

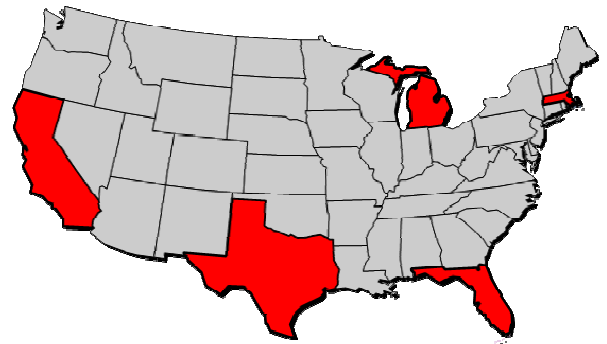


CASE STUDY

Core Practices in Math & Science: An Investigation of Consistently Higher Performing Schools in Five States

Perry Middle School

Carrollton-Farmers
Branch Independent
School District
(Texas)



Introduction

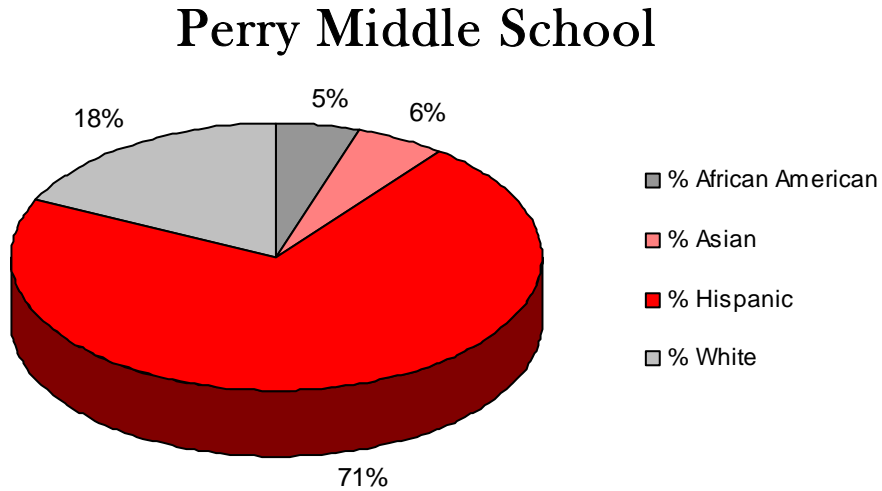
Since 1999, the National Center for Educational Achievement (NCEA) and its affiliated research teams have studied over 500 public schools across the country in an effort to identify and disseminate effective practices embraced by higher performing schools that distinguish their campuses from their average-performing peers. Building on the foundation established by this previous research, NCEA sought in the current study to focus specifically on educational practices in the areas of mathematics and science in five states: California, Florida, Massachusetts, Michigan, and Texas.

Criteria used in school selection in the current study included three years of state assessment data in mathematics and science (2004, 2005, and 2006), campus demographic make-up, percentage of economically disadvantaged students, school size, and geographic location. In addition, all of the schools selected for participation met the state and federal requirements for Adequate Yearly Progress (AYP) in 2006. Schools categorized as higher performing based on the selection criteria were those “beating the odds” with consistently better student achievement over three years, when compared to peer campuses with a similar student population. Therefore, a list of the state’s highest performing schools may contain schools different from those selected for this study.¹

In order to illuminate the roles of different members in a school community, for each selected school, NCEA researchers interviewed district-level administrators, school administrators, and classroom teachers. To supplement the interview data, researchers collected pertinent documents, observed secondary level algebra classes, and invited participants to take part in the NCEA *Self-Assessment* online.

¹ For more detailed information about the school identification process and the list of higher performing schools included in the study, please see the full cross-case report at <http://www.nc4ea.org>.

Figure 1: Student Demographics



District and School Profile

Situated in the northern portion of the Dallas metropolitan area (Metrocrest region), the Carrollton-Farmers Branch Independent School District (C-FB) serves 26,220 students living in portions of Carrollton, Farmers Branch, Addison, Coppell, Dallas, and Irving. The district is comprised of 4 high schools, 6 middle schools, and 28 elementary schools. Carrollton-Farmers Branch is a Texas Education Agency “Recognized” School District.

The C-FB area has strong manufacturing, retail and service-related industries. The district places an emphasis on Professional Pathways, a public/private sponsored program that assists employers by offering training to assist students in their transition from school to work.

DeWitt Perry Middle School enrolls approximately 1,000 students, 72% of whom receive free and reduced lunch and 19% of whom are considered English language learners. The majority (71%) of the student population is Hispanic, 18% are White, 5% are African American, and 6% are Asian.

As a strong proponent of higher standards, NCEA recognizes school efforts to move more students to the state’s higher standard of achievement by accounting for those students in the analysis of consistent higher performance. Tables 1 and 2 summarize performance at both the state’s proficient and advanced standards attained by the students at Perry Middle School for the years of 2004, 2005, and 2006. The state averages included in the tables represent student performance among schools with a student population similar to Perry, particularly based on the percentage of economically disadvantaged students.

Table 1: Performance Trends based on Proficiency Standard

	2004			2005			2006		
Grade	6	7	8	6	7	8	6	7	8
Mathematics	68%	56%	55%	63%	73%	69%	80%	74%	84%
Science	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	64%
State Average for Similar Schools (Math)	61%	55%	51%	67%	59%	56%	75%	67%	63%
State Average for Similar Schools (Science)	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	47%

Table 2: Performance Trends based on Advanced Standard

	2004			2005			2006		
Grade	6	7	8	6	7	8	6	7	8
Mathematics	32%	26%	30%	30%	38%	30%	34%	38%	51%
Science	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	23%
State Average for Similar Schools (Math)	19%	20%	19%	26%	26%	20%	29%	31%	24%
State Average for Similar Schools (Science)	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	9%

Theme 1

Student Learning: Expectations & Goals

Educators in Carrollton-Farmers Branch Independent School District develop a district-wide curriculum that provides more clarity and detail to the state standards to enable focused implementation in the classroom.

- Standards-based, detailed district curriculum materials feature built-in resources for educators. Capturing the essence of the state standards, the district curriculum provides specificity to the state-stipulated expectations in order to eliminate variation in educators' interpretation and achieve unity with regards to student learning results. As a district administrator explained, "The state standards are the framework or guide and the district 'puts some flesh' on that framework." The curriculum materials are online and include a number of resource documents for teachers. For instance, exemplary lessons are available within the curriculum for particularly troublesome learning objectives. In addition, scope and sequence documents ensure "that all students have learning experiences with the information they'll be held accountable for but at the same time [teachers] have the flexibility to re-teach when necessary."

- The curriculum provides a list of prioritized expectations for students to help teachers avoid the “too much to teach” problem. A district leader shared, “We have to prioritize a smaller number of key standards. It is virtually impossible to get the depth and conceptual understanding with students and cover everything, and we have had a great deal of angst over that....The curriculum online has high priority standards to help guide the teachers. They are identified by the coordinators by using data and multiple criteria.” The honed list of expectations specifies the knowledge and skills that are the most critical for student understanding in each grade and subject, as well as those that students are accountable for on the state assessments. In addition to narrowing the expectations, C-FB curriculum leaders use data to prioritize expectations and areas in which students have not performed well historically.
- Alignment between state standards and district curriculum materials facilitates and focuses C-FB curriculum implementation. With each unit of the district curriculum matched to corresponding learning objectives, teachers plan and implement lessons based both on the curriculum and on their awareness of the depth of student understanding required for the state assessments. A teacher at Perry Middle School shared, “The district does a good job providing the curriculum online. It goes through each unit and matches the unit with the state standards and assessments objectives that go along with those standards. That gives us a pretty good idea of where the students need to be going....It’s not a stand-alone resource, because you can’t just do what’s on the curriculum and think your students will have mastery of the content. But it does provide a good skeleton to know what direction you need to go in, where to start, what you need to put in to have extra work specific to your students.”

Aiming for the ultimate result of college and career readiness, educators establish ambitious learning goals for the students and embrace the objectives to maintain a unified focus.

- To keep students on track for college and career readiness, C-FB educators provide resources and assistance to help students set long-term goals for their academic careers. A district leader shared, “The district office has a very bold and challenging vision statement of ‘every child college ready without remediation.’” A leader from Perry Middle School further said, “The district is known for high standards. The push is no longer K-12 but K-16.” In addition to receiving information on potential educational and career plans from school-level educators, 8th-grade students in the district take the ACT Explore test to help determine college readiness. Teachers and administrators at Perry Middle School use the results of the Explore test to help students choose high school coursework. In addition, 8th-grade students in the district have access to the online Bridges Program that helps them develop a “road map” for classes they will take in 9th through 12th grades. The focus on future educational and career choices provides students with a vision of how they can succeed if they maintain the goals they establish for themselves.

- At Perry Middle School, educators establish ambitious, focused academic goals and center their work on those objectives. Educators consult student performance data to ensure their goals align to the most critical areas. For instance, a school leader expressed, “We have developed a school-wide S.M.A.R.T. goal that focuses on science because that was the area of the greatest need. All staff members in the school are aware of the S.M.A.R.T. goal and are doing their part.” As part of that goal, for example, the school nurse posts science vocabulary words on the ceiling for the students to see when they come to the office to lie down. This integrated focus on an academic goal incorporates the knowledge and persistence of everyone in the school and improves overall student achievement.

Theme 2

Staff Selection, Leadership, & Capacity Building

Regular, achievement-focused, collaborative meetings provide teachers with essential support to improve student performance.

- Recognizing the benefits of collegial collaboration, administrators provide focused time for teachers to work together and concentrate on student work. For instance, the district includes professional development periods in the teachers’ schedules, allowing both collaborative planning in the core content areas and district-provided training opportunities. Regarding content-area collaboration as particularly helpful, teachers at Perry Middle School use that time to share conversations about test results and students’ understanding of concepts. From there, teachers determine what students already know and still need to learn and discuss effective instructional approaches for particular concepts as well as questions useful to gauge the level of student comprehension. A teacher shared, “We go [into collaboration] asking ‘what do we want them to learn?’ and work back from there.”
- Collegial collaboration provides teachers with needed support in their efforts to enhance student performance as well as their overall capacity as educators. Regarding using the collaboration time to develop lesson plans, teachers at Perry Middle School reported the advantage of learning from one another. “Particularly when you come to a lesson that has never been taught, it’s helpful to have that time to collaborate and work together on how to teach it. Likewise, if someone has taught a lesson before, it’s helpful to learn from them.” In addition, at Perry Middle School, several teachers divide the lesson-planning work so that each of them can work on a unit, which the group later revises together. The focused and structured approach to collaboration time helps ensure that teachers meet their targeted goals for student achievement.

Selection and support for school-level staff in Carrollton-Farmers Branch focus on instruction, with an emphasis on competence, to enhance student achievement.

- The school administrator recruitment and selection process emphasizes instructional leadership and sustainability. As one district administrator explained, “Constant and consistent leadership is important. You need to not only attract and recruit the best people. You need to develop them. Good applicants are going to want to grow and become better. It is important that opportunities to grow are provided.” In their effort to develop internal candidates and recruit outside of the district for principal positions, C-FB leaders believe “having principals who are instructional leaders and have high expectations for teachers and students is important.” As a result, “before even training for assistant principalships, the district instills the ideas of not just being a disciplinarian but also an educational and instructional leader.” Leaders thus look for candidates who exhibit strong aptitude for working with effective instructional strategies, not merely building management abilities.
- Administrators in the Carrollton-Farmers Branch school district offer ongoing support to newly hired teachers. Teachers attend a weeklong New Teacher Academy that introduces them to topics such as learning goals, student demographics, expectations in terms of lesson plans, and classroom management skills. In addition to training, new teachers have access to liaisons within the district and mentors at the school. For instance, administrators introduce teachers to staff members in departments such as technology and personnel so that they have a “go-to” person to resolve various issues. Designated district-level liaisons create monthly newsletters for the teachers and are available to provide additional instructional support deemed necessary by school leaders. Mentors comprise another layer of the support system for new teachers at the school level. Mentors can provide daily assistance to new teachers on matters ranging from classroom management to effective instructional strategies.
- The district office makes personnel available for job-embedded support to equip all teachers with a deep understanding of the district curriculum and effective instructional strategies. For example, instructional specialists and curriculum coordinators are available in every subject and are considered a vital resource for content area support. They visit campuses frequently to assist with curriculum implementation. Instructional specialists act as master teachers, helping to implement effective teaching strategies and provide training during the professional development periods. Training conducted by instructional specialists often allows teachers to coach colleagues in their content areas. Similarly, curriculum coordinators work with department chairs at the school to develop lesson plans and review data in order to evaluate or establish goals related to student achievement.

Theme 3

Instructional Tools: Programs & Strategies

Research-based selection of instructional programs and strategies includes careful review before implementation to ensure effectiveness and alignment to the district curriculum and state standards.

- Provision of instructional strategies and resources for implementing such strategies stresses strong alignment to the academic objectives of the district curriculum, as well as proven effectiveness in raising student achievement. For instance, with the district-wide focus on content literacy, strategies and resources on the district's website are research based and incorporate a number of approaches such as reading, writing, viewing, listening, and speaking. Teachers in Carrollton-Farmers Branch use the strategies to promote students' reading comprehension and conceptual understanding and, ultimately, to enable students to become more independent and critical thinkers. In addition, every semester, the district office compiles additional highly effective instructional strategies to enrich the teachers' toolboxes. Teachers have the freedom to adopt the strategies as needed to improve their students' achievement levels.
- Adoption of instructional programs in Carrollton-Farmers Branch is evidence based. After determining the effectiveness of a program when used with similar student populations, district leaders proceed to conduct pilot testing on selected campuses before district-wide implementation. In addition, the district office considers instructional programs recommended as effective and successful by school-level personnel. Before providing school-requested programs to a campus, however, district leaders first ascertain whether programs align to the district curriculum and analyze available data to determine their success in the classroom. Summarizing the practice of program adoption, a district administrator commented, "The coordinators work with representatives across the district to review materials and products and determine what is the best fit with our philosophy and will garner student achievement."

Instructional arrangements and practices vary from school to school, but focus consistently on student achievement, academic goals, and educational objectives.

- Decisions regarding scheduling and instructional time focus not only on effective delivery of the district curriculum but also on attainment of important academic objectives. For instance, with the emphasis on literacy at Perry Middle School, teachers use mandatory blocks of time for sustained silent reading during which students select from a set of materials and respond to comprehension questions. Bolstering the school-wide goal of science performance improvement, educators provide students with science-based literature during sustained silent reading blocks at least twice a week. The

combination of science and reading during scheduled times helps deepen students' mastery of curricular scientific concepts and facilitates educators' progress toward objectives embedded in both science proficiency and literacy skills.

- Student placement at Perry Middle School stresses creating extended learning opportunities. A school leader expressed, "With the college awareness push in the district, we are pushing for more students in pre-AP classes." Teachers expect all students to take not only pre-AP classes but also algebra while in middle school. Teachers recommend placement of students in advanced and rigorous classes based on students' test scores and skills such as organization and punctuality. As one school leader pointed out, "The district has been trying to move away from just using test scores, because there are a lot of children who would be able to do pre-AP based on other skills they have like hard work, persistence, punctuality, and being able to manage their time wisely." Teachers also encourage students to take advantage of available summer programs to prepare for pre-AP courses.
- Teachers at Perry Middle School are skilled in a variety of effective instructional practices, yet all work to embrace the same academic objectives within the curriculum. School-wide practices that promote consistency at Perry include, for instance, inter-disciplinary training, which the teachers consider one of the most effective practices, since its different instructional approaches help spread the same objectives through every classroom. For example, due to inter-disciplinary training, every teacher infuses lessons in different subject areas with science vocabulary or concepts. As one school administrator explained, "An ESL teacher may say 'I spy...and hold up one of the science words and the students will look around the room to find it. Language arts teachers will have students correct the punctuation and sentence structure of a sentence that contains true, factual evidence related to a scientific concept. Science vocabulary words are posted all over the school in the hallways, even on the ceiling of the nurse's office." Other examples of campus-wide instructional practices include Cornell Notes and other AVID concepts such as organization and time management.

Theme 4

Monitoring: Compilation, Analysis, & Use of Data

Emphasizing data-based decision-making processes, district leaders work both to ensure that school-level educators have adequate student assessment data and to provide the skills necessary to interpret and act on the assessment data.

- District administrators emphasize the importance of data-based decision-making and provide not only data access but also resources for data analysis.

Concerned about whether teachers and school administrators have the skills necessary to adequately use the available data, district leaders work with principals on data analysis, discussing how to interpret the data and how to talk with teachers about the use of data. Principals in the district also meet with their direct supervisors twice a year to go over data and discuss overall school performance. As one district administrator commented, “The problem that 21st-century educators face is not insufficient data, but being able to make sense of a flood of data.” For that reason, the district office provides data in a user-friendly format and helps educators make instructional decisions easily, based on what they know about students. Considering the usefulness of data dependent on whether educators know how to use the data, a district leader shared, “The single element we have to continuously address is staff development for interpreting data, specifically at the teacher level. It doesn’t do you any good to push out a lot of data if they don’t know what they’re seeing. That’s not the fault of the delivery system you’re using. It would be the failure of not properly instructing teachers in interpretive skills....Technology and our delivery systems are dynamic and we have to continuously be alerted to the fact that staff development has to be an integral part, not just in how to use a delivery system, but how to interpret the data that comes from that delivery system. You must show someone how to use the delivery system in a meaningful way.”

- With the emphasis the district office places on data use, educators in C-FB utilize a wealth of information about student performance for instructional decision-making. Teachers in the district have timely access to all the tests their students have taken so they may monitor progress over time. Teachers can also access historical data collected throughout each student’s career in the district. Furthermore, teachers disaggregate data by class, state expectations, or objectives. Data-based decision-making regarding instructional matters includes, for example, whether students require tutoring or double-blocked classes and whether re-teaching is beneficial. A school leader shared, “Once teachers know where a student is, they can differentiate the instruction if needed, to guide the student and identify where the gap is and how they are going to overcome that gap.”

Ongoing instructional and performance monitoring in the Carrollton-Farmers Branch school district extends beyond evaluative purposes to include the provision of meaningful feedback in order to promote success.

- School-level administrators conduct frequent instructional monitoring and continuously provide teachers with pertinent support to ensure effective practices and curriculum delivery. At Perry Middle School, instructional teams, consisting of teachers and an administrator, conduct focused walkthroughs throughout the year. Since C-FB administrators promote staff opportunities for growth, leaders conduct these walkthroughs with the intent of coaching, not

merely evaluation. Each walkthrough involves a debriefing on areas of strength and weakness as well as suggestions for improvement. According to a district leader, the focused walkthrough “is a very productive process. It’s about both development and evaluation.”

- Perry Middle School also uses peer walkthroughs as a form of instructional monitoring, benefiting not only the teachers observed but also those observing. As one school leader expressed, “We thought that the benefit would be to the teacher, and that’s true. But the benefit has really been from the teachers going in and observing other teachers teach. They’re learning much from, as we call it, ‘this side of the clipboard.’ You learn more when you see other people teach and you learn more when you are being observed and get that feedback.”
- Monitoring school progress and the performance of school administration involves tapping multiple sources of information. District leaders monitor school progress through, for instance, campus visits, and provide feedback regularly. Twice every year, administrators from the district office visit each school to evaluate progress, reviewing implemented instructional programs and walking the campus. Such visits allow district staff the opportunity to provide school principals with much attention and feedback concerning their growth process. In addition to monitoring from above, the principal evaluation procedure includes a component of self-appraisal. A district administrator stated, “The district feels that a principal position should be a self-directed leadership role.” Teachers and parents also provide feedback regarding their school’s performance via district-designed surveys. A district administrator observed, “The evaluation is a holistic approach, not only based on test data. ...There may be perceptions that the data doesn’t confirm, but, nonetheless, there are perceptions that you have to know about.” As a result, the district office strives to capture as much information as possible in order to drive the decision-making process concerning school improvement.

Theme 5

Recognition, Intervention, & Adjustment

Recognizing the importance of successful intervention strategies to enable students to meet academic goals, educators at Perry Middle School provide a multitude of opportunities for students to receive needed additional support in the classroom, at school, and at home.

- With emphasis on math and reading, educators at Perry Middle School create a multitude of student intervention opportunities. To provide students with extra support and attention, educators double block math classes. One school administrator shared, “Learning takes time and therefore [we] have to give the students the time in the classroom.” Similarly, the school provides assistance

through reading improvement classes in addition to the regular language arts classes, both of which are part of the daily schedule. Saturday school opportunities further assist students struggling in math and reading. To provide students with even more instructional time, educators at Perry offer a focused tutorial program before and after school to target both struggling students and those who have not mastered particular learning objectives. Through the tutorial program, students receive multiple opportunities to absorb the material from teachers who uses instruction methods that differ from those of their regular classroom teacher.

- In addition to structured student support programs already in place, educators at Perry Middle School engage in more informal intervention strategies and resources. One teacher expressed how extra time and dedication is always necessary to support the students adequately: “Teachers who have challenging populations have to understand that they’re going to have a lot of extra work outside the classroom. You’re going to have to put in tutorials and after-school opportunities for the students.” In addition, if intervention efforts from individual teachers do not suffice for the students’ needs, educators seek out additional resources and assistance. As one school administrator noted, “It’s too much for one teacher or one department or one grade level. It takes a collaborative effort.” The continuous efforts from the school administration and teachers to assist struggling students have proven effective in raising student achievement.
- To expand the success of school-based support opportunities for students, educators at Perry Middle School promote parental involvement. For example, through Math Night, parents learn about the subject matter and ways to encourage their children to study math. In addition, to promote parent participation in school events, educators offer babysitting to make the opportunity available to as many families as possible. Educators at Perry also communicate often with parents in order to enhance student performance. For instance, educators conduct conferences with parents of students who are struggling with their grades. A telephone system at the school further supports parental communication, allowing educators to set up automatic phone calls reminding parents of mandatory tutorial sessions for their children.

To effectively support student needs, administrators at Perry Middle School ensure flexible and adequate staff assignment.

- With the goal of making the school a safe and orderly environment where students want to become involved, educators at Perry Middle School devote efforts to student behavior interventions. A behavior resources specialist creates intervention plans for the students with behavior issues, assists them with school work, and provides a safe place for students to discuss challenges they face in their lives.

- In order to have many opportunities for students to receive academic interventions, educators at Perry Middle School effectively allocate available staff members. For instance, a school leader shared that offering “double-blocked math classes for many students, which means the students get two classes with the same teacher...impacts personnel for elective classes and teaching.” Similarly, the newcomers’ program for English language learners double blocks students to allow them more time with language arts and math.

Summary of Findings

Student Learning: Expectations & Goals

Educators in the Carrollton-Farmers Branch Independent School District develop a district-wide curriculum that provides more clarity and detail than the state standards alone. Within the district’s curriculum, a list of prioritized state standards helps the teachers avoid the “too much to teach” problem. Such practices enable focused implementation of the district’s curriculum in the classroom. The ultimate goal for all students in C-FB is college and career readiness. To that end, educators in the district provide resources and assistance to enable students to set long-term goals for their academic careers.

Staff Selection, Leadership, & Capacity Building

Recognizing the benefits of collegial collaboration, administrators provide focused time for teachers to work together and concentrate on student work. Schools throughout the district hold regular collaborative meetings, providing teachers with essential support to improve student performance. The structured, collaborative meetings always focus on student achievement. Teachers use the meeting time to discuss data, concepts within the curriculum, and instructional practices. In order to enhance student achievement, instructionally based selection of and support for the district’s school-level staff emphasize competence. The district recruits school administrators based on instructional leadership and the candidates’ potential for sustainability within the district. C-FB both offers ongoing support to newly hired teachers through mentors and training and provides personnel support to equip all teachers with a deeper understanding of the district curriculum and effective instructional strategies.

Instructional Tools: Programs & Strategies

Research-based selection of instructional programs and strategies for district schools includes careful review before implementation. Provision of instructional strategies as well as the resources for implementing such strategies stresses strong alignment to the academic objectives of the district curriculum and state standards and proven effectiveness in raising student achievement. Instructional

arrangements and practices vary from school to school, but they focus unvaryingly on student achievement. Decisions regarding scheduling and instructional time focus not only on the effective delivery of the district curriculum but also on attainment of important academic objectives. Perry Middle School emphasizes school-wide goals as they pertain to particular academic objectives. Teachers at Perry use varying instructional strategies and practices to achieve the school-wide goals.

Monitoring, Compilation, Analysis, & Use of Data

C-FB emphasizes data-based decision making processes. To that end, the district leaders work to ensure that school-level educators have adequate student assessment data as well as the skills necessary to interpret and act on the data. Instruction and performance monitoring in C-FB is ongoing and extends beyond evaluative purposes to include meaningful feedback. The monitoring of both school progress and the performance of school administration involves tapping multiple sources of information. The district office strives to capture as much information as possible in order to drive the decision-making process concerning school improvement. School-level administrators conduct frequent instructional monitoring and offer support to teachers to ensure effective practices and curriculum delivery.

Recognition, Intervention, & Adjustment

Educators at Perry Middle School provide a multitude of opportunities for students to receive instructional support. In the interest of providing more instructional time, educators double block math classes, supplement regular language arts classes with reading improvement classes, and offer a focused tutorial program before and after school to target both struggling students and those who have not mastered particular learning objectives. In addition, educators actively promote parental involvement to enhance student performance. In order to support student needs effectively, administrators at Perry Middle School also ensure flexible and adequate staff assignment. School administrators allocate available staff members for double-blocked classes, ensuring that each student receives the additional support needed from the same instructor that teaches the core class.



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