American (%)	0.0	7.8	21.6	0.0	9.8	16.6	13.3	0.0	0.0	8.3	16.1
Hispanic (%)	100.0	69.5	78.4	100.0	73.2	66.6	53.3	85.7	100.0	66.7	74.0
Other ethnicity (%)	0.0	0.6	0.0	0.0	0.5	2.2	6.7	0.0	0.0	4.2	2.1
Economically disadvantaged (%)	100.0	76.6	89.2	83.3	79.5	78.1	66.7	85.7	100.0	75.0	88.0
Limited English proficiency (%)	0.0	13.6	27.0	41.7	17.6	12.9	13.3	14.3	100.0	16.7	28.9
Immigrant (%)	0.0	5.8	13.5	8.3	7.3	3.9	13.3	0.0	100.0	12.5	11.2

Exhibit D-11 (continued)
Eleventh-Grade Former Repeater Information for Schools Beginning Implementation in 2006–07

Mean (Standard Deviation) *N*	Promoted to Eleventh Grade in 2009						Not Promoted to Eleventh Grade in 2009				
	T-STEM	HSTW	HSRD	ECHS	THSP Overall	Comparison Schools	HSTW	HSRD	ECHS	THSP Overall	Comparison Schools
Student Prior Achievement											
Ninth-grade TAKS reading score in 2006	*	2168.2	2085.2	2193.4	2155.8	2160.9	2123.9	2058.6	*	2096.8	2100.8
		(139.1)	(136.7)	(207.5)	(146.2)	(145.5)	(156.1)	(191.9)		(160.6)	(160.7)
		154	37	12	205	1935	15	7		24	242
Ninth-grade TAKS math score in 2006	*	1999.2	1924.3	2049.9	1990.1	1992.7	1918.3	1851.4	*	1892.5	1903.5
		(136.5)	(145.5)	(191.5)	(145.2)	(143.5)	(101.7)	(86.8)		(100.3)	(118.5)
		154	37	12	205	1935	15	7		24	242
Student Outcomes											
Percentage of days absent	*	7.9	13.8	6.9	8.9	9.1	11.7	28.5	*	19.1	17.1
		(5.7)	(8.7)	(2.3)	(6.6)	(8.7)	(9.6)	(22.7)		(21.1)	(16.3)
		154	37	12	205	1935	15	7		24	242
Enrolled in AP, IB, or dual credit course in 2009 (%)	*	13.0	0.0	16.7	11.2	14.0	6.7	0.0	*	4.2	6.8
		154	37	12	205	1923	15	7		24	235
Eleventh-grade TAKS English score	*	2124.5	*	*	2145.7	2182.7	N/A	N/A	N/A	N/A	N/A
		(124.1)			(134.6)	(130.1)	N/A	N/A	N/A	N/A	N/A
		17			20	245	N/A	N/A	N/A	N/A	N/A
Eleventh-grade TAKS math score	*	2128.2	*	*	2133.9	2097.4	N/A	N/A	N/A	N/A	N/A
		(118.4)			(126.0)	(147.3)	N/A	N/A	N/A	N/A	N/A
		16			21	226	N/A	N/A	N/A	N/A	N/A
Eleventh-grade TAKS social studies score	*	2220.2	*	*	2226.8	2269.2	N/A	N/A	N/A	N/A	N/A
		(171.9)			(167.5)	(146.4)	N/A	N/A	N/A	N/A	N/A
		17			21	224	N/A	N/A	N/A	N/A	N/A
Eleventh-grade TAKS science score	*	2091.1	*	*	2095.8	2117.3	N/A	N/A	N/A	N/A	N/A
		(117.8)			(115.0)	(124.3)	N/A	N/A	N/A	N/A	N/A
		16			21	230	N/A	N/A	N/A	N/A	N/A
Passed all four eleventh-grade TAKS (%)	*	33.3	*	*	35.3	30.9	N/A	N/A	N/A	N/A	N/A
		15			17	204	N/A	N/A	N/A	N/A	N/A

Notes: The sample consists of students who were at the same school 70% of the academic year (126 days).
Means and standard deviations are presented for continuous variables. Values reported for dichotomous variables represent the percentages.
All starred (*) cells have been omitted to comply with privacy guidelines under FERPA.
Data source: PEIMS data from 2005 through 2008.

Appendix E. Student and Teacher Survey Factors, 2008

Exhibit E-1
Texas High School Project Student Survey Factors

Scales	Survey Items	Reliability (α)
Access to Postsecondary Support and Preparatory Experiences	17g: College entrance exam prep assistance 17h: Career guidance 18b: College tours 18c: Enrollment in college courses (offered on a college campus, online, or at my school) 18d: Job shadowing or visits to observe work sites 18f: Internships	0.74
Access to Academic Supports	17a: One-to-one tutoring 17b: Classes and/or seminars on how to improve academically (e.g., homework strategies, organization, time management) 17d: Academic counseling 17e: Academic remediation 17h: Career guidance 17j: Advanced Placement Strategies (e.g., tutoring, prep sessions, or summer academies supporting your work in AP classes)	0.76
Student Report on Instruction Relevance	6a: Made connections between what I was learning in class to life outside the classroom. 6b: Made connections between what was covered in my class and what I covered in other classes. 6c: Made connections between what was covered in class and what I plan to do in life.	0.77
Student Report on Instruction - English Advanced Skills	9d: Used my point of view about something I have read. 9e: Wrote papers and essays. 9f: Proposed an argument and supported it with ideas from books or other readings. 9h: Gathered information on a topic using books or materials other than my text book. 9i: Worked on assignments, reports, or projects that take multiple days to complete.	0.82
Student Report on Instruction - English Basic Skills	9a: Answered factual questions about passages the class has read. 9b: Learned parts of speech or how to diagram sentences. 9c: Edited text for grammar and clarity. 9g: Memorized and recalled literary facts (e.g., literary periods, authors, terms).	0.78
Student Report on Instruction - Math Basic Skills	13a: Watched the teacher demonstrate how to do a procedure or solve a problem. 13g: Took notes from lectures or the textbook. 13h: Completed exercises from a textbook or worksheet.	0.67

Exhibit E-1 (continued)
Texas High School Project Student Survey Factors

Scales	Survey Items	Reliability (α)
Student Report on Instruction - Math Advanced Skills	13c: Applied mathematical concepts to "real world" problems. 13d: Analyzed data to make inferences or draw conclusions. 13e: Explained to the class how I solved a math problem. 13k: Made estimates, predictions, or hypotheses. 13l: Work on projects or reports that take multiple days to complete.	0.79
Student Report on Instruction - Science Basic Skills	16c: Memorized facts. 16f: Found information from graphs and tables. 16h: Watched the teacher demonstrate or lecture.	0.74
Student Report on Instruction - Science Advanced Skills	16b: Wrote up results or prepared presentation from a lab activity, investigation, or experiment. 16d: Generated my own hypotheses. 16e: Used evidence/data to support an argument or hypotheses. 16g: Worked on projects that take multiple days to complete.	0.85
Student Report - Course-taking Requirements	1f: Students in this school are expected to take four years of math in high school. 1g: Students in this school are expected to take more than four years of science in high school. 1h: Students in this school are expected to take more than two years of a foreign language.	0.69
Student Perception of Teacher Expectations for Student Success	1a: The teachers at this school believe that all students in this school can do well. 1b: The teachers at this school have given up on some of their students. 1c: The teachers at this school expect very little from students. 1d: The teachers at this school work hard to make sure that all students are learning. 1j: Teachers at this school only care about smart students.	0.75
Student Perception of Respect Between Students and Adults	2a: Teachers always try to be fair. 2b: Students feel safe & comfortable with teachers. 2c: Teachers treat me with respect. 2d: Teachers can't be trusted. 2e: Teaches care about my opinions 2f: Teachers would be willing to give me extra help. 2h: Teachers care about how I am doing in school. 2i: Teachers are not willing to help students with their personal problems. 2j: Teachers treat some groups of students better/more fairly than others.	0.84

Exhibit E-1 (continued)
Texas High School Project Student Survey Factors

Scales	Survey Items	Reliability (α)
Student Report – Personal Connection with Teachers	3a. During this school year, how often have you… Talked to a teacher about my friends or family. 3b. During this school year, how often have you… Talked to an adult from my school about something important to me in my life outside of school. 3c. During this school year, how often have you… Talked to an adult from my school about classes to take and/or graduation requirements. 3d. During this school year, how often have you… Talked to an adult from my school about college or a career. 3e. During this school year, how often have you… Worked one-on-one with a teacher when I was having difficulty in a class.	0.77
Attitudes of Students' Friends Toward Academics	19a. My friends… Try hard in school. 19b. My friends… Think that it is important to get good grades in school. 19c. My friends… Help each other with school work. 19d. My friends… Believe that they can do well in school. 19e. My friends… Value learning. 19f. My friends… Want to go to college.	0.89
Student Perception of Peer-Attitudes Towards Academics (English & Math Classes)	11a: Came to class on time. 11b: Attended class regularly. 11c: Came to class prepared with supplies and books. 11d: Regularly paid attention in class. 11e: Talked and shared ideas in class. 11g: Care about what grade they receive in class. 15a: Came to class on time. 15b: Attended class regularly. 15c: Came to class prepared with supplies and books. 15d: Regularly paid attention in class. 15e: Talked and shared ideas in class. 15g: Care about what grade they receive in class.	0.90
Student Attitudes Towards Academic Improvement	7a: Used suggestions from the teacher to change or make my work better. 7b: Kept track of my progress and improvement in class. 7c: Used suggestions from another student to change or make my work better. 7e: Talked to a teacher about what I could do to get better grades.	0.76

Exhibit E-1 (continued)
Texas High School Project Student Survey Factors

Scales	Survey Items	Reliability (α)
Student Attitudes Towards Effort-Based Learning	7f: Began to work harder to improve my grades. 7g: Spent enough time working on a school assignment to understand it really well. 23b: When my schoolwork became difficult I found a way to get help. 23c: I gave extra effort to challenging assignments or projects. 23d: I kept trying to do well on my schoolwork even when it wasn't interesting to me.	0.79
Student Attitudes Towards the Importance of School	22a: Getting good grades is important to me. 22b: I always study for tests 22c: I manage my time well enough to get all of my work done. 22d: High school teaches me valuable skills. 22e: Grades in high school matter for success in college 22f: Working hard in high school matters for success in the work force. 22h: I find my schoolwork interesting. 22i: I generally feel well prepared to complete my schoolwork.	0.86
Parental Involvement	20a: Talked to you about how you are doing in your classes. 20b: Talked to you about what you are studying in class. 20c: Talked to you about your homework assignments.	0.89

Exhibit E-2
Texas High School Project Teacher Survey Factors

Scales	Survey Items	Reliability (α)
Teacher-Reported Distributed School Leadership	Indicate whether you agree or disagree with the following statements about your school. 9a: Teachers are involved in making the important decisions in this school. 9b: Teachers have a lot of informal opportunities to influence what happens. 9c: Teachers are encouraged to express their opinions without fear of criticism or retaliation.	0.89
Teacher-Reported Overall School Leadership	Indicate how effective the school leadership has been at each of the following activities. 8a: Ensuring that the school runs smoothly. 8b: Inspiring the very best in the job performance of all teachers. 8c: Setting high standards for teaching. 8d: Making expectations for meeting instructional goals clear to the staff. 8e: Setting high standards for student learning. 8f: Supporting regular use of student assessment data. 8g: Promoting teachers' ongoing professional development (including the development of teacher professional learning communities). 8h: Identifying and implementing supports for improved student learning. 8i: Providing time and resources for teachers to collaborate and plan together. 8j: Knowing what's going on in my classroom. 8k: Developing and communicating a clear vision for school reform. 8l: Clearly articulating and implementing specific strategies to achieve reform in our school.	0.93
Teacher-Reported Access to Professional Development	How often have you done the following during the current academic year? 11a: Created or reflected on individual professional development plans with the assistance of the school leadership (e.g., principal, lead teachers). 11b: Participated in professional development during regularly scheduled time during the school day. 11g: Had opportunities to work productively with teachers from other schools. 11h: Attended professional development activities sponsored by your school/district. 11i: Attended professional development activities provided by an organization other than your school/district.	0.72

Exhibit E-2 (continued)
Texas High School Project Teacher Survey Factors

Scales	Survey Items	Reliability (α)
Teacher-Reported District Leadership for School Effectiveness	To what extent do you agree or disagree with the following statements about the district office? The district office… 1a: Demonstrates its commitment to high standards for every student. 1b: Supports my school's reform efforts. 1c: Respects school-based decision making. 1d: Promotes the professional development of teachers (including the development of teacher professional learning communities in our school). 1e: Allows high schools the flexibility to choose and adapt new programs and practices. 1f: Seeks input from teachers and listens to their ideas and concerns. 1g: Is committed to high quality in the implementation of its policies, programs, and procedures. 1h: Clearly communicates its priorities. 1i: Has priorities consistent with this school's priorities. 1j: Allocates resources to schools equitably. 1k: Has a clear vision for school reform at my school. 1l: Has developed and implemented strategies to achieve reform at my school.	0.95
Teacher-Reported Frequency of Participating in High-Quality Professional Development	How often have you done the following during the current academic year? 11a: Attended professional development that has been sustained and coherent, rather than short term and disconnected. 11d: Attended professional development that has been closely connected to our school's improvement plan. 11e: Attended professional development that has built on your previous knowledge. 11f: Attended subject-matter-specific professional development.	0.86
Teacher-Reported Frequency of Collaboration with Colleagues	Indicate how often most teachers at your school do each of the following activities. 14a: Sharing ideas on teaching. 14b: Discussing what was learned at a workshop or conference. 14c: Sharing and discussing student work. 14d: Discussing beliefs about strategies for teaching and learning. 14e: Sharing and discussing research on effective teaching methods. 14f: Observing each other's classroom instruction. 14g: Planning lessons and units together in a formal meeting structure. 14h: Discussing student assessment data with other teachers to make instructional decisions.	0.89

Exhibit E-2 (continued)
Texas High School Project Teacher Survey Factors

Scales	Survey Items	Reliability (α)
Teacher-Reported Shared Vision and Common Focus Across School	Indicate the extent to which you agree or disagree with the following statements about your school. 12a: Most teachers in this school do not share a vision common for student learning. 12b: Most teachers in this school share my beliefs and values about what the central mission of the school should be. 12c: Most teachers in this school are committed to developing strong relationships with students. 12d: The school leadership and teachers share beliefs and values about the vision for the school.	0.78
Teacher-Reported Academic Support Offered to Students	Supports provided. . . 40a_a: One-to-one tutoring 40a_b: Academic classes and/or seminars 40a_d: Academic counseling 40a_f: Academic remediation 40a_g: AP Strategies	0.68
Teacher-Reported Postsecondary Support and Preparatory experiences	Supports Provided. . . 40a_i: College entrance exam preparation 40a_j: Career guidance 41b: College tours 41c: Enrollment in college courses (offered on a college campus, online, or at your school) 41d: Job shadowing or visits to observe work sites 41f: Internships (work experience or employment)	0.75
Teacher-Reported Climate of High Expectations	To what extent do you agree or disagree with the following statements about your school? 15a: Teachers set high standards for teaching. 15d: Teachers are continually seeking new ideas about teaching and learning in the classroom. 15f: Most teachers work very hard to make sure that all students are learning. 15g: Teachers help students plan for after graduation (e.g., college or employment). 15i Teachers feel that it is part of their job to prepare students to succeed both in high school and after graduation. 16h: Teachers can usually get through to even the most difficult students.	0.82

Exhibit E-2 (continued)
Texas High School Project Teacher Survey Factors

Scales	Survey Items	Reliability (α)
Teacher-Reported Climate of Respect at School	To what extent do you agree or disagree with the following statements about you school? 16a: Teachers trust and respect one another. 16b: Students treat one another with respect. 16c: The relationship between students and teachers is based on mutual trust and respect. 16d: The teachers, administrators, and other staff model responsible behavior for the students to see. 16i: The principal and other school administrators respect and support the teachers in their work. 17a: Teachers and parents think of each other as partners in educating children. 17b: Parents have confidence in the expertise of the teachers. 17c: Staff at this school work hard to build trusting relationships with parents. 17d: This school makes an effort to reach out to the community. 17e: The community respects the teachers at this school.	0.88
Teacher-Reported Familiarity with School's Students	Of the students in your school, please estimate the percentage for whom you know the following. 18a: Their first and last names 18b: Their academic aspirations 18c: Their academic background prior to this year (e.g., whether they were held back a year) 18d: Their home life (e.g., family situations that may affect their learning) 18e: Who their friends are 19f: Their cultural and linguistic backgrounds	0.95
Teacher-Reported Frequency of Interaction with Students Regarding Student Concerns	During this school year, how often have students in your class done each of the following? 19a: Talked to you about their progress in your class. 19b: Talked to you about what they are doing in other classes. 19c: Told you about getting good grades or other academic achievements. 19d: Talked to you about their friends or family. 19e: Asked you for help with personal problems.	0.90

Exhibit E-2 (continued)
Texas High School Project Teacher Survey Factors

Scales	Survey Items	Reliability (α)
Teacher-Reported Schoolwide Use of Data	To what extent do you use data to do the following? 31a: Help develop a school plan. 31b: Help set schoolwide goals for student achievement. 31i: Compare performance of different groups of students (i.e., race/ethnicity, gender, special education, etc.) 31j: Share information with parents.	0.79
Teacher-Reported Use of Data for Instructional Purposes	To what extent do you use data to do the following? 31c: Set goals for individual student achievement. 31d: Modify instructional strategies. 31e: Select instructional materials. 31f: Track students' academic progress. 31g: Develop individual learning plans for students. 31h: Arrange for remediation, tutoring, or special instruction for students.	0.87
Teacher-Reported Supports for Data Use	To what extent do you agree or disagree with the following statements about the support your school provides for using data. 32a: Administrators or other leaders are available to assist teachers with reading and interpreting data. 32b: Instructional coaches, consultants, or mentor teachers are available to assist teachers in making instructional changes based on data. 32c: Professional development is offered to help teachers use data in decision-making. 32d: Time is built into the school schedule to analyze and/or discuss data. 32e: Data are provided to teachers in a timely manner. 32f: The school's data system is useful for instructional planning. 32g: School leaders follow up with teachers about instructional or programmatic changes related to data analysis.	0.88
Teacher-Reported Student Engagement in Learning	How many students in your classes do each of the following? 37a: Come to class on time. 37b: Attend class regularly. 37c: Come to class prepared with the appropriate supplies and books. 37d: Regularly pay attention in class. 37e: Actively participate in class activities. 37f: Always turn in their homework. 37g: Take notes. 37h: Care about what grade they receive in this class.	0.88

Exhibit E-2 (continued)
Texas High School Project Teacher Survey Factors

Scales	Survey Items	Reliability (α)
Teacher-Reported Student Attitudes Toward Academics	To extent do you agree or disagree with the following statements? 38a: Most students do not show interest in their schoolwork. 38b: Most students believe that they can do well in school. 38c: Most students do not value learning. 38d: Most students want to go to college.	0.79
Teacher-Reported General Responsiveness to Student Differences	During this school year, how often have you done each of the following: 26a: Encouraged high-achieving students to do additional advanced work. 26b: Attempted to assess students' problem-solving processes, not just answers. 26c: Adjusted instructional strategies to respond to students' levels of understanding. 26d: Modified your lesson to meet students' needs.	0.80
Teacher-Reported Frequency of Teaching Advanced Skills	In an instructional period, how often are students asked to do the following? 24f: Evaluate and defend their ideas or views. 24h: Orally present their work to peers, staff, parents, or others. 24i: Work on multidisciplinary projects. How often are students asked to turn in assignments that require them to do the following? 25a: Use evidence to support their ideas. 25b: Report on or paraphrase a single text. 25c: Clearly state a main thesis or argument. 25d: Demonstrate original thought, ideas, or analysis. 25e: Consider multiple solutions or perspectives. 25f: Synthesize information from multiple sources. 25h: Present their own examples.	0.91
Teacher-Reported Instruction – Math Basic Skills	In a typical class, how often do students do each of the following types of activities? 27a_a: Practicing computations, procedures, or skills. 27a_b: Watching you demonstrate how to do a procedure or solve a problem. 27a_c: Taking notes from lectures or the textbook. 27a_d: Completing exercises from a textbook or a worksheet.	0.76

Exhibit E-2 (continued)
Texas High School Project Teacher Survey Factors

Scales	Survey Items	Reliability (α)
Teacher-Reported Instruction – Math Advanced Skills	In a typical class, how often do students do each of the following types of activities? 27a_e: Presenting or demonstrating solutions to a math problem to the whole class. 27a_f: Using manipulatives (e.g., geometric shapes or algebraic tiles), measurement instruments (e.g., rulers or protractors), or data collection devices. 27a_i: Applying math concepts to “real-world” problems. 27a_j: Making estimates, predictions, or hypotheses. 27a_k: Analyzing data to make inferences or draw conclusions 27a_l: Working on assignments, reports, or projects over an extended period of time.	0.83
Teacher-Reported Instruction – English Basic Skills	In a typical class, how often do students do each of the following types of activities? 27e_a: Answering factual questions about passages they and/or the class has read. 27e_d: Memorizing and recalling literary facts (e.g., literary periods, authors, terms). 27e_f: Learning parts of speech or diagramming sentences. 27e_g: Editing text for grammar and clarity.	0.72
Teacher-Reported Instruction - English Advanced skills	In a typical class, how often do students do each of the following types of activities? 27e_b: Proposing an argument and supporting it using text references. 27e_c: Debating interpretations of a text. 27e_e: Gathering information on a topic from primary sources (besides the text book). 27e_h: Working on assignments, reports, or projects over an extended period of time. 27e_i: Writing a paper or essay.	0.74
Teacher-Reported Instruction - Science Basic Skills	In a typical class, how often do students do each of the following types of activities? 27b_a: Watching you demonstrate or lecture. 27b_j: Memorizing facts. 27b_k Finding information from graphs or tables.	0.62

Exhibit E-2 (concluded)
Texas High School Project Teacher Survey Factors

Scales	Survey Items	Reliability (α)
Teacher-Reported Instruction - Science Advanced Skills	In a typical class, how often do students do each of the following types of activities? 27b_b: Using probes, computers, calculators or other educational technology to learn science. 27b_e: Making predictions or hypotheses. 27b_f: Doing a laboratory activity, investigation, or experiment. 27b_g: Writing up results or preparing a presentation from a laboratory activity, investigation, experiment, or research project. 27b_h: Working on assignments, reports, or projects over an extended period of time.	0.73
Teacher-Reported Teachers' Responsibility for Student Learning	To what extent do you agree or disagree with the following statements about your school? 15a: Teachers set high standards for teaching. 15b: Teachers make their expectations for meeting instructional goals clear to students. 15c: Teachers carefully track students' academic progress. 15d: Teachers are continually seeking new ideas about teaching and learning in the classroom. 15e: Most teachers believe that all students in this school can do well academically. 15f: Most teachers work very hard to make sure that all students are learning. 15g: Teachers help students plan for after graduation (e.g., college or employment). 15i: Teachers feel that it is part of their job to prepare students to succeed both in high school and after graduation.	0.89

Appendix F: Models Relating Implementation to 2008–09 Student Outcomes

Exhibit F-1
Coefficients and Standard Errors of Relationships Between Implementation Factors and Tenth-Grade TAKS Outcomes

	(1,684 students in 37 schools)		(1,690 students in 37 schools)	
Fixed Effects	Coefficient	*SE*	Coefficient	*SE*
Model for school means				
Intercept	2186.56	20.78	2263.17	13.81
Accountability rating Exemplary/Recognized	20.12	35.81	-14.36	23.91
Accountability rating Unacceptable	-13.34	45.48	20.02	30.80
Rural	14.10	27.91	18.22	18.76
Small	-5.98	31.46	-2.67	21.00
Percent new teachers	-0.72	1.51	0.38	0.99
THSP schools in second year of implementation	18.39	25.63	24.08	17.14
Principal-reported district leadership for school effectiveness	-3.67	25.72	-5.02	17.51
Principal-reported school divided into small groups (e.g., "houses")	27.24	25.80	15.63	17.53
Teacher-reported student engagement in learning	-35.69	56.01	16.75	37.84
Teacher-reported access to professional development	-18.68	57.11	11.82	39.85
Teacher-reported frequency of collaboration with colleagues	-9.64	35.41	-14.29	24.45
Teacher-reported teachers' responsibility for student learning	-2.07	55.07	21.79	37.39
Teacher-reported supports for data use	74.88	46.83	37.28	31.45
Teacher-reported climate of respect at school	-5.34	60.15	8.66	40.31
Teacher-reported frequency of teaching advanced skills	1.66	25.91	-0.99	17.22
Student-level model				
Parental involvement	-4.15	2.22	0.55	1.97
Eighth-grade TAKS reading score	0.09 *	0.02	0.23 *	0.02
Eighth-grade TAKS math score	0.64 *	0.02	0.15 *	0.02
Limited English proficiency	31.33	18.33	-36.12 *	16.26
At-risk status	-37.73 *	6.23	-27.11 *	5.53
Immigrant	10.04	40.63	-5.65	36.11
African-American	-3.55	11.12	2.87	9.86
Hispanic	-1.77	8.12	-2.56	7.20
Asian	64.84 *	17.21	22.79	15.28
Female	1.04	5.22	30.62 *	4.63
Economically disadvantaged status	-9.75	6.11	-10.70	5.42
Teacher expectations for student success	29.81	69.04	-6.66	46.51
Access to social supports	-101.71	151.42	70.36	103.15
Respect between students and adults	7.16	6.20	-1.14	5.51
Personal connection with teachers	5.08	3.83	5.28	3.39
Access to academic and postsecondary supports	-1.31	12.62	-25.62 *	11.25
Attitude towards importance of school	31.98 *	5.90	15.67 *	5.28
Attitude towards academic improvement	2.45	86.54	-55.00	58.35
Attitude towards effort-based learning	35.04	95.61	52.41	65.38
Aspiration to graduate from high school	26.16	22.42	-13.63	15.70
Plan to attend college	-30.34	41.30	23.50	28.86

Random Effects	Variance Component	*SE*	Variance Component	*SE*
School mean	1003.98	496.80	454.20	223.92
Student effect	10507.22	365.00	8176.89	283.06

$^*p < 0.05$, ◊$p < .10$

Exhibit F-2
Coefficients and Standard Errors of Relationships Between Implementation Factors and Absence Rate (1,839 students in 38 schools)

Fixed Effects	Coefficient	*SE*
Model for school means		
Intercept	-3.09	0.15
Accountability rating Exemplary/Recognized	0.06	0.16
Accountability rating Unacceptable	-0.26	0.16
Rural	-0.09	0.10
Small	0.07	0.14
Percent new teachers	0.01	0.01
THSP schools in second year of implementation	-0.01	0.10
Principal-reported district leadership for school effectiveness	-0.10	0.10
Principal-reported school divided into small groups (e.g., "houses")	-0.10	0.14
Teacher-reported student engagement in learning	-0.20	0.21
Teacher-reported access to professional development	0.49 ◊	0.25
Teacher-reported frequency of collaboration with colleagues	-0.48 *	0.16
Teacher-reported teachers' responsibility for student learning	0.15	0.26
Teacher-reported supports for data use	-0.11	0.16
Teacher-reported climate of respect at school	0.14	0.26
Teacher-reported frequency of teaching advanced skills	0.19 *	0.07
Attendance rate of the past year	-0.10 *	0.02
Student level model		
Parental Involvement	0.04 ◊	0.02
Eighth-grade TAKS reading score	0.00 *	0.00
Eighth-grade TAKS math score	0.00 *	0.00
Limited English proficiency	-0.14	0.25
At-risk status	0.09 *	0.04
Immigrant	-0.39	0.42
African-American	-0.33	0.12
Hispanic	-0.07 ◊	0.08
Asian	-0.66	0.24
Female	0.18 ◊	0.05
Economically disadvantaged status	0.29 ◊	0.07
Teacher expectations for student success	0.32	0.27
Access to social supports	-1.18	0.93
Respect between students and adults	-0.22 ◊	0.06
Personal connection with teachers	0.10 *	0.02
Access to academic and postsecondary supports	0.03	0.12
Attitude towards importance of school	-0.37 ◊	0.06
Attitude towards academic improvement	0.27	0.39
Attitude towards effort-based learning	0.54	0.38
Aspiration to graduate from high school	0.06	0.10
Plan to attend college	-0.04	0.18
School mean	0.00	0.00

$*p < 0.05$, ◊$p < .10$.

Appendix G. Program Effect Analyses

Ninth-Grade Results

Exhibit G-1
Results for Ninth-Grade TAKS Math and Reading Achievement
(Nonrepeaters in 790 Schools)

	Math (*N* = 166,183)			Reading (*N* =167,194)		
Fixed Effects	Coefficient		*SE*	Coefficient		*SE*
Model for school means						
Intercept	2232.05	*	4.17	2271.05	*	2.91
T-STEM	**27.16**	*****	**8.51**	**-10.35**		**6.83**
HSTW	**5.13**		**9.12**	**-4.04**		**6.33**
HSRD	**-6.74**		**17.24**	**-1.94**		**11.80**
HSRR	**10.68**		**8.41**	**-6.56**		**5.96**
DIEN	**-24.72**		**21.20**	**-23.20**		**14.63**
NSCS	**59.56**	*****	**15.26**	**13.39**		**11.48**
ECHS	**23.54**	*****	**9.35**	**13.95**	*****	**6.74**
T-STEM & Comparison	8.59	◊	4.99	1.91		3.54
HSRD & Comparison	-2.27		7.72	7.54		5.28
HSRR & Comparison	-0.52		4.90	-3.52		3.44
DIEN & Comparison	18.43	*	8.89	4.34		6.09
NSCS & Comparison	17.58	*	7.19	4.85		5.30
ECHS & Comparison	7.65		5.08	3.46		3.56
Accountability rating - Unacceptable	5.70		9.14	2.23		6.52
Accountability rating - Recognized	-4.04		3.44	-2.96		2.43
Accountability rating - Exemplary	1.47		5.16	7.00		3.65
Rural	3.06		3.30	9.09	*	2.37
Mobile students (%)	-0.11		0.11	0.00		0.08
Special education students (%)	0.21		0.15	0.11		0.11
Teachers in first year of teaching (%)	-0.23		0.16	-0.06		0.12
Student-level model						
Eighth-grade TAKS reading score	0.04	*	0.00	0.23	*	0.00
Eighth-grade TAKS math score	0.64	*	0.00	0.12	*	0.00
Eighth-grade TAKS science score	0.18	*	0.00	0.11	*	0.00
Eighth-grade TAKS social studies score	0.11	*	0.00	0.12	*	0.00
Female	14.01	*	0.64	32.35	*	0.67
African-American	-3.46	*	1.17	2.00	◊	1.21
Hispanic	2.30	*	0.97	-3.61	*	1.00
Asian	43.56	*	1.83	-1.17		1.91
Limited English proficiency	15.11	*	1.41	-21.01	*	1.47
Immigrant	15.31	*	2.49	17.43	*	2.60
At-risk status	-29.09	*	0.82	-14.91	*	0.86
Economically disadvantaged status	-9.40	*	0.80	-7.08	*	0.83
Random Effects	Variance Component		*SE*	Variance Component		*SE*
School mean	1,436.12		88.23	630.30		44.61
Student effect	16,078.41		55.92	17,671.90		61.28

$^*p < .05$, ◊$p < .10$

Exhibit G-2
Results for Ninth-Grade TAKS Math and Reading Achievement
(Repeaters in 342/368 Schools)

	Math (*N* = 9,499)			Reading (*N* =11,030)		
Fixed Effects	Coefficient		*SE*	Coefficient		*SE*
Model for school means						
Intercept	2018.64	*	5.60	2156.33	*	3.36
T-STEM	**86.38**	*	**34.32**	**18.11**		**29.42**
HSTW	**19.33**	◊	**11.65**	**0.64**		**7.41**
HSRD	**-30.41**	◊	**17.75**	**-29.58**	*	**12.20**
HSRR	**-12.18**		**11.94**	**-1.89**		**8.01**
DIEN	**-35.62**		**26.78**	**-8.23**		**18.14**
NSCS	**106.40**		**71.55**	**23.73**		**61.69**
ECHS	**-6.73**		**45.81**	**29.18**		**36.39**
T-STEM & Comparison	-2.40		10.20	3.92		6.33
HSRD & Comparison	-7.25		7.65	-3.56		4.57
HSRR & Comparison	-11.57	◊	6.44	-5.23		3.98
DIEN & Comparison	-10.12		8.83	-6.86		5.29
NSCS & Comparison	-24.17		20.04	-4.44		12.19
ECHS & Comparison	-18.00		15.78	-17.48		11.11
Accountability rating - Unacceptable	-4.22		13.06	-8.01		8.39
Accountability rating - Recognized	-4.30		5.39	-3.05		3.37
Accountability rating - Exemplary	1.10		8.92	1.05		5.70
Rural	2.29		6.81	-2.06		4.79
Mobile students (%)	0.06		0.22	0.03		0.14
Special education students (%)	0.13		0.21	0.05		0.13
Teachers in first year of teaching (%)	1.20	*	0.50	0.63		0.32
Student-level model						
Ninth-grade TAKS reading score	0.17	*	0.01	0.48	*	0.01
Ninth-grade TAKS math score	0.64	*	0.01	0.14	*	0.01
Female	-9.57	*	2.68	6.53	*	2.34
African-American	-19.43	*	5.58	-7.38		4.69
Hispanic	-3.82		4.88	-3.49		4.08
Asian	16.60		13.90	-12.62		12.34
Limited English proficiency	-12.41	*	3.92	-40.45	*	3.42
Immigrant	5.30		9.42	-4.91		8.30
Economically disadvantaged status	-2.44		3.62	-7.86	*	3.10

Random Effects	Variance Component	*SE*	Variance Component	*SE*
School mean	771.82	127.86	138.69	44.69
Student effect	15,763.67	232.37	14,055.77	191.41

$*p < .05$, $◊p < .10$

Exhibit G-3
Results for Passing TAKS in Two Subjects in Ninth Grade
(149,930 Nonrepeaters in 758 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	1.93	*	0.07
T-STEM	**0.57**	*	**0.17**
HSTW	**0.02**		**0.16**
HSRD	**-0.02**		**0.29**
HSRR	**0.19**		**0.15**
DIEN	**-0.40**		**0.36**
NSCS	**0.94**	*	**0.30**
ECHS	**0.71**	*	**0.19**
T-STEM & Comparison	0.13		0.09
HSRD & Comparison	0.00		0.13
HSRR & Comparison	0.03		0.09
DIEN & Comparison	0.15		0.15
NSCS & Comparison	0.25	◊	0.14
ECHS & Comparison	0.14		0.10
Accountability rating - Unacceptable	-0.05		0.16
Accountability rating - Recognized	-0.05		0.06
Accountability rating - Exemplary	0.02		0.10
Rural	0.07		0.06
Mobile students (%)	0.00		0.00
Special education students (%)	0.00		0.00
Teachers in first year of teaching (%)	0.00		0.00
Student-level model			
Eighth-grade TAKS reading score	0.00	*	0.00
Eighth-grade TAKS math score	0.01	*	0.00
Eighth-grade TAKS science score	0.00	*	0.00
Eighth-grade TAKS social studies score	0.00	*	0.00
Female	0.33	*	0.02
African-American	-0.02		0.03
Hispanic	0.03		0.03
Asian	0.36	*	0.07
Limited English proficiency	-0.07	*	0.03
Immigrant	0.23	*	0.06
At-risk status	-0.54	*	0.02
Economically disadvantaged status	-0.15	*	0.02

Random Effects	Variance Component	*SE*
School mean	0.40	0.03

**p* < .05, ◊*p* < .10

Exhibit G-4
Results for Passing TAKS in Two Subjects in Ninth Grade
(9,091 Repeaters in 342 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	-1.24	*	0.10
T-STEM	**2.19**	*	**0.82**
HSTW	**0.44**	*	**0.20**
HSRD	**-0.25**		**0.35**
HSRR	**-0.29**		**0.23**
DIEN	**-1.14**		**0.64**
NSCS	**14.03**		**493.83**
ECHS	**0.85**		**0.87**
T-STEM & Comparison	-0.07		0.18
HSRD & Comparison	-0.20		0.13
HSRR & Comparison	-0.16		0.11
DIEN & Comparison	-0.24		0.15
NSCS & Comparison	-0.58		0.37
ECHS & Comparison	-0.44		0.32
Accountability rating - Unacceptable	0.17		0.23
Accountability rating - Recognized	-0.09		0.10
Accountability rating - Exemplary	0.19		0.16
Rural	0.01		0.13
Mobile students (%)	0.00		0.00
Special education students (%)	0.00		0.00
Teachers in first year of teaching (%)	0.02	*	0.01
Student-level model			
Repeater			
Ninth-grade TAKS reading score	0.00	*	0.00
Nihth-grade TAKS math score	0.01	*	0.00
Female	-0.29	*	0.06
African-American	-0.20	◊	0.12
Hispanic	0.03		0.10
Asian	-0.06		0.29
Limited English proficiency	-0.38	*	0.10
Immigrant	0.10		0.25
Economically disadvantaged status	-0.05		0.08

Random Effects	Variance Component	*SE*
School mean	0.14	0.04

*$p < .05$, ◊$p < .10$

Exhibit G-5
Results for Passing Algebra I in Ninth Grade
(145,256 Nonrepeaters in 758 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	3.27	*	0.07
T-STEM	**-0.12**		**0.20**
HSTW	**-0.12**		**0.15**
HSRD	**0.08**		**0.29**
HSRR	**0.15**		**0.15**
DIEN	**0.58**	◊	**0.35**
NSCS	**-0.64**	*	**0.33**
ECHS	**-0.39**	◊	**0.21**
T-STEM & Comparison	-0.19	*	0.09
HSRD & Comparison	0.38	*	0.13
HSRR & Comparison	0.02		0.09
DIEN & Comparison	0.40	*	0.14
NSCS & Comparison	0.08		0.15
ECHS & Comparison	-0.35	*	0.10
Accountability rating - Unacceptable	0.31	◊	0.17
Accountability rating - Recognized	0.00		0.06
Accountability rating - Exemplary	-0.01		0.10
Rural	0.18	*	0.06
Mobile students (%)	0.00		0.00
Special education students (%)	0.00		0.00
Teachers in first year of teaching (%)	0.01	*	0.00
Passing Algebra I before ninth grade (%)	0.09	*	0.00
Student-level model			
Eighth-grade TAKS reading score	0.00	*	0.00
Eighth-grade TAKS math score	0.00	*	0.00
Eighth-grade TAKS science score	0.00	*	0.00
Eighth-grade TAKS social studies score	0.00	*	0.00
Female	0.65	*	0.02
African-American	0.47	*	0.04
Hispanic	0.02		0.03
Asian	0.29	*	0.08
Limited English proficiency	0.19	*	0.03
Immigrant	0.17	*	0.07
At-risk status	-0.64	*	0.03
Economically disadvantaged status	-0.33	*	0.03

Random Effects	Variance Component	*SE*
School mean	0.33	0.03

$^*p < .05$, ◊$p < .10$

Exhibit G-6
Results for Passing Algebra I in Ninth Grade
(13,501 Repeaters in 403 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	1.89	*	0.13
T-STEM	**0.14**		**0.97**
HSTW	**-0.18**		**0.27**
HSRD	**0.18**		**0.50**
HSRR	**0.37**		**0.28**
DIEN	**1.56**	*****	**0.65**
NSCS	**13.20**		**811.08**
ECHS	**-0.17**		**1.32**
T-STEM & Comparison	-0.17		0.24
HSRD & Comparison	0.60	*	0.19
HSRR & Comparison	0.01		0.15
DIEN & Comparison	0.22		0.22
NSCS & Comparison	0.13		0.44
ECHS & Comparison	0.54		0.39
Rural	0.24		0.34
Accountability rating - Unacceptable	-0.09		0.13
Accountability rating - Recognized	-0.17		0.20
Accountability rating - Exemplary	-0.11		0.15
Mobile students (%)	0.00		0.00
Special education students (%)	0.00		0.00
Teachers in first year of teaching (%)	-0.01		0.01
Passing Algebra I before ninth grade (%)	0.07	*	0.01
Student-level model			
Ninth-grade TAKS reading score	0.00	*	0.00
Ninth-grade TAKS math score	0.00	*	0.00
Female	0.26	*	0.05
African-American	0.21	◊	0.11
Hispanic	0.08		0.10
Asian	0.23		0.29
Limited English proficiency	0.07		0.08
Immigrant	0.56	*	0.20
Economically disadvantaged status	-0.11		0.07

Random Effects	Variance Component	*SE*
School mean	0.57	0.08

*p < .05, ◊p < .10

Exhibit G-7
Results for "Four by Four" On Track for Ninth-Graders
(98,400 Nonrepeaters in 393 schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	0.93	*	0.14
HSTW	**-0.09**		**0.27**
HSRD	**0.61**		**0.50**
HSRR	**0.11**		**0.25**
DIEN	**-0.13**		**0.62**
HSRD & Comparison	-0.12		0.23
HSRR & Comparison	-0.20		0.15
DIEN & Comparison	0.10		0.26
Accountability rating - Unacceptable	-0.10		0.39
Accountability rating - Recognized	0.01		0.14
Accountability rating - Exemplary	0.14		0.22
Rural	0.72	*	0.14
Mobile students (%)	0.00		0.01
Special education students (%)	0.01		0.01
Teachers in first year of teaching (%)	0.02	*	0.01
Student-level model			
Eighth-grade TAKS reading score	0.00	*	0.00
Eighth-grade TAKS math score	0.00	*	0.00
Eighth-grade TAKS science score	0.00	*	0.00
Eighth-grade TAKS social studies score	0.00	*	0.00
Female	0.57	*	0.02
African-American	0.39	*	0.03
Hispanic	0.00		0.03
Asian	0.34	*	0.06
Limited English proficiency	0.06	◊	0.03
Immigrant	-0.02		0.06
At-risk status	-0.56	*	0.02
Economically disadvantaged status	-0.42	*	0.02

Random Effects	Variance Component	*SE*
School mean	1.26	0.11

**p* < .05. ◊*p* < .10

Exhibit G-8
Results for Percentage of Days Absent in Ninth Grade
(152,082 Nonrepeaters in 751 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	-3.18	*	0.02
T-STEM	**-0.23**	*	**0.08**
HSTW	**0.02**		**0.04**
HSRD	**0.04**		**0.08**
HSRR	**0.05**		**0.05**
DIEN	**-0.23**		**0.17**
NSCS	**-0.30**	◊	**0.16**
ECHS	**-0.34**	*	**0.07**
T-STEM & Comparison	0.02		0.03
HSRD & Comparison	-0.04		0.03
HSRR & Comparison	-0.03		0.03
DIEN & Comparison	-0.01		0.04
NSCS & Comparison	-0.12		0.08
ECHS & Comparison	0.04		0.03
Accountability rating - Unacceptable	-0.06		0.06
Accountability rating - Recognized	0.02		0.02
Accountability rating - Exemplary	0.04		0.03
Rural	-0.08	*	0.02
Mobile students (%)	0.00		0.00
Special education students (%)	0.00		0.00
Teachers in first year of teaching (%)	0.00	◊	0.00
Previous absence rate	-0.08	*	0.00
Student-level model			
Eighth-grade TAKS reading score	0.00	*	0.00
Eighth-grade TAKS math score	0.00	*	0.00
Eighth-grade TAKS science score	0.00	*	0.00
Eighth-grade TAKS social studies score	0.00	*	0.00
Female	0.01		0.01
African-American	-0.35	*	0.02
Hispanic	-0.25	*	0.01
Asian	-0.52	*	0.03
Limited English proficiency	-0.16	*	0.02
Immigrant	0.04		0.03
At-risk status	0.19	*	0.01
Economically disadvantaged status	0.25	*	0.01

*p < .05, ◊p < .10

Exhibit G-9
Results for Percentage of Days Absent in Ninth Grade
(9,222 Repeaters in 403 Schools)

Fixed Effects	Coefficient		S.E.
Model for School Means			
Intercept	-2.29	*	0.04
T-STEM	**-0.26**		**0.36**
HSTW	**0.02**		**0.14**
HSRD	**0.20**		**0.25**
HSRR	**0.09**		**0.11**
DIEN	**-0.06**		**0.17**
NSCS	**-1.26**	*	**0.57**
ECHS	**-0.01**		**0.08**
T-STEM & Comparison	-0.06		0.07
HSRD & Comparison	0.02		0.07
HSRR & Comparison	-0.02		0.06
DIEN & Comparison	0.14	◊	0.07
NSCS & Comparison	-0.03		0.20
ECHS & Comparison	0.20	*	0.07
Accountability rating - Unacceptable	0.14		0.14
Accountability rating - Recognized	0.10	◊	0.05
Accountability rating - Exemplary	0.01		0.08
Rural	-0.02		0.05
Mobile students (%)	0.00		0.00
Special education students (%)	0.00		0.00
Teachers in first year of teaching (%)	0.00		0.00
Previous absence rate	-0.10	*	0.01
Student level model			
Ninth-grade TAKS reading score	0.00		0.00
Ninth-grade TAKS math score	0.00		0.00
Female	0.15	*	0.02
African-American	-0.19	*	0.06
Hispanic	-0.06		0.04
Asian	-0.24		0.15
Limited English proficiency	-0.16	*	0.04
Immigrant	-0.38	*	0.12
At-risk status	0.17	*	0.09
Economically disadvantaged status	0.10	*	0.03

*p < .05. ◊p <.10

Note: T-STEM and NSCS had too few repeaters to be included in the analysis.

Tenth-Grade Results

Exhibit G-10
Results for Promotion to Tenth Grades
(104,319 Students in 572 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	3.65	*	0.14
T-STEM	**0.20**		**0.49**
HSTW	**0.37**		**0.28**
HSRD	**0.90**	◊	**0.49**
HSRR	**0.73**	*	**0.34**
DIEN	**0.57**		**0.61**
NSCS	**-0.20**		**0.57**
ECHS	**2.75**	*	**0.64**
T-STEM & Comparison	0.56	*	0.20
HSRD & Comparison	-0.03		0.22
HSRR & Comparison	-0.08		0.17
DIEN & Comparison	0.02		0.27
NSCS & Comparison	0.52	◊	0.27
ECHS & Comparison	0.32	◊	0.18
Accountability rating - Unacceptable	0.07		0.33
Accountability rating - Recognized	0.03		0.13
Accountability rating - Exemplary	-0.05		0.20
Rural	0.85	*	0.13
Mobile students (%)	-0.01		0.00
Special education students (%)	0.00		0.00
Teachers in first year of teaching (%)	0.00		0.01
Student-level model			
Ninth-grade TAKS reading score	0.00		0.00
Ninth-grade TAKS math score	0.00	*	0.00
Ninth-grade TAKS science score	0.00	*	0.00
Ninth-grade TAKS social studies score	0.00	*	0.00
Female	0.58	*	0.03
African-American	0.37	*	0.05
Hispanic	0.00		0.05
Asian	0.57	*	0.12
Limited English proficiency	0.19	*	0.04
Immigrant	0.29	*	0.14
At-risk status	-2.38	*	0.07
Economically disadvantaged status	-0.44	*	0.03

Random Effects	Variance Component	*SE*
School mean	1.15	0.10

**p* < .05, ◊*p* < .10

Exhibit G-11
Results for Tenth-Grade TAKS Math, English, Science, and Social Studies Achievement (Promoted Students in 569 Schools)

	Math (*N* =95,207)			English (*N* = 95,591)			Science (*N* = 94,577)			Social Studies (*N* = 94,417)		
Fixed Effects	Cofficient		*SE*	Cofficient		*SE*	Cofficient		*SE*	Cofficient		*SE*
Model for school means												
Intercept	2197.98	*	3.54	2256.62	*	2.42	2184.28	*	3.12	2340.07	*	3.40
T-STEM	**20.97**	*****	**9.34**	**6.18**		**7.12**	**28.98**	*****	**8.53**	**7.65**		**9.20**
HSTW	**-7.09**		**7.52**	**5.62**		**5.14**	**-5.62**		**6.63**	**7.69**		**7.23**
HSRD	**-11.89**		**14.24**	**-6.58**		**9.66**	**-14.10**		**12.53**	**-4.79**		**13.67**
HSRR	**1.22**		**9.26**	**1.18**		**6.36**	**-3.23**		**8.17**	**-2.95**		**8.91**
DIEN	**-5.28**	*****	**17.70**	**-19.99**	◊	**12.08**	**-15.15**		**15.61**	**-25.72**		**17.02**
NSCS	**65.98**	*****	**14.92**	**26.12**		**10.84**	**44.96**	*****	**13.36**	**41.25**	*****	**14.51**
ECHS	**24.26**		**9.12**	**2.24**		**6.38**	**20.64**	*****	**8.09**	**28.04**	*****	**8.80**
T-STEM & Comparison	2.44		4.91	6.49	◊	3.44	-0.31		4.37	4.66		4.75
HSRD & Comparison	4.99		6.43	9.29		4.37	-4.40		5.66	5.10		6.18
HSRR & Comparison	-2.94		4.63	0.56		3.18	-5.15		4.09	-7.24		4.46
DIEN & Comparison	20.99	*	7.69	8.89		5.23	4.41		6.77	8.75		7.38
NSCS & Comparison	9.76		6.47	-0.76		4.62	5.76		5.77	6.82		6.27
ECHS & Comparison	-1.78		4.66	6.90	*	3.22	-0.98		4.12	-7.79		4.49
Accountability rating - Unacceptable	-21.69	*	8.47	1.59		5.83	-20.28		7.48	2.66		8.15
Accountability rating - Recognized	-2.16		3.33	-0.87		2.31	-2.47		2.95	-0.43		3.21
Accountability rating - Exemplary	6.16		5.26	8.37	*	3.64	6.86		4.65	2.49		5.07
Rural	-8.28	*	3.15	-2.05		2.21	-4.35		2.80	-15.73	*	3.05
Mobile students (%)	-0.03		0.08	-0.01		0.05	0.00		0.07	0.07		0.07
Special education students (%)	-0.09		0.13	0.05		0.09	-0.04		0.11	-0.27	*	0.12
Teachers in first year of teaching (%)	-0.29		0.20	-0.17		0.14	-0.36	*	0.18	-0.06		0.19
Student-level model												
Eighth-grade TAKS reading score	0.01	*	0.00	0.17	*	0.00	0.07	*	0.00	0.12	*	0.00
Eighth-grade TAKS math score	0.56	*	0.00	0.11	*	0.00	0.15	*	0.00	0.11	*	0.00
Eighth-grade TAKS science score	0.15	*	0.00	0.09	*	0.00	0.19	*	0.00	0.19	*	0.00
Eighth-grade TAKS social studies score	0.07	*	0.00	0.07	*	0.00	0.34	*	0.00	0.34	*	0.00
Female	6.95	*	0.68	32.55	*	0.60	-19.42	*	0.65	-27.57	*	0.70
African-American	-4.24	*	1.29	5.22	*	1.13	-17.45	*	1.23	-7.40	*	1.31
Hispanic	-0.67		1.04	0.72		0.92	-19.52	*	1.00	-11.57	*	1.06
Asian	37.83	*	2.00	20.42	*	1.77	8.55	*	1.91	7.39	*	2.04
Limited English proficiency	16.24	*	1.52	-37.06	*	1.34	1.27		1.45	-11.47	*	1.55
Immigrant	1.04		3.64	11.40	*	3.19	8.73	*	3.48	13.51	*	3.71
At-risk status	-40.84	*	0.88	-24.14	*	0.78	-22.77	*	0.84	-25.21	*	0.90
Economically disadvantaged status	-3.35	*	0.83	-10.27	*	0.73	-5.55	*	0.79	-8.41	*	0.85

Random Effects	Variance Component	*SE*	Variance Component	*SE*	Variance Component	*SE*	Variance Component	*SE*
School mean	973.96	70.68	432.10	33.95	746.64	55.77	891.24	65.24
Student effect	10149.66	46.67	7959.39	36.52	9196.36	42.43	10448.23	48.24

*$p < .05$, ◊$p < .10$

Exhibit G-12
Results for Passing TAKS in Four Subjects in Tenth Grade
(93,168 Promoted Students in 568 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	0.88	*	0.07
T-STEM	**0.40**	◊	**0.21**
HSTW	**-0.07**		**0.14**
HSRD	**-0.20**		**0.25**
HSRR	**-0.11**		**0.17**
DIEN	**-0.22**		**0.32**
NSCS	**1.30**	*	**0.31**
ECHS	**0.83**	*	**0.18**
T-STEM & Comparison	0.12		0.09
HSRD & Comparison	0.08		0.11
HSRR & Comparison	0.04		0.08
DIEN & Comparison	0.22		0.14
NSCS & Comparison	0.17		0.13
ECHS & Comparison	0.08		0.09
Accountability rating - Unacceptable	-0.48	*	0.16
Accountability rating - Recognized	-0.06		0.06
Accountability rating - Exemplary	0.12		0.10
Rural	-0.14		0.06
Mobile students (%)	0.00		0.00
Special education students (%)	0.00		0.00
Teachers in first year of teaching (%)	0.00		0.00
Student-level model			
Eighth-grade TAKS reading score	0.00	*	0.00
Eighth-grade TAKS math score	0.01	*	0.00
Eighth-grade TAKS science score	0.00	*	0.00
Eighth-grade TAKS social studies score	0.00	*	0.00
Female	-0.01		0.02
African-American	-0.14	*	0.04
Hispanic	-0.16	*	0.03
Asian	0.39	*	0.07
Limited English proficiency	-0.10	◊	0.05
Immigrant	0.25	*	0.11
At-risk status	-0.87	*	0.02
Economically disadvantaged status	-0.12	*	0.02

Random Effects	Variance Component	*SE*
School mean	0.28	0.02

**p* < .05, ◊*p* < .10

Exhibit G-13
Results for Growth in Standardized TAKS Math Score from Eighth to Tenth Grade
(130,744 Students in 576 Schools)

Fixed Effects	Coefficient	SE
Model for school means		
Intercept	-0.001	0.021
T-STEM	0.315 *	0.066
HSTW	-0.013	0.057
HSRD	-0.085	0.106
HSRR	-0.060	0.068
DIEN	-0.128	0.131
NSCS	0.093	0.107
ECHS	0.333 *	0.067
T-STEM & Comparison	0.076 *	0.035
HSRD & Comparison	-0.101 *	0.046
HSRR & Comparison	-0.083 *	0.033
DIEN & Comparison	-0.084	0.056
NSCS & Comparison	-0.084 ◊	0.044
ECHS & Comparison	0.127 *	0.033
Accountability rating - Unacceptable	-0.101	0.062
Accountability rating - Recognized/Examplary	0.010 *	0.003
Mobile students (%)	0.000	0.001
Special education students (%)	-0.002 ◊	0.001
Teachers in first year of teaching (%)	-0.002	0.001
Student-level model		
Female	-0.067 *	0.004
African-American	-0.407 *	0.007
Hispanic	-0.194 *	0.006
Asian	0.364 *	0.012
Limited English proficiency	-0.475 *	0.008
Immigrant	0.229 *	0.017
At-risk status	-0.316 *	0.003
Economically disadvantaged status	-0.225 *	0.005
Model for year[1] slope		
Intercept	-0.013 *	0.002
T-STEM	**0.022 ◊**	**0.012**
HSTW	**-0.010 ***	**0.005**
HSRD	**-0.013**	**0.008**
HSRR	**-0.005**	**0.006**
DIEN	**0.026 ***	**0.012**
NSCS	**0.221 ***	**0.020**
ECHS	**0.014**	**0.009**
T-STEM & Comparison	0.003	0.003
HSRD & Comparison	0.024 *	0.004
HSRR & Comparison	0.013 *	0.003
DIEN & Comparison	0.050 *	0.004
NSCS & Comparison	0.030 *	0.006
ECHS & Comparison	0.010 *	0.003

Random effects	Variance Component	SE
School mean	0.054	0.004
Student effect	0.471	0.003
Measurement-level	0.162	0.001
Year slope	0.017	0.001

*p < .05. ◊p <.10.

[1]Year is coded as 0 for eighth grade, 1 for ninth grade and 2 for tenth grade math z score.

Exhibit G-14
Results for "Four by Four" On Track for Tenth-Graders
(75,948 Students in 310 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	0.27	*	0.13
HSTW	-0.31		0.24
HSRD	-0.02		0.46
HSRR	-0.21		0.31
DIEN	0.10		0.57
HSRD & Comparison	-0.19		0.21
HSRR & Comparison	-0.11		0.15
DIEN & Comparison	0.25		0.25
Accountability rating - Unacceptable	-0.75	◊	0.42
Accountability rating - Recognized	-0.03		0.14
Accountability rating - Exemplary	0.11		0.22
Rural	0.59	*	0.14
Mobile students (%)	0.00		0.01
Special education students (%)	0.01	◊	0.01
Teachers in first year of teaching (%)	0.02	◊	0.01
Student-level model			
Eighth-grade TAKS reading score	0.00		0.00
Eighth-grade TAKS math score	0.00	*	0.00
Eighth-grade TAKS science score	0.00	*	0.00
Eighth-grade TAKS social studies score	0.00	*	0.00
Female	0.49	*	0.02
African-American	0.25	*	0.04
Hispanic	-0.12	*	0.03
Asian	0.57	*	0.06
Limited English proficiency	0.00		0.04
Immigrant	-0.42	*	0.09
At-risk status	-1.13	*	0.02
Economically disadvantaged status	-0.38	*	0.02

Random Effects	Variance Component	*SE*
School mean	1.03	0.10

*$p < .05$, ◊$p < .10$

Exhibit G-15
Results for Percentage of Days Absent in Tenth Grade
(104,319 Students in 572 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	-3.14	*	0.02
T-STEM	**-0.08**		**0.06**
HSTW	**0.03**		**0.04**
HSRD	**0.18**	*	**0.06**
HSRR	**0.10**		**0.08**
DIEN	**-0.07**		**0.14**
NSCS	**-0.46**	*	**0.17**
ECHS	**-0.28**	*	**0.08**
T-STEM & Comparison	-0.02		0.03
HSRD & Comparison	-0.03		0.04
HSRR & Comparison	-0.02		0.03
DIEN & Comparison	0.02		0.04
NSCS & Comparison	-0.01		0.11
ECHS & Comparison	0.05		0.03
Accountability rating - Unacceptable	-0.03		0.07
Accountability rating - Recognized	0.04		0.03
Accountability rating - Exemplary	0.03		0.03
Rural	0.01		0.02
Mobile students (%)	0.00		0.00
Special education students (%)	0.00	*	0.00
Teachers in first year of teaching (%)	0.00		0.00
Previous absence rate	-0.08	*	0.01
Student-level model			
Eighth-grade TAKS reading score	0.00	*	0.00
Eighth-grade TAKS math score	0.00	*	0.00
Eighth-grade TAKS science score	0.00	*	0.00
Eighth-grade TAKS social studies score	0.00	*	0.00
Female	0.09	*	0.01
African-American	-0.31	*	0.02
Hispanic	-0.21	*	0.02
Asian	-0.49	*	0.03
Limited English proficiency	-0.16	*	0.02
Immigrant	-0.18	*	0.05
At-risk status	0.25	*	0.01
Economically disadvantaged status	0.18	*	0.01

**p* < .05, ◊*p* < .10

Eleventh-Grade Results

Exhibit G-16
Results for Promotion to Eleventh Grade
(39,223 Students in 210 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	3.85	*	0.13
T-STEM, ECHS, NSCS	**0.88**		**0.58**
HSTW	**-0.28**		**0.29**
HSRD	**0.64**		**0.42**
T-STEM, ECHS, NSCS & Comparison	0.17		0.21
HSRD & Comparison	0.01		0.20
Accountability rating - Unacceptable	0.30		0.30
Accountability rating - Recognized/Exemplary	0.21		0.28
Rural	0.76	*	0.24
Mobile students (%)	-0.07	*	0.01
Special education students (%)	0.08	*	0.02
Teachers in first year of teaching (%)	0.04	*	0.02
Student-level model			
Eighth-grade TAKS reading score	0.00		0.00
Eighth-grade TAKS math score	0.00	*	0.00
Eighth-grade TAKS science score	0.00	*	0.00
Eighth-grade TAKS social studies score	0.00	*	0.00
Female	0.76	*	0.04
African-American	0.50	*	0.09
Hispanic	-0.03		0.08
Asian	0.25	◊	0.15
Limited English proficiency	0.03		0.07
Immigrant	-0.92	*	0.11
At-risk status	-2.63	*	0.14
Economically disadvantaged status	-0.53	*	0.06

Random Effects	Variance Component	*SE*
School mean	0.77	0.11

*$p < .05$, ◊$p < .10$.

Exhibit G-17
Results for Eleventh-Grade TAKS Math, English, Science, and Social Studies Achievement (Promoted Students in 210 Schools)

	Math (*N* = 35,689)		English (*N* = 35,803)		Science (*N*=35,636)		Social Studies (*N* = 35,631)	
Fixed Effects	Coefficient	*SE*	Coefficient	*SE*	Coefficient	*SE*	Coefficient	*SE*
Model for school means								
Intercept	2276.80 *	4.32	2307.95 *	3.03	2244.24 *	3.35	2390.73 *	4.06
T-STEM	**-33.71**	**32.48**	**-14.44**	**24.37**	**-4.49**	**24.95**	**29.16**	**30.26**
HSTW	**14.26**	**9.72**	**1.16**	**6.84**	**0.12**	**7.53**	**9.02**	**9.12**
HSRD	**-6.18**	**14.70**	**-9.03**	**10.29**	**-4.69**	**11.39**	**-10.03**	**13.79**
NSCS	**178.68 ***	**46.08**	**137.52 ***	**35.28**	**110.25 ***	**35.37**	**160.79 ***	**42.90**
ECHS	**9.28**	**17.51**	**-1.38**	**12.48**	**11.64**	**13.54**	**-9.52**	**16.40**
T-STEM & Comparison	31.12 *	12.28	-5.51	9.00	5.87	9.47	-4.20	11.49
HSRD & Comparison	3.04	7.30	11.68 *	5.12	0.09	5.66	3.41	6.85
NSCS & Comparison	-26.89 ◊	16.30	-28.78 *	12.21	-10.11	12.54	-33.61 *	15.21
ECHS & Comparison	-8.82	7.40	2.21	5.27	-0.41	5.73	-12.25 ◊	6.94
Accountability rating - Unacceptable	-10.79	10.71	-6.42	7.51	1.52	8.29	-4.59	10.05
Accountability rating - Recognized/Exemplary	21.81 *	7.67	14.50 *	5.54	9.63	5.92	3.64	7.17
Rural	-12.00	7.86	7.03	5.63	-5.74	6.07	-9.25	7.36
Mobile students (%)	-0.16	0.46	-0.88 *	0.33	0.24	0.36	0.86 *	0.43
Special education students (%)	-0.01	0.62	-0.39	0.45	-0.64	0.48	-0.82	0.58
Teachers in first year of teaching (%)	0.34	0.50	0.15	0.36	-0.14	0.39	-0.04	0.47
Student-level model								
Eighth-grade TAKS reading score	0.02 *	0.00	0.20 *	0.00	0.07 *	0.00	0.12 *	0.00
Eighth-grade TAKS math score	0.53 *	0.01	0.09 *	0.00	0.14 *	0.00	0.03 *	0.00
Eighth-grade TAKS science score	0.13 *	0.01	0.07 *	0.00	0.23 *	0.00	0.17 *	0.00
Eighth-grade TAKS social studies score	0.05 *	0.01	0.11 *	0.00	0.12 *	0.00	0.30 *	0.00
Female	-4.41 *	1.22	31.21 *	1.11	-12.32 *	0.92	-34.17 *	1.12
African-American	-13.97 *	2.37	-2.21	2.14	-8.99 *	1.78	-17.72 *	2.16
Hispanic	-3.02	1.96	2.57	1.76	-15.29 *	1.47	-6.74 *	1.79
Asian	20.40 *	3.40	22.01 *	3.08	3.90	2.55	-1.02	3.10
Limited English proficiency	2.30	3.15	-33.22 *	2.86	-3.08	2.36	-11.18 *	2.87
Immigrant	0.93	4.65	23.84 *	4.20	5.67	3.49	5.62	4.24
At-risk status	-51.00 *	1.58	-28.54 *	1.44	-23.25 *	1.19	-23.10 *	1.45
Economically disadvantaged status	-3.29 *	1.59	-7.15 *	1.44	-4.10 *	1.19	-7.42 *	1.45

Random Effects	Variance Component	*SE*	Variance Component	*SE*	Variance Component	*SE*	Variance Component	*SE*
School mean	1,009.94	119.41	473.12	59.80	608.85	69.94	892.57	103.91
Student effect	11,996.01	90.10	9,945.90	74.58	6,726.84	50.55	9,978.58	75.00

$^{*}p < .05$, ◊$p < .10$.

Exhibit G-18
Results for Passing TAKS in Four Subjects in Eleventh Grade
(35,048 Promoted Students in 210 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	2.96	*	0.09
T-STEM	**-0.28**		**0.98**
HSTW	**0.16**		**0.18**
HSRD	**-0.07**		**0.26**
ECHS	**0.13**		**0.36**
T-STEM & Comparison	0.28		0.26
HSRD & Comparison	-0.04		0.13
ECHS & Comparison	-0.06		0.15
Accountability rating - Unacceptable	-0.17		0.19
Accountability rating - Recognized/Exemplary	0.51	*	0.17
Rural	-0.07		0.15
Mobile students (%)	0.01		0.01
Special education students (%)	-0.01		0.01
Teachers in first year of teaching (%)	0.02		0.01
Student-level model			
Eighth-grade TAKS reading score	0.00	*	0.00
Eighth-grade TAKS math score	0.01	*	0.00
Eighth-grade TAKS science score	0.00	*	0.00
Eighth-grade TAKS social studies score	0.00	*	0.00
Female	-0.06		0.04
African-American	-0.15	*	0.07
Hispanic	-0.13	*	0.06
Asian	0.11		0.14
Limited English proficiency	-0.29	*	0.08
Immigrant	0.06		0.12
At-risk status	-1.30	*	0.08
Economically disadvantaged status	-0.15	*	0.05

Random Effects	Variance Component	*SE*
School mean	0.284	0.041

**p* < .05, ◊*p* <.10.

Exhibit G-19
Results for Participating in Accelerated Learning for Eleventh-Graders
(39,390 Students in 210 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	-0.62	*	0.18
T-STEM	**1.39**		**1.24**
HSTW	**0.59**		**0.39**
HSRD	**0.76**		**0.60**
ECHS	**2.71**	*	**0.72**
T-STEM & Comparison	-0.10		0.48
HSRD & Comparison	0.21		0.30
ECHS & Comparison	0.09		0.30
Accountability rating - Unacceptable	1.16	*	0.44
Accountability rating - Recognized/Exemplary	1.09	*	0.31
Rural	-0.52	◊	0.31
Mobile students (%)	0.05	*	0.02
Special education students (%)	-0.05	*	0.03
Teachers in first year of teaching (%)	-0.01		0.02
Student-level model			
Eighth-grade TAKS reading score	0.00	*	0.00
Eighth-grade TAKS math score	0.00	*	0.00
Eighth-grade TAKS science score	0.00	*	0.00
Eighth-grade TAKS social studies score	0.00	*	0.00
Female	0.73	*	0.03
African-American	0.14	*	0.06
Hispanic	0.12	*	0.05
Asian	0.87	*	0.08
Limited English proficiency	0.08		0.08
Immigrant	-0.45	*	0.11
At-risk status	-0.79	*	0.03
Economically disadvantaged status	-0.46	*	0.04

Random Effects	Variance Component	*SE*
School mean	1.75	0.21

$^*p < .05$, $◊p < .10$.

Exhibit G-20
Results for "Four by Four" On Track for Eleventh-Graders
(30,978 Students in 134 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	-0.46	*	0.13
HSTW	**0.24**		**0.30**
HSRD	**0.64**		**0.45**
HSRD & Comparison	-0.16		0.23
Accountability rating - Unacceptable	-0.67	◊	0.36
Accountability rating - Recognized/Exemplary	-0.28		0.40
Rural	0.60	*	0.26
Mobile students (%)	0.02		0.02
Special education students (%)	-0.03		0.02
Teachers in first year of teaching (%)	-0.01		0.02
Student-level model			
Eighth-grade TAKS reading score	0.00	*	0.00
Eighth-grade TAKS math score	0.00	*	0.00
Eighth-grade TAKS science score	0.00		0.00
Eighth-grade TAKS social studies score	0.00	*	0.00
Female	0.54	*	0.03
African-American	0.19	*	0.06
Hispanic	-0.18	*	0.05
Asian	0.25	*	0.08
Limited English proficiency	-0.36	*	0.08
Immigrant	-0.46	*	0.12
At-risk status	-1.13	*	0.04
Economically disadvantaged status	-0.35	*	0.04

Random Effects	Variance Component	*SE*
School mean	0.98	0.14

$*p < .05$, $◊p < .10$

Exhibit G-21
Results for Percentage of Days Absent in Eleventh Grade
(39,420 Students in 210 Schools)

Fixed Effects	Coefficient		*SE*
Model for school means			
Intercept	-2.97	*	0.02
T-STEM	**0.12**		**0.15**
HSTW	**-0.05**		**0.04**
HSRD	**0.11**	◊	**0.07**
NSCS	**-1.76**	*	**0.18**
ECHS	**-0.39**	*	**0.16**
T-STEM & Comparison	0.05		0.11
HSRD & Comparison	-0.05		0.04
NSCS & Comparison	-0.04		0.14
ECHS & Comparison	-0.01		0.04
Accountability rating - Unacceptable	-0.05		0.06
Accountability rating - Recognized/Exemplary	-0.03		0.06
Rural	-0.05		0.08
Mobile students (%)	0.00		0.00
Special education students (%)	0.00		0.00
Teachers in first year of teaching (%)	-0.01	*	0.00
Previous rate absence	-0.11	*	0.01
Student-level model			
Eighth-grade TAKS reading score	0.00	*	0.00
Eighth-grade TAKS math score	0.00	*	0.00
Eighth-grade TAKS science score	0.00	*	0.00
Eighth-grade TAKS social studies score	0.00	*	0.00
Female	0.06	*	0.02
African-American	-0.34	*	0.04
Hispanic	-0.20	*	0.03
Asian	-0.42	*	0.06
Limited English proficiency	-0.04		0.04
Immigrant	0.39	*	0.05
At-risk status	0.36	*	0.02
Economically disadvantaged status	0.23	*	0.02

*$p < .05$, ◊$p < .10$.