

# California Comprehensive Center

## Research Summary Supporting the Nine Essential Program Components And Academic Program Survey

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## Overview

The nine Essential Program Components (EPCs), as measured on the Academic Program Survey (APS), are designed to support the improvement of student academic performance in reading/language arts and mathematics. The nine components have been identified in numerous research studies as key factors for school improvement and for the functioning of schools that are “beating the odds” by demonstrating success with challenging student populations. By focusing on the instructional core—curriculum and instruction, and supports for curriculum and instruction—the EPCs aim to ensure the School Assistance and Intervention Team (SAIT) process remains focused intensively on the improvement of student achievement in key academic subject areas.

While each individual component is considered an important piece of the school improvement process, no one component should be seen as a silver bullet. The nine components are intended to work together to form a comprehensive and coherent improvement process; the strength of each component is bolstered by addressing all components in combination. Recent research shows that a *coherent* instructional program is key to successful improvement (Bitter, Pérez, Parrish, González, Socías, & Salzfass, 2005). Implemented together, the EPCs foster coherence by aligning curricula (i.e., State Board of Education-adopted or standards-aligned instructional materials) with professional development (through legislatively-mandated training on the materials), and monitoring (through the use of curriculum-embedded assessments). Additional components, including increased instructional time, the use of instructional coaches, teacher collaboration, academic interventions, and fiscal support are designed to work together to support the implementation of a coherent instructional program. These components aim to ensure that students receive sufficient hours of instruction and intensive intervention in English/language arts and mathematics when needed. The EPCs also support the development of qualified instructional staff through the provision of additional instructional support providers and collaboration time.

The EPCs are designed to serve as the foundation of an effective improvement process. However, each school has unique challenges and should be examined closely to identify individual needs. Any improvement process must be not only comprehensive, but also intensive and customized to ensure that the process addresses the factors that have most hindered improvement in student achievement in a particular context.

The following summary draws on school reform research, including studies that have examined factors contributing to the successful improvement of low-performing schools. We also cite several studies that have examined characteristics of schools that have demonstrated success with high percentages of low-income students or English learners. We draw on additional practitioner-focused literature that examines characteristics of professional development, leadership, and professional community.

## Essential Program Component #1:

***Use of State Board of Education (SBE)-adopted (kindergarten through grade eight) or standards-aligned (grade nine through twelve) English-language arts and mathematics instructional materials, including intervention materials***

***Elementary and Middle School Levels:*** *The school/district provides the most recent SBE-adopted core instructional programs, including accelerated interventions, for reading/language arts (2002-08 adoption) and mathematics (2001-07 adoption), documented to be in daily use in every classroom with materials for every student.*

***High School Level:*** *Schools/districts provide state standards-aligned English-language arts textbooks in all classrooms for all students enrolled in ninth and tenth grade English-language arts, as well as SBE-adopted mathematics textbooks in all classrooms for all students enrolled in remedial math and Algebra 1 courses.*

Research emphasizes the role of curriculum coherence, articulation, and organization in promoting school effectiveness (Purkey & Smith, 1983), which is supported by the state’s core content curricular frameworks and adopted instructional materials. A recent study of California schools that examines the relationship between educational factors and student achievement finds a strong relationship between the implementation of a coherent curriculum and higher Academic Performance Index (API) scores (Williams, Kirst, & Haertel, 2005). A strong curriculum, implemented in a consistent and intensive way, appears most effective for student outcomes when high levels of alignment in curriculum and instruction are combined with the use of assessment data to monitor and evaluate teacher practices (Levin, Haertel, Kirst, Williams, & Perry, 2006). Similarly, a study looking at California high schools “beating the odds” finds that the use of consistent curricula together with frequent diagnostic tests, along with effective instruction and professional development, results in dramatic gains for high schools serving large populations of low-income, minority, and English learner students (Oberman, Arbeit, Praglin, & Goldstein, 2005).

California content standards provide a statewide definition of the skills, concepts, and knowledge all students are expected to achieve, and are designed to help teachers raise student achievement. Content standards, combined with performance standards, which gauge the degree to which students are meeting grade level content standards, go beyond setting common and coherent curricular goals by providing a framework for measuring whether students are making progress (O’Day & Smith, 1993). In fact, a large body of research finds a positive relationship between clear goals and student learning outcomes, emphasizing the importance of embedding content standards in curricular materials (Datnow, Borman, & Stringfield, 2000; Newmann, King, & Youngs, 2000).

Because instructional coherence plays an integral part in successful school improvement efforts (Newmann, Smith, Allenworth, & Bryk, 2001), aligning and articulating intervention materials with core content curriculum and standards is central to supporting student progress toward grade level proficiency. Research suggests that reducing academic content for lower performing students, particularly English learners, can result in tracking of students to below grade-level coursework (Callahan, 2005; Walqui, 2000). Supovitz and Taylor (2005), in their evaluation of systemic reform in a large district, find the district gave special emphasis to increasing the achievement of lower-performing students, provided students not meeting performance standards with a variety of intervention strategies, and assessed individual student data on a regular basis.

Given the diverse learning needs of students served in California schools, it is critical that both core instructional curriculum and intervention materials support student progress toward proficiency in standards and improved achievement.

## Essential Program Component #2:

***Instructional time (adherence to instructional minutes for reading/language arts and mathematics (K-8) and high school access to standards-aligned core courses)***

***Elementary and Middle School Levels:*** *The school/district complies with and monitors implementation of required instructional time for the adopted programs for reading and language arts. This time should be given priority and be protected from interruptions.*

***High School Level:*** *A school's master schedule and English-language arts and mathematics course pacing schedules reflect effective use of instructional time and provide all students access to English-language arts instruction and mathematics instruction that is needed to master the skills necessary to pass the language arts, writing, and mathematics components of the California High School Exit Examination (CAHSEE).*

Among the many elements that impact student achievement, the allocation of instructional time is one factor directly under school control. More than a decade after the National Education Commission on Time and Learning (1994) recommended the school day be redesigned to increase time spent on core subject areas, research continues to examine strategies aimed at ensuring adequate instructional time, as well as boosting its effectiveness. Literature on time and learning looks both at the total number of days or hours of instructional time and the arrangement of school time throughout the year, investigating the time students actually spend engaged in focused learning activities (also referred to as “engaged time”, “academic learning time”, and “time-on-task”) (Berliner, 1990; WestEd, 2001). In addition to allocating adequate instructional time, prioritizing and protecting time for core content is a key element of research-based practice. Many curricular programs, such as those used in the federal Reading First program (U.S. Congress, 2002; Simmons & Kame’enui, 2003), are designed to help teachers protect time for addressing the core content.

Using instructional time effectively is critical to improving student achievement. Studies of high poverty schools report that those schools “beating the odds” tend to spend more time on core subject areas (Barthe, Haycock, Mora, Ruiz, Robinson, & Wilkins, 1999; Taylor, Pearson, Clark, & Walpole, 2000). Ongoing school and district reform efforts, however, represent diverse approaches to improving the effectiveness of instructional time. A 2005 study of the state’s Immediate Intervention/Underperforming Schools Program (II/USP) finds schools experiencing growth on the API use a variety of approaches to address challenging student needs, including implementing intervention programs, focusing on core content subject areas, and incorporating additional instructional time (Bitter et al., 2005). David and Shields (2001) suggest a key element of implementing standards-based reform is incorporating extended instructional time for at-risk student populations, such as English learners, with clear expectations for instruction and student progress. Similarly, Quint (2006) finds that a combination of structured “catch-up” courses and longer class periods may have helped high school students with poor academic skills spend more classroom time engaged in learning.

However, a critical component of school improvement is not only addressing the use of instructional time, but also developing strategies that maximize the quality of the instructional time. Recent research suggests the relationship between student achievement and instructional time is more closely linked to student engagement and quality of instructional activities than to the specific

amount of time allocated to the school day or year (WestEd, 2001; Cohen & Ball, 1999). Aronson, Zimmerman, and Carlos (1999) find three factors, along with the use of instructional time, that appear to contribute to student learning: (1) improving teachers' classroom management techniques; (2) ensuring appropriateness of curriculum and instruction; and (3) increasing student motivation. Providing teachers with longer, subject-focused blocks of time to increase opportunities for active learning and student involvement shows some relationship to student outcomes (i.e., grades, but not necessarily to test scores). Zepeda and Mayers (2006) conclude this outcome may reflect that teachers' instructional strategies may not have changed to make more effective use of the additional time. To ensure that teachers use instructional time effectively, teachers should receive meaningful professional development on interactive instructional strategies and pedagogical knowledge (Lieberman & Miller; 1990; Marzano, 2003).

Given these findings, in addition to ensuring instructional time is dedicated to core content, maximizing the quality of instructional time is another essential component of school improvement efforts.

### Essential Program Component #3:

***Principals' instructional leadership training Assembly Bill (AB) 75 training on SBE-adopted instructional materials***

*The district provides the school's principal and vice-principal(s) with Assembly Bill 75 (Chapter 697, Statutes of 2001), Principal Training Program, Module 1 on Leadership and Support of Student Instructional Programs, through an SBE-authorized provider. AB 75 training for the K-8 principal features the school/district adopted reading/language arts, mathematics, and intervention programs. The 9-12 Principal Training Program features the district's adopted intensive intervention program for reading/language arts and/or is focused on the SBE-approved Pre-Algebra, Algebra 1, and local mathematics program in use at their site and includes 40 hours of training and 40 hours of practicum.*

The literature on effective schools has long focused on the critical role of principals, as both administrative and instructional leaders, in improving student achievement (Edmonds, 1979). School leaders face the challenge of effectively navigating multiple contexts for learning, including a focus on individual student learning, teacher professional development, and the school's progress as a whole. The role of administrators in improving instructional quality through building school capacity—increasing teacher knowledge and instructional skills, instructional program coherence, and resources—is key to developing and sustaining reform (Fullan, 2002). Elmore (2000) describes the role of principals in designing school improvement strategies and professional development activities consistent with the strategies, while simultaneously buffering teachers from non-instructional issues. In their research-based framework for “leading for learning”, Knapp, Copland and Talbert (2003) propose five mutually reinforcing goals for improving learning and teaching: establishing a focus on learning; building professional communities; acting strategically and sharing leadership; creating instructional coherence; and engaging external environments.

Given the multi-faceted role of principals, supporting their professional learning and continued development as instructional leaders is clearly important. Elmore and Burney (1997), and later Resnick and Fink (2001), examine the various structures used by one school district to provide professional development to principals. Both studies highlight that the importance of continuous development of specific curriculum and instruction knowledge combined with the development of general leadership skills needed to manage a school, is critical to achieving instructional improvement goals. In addition, findings from a study of school capacity in urban elementary

schools found a strong association between leadership by principals and comprehensive professional development at the school site, suggesting that principals' own professional development should build their understanding of how to enhance school capacity for reform (Newmann, King, & Youngs, 2000).

Among these various instructional leadership responsibilities, articulating and supporting subject matter reform is critical to ensuring the implementation of school-wide instructional strategies. Subject matter provides an important context for instructional improvement reforms, particularly because subject matter influences instructional practices and how teachers think about curriculum, learning, and instruction (Stodolsky, 1988; Stodolsky, 1995). Principals and school leaders, therefore, play an important role in making sure literacy and mathematics reform strategies are implemented appropriately by providing instructional expertise and opportunities for subject-matter development to support teachers' professional learning needs (Burch & Spillane, 2003). In her study of urban schools, Little (1990; 1993) found increased examination and reflection in instructional practice in schools where the administrator actively worked with teachers in setting expectations and modeling instruction. Principals must have a clear understanding of curricular materials and methods of delivery in order to monitor implementation, provide feedback and guidance to teachers, and set expectations for school-wide instructional reform.

Ultimately, the effectiveness of instructional leadership is dependent on principals' abilities to serve as multi-subject instructional leaders and to build momentum for school-wide improvement.

#### Essential Program Component #4

***Fully credentialed teachers and teacher participation in AB 466 training on SBE-adopted instructional materials***

*Essential Program Component (EPC) #4 has three parts:*

*First, the district staffs the majority of its elementary, middle school, and secondary classrooms with fully credentialed teachers. The district provides a substantial number of fully credentialed ninth and tenth grade English-language arts, intervention teachers, and mathematics teachers (Algebra 1 and remedial mathematics). The district has a plan to have fully credentialed teachers in every classroom within three years.*

*A majority of K-8 teachers attend AB 466 Professional Development Program (40 hours of institute and 80 hours of practicum). The training features the district's adopted core program and/or intervention programs for reading/language arts and district's adopted basic programs for mathematics for each teacher's grade level and program.*

*Ninth and tenth grade English-language arts teachers are supplied with AB 466 training . Pre-Algebra, Algebra 1, and mathematics teachers are provided with professional development focused on SBE-adopted instructional materials for Algebra 1 (AB 466, Chapter 737, Statutes of 2001). Remedial mathematics teachers are provided professional development on instructional materials used at their site.*

Current research indicates student achievement gains are more influenced by teacher quality than by many other factors, such as class size or student demographics (Darling-Hammond, 2002). Consequently, the No Child Left Behind Act mandates schools must employ qualified and fully credentialed teachers (U.S. Congress, 2002). To date, not all California schools have been able to achieve this goal; a recent study by the Center for the Future of Teaching and Learning found that

California’s low-achieving, low-income, and minority students are much more likely to have a teacher without a full credential (Esch & Shields, 2005). Esch and Shields go on to recommend that districts have a coherent plan, such as enrolling uncertified teachers in quality credentialing programs or actively recruiting fully certified teachers, to ensure that all students have high quality, fully credentialed teachers equipped to teach core content using appropriate subject-specific pedagogy.

While teacher quality is the foundation for improved classroom instruction, relevant professional development for teachers on the effective implementation of the core program is also necessary to improve student achievement and instructional programs (Corallo & McDonald, 2002). Despite this importance of relevant professional development, a nationwide review found that professional development often lacks a direct link to teachers’ work assignments and is not consistently tailored to their needs (Consortium for Policy and Research in Education, 1997). By contrast, the Japanese lesson study model where groups of teachers meet regularly over an extended period of time to plan, implement, and assess “research lessons,” provides teachers with job-embedded, hands-on opportunities to improve delivery of instruction (Stigler and Hiebert, 1999). When teachers receive training that builds on their subject-matter knowledge and deepens their practice, they gain the tools necessary to successfully utilize instructional materials to drive student achievement (Corallo & McDonald, 2002; Marzano, 2003).

One element of developing a school culture that supports ongoing inquiry into instructional practice, according to Lieberman and Miller (1990), is building norms for teacher leadership in curriculum and instruction. Many studies have found that focused and sustained professional development that is integrated into instructional practice can foster professional inquiry and build a professional community (Fullan, 2001; Little, 1993; Newmann, King, & Youngs, 2000). For example, regularly scheduled professional development sessions can provide opportunities for teachers to examine their practice, share instructional strategies, and work collaboratively to help improve each other’s instructional practice.

Ultimately, students benefit most when a community of qualified teachers, armed with professional development and a collective goal to raise achievement, effectively deliver instructional programming to all students.

#### Essential Program Component #5:

***Student achievement monitoring system (use of data to monitor student progress on curriculum-embedded assessments and modify instruction)***

*The school/district has an assessment and monitoring system (e.g., every six to eight weeks) which may include curriculum-embedded assessments available as part of the adopted program. These assessments inform teachers and principals on student progress and effectiveness of instruction in all reading/language arts and mathematics classrooms. These curriculum-embedded assessments are based on the adopted reading/language arts and mathematics programs. The purpose of these assessments is to provide timely data to teachers and principals to make decisions that will improve instruction and student achievement. In addition, they will provide a basis for the monitoring system.*

Research shows the ongoing use of data can help schools and districts guide instruction and decision-making, and in turn positively affect student achievement (National Center for Education Accountability, 2002; Petrides & Nodine, 2005). The role of data use in instructional reform efforts is multi-faceted—it provides educators with data to identify problems, assess what interventions are

appropriate, and monitor progress toward goals (Killion & Bellamy, 2000). A recent study of California elementary schools underscores this relationship, finding a strong relationship between higher API scores and the extensive use of student assessment data by the district and the principal in an effort to improve instruction and student learning (Williams et al., 2005).

A recent study of the Immediate Intervention/ Underperforming Schools Program (II/USP) finds a key difference between schools showing high and low API growth is the frequency to which data is used to inform instruction—high growth schools reported using data extensively to guide instruction (Bitter et al., 2005). Data use can inform school improvement efforts on multiple fronts, through ongoing monitoring of student data, formative evaluations assessing program implementation and student progress, and progress evaluations assessing whether benchmarks or other indicators of success are being met (National Science Foundation, 2002). One key to using data to improve student achievement, however, is managing data effectively. While schools generate large quantities of data, they are often not packaged in a user-friendly format that translates readily to instructional practice and modification (Massell, 2000). Beyond organizing and managing data, research also underscores the importance of providing professional development to teachers on using data effectively, as well as setting aside time for analyzing and interpreting data to make effective instructional decisions that impact student progress (Bernhardt, 2004; Almanzán, 2005).

Research suggests that lower performing students, especially English learners, can be better supported by taking a “whole child, whole curriculum” approach to academic success (Genesee, 1994). In fact, many experts emphasize the importance of using additional indicators of success beyond test score data, which is what Reeves (2002) calls “holistic accountability.” Darling-Hammond and Ascher (1991) recommend a “comprehensive indicator system” that looks at contextual factors such as dropout rates, student mobility, school demographics, and teacher turnover rates. These types of indicators provide rich insight into the complexities of using student achievement data to improve performance.

In sum, using data to examine student achievement and additional student outcome measures plays a critical part in instructional reform efforts, helping administrators and teachers to assess individual student needs and progress, the implementation of instructional programs, and school-wide progress toward the achievement of California standards.

#### Essential Program Component #6:

***Ongoing instructional assistance and support for teachers (use of content experts and instructional coaches)***

*Schools/district provide instructional assistance and support to all teachers of reading/language arts and/or mathematics. Elementary and middle school teachers, and ninth and tenth grade English-language arts and mathematics (Algebra I, and remedial mathematics) teachers receive ongoing support offered by the school and district. Possible options for providing support include coaches/content experts who work inside the classroom to support teachers and deepen the knowledge about the content and delivery of instruction, and specialists who have experience coaching teachers and who are knowledgeable about the adopted program.*

Providing embedded instructional assistance and support that combines content knowledge and instructional practice provides teachers with sustained opportunities to improve instructional practice and, in turn, improve student achievement. A study by Elmore and Burney (1997), looking at a professional development reform in a large urban district, suggests a continuous improvement, professional learning model that focuses on specific content areas may be an effective approach to large-scale improvement of instructional practice. Peer coaching is one approach to professional learning that impacts the content and delivery of instruction through individualized support to teachers, particularly beginning teachers. Coaching can take a variety of forms, but generally involves sessions that focus on the classroom implementation of curriculum content and analysis of student responses to teaching through technical coaching or team coaching, specifically focused on integrating new teaching practices into classroom instruction through demonstration and practice (Showers & Joyce, 1996).

While professional learning enhances teacher knowledge of content and instructional strategies, it is the transfer of these skills to the classroom that produces results for students. Lieberman and Miller (1990) emphasize the importance of using a content-in-context approach—including dialogue, discussion, and practice of instructional strategies—to help teachers actively expand their teaching techniques. In their studies of peer coaching, Joyce and Showers (1983; 1996) found that teachers who received training using a model that combined theory, demonstration, practice, and coaching showed an 80 percent transfer rate of the new skills to the classroom and improved their ability to implement new strategies appropriately and improved their techniques over time. In addition to assisting teachers to implement new curriculum and strategies into practice, participation in peer coaching also deepens teachers' subject matter knowledge and increases teacher effectiveness in regard to student work and instructional practice.

The literature examining the relationship between teaching and learning emphasizes the importance of ongoing support for teachers to further develop content knowledge and instructional practices to ensure that larger reform efforts impact classroom instruction. In their study of three large urban districts showing a trend of overall improved student achievement and a narrowing gap between white and minority students, Snipes, Doolittle, and Herlighy (2003) found that these districts implemented a coherent instructional plan district-wide, including reading and math curricula, and then supported teacher development around the curricula with teacher coaches and grade-level planning periods. Similarly, findings from a national study of reading growth in high-poverty classrooms suggest a relationship between research-based instructional practices and student achievement and engagement (Taylor, Pearson, Peterson, & Rodriguez, 2003).

Overall, these results indicate professional development that combines attention to both instructional practice and content knowledge, which can be particularly important for increasing teacher efficacy and positively impacting student achievement in low-performing schools.

## Essential Program Component #7:

### ***Monthly teacher collaboration by grade level (K-8) and department (9-12)***

*The school/district facilitates and supports teacher grade-level collaboration on a regular and frequent basis for elementary, middle, and high school English-language arts and mathematics teachers to focus on the use of curriculum-embedded assessment data and data review to strengthen implementation of the adopted English-language arts and mathematics programs. Time must be built into the calendar so that staff has regular opportunities to meet by department and subject matter, review the results of embedded assessments together, discuss the data in meaningful ways, examine the implications, make instructional decisions, and plan lesson delivery.*

A collaborative school environment—where teachers work together to improve instructional practice—is often characterized as a driver of successful efforts to impact student achievement. Creating a community of connection and collaboration has the potential to renew teachers’ sense of creativity and initiative in their work (Little, 1993; Sawyer, 2001), which influences instructional practices and ultimately student achievement. Building this collaborative environment requires more than occasional teamwork opportunities; school staff need to work together to analyze data and curricular materials to inform their professional practice systematically, with the goal of improving student outcomes. Darling-Hammond and McLaughlin (1995) suggest implementing an institutional infrastructure will help to build a collaborative environment. This infrastructure supports teachers’ professional growth by providing structures for knowledge-sharing based on practice as well as sustained, cooperative experiences that allow teachers to reflect on both the process and on the content of what they are learning.

Collaboration should be focused on issues of student achievement and instruction, and should be structured by clear agendas with specific tasks and outcomes for the time being used to ensure the collaboration concretely addresses student needs. DuFour (2001) proposes that school leaders play an active role in facilitating successful collaboration by: (1) building in time for collaboration in the school day and year; (2) identifying critical questions to guide the work of collaborative teams; (3) asking teams to create products as a result of their collaboration; (4) identifying critical questions to guide collaborative teams; and (5) providing relevant data and information. Therefore, the literature clearly points to collaboration as a vital component of professional development (Barton, 2005), with a critical role played by school leadership. Principals and other school leaders need to establish an environment with collaborative problem solving and team-centered relationships (Eastwood & Louis, 1992), and provide focus and support to help the collaborative teams work effectively (Garmstron & Wellman, 2003).

One method for implementing teacher collaboration is through professional learning communities, a structured approach that can include implementing teacher study groups, engaging teachers in research, and providing meaningful professional development. Studies of school-based professional learning communities suggest that positive outcomes of effective teacher collaboration include increased teacher commitment to the school’s mission and goals, higher staff morale, shared responsibility for student development and success, and positive outcomes for students—including smaller achievement gaps among students from diverse backgrounds (Hord, 1997; McLaughlin & Talbert, 2003).

Establishing institutional infrastructure and a school environment that values, supports, and actively structures collaboration to maximize teacher learning therefore, is critical to positively impacting instructional practice and improving achievement.

## Essential Program Component #8:

### ***Lesson and course pacing schedule (K-8) and master schedule flexibility for sufficient numbers of intervention courses (9-12)***

*Elementary and Middle School Levels: The school/district prepares and distributes an annual district/schoolwide pacing schedule for each grade level (K-8) for the reading/language arts and mathematics program in order for all teachers to know when each lesson is expected to be taught and in what sequence to ensure content coverage.*

*High School Level: School/district provides (a) SBE-adopted intervention programs, offered as a separate, extended-period class, for all students requiring intensive intervention in English/language arts, i.e., those who are unable to demonstrate proficiency in sixth grade standards, and (b) appropriate instructional strategies for those students requiring strategic intervention, i.e. students at or above the sixth grade reading/language arts standards but unable to pass the English/language arts portion of the CAHSEE.*

*School/district provides (a) intervention programs offered as a separate, extended-period class, for all students requiring intensive intervention in mathematics, i.e., those who are unable to demonstrate proficiency in seventh grade mathematics standards, and (b) appropriate instructional strategies for those students who are unable to demonstrate proficiency in Algebra I and/or are at risk of failing the mathematics portion of the CAHSEE.*

To bring a school-wide focus to meeting state standards and improving student achievement, schools often use an instructional pacing schedule—a year-long plan outlining expected progress through the curriculum—combined with extended time intervention programs to provide extra instructional support to students below proficiency in core content areas. These elements provide teachers with a common goal and method to cover the standards while building in the flexibility to meet diverse student needs through interventions aligned and articulated with the core curriculum. While curricular structures vary in the method used for covering content (Posner, 1974), one approach to a pacing schedule that attempts to ensure all students gain mastery of standards is the use of a “spiraled curriculum” in which skills and concepts are revisited and assessed throughout the year. Reyes and Fletcher (2003) identify spiraling and constant review as one of four common instructional elements of a successful mathematics program for migrant students.

For students requiring additional academic support beyond the curricular structures of the pacing schedule, appropriate and timely research-based intervention strategies can help students make progress toward grade-level standards (Corallo & MacDonald, 2002). Investigating how Title I schools integrate curricular standards into their school-wide improvement program, Sunderman and Mickelsen (2000) identify instructional pacing and focused instruction for students not meeting standards as two key elements of their high-performing schools. These schools also had existing programs to provide instruction to low-performing students that were tailored to local context. Similarly, studies of effective high schools have found that intense “catch-up” programs that provide support in reading, mathematics, and science help students spend more time engaged in learning and meet graduation standards (Bottoms & Anthony, 2004; Quint, 2006).

Given the potential of research-based intervention programs to impact achievement, adopted interventions should appropriately serve students, and the additional targeted instruction time—often in the form of extended-period classes for at-risk students such as English learners, or special education students—should be incorporated into the master schedule to ensure students have equal

access to the core curriculum. This is particularly crucial for English learners, given their challenge of both achieving content standards and gaining English fluency (August & Hakuta, 1997; Merickel, Parrish, Pérez, Linqanti, Socías, & Spain, 2005). Effective intervention programs also depend on having sufficient scheduled time to present coherent instruction grounded in content standards (Quint, 2006).

The coordinated implementation of intervention strategies and an instructional pacing schedule designed to ensure students are exposed to all standards are key pieces to offering a coherent instructional program that meets student needs and improves student achievement.

#### Essential Program Component #9:

##### ***Fiscal support***

*The general and categorical funds of the school or district are used appropriately to support the reading/English-language arts and mathematics program goals in the school plan.*

Appropriately allocating fiscal resources to support the school-wide plan for student achievement is critical to improved achievement in schools, especially schools serving low-income students. The alignment and allocation of all resources—federal, state, and district funds as well as school resources such as staff, time, materials, and equipment—with instructional goals is necessary for effective instructional program implementation (Corallo & MacDonald, 2002). Odden and Archibald (2000) emphasize that effective resource allocation is key to educating all students to high standards, arguing that school and district leaders should develop school-wide strategies to meet student needs and enhance staff capacity, including professional development that is focused and relevant to core content. Research on California schools reported by Williams, Kirst, and Haertel (2005) suggests that the availability of instructional resources, including staff with characteristics such as strong content knowledge and training in curriculum programs, and up-to-date instructional materials for all students and support for supplementary instruction, relates to higher API performance.

Many recent studies focusing on fiscal resources have examined high-performing schools in an attempt to generalize how schools might reallocate resources to increase student achievement. Based on their case study findings, Hawley Miles and Darling-Hammond (1997) propose six principles of resource allocation to increase opportunities to align resources to school goals: (1) reduction of specialized programs; (2) flexible student grouping; (3) structures that create a more personalized environment; (4) longer and more varied blocks of instructional time; (5) more common planning time for staff; and (6) creative definition of staff roles and schedules. Designing a vision for meeting student needs, supported through the thoughtful allocation of fiscal resources supporting the core reading/language arts and mathematics instructional programs, builds a foundation for successful school improvement efforts.

While quantities of resources have conventionally been used as a measure of educational quality, there is growing evidence that identifying knowledge and practices that help schools to best use resources may play a greater role in improving student achievement (Cohen, Raudenbush, & Ball, 2003; Hanushek, 1997). A Public Policy Institute of California study asking principals to complete imaginary school budgets focused on improving student achievement finds that principals chose to allocate resources differently based on school type (elementary, middle and high school), particularly with regard to staffing decisions (Rose, Sonstelie, & Richardson, 2004). These findings suggest that the impact and relative efficacy of different resources may vary considerably with individual school context. Furthermore, the findings also emphasize the importance of thoughtful

allocation of resources to target instructional goals, especially with regard to the requirements of individual and categorical programs such as Title I, special education, and English learner programs.

Ultimately, the entire budget – both for categorical and special grant funds as well as all school resources—should reflect the priorities for improving student achievement as efficient resource allocation, aligned with school improvement goals, can support effective instruction and ultimately improve student outcomes.

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