# Conceptualizing Essential Components of Effective High Schools

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**ABSTRACT**

Three decades of reform aimed at improving disadvantaged student achievement have not substantially narrowed achievement and graduation gaps. This article reviews the research around eight essential components of effective high schools emerging from a review of the effective schools and high school reform literature, and provides a framework for how these components are implemented and integrated. We submit that far-reaching high school improvement is rooted in these components: schools succeed because they are woven into the school's organizational fabric to create internally consistent and mutually reinforcing reforms; their success is explained by more than the simple sum of their parts.

More than 30 years have passed since *A Nation at Risk* raised concerns about the "rising tide of mediocrity" in American education (U.S. National Commission on Excellence in Education, 1983). Despite the ambitious reforms that followed, high schools today have low rates of student retention and learning, particularly for students from traditionally low-performing subgroups (Becker & Luthar, 2002; Cook & Evans, 2000; Davison, Young, Davenport, Butterbaugh, & Davison, 2004; Lee, 2002, 2004). While racial and ethnic gaps in reading and mathematics achievement between both 17-year-old White and Black students and White and Hispanic students narrowed between 1978 and the early 1990s, these gaps have remained stagnant over the last two decades (Murphy, 2010). Currently, gaps between Black and Hispanic 17-year olds and their White counterparts range from 2 to 4 years of learning (Rampey, Dion, & Donahue, 2009). Gaps are even wider in the senior year of high school between native English speakers and English language learners (ELLs). Differential dropout rates, wherein low-income students, minorities, and ELLs leave school at higher rates than other students, only compound the problem and there is little evidence that gaps in the Black-White graduation rate have closed over

the last 35 years (Heckman & LaFontaine, 2010; Kaufman & Chapman, 2004; Snyder, Dillow, & Hoffman, 2009). While the number of "dropout factories" is declining, as of 2011, one quarter of African-American students, and almost 20% of Latino/a students, attended high schools where graduation rates were less than 50%, while less than 10% of White students attended such schools (Balfanz, Bridgeland, Bruce, & Fox, 2013).

Reviews of research on high school students suggest that over three decades of urban high school reform since *A Nation at Risk*, aimed at improving disadvantaged student achievement, have not resulted in substantially narrowing these achievement and graduation gaps (Becker & Luthar, 2002; Cook & Evans, 2000; Davison et al., 2004; Murnane, 2013). There is little evidence that any single program or practice will close more than a fraction of the achievement gap and reduce high school dropout (Aladjem et al., 2010; Berends, 2000, 2004; Miller, 1995). Through studies of several organizational and structural elements of schools, the literature indicates that structures alone do not increase school effectiveness; the evidence is weak or mixed for any structural or organizational change alone leading to improved student outcomes. The research clusters around two areas: how schools divide and use time in the school day (e.g., scheduling) and how students and teachers are organized within that time to meet the academic needs of students (e.g., course-taking practices, personnel assignment).

Studies examining the subdivision of time within the high school day do not clearly indicate best practices, programs, or policies. Block scheduling of academic courses is found to be both more (Hughes, 2004) and less effective (Rice, Croninger, & Roellke, 2002) than traditional course scheduling. Other studies find no differences in the performance between students who had either block or traditional scheduling in high school (Dexter, Tai, & Sadler, 2006; Schreiber, Veal, Flinders, & Churchill, 2001). Substantially improving the learning opportunities for students from traditionally low-performing subgroups will require
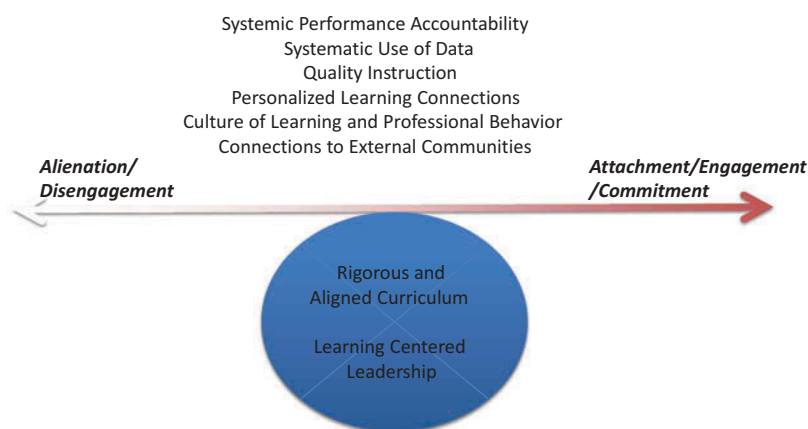


Figure 1. Essential components of effective high schools.

comprehensive, multifaceted, integrated, and coherent designs (Chatterji, 2005; Shannon & Bylsma, 2002; Thompson & O'Quinn, 2001).

We submit that far-reaching school improvement in high schools is rooted in an interconnected set of essential components that continue to emerge from the literature on effective schools in general and effective high schools in particular: schools succeed not because they adopt piecemeal practices that address each of these components, but rather they organize their collective practices into a coherent and cohesive framework of aligned practices. In effective schools, these components are woven into the school's organizational fabric to create internally consistent and mutually reinforcing reforms; their success is explained by more than the simple sum of their parts.

The notion of essential components of effective schools is not new: reviewing the literature on effective schools at the time of *A Nation at Risk*, Purkey and Smith (1983) paint the portrait of an effective school, differentiating between organizational components that can be implemented administratively, and process components, which follow organizational components and define a school's climate and culture. Table 1 enumerates these components.

More recently, the National High School Center (NHSC) focused on comprehensive, systemic reform at the high school level. They offer eight elements of high school improvement: rigorous curriculum and instruction, assessment and accountability, teacher quality and professional development, student and family supports, stakeholder engagement, leadership and governance, organization and structure, and resources for sustainability (National High School Center, 2008). In describing these elements, NHSC emphasizes that they are not discrete elements, but must remain interconnected.

**Table 1.** Components of an Effective School

| Organizational Components | Process Components |
| --- | --- |
| School site management—leadership and staff<br> need autonomy to address how to increase achievement | Collaborative planning and collegial relationships |
| Instructional leadership | A sense of community |
| Staff stability | Clear goals and high expectations that are commonly shared |
| Curriculum articulation and organization: purposeful programs of study | Order and discipline |
| School-wide staff development, focused on altering attitudes and behaviors and providing staff with new techniques and skills | |
| Parental involvement and support | |
| School-wide recognition of academic success | |
| Maximized learning time | |
| District support | |

The purpose of this article is to present eight essential components of effective high schools that emerge from a comprehensive review of the effective schools and high school reform literature, and provide a framework for how these components are implemented and integrated (Dolejs, 2006; Murphy, Beck, Crawford, Hodges, & McGaughy, 2001; Murphy, Elliott, Goldring, & Porter, 2006). This conceptualization suggests that these essential components, when implemented through a cohesive and coherent framework, can work together in effective high schools to create deep connections, engagement, and attachment to the work, the norms, and the outcomes of high schools, for both adults (leaders, teachers, staff) and students, while the inability to effectively implement all of these components cohesively to high quality and high frequency can explain alienation, disengagement, and lack of effort in high schools for students and adults. It is through the teaching of subject matter via a *rigorous and aligned curriculum* for all students (the content of schooling) and through distributed, *learning-centered leadership* (inspiring the vision and enacting it) that the other core components can be implemented and sustained to achieve positive outcomes for all students—through developing a sense of attachment and engagement. Figure 1 illustrates the relationships among these 8 core components.

By alienation, we mean lacking a sense of belonging and engagement in a school setting (Schulz, 2011). This includes feelings of powerlessness or lack of agency, meaninglessness, normlessness, social estrangement, and isolation (Mau, 1992; Smerdon, 2002; Taines, 2012). Feelings of powerlessness are particularly salient in conceptualizing the continuum from alienation to attachment for adults. Taines (2012) defines powerlessness as "a feeling of exclusion from the decision making of societal institutions, discerning little political influence over the processes that govern one's affairs" (p. 57). By attachment, we mean the degree to which individuals feel embedded in or a part of their school community (Johnson, Crosnoe, & Elder, 2001). This includes a sense of belonging, commitment to the work at hand, and a commitment to the institution itself, both its goals and purposes and the structure and norms that govern how those goals are achieved (Smerdon, 2002).

In this article, we present a brief literature review of each component, and then end each component by suggesting how these components can be operationalized to serve as the basis for the design of innovations that can address the achievement gaps in high schools, and drive an empirical research agenda. This literature review is based on a review of empirical research that appeared in top-tier core education journals with relatively broad foci (e.g., not focused specifically on teacher education or educational psychology) with a 5-year impact factor greater than one. We initially searched the table of contents and abstracts of twelve top-tier peer-reviewed journals for the words "high school(s)" from 2002 to present, focusing on the

No Child Left Behind era. A total of 231 articles were reviewed for inclusion, and of these, 91 met the criteria detailed below for inclusion. The top pane of Table 2 provides the journals included, with counts of articles reviewed and included. Based on each abstract, we then determined whether each article was relevant to one or more of our core components based on the definitions provided in the next section, and coded the articles for relevant components for the authors to review.[1] We include articles that encompass programs, policies, and practices enacted at the school level, including program evaluations. Because our work is at the school level, focused on identifying programs, policies, and practices that work together to create successful high schools, we excluded articles focused on district- or state-level policies, such as state graduation requirements. Finally, we acknowledge that high schools serve many social and cultural purposes, but limit our review to literature focused on outcomes related to student achievement and attainment.

From our perspective, this initial review of the literature did not yield sufficient literature to form a complete picture of each essential component. As such, we widened our search to include seven more journals. These journals were lower tier, but broadly focused (e.g., *Educational Policy*) or top-tier journals focused on a specific area (e.g., *Educational Psychologist*). This second search yielded 172 additional articles for review. Of these, 32 met our criteria for inclusion. These journals are detailed in the bottom pane of Table 2.

**Table 2.** Journals Included for Review

| Journal | Number reviewed | Number included | 5-year impact factor |
|---|---|---|---|
| Initial Search | | | |
| *American Journal of Education* | 13 | 10 | 1.16 |
| *American Educational Research Journal* | 23 | 21 | 3.09 |
| *Economics of Education Review* | 9 | 8 | 1.472 |
| *Educational Evaluation and Policy Analysis* | 9 | 9 | 1.81 |
| *Educational Administration Quarterly* | 10 | 8 | 1.38 |
| *Harvard Review of Education* | 3 | 1 | 1.69 |
| *Sociology of Education* | 16 | 8 | 2.72 |
| *Review of Educational Research* | 9 | 2 | 5.46 |
| *Teachers College Record* | 55 | 19 | 1.19 |
| *Educational Researcher* | 4 | 4 | 2.527 |
| *Review of Research in Education* | 1 | 1 | 1.773 |
| Second Search | | | |
| *Educational Policy* | 13 | 5 | 0.68 |
| *Educational Psychologist* | 2 | 1 | 5.137 |
| *High School Journal* | 32 | 11 | n/a |
| *Teaching and Teacher Education* | 33 | 8 | 1.67 |
| *Journal of Social Issues* | 14 | 4 | 2.62 |
| *Cognition and Instruction* | 3 | 2 | 2.20 |
| *Journal of Educational Psychology* | 17 | 1 | 4.93 |

## Essential components of effective high schools

From the literature emerge eight essential components that provide a robust framework to more deeply understand effective high schools. The components are organized into two broad categories. The first two components anchor the other components. That is, they hold together the other components and cut across them. These are (1) *Learning-centered leadership*, which entails the extent to which leaders hold a vision in the school for learning and high expectations for all students (Murphy, Goldring, Cravens, & Elliott, 2007) and focus all leadership, distributed on the other components, and (2) *rigorous and aligned curriculum*, which focuses on the content that secondary schools provide in core academic subjects, including both the topics that students cover as well as the cognitive skills they must demonstrate during each course (Gamoran, Porter, Smithson, & White, 1997).

The second set of components are those that constitute the necessary elements to develop engagement, commitment, and shared norms and values, including *quality instruction*, the teaching strategies and assignments that teachers use to implement the curriculum and help students to reach high academic standards (McLaughlin & Talbert, 1993; Wenglinsky, 2002, 2004). Another component is *systemic use of data*, including multiple indicators of student learning, using data to inform classroom decisions (Kerr, Marsh, Ikemoto, Darilek, & Barney, 2006). The third component is *personalized learning connections*, developing strong connections between students and adults that allow teachers to provide more individual attention to their students and dialogue with each regarding unique circumstances and learning needs (Lee, Bryk, & Smith, 1993; Lee & Smith, 1999; McLaughlin, 1994) as well as developing students' sense of belonging (Walker & Greene, 2009). The fourth essential component is a *culture of learning and professional behavior*, which refers to the extent to which teachers take responsibility for events in the school and their students' performance, and the degree to which they collaborate their efforts through such activities as school-wide professional development (Little, 1982; Lee & Smith, 1995). The fifth essential component is *systemic performance accountability*, encompassing both external and internal structures that hold schools responsible for improved student learning. External accountability refers to the expectations and benchmarks from state and national bodies, while internal accountability consists of the district- and school-level goals (Adams & Kirst, 1999; Murphy et al., 2006). The final component is *connections to external communities*, the ways in which effective secondary schools establish meaningful links to parents and community organizations, and relationships with local social services, and student work experiences in the community (Ascher, 1988; Mediratta & Fruchter, 2001; Sanders & Lewis, 2004; Shaver & Walls, 1998).

## The anchors of the components

We submit that *learning-centered leadership* and a *rigorous and aligned curriculum* anchor the other six essential components. These two components hold together the other components and cut across them. The school-wide vision entailed in learning-centered leadership, for example, sets the expectations for what each component will look like in the school and it is incumbent upon leadership to provide the necessary systems and supports for each component to meet the expectations set forth in the vision. Similarly, rigorous and aligned curriculum provide the high expectations that other components must rise to meet. While systematic use of data can provide a school with information on how to improve instruction, if the school does not implement a rigorous and aligned curriculum, the information that data provide as to how to improve instruction cannot overcome achievement gaps in the face of a weak curriculum. While none of the components in and of itself is sufficient for an effective high school, learning-centered leadership and rigorous and aligned curriculum are the aspects upon which the other components must be built and, in an effective school, hold strong influence over how the other components are enacted.

### *Learning-Centered leadership*

An important aspect of understanding how schools cultivate, support, and improve the essential components of effective schools is school leadership. Research has demonstrated the impact that principals have on schools when their work focuses on influencing school processes that in turn influence student learning (Grissom, Loeb, & Master, 2013; Hallinger & Heck, 1996; Horng, Klasik, & Loeb, 2010). Prior studies also suggest that schools whose leaders organize their schools by articulating an explicit school vision, generating high expectations and goals for all students, and monitoring their schools' performance through regular use of data and frequent classroom observations are linked to increases in their students' learning (Leithwood & Riehl, 2005; Murphy et al., 2007). Principals' effects on student learning are also likely mediated by their efforts to improve teacher motivation, working conditions, and school learning climate (Louis, Leithwood, Wahlstrom, & Anderson, 2010; Sebastian & Allensworth, 2012) as well as to hire high quality personnel (Grissom & Loeb, 2011; Horng et al., 2010). Finally, research suggests that principals can play important roles in implementing instructional reforms. Quinn (2002) found that in schools where principals actively work to secure curricular materials and act as instructional resources for instructional reforms their teachers more frequently engaged in the new instructional strategies.

When not specific to high schools, studies of effective leadership have found positive effects for instructional (Robinson, Lloyd, & Rowe, 2008) or transformational leadership approaches (Leithwood, Leonard, & Sharratt, 1998). Yet in comparison to elementary schools, high schools face unique, less tractable challenges (Fernandez, 2011; Robinson et al., 2008). These challenges may also demand different strategies. Research on high school leadership is limited. One study of high school principals' time use found that time spent on organization management issues is associated with positive school outcomes including student learning, staff satisfaction, and parental assessments of the school, and that time devoted to instructional oversight characterized principals had no positive effects (Horng et al., 2010).

However, the body of empirical research on leadership practices in schools is limited in a number of ways conceptually and in terms of its applicability to high schools. In particular there are very few empirical studies devoted to high school leadership broadly defined. Conceptually, much of the research on leadership in schools takes a predetermined dimension of leadership—such as instructional leadership—and offers assessments or comparisons of leaders' (most often principals') adherence to specific, discrete practices to the authors' conceptualization of these dimensions (see, for example, Goldring, Huff, May & Camburn, 2008; Horng et al., 2010; Supovitz, Sirinides, & May, 2010).

High schools are unique educational settings because of the greater autonomy and inertia of older students, departmentalization around academic subject area, and the responsibility associated with being the terminus of universal education. High schools also differ significantly from elementary and middle schools because of their larger size, unique and heterogeneous student bodies, and their role in providing students with an exodus into the larger society and workforce (Fuhrman & Elmore, 2004; Jacobs & Kritsonis, 2006). These distinguishing features may exacerbate cultural barriers to centralized decision-making and increase the importance of distributed leadership within departments or other forms of professional learning communities.

A fruitful approach to articulating learning-centered leadership in high schools is to follow Spillane's (2012) notion of "practice," rather than to articulate a list of behaviors as we attempt to understand how leadership influences the enactment of the essential components described above. Following Spillane's (2012) work we use "practice" to refer to

> more or less coordinated, patterned, and meaningful interactions of people at work; the meaning of and the medium for these interactions is derived from an 'activity' or 'social' system that spans time and space. A particular instance of practice is understandable only in reference to the activity system that provides the rules and resources that enable and constrain interactions among participants in the moment." (p. 114)

A key aspect of practice as developed by Spillane (2012) and Feldman and Pentland (2003) is the notion of an "organizational routine," which they define as "a repetitive, recognizable pattern of interdependent actions, carried out by multiple actors" (Feldman & Pentland, 2003, p. 105). These authors also offer one final distinction that is central to our conceptualization of learning-centered leadership: the "ostentive" versus "performative" aspects of organizational routines. Feldman and Pentland define these as the following: "The ostensive aspect is the ideal or schematic form of a routine. It is the abstract, generalized idea of the routine, or the routine in principle. The performative aspect of the routine consists of specific actions, by specific people, in specific places and times. It is the routine in practice" (2003, p. 101). They argue that studies of organizational routines must include examinations of the "ostentive," intended, ideal forms of practices (such as recommendations or formal expectations for what a group should do to examine school data) along with the "performative" aspect that focuses on what different individuals actually do within the context of these expectations and their group.

Only when researchers pay attention to both can they capture organizational routines in their intent and in their actual implementation. In schools that demonstrate strong learning-centered leadership, there is evidence not only of the ostentive aspects of routines—intentions and purposes—but of actual implementation of these routines that are pervasive, shared, and structured, the performative aspect of routines. This focus on practices and routines is consistent with a distributed perspective of leadership (Spillane, Halverson, & Diamond, 2001), as it transcends one person or specific roles (our definition of leaders in these schools includes administrators, department chairs, and leaders of other groups such as professional learning communities), and it also acknowledges the extent to which leadership is dependent upon interactions between multiple actors in schools. Klar (2012) provides case studies of the steps three principals undertook to develop the instructional leadership of their department chairs, including cognitive apprenticeships and opportunities for collaborative learning with built-in feedback.

Existing research reveals a complex relationship between the leadership of school principals and student achievement—principals' influences on student learning outcomes are often indirect, mediated through multiple factors within the school. Researchers have produced extensive evidence that principals' practices can influence student learning when they focus on (a) organizing school structures, processes, and resources that support student learning and (b) strategies that more closely support teachers' high-quality instruction (Hallinger & Heck, 1996; Heck & Hallinger, 2009; Supovitz et al., 2010; Louis et al., 2010; Horng et al., 2010; Sebastian & Allensworth, 2012).

It is these structures and strategies that are the focus of our conceptualization: strong leadership sets and implements vision for all stakeholders, and such a vision encompasses the second set of components of effective high

schools. The vision implemented by learning-centered leadership supports the development of quality instruction, supports the development of a rigorous and aligned curriculum, promotes personalized learning connections for students, promotes ongoing analysis and review of school-level data, garners and allocates resources to support student learning, and promotes the development of teachers' instructional expertise.

## Rigorous and aligned curriculum

The second anchor component, a *rigorous and aligned curriculum*, focuses on the content that schools provide in core academic subjects (Gamoran et al., 1997). On the whole, high school curricula are driven by state standards and increasingly, by Common Core State Standards (or individual states' versions of them), as required under No Child Left Behind (2002). Research on curriculum at the high school level centers around differences between vocational/technical curriculum or remedial courses and college preparatory curriculum, case studies of implementing new packaged curricula, the effects of increasing curricular requirements for graduation, and access to curriculum, specifically advanced courses, for different groups of students.

A number of studies address the effects of constrained curriculum, effectively requiring the same college preparatory curriculum for all students. Lee and Burkham (2003) find that students in schools with more constrained curriculum have lower odds of dropping out, while Plunk and colleagues (2014) find that increased math and science requirements for graduation are associated with higher odds of dropping out. Constrained curriculum includes requiring specific college preparatory courses for students, including Algebra I in the ninth grade (Allensworth, Nomi, Montgomery, & Lee, 2009) or replacing remedial math courses with transition courses (Gamoran et al., 1997). These studies find that, while achievement growth for students in transitional courses falls between that of students in transitional classes that of students in Regents classes, it is not significantly different from either. Further, Allensworth et al. (2009), find increased failure rates and lower GPAs for the lowest-ability students. The failure of requiring Algebra I to improve academic outcomes, while at the same time increasing the number of students receiving Algebra I credit, begs the question of whether schools changed the content of courses being offered or merely renamed remedial courses. Gamoran et al.'s finding (1997) that math achievement is greater in classes where more content is covered supports this hypothesis.

Case studies consider the implementation of constrained curriculum as well. A technical high school in Florida requires the same course sequence for all of its students in their first two years, where every course either fulfills a graduation or college entry requirement or prepares students to choose a technical course of study (Blasik, Williams, Johnson, & Boegli, 2003).

Descriptive comparisons of student achievement in reading and math scores show students outscoring both county and state averages. AVID, Advancement Via Individual Determination, an elective aimed at providing greater support for at-risk students to increase college-going, cuts across many of the essential components outlined here: connections to external communities, personalized learning connections, and quality instruction, among others. At the heart of AVID, however, is a focus on increasing students' access to a rigorous, college preparatory curriculum while providing them with the support necessary to succeed (Swanson, Marcus, & Elliott, 2000). A Texas study of AVID used as a school reform model in 10 high schools found more increases in AVID schools on state accountability ratings, graduation rates, and in advanced course-taking as compared to matched high schools serving similar student bodies over the first three years of implementation (Watt, Powell, Mendiola, & Cossio, 2006).

Others studies explore the factors explaining both contexts in which advanced courses are offered and patterns of student enrollment and progression through in these courses. A mixed-methods study of eight high schools' efforts to increase the number of African-American students enrolled in advanced math courses demonstrates the overlap among the essential components of effective high schools. Teachers' commitment to students, including accessibility outside of class hours and structured tutoring opportunities (*personalized learning connections*), commitment to collaboration (*culture of learning and professional behavior*), and use of specific instructional strategies including cooperative learning and using materials relevant to students' lives (*quality instruction*) contribute to this increased enrollment (Gutierrez, 2000). Another study in Florida finds the number of students taking Advanced Placement courses is, over time, increasingly driven by the students' prior preparation, but controlling for school size, teacher resources do not play a role in the number of advanced courses offered (Iatarola, Conger, & Long, 2011). Further, schools with higher percentages of minority students and students eligible for free or reduced-price lunch are less likely to offer advanced courses. In Texas, 20% of White students are enrolled in Advanced Placement courses, while only 10% of Black, Hispanic, and economically disadvantaged students are and nationally, students with a learning disability are far less likely to complete a college preparatory curriculum than other students (Moore & Slate, 2008; Shifrer, Callahan, & Muller, 2013). A case study of one high school suggests that school personnel steer English language learners away from higher-track coursework, and institutional mechanisms such as a course sequence that moves students automatically from courses like ELL science into remedial science as they "progress" prohibits ELLs from enrolling in higher-track courses (Kanno & Kangas, 2014). Nationally, over the last 30 years the odds of Black and Hispanic students

completing Algebra II have increased relative to White students, but have remained the same for calculus completion (Domina & Saldana, 2012), while in North Carolina, the comprehensive school reform model High Schools that Work, which focuses on expanding access to courses granting post-secondary credit, is largely unsuccessful in helping students to progress successfully through its curriculum pipeline (Miller & Mittleman, 2012). Increasing evidence shows that curricular rigor is associated with positive student outcomes including increased achievement, high school graduation, college-going, and college completion (Adelman, 2006; Aughinbaugh, 2012; Long, Conger, & Iatarola, 2012; Saavedra, 2014)).

Few studies address curricular alignment between high schools and institutions of higher education (IHEs). A fixed effects analysis of partnerships between school districts and IHEs in California finds increased graduation rates and increased numbers of students who graduate having completed necessary requirements for admission to either the California State University system or University of California system (Domina & Ruzek, 2012). These partnerships provide student services and teacher professional development and may even be involved in district planning and policymaking. Similarly, a fixed-effects study of Tech-Prep programs, which promote articulation agreements between high schools and community colleges, finds positive effects on high school graduation and two-year college enrollment (Cellini, 2006).

An important aspect of the curriculum discussion is the extent to which high schools implement tracking and whether there is variability and/or compression of schooling experiences. Effective schools work to compress preexisting variability by promoting equal and equitable access to school resources and promoting the inclusion of all students in all aspects of the schooling experience; in other words, there is a focus on opportunities to learn. Effective schools also create variable and differentiated experiences to meet the needs of diverse learners. Studies of how schools organize students and teachers into courses and programs yield mixed results. Several authors find that tracking through ability grouping is not an effective practice, in part because when students are tracked by ability, lower-achieving students are more likely to have lower-quality teachers (Betts & Skholnik, 2000; Boaler & Staples, 2008; Kalogrides & Loeb, 2013); assigning all students to the highest track has been found to be both beneficial (Burris, Wiley, Welner, & Murphy, 2008; Domina, Conley, & Farkas, 2011) and detrimental (Allensworth et al., 2009) for student achievement. Cellini (2006) finds that Tech-Prep programs may increase overall achievement while simultaneously diverting capable students from four-year colleges.

More recently, the process of tracking students into courses in high school has shifted from a rigid, deterministic model to more flexible curricular choice (Allensworth et al., 2009). Schools may also organize smaller schools within the full high school through academies or other programs. Reorganizing schools

by creating smaller "schools-within-schools" was found to increase achievement and attendance (Darling Hammond, Ancess, & Ort, 2002). Small school reorganization was found to be more effective when schools were "started-up" instead of converted (Shear et al., 2008). High school career academies appear to increase student outcomes, but may not be cost effective or exceed the benefits of taking more academic courses (Maxwell & Rubin, 2002). While tracking practices are increasingly less formal, "neotracking" through highly differentiated curricular choices tends to stratify by race and class (Heck, Price, & Thomas, 2004; Lewis & Cheng, 2006; Lucas & Berends, 2002; Mickelson & Everett, 2008; Ready & Lee, 2008).

Most of the literature describes the stratification and the potential dangers of allowing stratification to exist, while falling short of offering best practices or policies to prevent or correct it. Mickelson and Everett (2008) look at North Carolina high school students' choice to pursue differentiated courses of study (e.g., vocational, college preparatory) and report that this policy reproduces the stratification by race and class of opportunities to learn, and conclude that graduates "may not be prepared either for higher education or for the workplace" because of their curricular choices (p. 536). Lewis and Cheng (2006) analyze tracking and expectations through a survey of principals to reconcile the finding that "socioeconomic status predicts the dominant track in schools" and conclude that these stratifications may be a result of differential beliefs and expectations for certain classes of students (p. 91). Similarly, Iatarola et al. (2011) study the factors determining a school's decision to offer IB/AP courses and find that schools choose to offer advanced courses only when high-achieving students—in reality or perception—enroll in the school, suggesting a lack of open access to advanced courses. The literature suggests that effective schools should work to compress variability in course selection by race and class and ensure all students have access to advanced courses (Muller, Riegle-Crumb, Schiller, Wilkinson, & Frank, 2010).

Effective schools may also create variability by offering transition classes (Gamoran, 1997), schools-within-schools (Ready & Lee, 2008), career academies (Maxwell & Rubin, 2002), college outreach programs (Domina, 2009), and other differentiated programs to meet student needs. These programs are targeted at subgroups within a school to meet a specific need, such as informing at-risk students about the college application process. The findings on the effectiveness of these programs are mixed, suggesting that the structures, programs or practices intended to create variable experiences for certain subgroups are dependent on the presence of other key components, such as personalized learning connections or quality instruction.

In our broader work, we define rigorous and aligned curriculum as vertical alignment of curriculum both between grade levels and feeder schools, focus on increased enrollment and access to rigorous curriculum like AP courses, and the degree of flexibility in course enrollment, and in the implementation of state and district curriculum and instructional calendars.

Here we turn to reviewing the literature around the other six components that are rooted in these two anchor components.

## Quality instruction

First, *quality instruction* encompasses the teaching strategies teachers employ to achieve high standards for all students. Much of the research discussing the quality of instruction at the high school level is descriptive, either explaining programs that have been developed and implemented to increase student achievement, particularly in math, or case studies describing the practice of effective teachers. Trends in this research cluster around common practices and specific classroom foci. Common practices include collaborative group work and inquiry-based learning (Langer, 2001; Staples, 2007), formative assessment (Brown, 2008), scaffolding, and introducing new concepts concretely (Alper, Fendel, Fraser, & Resek, 1997). Classroom foci include creating structures and classroom climate where students are allowed to try and fail without negative consequences (Alper et al., 1997), making content not only relevant for real life, but important, and setting high expectations for all students (Boaler & Staples, 2008).

Evaluations of programs aimed at improving the quality of instruction comprise another body of research at the high school level. For example, a two-year study of Read 180 in the Phoenix Union High School District found mixed results for ninth- and tenth-grade students who participated in the program on a variety of reading proficiency tests as compared to matched non-participants (White, Haslam, & Hewes, 2006). There were, however, larger gains for participating ELL and low-achieving students than matched non-participants. Similarly, students in an AP U.S. Government and Politics course taught with a problem-based learning approach scored better on both the AP exam and a complex scenario test of applied knowledge (Parker et al., 2013), while a randomized control trial of the effects of Cognitive Tutor Algebra I, which utilizes a personalized mastery-learning method, finds positive effects for high school students on proficiency exams in the second year of implementation (Pane, Griffin, McCaffrey, & Karam, 2014).

The vast majority of more recent work on the quality of instruction has focused on developing frameworks and corresponding classroom observation rubrics. These observation rubrics are either subject-specific, such as Mathematical Quality of Instruction (MQI) (Hill et al., 2008) and the Protocol for Language Arts Teaching Observations (PLATO) (Grossman et al., 2010), or are designed for use across subjects like the Classroom Assessment Scoring System-Secondary (CLASS-S) (Pianta, Hamre, & Mintz, 2011) and Charlotte Danielson's Framework for Teaching (2007). Behind each of these rubrics is the articulation of a conceptualization of the quality of instructional practices. These frameworks collectively suggest

that high-quality instruction is rooted in a notion of engaged learning (instructional dialogue, feedback, responsiveness), whereas low-quality instruction consistently allows students to be passive, and disengaged as learners (seatwork, receivers of information, and limited accountability for learning).

Other research supports the notion that quality instruction is about engaging the student through teaching. Practices promoting engagement include games and fun activities, group work, and projects (Cooper, 2014). Students report finding group projects engaging, but not teacher lectures (Yazzie-Mintz, 2009). In English/Language Arts, empirical studies find that content is a significant predictor of reading achievement (Carbonaro & Gamoran, 2002). Increased student voice, where students play a more equal role with teachers in classroom discourse, and hours spent on homework also have positive associations with reading achievement (Applebee, Langer, Nystrand, & Gamoran, 2003). Additionally, Nystrand (1997) finds that a number of features of classroom discussion are related to achievement scores: authentic questions that promote exploration instead of only comprehension, more time for open discussion, and teacher questioning that build on student responses.

A case study of a high school math department implementing a reform curriculum and teaching methods found that instruction focused on collaborative group work where there were multiple avenues for success, each student had a structured role, and students were required to justify their answers and responsible for each other's' learning (Boaler & Staples, 2008). Teachers setting high expectations and providing tasks with high cognitive demands were key elements in this reform as well. A similar case study of a high school English department describes details of how teachers promote higher-level reasoning and students' responses to their efforts (Anagnostopoulos, 2003). Teachers collaboratively learned to write, and wrote, higher-order questions based on Marzano's and Bloom's frameworks for higher-order thinking skills. While students initially needed teacher support to answer these questions about their reading, ultimately, they reported becoming aware of the relationship between their effort and academic outcomes, as well as developing the ability to identify distractions, learn new vocabulary, and better manage their time.

Other case studies of teachers' roles in collaborative learning, including group work and discussions, focus on the importance of scaffolding. Scaffolding is important both in teaching students discussion skills (Flynn, 2009) and in focusing students on the task at hand and making them think through their actions, through prompts and probing and meta-cognitive questions (Anderman, Andrzejewski, & Allen, 2011; Gillies & Boyle, 2008). In a review of the research on the relationship between classroom activity structure and the engagement of low-achieving students, Kelly and Turner (2009) propose a set of guidelines for whole-class discussion to reduce the risk of participation: teachers must relinquish authority over the direction and topic of discussion and defer evaluation of

students' comments in order to demonstrate that student ideas are important. They provide examples of scaffolding to promote student motivation, engagement and effort: modeling thinking, giving hints, asking for explanations, providing feedback instead of evaluation, treating mistakes as opportunities, and emphasizing joint responsibility between students and teachers. The absence of these teaching strategies can lead to classrooms where students are disengaged from their teachers, other students, and the academic content learning; in a word, students are bored. They describe a boring classroom as "one-way, tops-down, unengaged relationship with a teacher whose pedagogy feels disrespectful because it is not designed to tempt, engage, or include students" (Fallis & Opotow, 2003, p. 108).

The framework guiding our larger body of work on conceptualizing the quality of instruction in high schools is the CLASS-S. The CLASS-S articulates domains and dimensions of quality instruction, where dimensions describe various aspects of each domain (Pianta et al., 2011). The three core domains of the CLASS-S are instructional support, emotional support, and classroom organization, with a fourth domain, student engagement, as an outcome. Instructional support includes teachers' demonstration of their content understanding, how teachers facilitate student use of higher-order thinking skills, the quality of feedback teachers provide, and their use of instructional dialogue to facilitate content understanding. Emotional support largely overlaps with the academic engagement aspect of personalized learning connections and includes measures of positive and negative classroom climate, teacher sensitivity and responsiveness to student needs, and teacher's regard for adolescent perspectives, i.e., the degree to which teachers provide opportunities for autonomy and leadership as well as relevant applications of content. Finally, classroom organization includes behavior management, productivity or the maximization of learning time, and teachers' use of a variety of instructional learning formats to maximize student engagement. Findings from the Measures of Effective Teaching Project (MET) indicate that aggregate scores on the CLASS-S and other observational rubrics are associated with student achievement (MET Project, 2012).

## Systematic use of data

A second component, *systemic use of data*, refers to "data use" or "data-based decision making" as a practice critical to school improvement efforts. Yet it would be faulty to assume that access to data alone will lead to more effective practice (Ingram, Seashore Louis, & Schroeder, 2004; Schildkamp & Visscher, 2010; Spillane, 2012). Rather, research on systematic data use suggests that effective practice requires a critical consideration of both which data and what forms of use are most effective in improving academic performance. The literature provides insights on the sources, practices, and actors

characterizing effective data use in high schools based on largely correlational and case-study research. Although research specific to data use in high schools is scant, a consistent finding across this work is that where data use is effective, the power to make data-based decisions is diffuse, collaborative, and pervasively integrated into practice (Lachat & Smith, 2005). In contrast, data-based decisions made centrally and dictated to teachers breed resistance, foster mistrust, and do not improve instructional practices. We thus suggest that data use is one mechanism to develop engagement and commitment of educators to students and school goals, through sharing and distributing information and decision making. Further, widespread, integrated data use can be a mechanism for helping adults and students collaborate and receive feedback for continuing engagement in the "work" of schooling.

The first characteristic of effective use of data in high schools is a diffusion of both the availability and analysis of data. Studies of educational leadership, for example, have found data use is the domain of school activity which best exemplifies the effectiveness of distributed leadership (Copland, 2003; Schildkamp & Visscher, 2010; Spillane, 2012). Diffusion of data access and use may be most critical in high schools, which are commonly departmentalized around subject areas. When data access is centralized in the hands of a principal, data use can be limited by the principal's personal beliefs and skills related to data use (Luo, 2008).

Though diffusion is necessary for effective data use, it is not sufficient. Even when teachers have the power to make data-based decisions, in low- and average-performing high schools, such decision making is typically a solitary activity for teachers, while in high-performing schools, by contrast, teachers' data use drives improvement from the center of a school-wide feedback loop (Schildkamp & Visscher, 2010; Wilcox & Angelis, 2011).

In addition to the relationships found between school-level achievement and teacher collaboration, research suggests that collaborative data-based inquiry affects intermediate outcomes, increasing teachers' investment in school-wide issues, strengthening instructional efficacy, and characterizing both mature and successful school improvement efforts (Copland, 2003; Huffman & Kalnin, 2003; Tedford, 2008; Tubin, 2015; Wilcox & Angelis, 2011). Ingram et al. (2004) identified multiple barriers to data use in high schools, including disagreement over which outcomes matter most, lack of time, and mistrust of data. In contrast, Lachat and Smith (2005) enumerate three conditions which facilitate ease of data use in high schools: teachers must have timely access to data, data must be disaggregated to student levels in order for staff to view data as "theirs," and focused questions about student performance increase teacher ability and motivation to use data. Evidence suggests that teachers are more open to collaborative data use when the definition of "data" includes surveys and interviews in addition

to student test scores (Wilcox & Angelis, 2011) and when teachers have ownership of both the collection and analysis of data (Huffman & Kalnin, 2003; Lachat & Smith, 2005).

Finally, once data are available and discussed collaboratively, data use must permeate organizational routines in order to be effective (Ingram et al., 2004; Schildkamp & Visscher, 2010; Spillane, 2012). That is, even when data are diffuse within the school and teachers are organized to support collaboration, it is still not guaranteed that practices will improve. For instance, without redirection and retraining, teachers may fall into patterns of ineffective data use, such as devising strategies before considering evidence (Copland, 2003). Tubin (2015) provides a case-study example of pervasive data-use in successful Israeli high schools: the schools use a database for "digital mapping" student information to track student achievement, behavior problems, attendance, and automatically alert teachers to red flags. The pervasiveness of data-based decision making can even extend beyond instructional practice: in schools with established routines of data-based inquiry, principals may look for teaching candidates they believe will contribute positively to collaborative discussions tying practice to performance feedback (Copland, 2003).

In our framework, we operationalize the effective use of data in high schools as schools where data are available for all stakeholders to access, including parents, teachers, and students; teachers have the capacity to use this data and act on what they learn from it (i.e., re-teaching); and there is a culture of data use among members of the school community. We view data use as an important component for creating shared commitment and engagement amongst adults and students.

### Personalized learning connections

A third component, *Personalized Learning Connections* involves developing strong connections between students and adults that allow teachers to provide more individual attention to their students (Cooper, 2014; Lee & Smith, 1999; McLaughlin, 1994). Personalized learning connections also refers teachers' knowledge of and care for their students and to developing students' sense of belonging to school (Cooper, 2014; Walker & Greene, 2009), and can exist in any high school on a continuum from strong and robust leading to connectedness, to weak and nonexistent, leading to alienation (Crosnoe, Johnson, & Elder, 2004; Hallinan, 2008; Nasir, Jones, & McLaughlin, 2011).

The importance of understanding the extent to which there are personalized learning connections in a high school is related to understanding the mechanisms and explanations for students dropping out of high schools: student alienation and disengagement is a long-term process, but ultimately, the consequence of alienation is dropout (Rumberger, 2001, 2011). Much of

the research around high school dropout seeks to understand the role of schools in predicting dropout (e.g. Englund, Egeland, & Collins, 2008; Lee & Burkham, 2003; Patterson, Hale, & Stessman, 2007). Using data from the High School Effectiveness Study, a part of NELS:88, Lee and Burkham (2003) find that students in schools with stronger student-teacher relationships have decreased odds of dropping out. However, the strength of the relationship between student-teacher relationships and dropout differs across school size: as school size increases, the strength of the relationship decreases. Other school personnel, such as college coaches, can assist in developing student-adult relationships and trust, and, in turn, increase students' likelihood of college-going for disadvantaged students (Stephan & Rosenbaum, 2012). Using NELS:88 data, Rumberger and Larson (1998) address individual determinants of dropout and find that measures of academic and social engagement (i.e., absenteeism, behavior, extracurricular participation) are predictors not only of dropout, but also of student mobility, suggesting that student mobility is another form of disengagement.

Extracurricular activities play a role in developing personalized learning connections in high schools. At-risk students who participate in extracurricular activities, specifically sports and volunteering, are twice as likely to graduate from high school and enroll in college (Peck, Roeser, Zarrett, & Eccles, 2008; Roeser & Peck, 2003). In a review of the literature on school-based extracurricular activities and their role in adolescent development, Feldman and Matjasko (2005) find that the costs and benefits of participating in extracurricular activities vary across types of activities and social contexts. Such activities do provide opportunities to develop social capital and supportive networks, such as mentoring relationships with coaches and other adults. These supports and networks, in turn, increase student connectedness, which has a positive relationship with achievement and staying in school (Eccles, Barber, Stone, & Hunt, 2003; Mahoney, 2000). Working during high school, on the other hand, has been found to have negative effects on academic outcomes such as grades and progression toward graduation (Marsh & Kleitman, 2005). Class cutting is another result of this alienation, what students describe as "boredom": disappointment in their education and feelings that they are not being challenged or engaged in productive work (Fallis & Opotow, 2003). Teachers can compound this class cutting in their reactions to it, indicating they do not care about students and whether they attend class.

Inside the classroom, teachers are the primary agents of developing personalized learning connections. The vast majority of research describing teachers' role in promoting personalization of learning takes the form of qualitative case studies. Salient in this literature is the idea that the burden for developing relationships with students falls on the teacher (Anderman, Andrezejewski, & Allen, 2011; Cothran, Kulinna, & Garrahy, 2003). To develop personalized

learning connections, teachers must show interest in their students, be enthusiastic, and care about and value them and interact with them both formally and informally (Langer, 2000; Stronge, 2002; Whitney, Leonard, Leonard, Camelio, & Camelio, 2005). From students' perspectives, teachers' approach to discipline is a key factor in the development of these relationships, Students want to trust their teachers to be fair and this trust is a key component in student respect of teachers (Copland, 2003; Gregory & Ripski, 2008). This relational support that teachers provide students is positively associated with their academic motivation (Legault, 2006).

Additionally, a number of structural and programmatic factors can promote teachers forming such relationships with their students: small school size (Lee, Smerdon, Alfed-Liro, & Brown, 2000), small class sizes, weekly structured advisory periods (Darling-Hammond et al., 2002) with a clear purpose and sufficient resources (personal and social services) for teachers (Nasir et al., 2011), and cross-discipline teaming of teachers wherein teachers share the same group of students (Langer, 2000).

We operationalize schools with positive personalized learning connections as schools with personalization for both academic and social learning, where students feel strong connections to the school, both through classroom engagement and opportunities for involvement in extracurricular activities, and where these connections exist on a school-wide level with specific social and academic structures in place to support the development of these connections. Examples of such structures might include looping and discipline structures that require student discussions with administration and support personnel.

## Culture of learning and professional behavior

*Culture of learning and professional behavior*, the fourth component, refers to students *and* teachers in effective high schools who participate in a strong culture of learning and professional behavior. In terms of students, this culture is defined by a shared focus on high expectations for students and emphasis on students' academic needs among the administration, staff, and faculty of the school. Students internalize these cultural values as well, taking responsibility for their own learning and working together with teachers toward academic success. For teachers, much of this component also includes the notion of teacher professional learning communities and other communities of practice the define norms of engagement, commitment, and heightened professionalism for learning.

There are four major aspects that determine and set the tone of a culture of learning and professional behavior: (1) safety, both physical and social-emotional aspects; (2) teaching and learning, including instructional quality and social, emotional, and ethical learning; professional development; and leadership; (3) relationships, including respect for diversity, school community and collaboration, and morale and connectedness; and (4) environmental-structural

aspects, including aesthetics, resources, and extracurricular activities (Cohen, 2006; Cohen, McCabe, Michelli, & Pickeral, 2009; Freiberg, 1999).

The literature in this component clusters around teacher communities of practice, teacher expectations of students, and student-teacher relationships. A culture of learning and professional behavior is often supported by a teacher learning community as a means of professional development. Research addressing teacher learning communities are largely case studies. These may focus on critical friends groups, teacher inquiry groups, professional learning communities, or communities of teacher practice. While these groups take various forms, most have instructional improvement as a goal and center around teacher collaboration or community (Curry, 2008; Emerling, 2010; Langer, 2000). Different types of groups engage in different activities: critical friends groups may engage in a range of activities (Curry, 2008), teacher inquiry groups may focus on planning and implementing specific strategies to address particular instructional problems (Emerling, 2010), and teacher communities of practice may engage in data analysis and addressing student academic and social needs (Levine & Marcus, 2010). Such communities work to build a culture of learning and professional behavior by de-privatizing teacher practice and focusing on aspects of their work teachers can control and change, working to change teacher practice which should lead to increased student learning (Levine & Marcus, 2010; Vescio, Ross, & Adams, 2008). This sense of collective efficacy has been found to predict student achievement across multiple subjects (Goddard, LoGerfo, & Hoy, 2004).

Effective schools create a culture of learning and professional behavior among students by setting school-level and teacher-level high expectations of students. These schools clearly state their expectations for student behavior and academic performance (Wilcox & Angelis, 2011), and teachers have an active commitment to collective expectations of students, thereby playing a crucial role in student's internalization of a culture of achievement (Gutierrez, 2000; Pierce, 2005; Rhodes, Stevens, & Hemmings, 2011). Hoy, Tarter, and Hoy (2006) contend that a school's culture is built around three components: academic emphasis and high expectations, collective efficacy of students and teachers, and faculty trust in parents and students. Effective schools create this culture by pressing for and celebrating academic achievements, modeling success for teachers and students, and creating useful communication pathways for students and families (Hoy et al., 2006). Schools with high academic press and expectations, where students perceive that teachers care for them and encourage them, are associated with lower suspension rates and higher graduation rates (Gregory, Cornell, & Fan, 2011; Reed, 2015). Further, when faculty and staff do not hold high expectations for all students, the result is alienation (Patterson, Hale, & Stressman, 2008); student disengagement due to low expectations is the primary reason for class cutting (Fallis & Opotow, 2003) and eventual dropout (Patterson et al., 2008).

An effective culture of learning and professional behavior should lead to increased student effort and ownership. Domina et al. (2011) examine several

secondary data sets and find that students with higher expectations placed upon them exert higher effort in their classes; Carbonaro (2005) also finds that students in higher academic tracks exert more effort, controlling for prior achievement and prior effort.

In our work, we operationalize *culture of learning and professional behavior* as schools where both adults and students have both a culture of learning and high expectations among themselves: there are frequent opportunities for teachers to collaborate around instructional issues and participate in professional development, faculty have collegial relationships and a sense of collective efficacy, and students are supported academically based on their performance. These opportunities may be supported by specific practices such as professional learning communities, looping, and instructional coaching teams.

## *Systemic performance accountability*

The next component, *systemic performance accountability*, refers to the "new accountability" of education reform, where outcomes take precedence over processes in the evaluation of scholastic performance (Elmore, Abelmann, & Furhrman, 1996). The emphasis on outcomes is evident throughout the system: schools and districts face sanctions specified under the federal No Child Left Behind Act; student test scores increasingly determine grade promotion and graduation; and in an increasing number of states, student test scores now constitute a portion of teacher performance evaluations. In theory, as teachers and other educators are held accountable for student outcomes, and where there are real consequences for student outcomes, achievement will increase. Yet the literature on systemic performance accountability in secondary schools finds that efforts to shift the focus of educational accountability away from educator processes to student learning outcomes do not always achieve their desired effects on either processes or outcomes: the success or failure of an accountability policy is a function of how those at the "street level" ultimately implement it rather than the quality of the policy's design (Anagnostopoulos, 2003; Anagnostopoulos & Rutledge, 2007; Carlson & Planty, 2011; Hemmings, 2003).

One consistent finding across the literature is that the success of accountability policies, as measured by either implementation fidelity or student achievement, is mediated by teachers' beliefs about their students (Metz, 1990). Specifically, whether teachers alter their practices in response to new policies hinges on educators' willingness to acknowledge connections between instructional practices and student learning (personal responsibility), and between student learning and the policy's outcomes of consequence (data validity).

Whether educators respond to accountability measures with instructional strategies or by deflection depends on the degree to which they acknowledge these linkages. High school teachers do not adapt instruction in response to outcome-focused accountability policies in cases where they do not believe their practices meaningfully contribute to the outcomes of consequence. Instead, teachers deflect policies' intended responses either with "cognitive shields," like blaming student failure on students themselves or their family backgrounds or tactical deflection strategies like lowering expectations or altering results (Anagnostopoulos, 2003). As accountability policies increasingly center on student learning, teachers in high schools see the onus for meeting increased performance standards falling on students (DeBray, 2005). Other evidence suggests that teachers' dissociation of their instructional practice from student achievement is a long-standing facet of teachers' professional culture (Ingram et al., 2004). Thus when students struggle to achieve performance targets set forth by accountability policy, teachers distribute blame between students' inadequate preparation and lack of motivation or interest (Anagnostopoulos, 2003; Anagnostopoulos & Rutledge, 2007; DeBray, 2005). Carlson and Planty (2011) find evidence that where accountability policies have ostensibly ratcheted up student graduation requirements, educators manipulate the policy to allow students to graduate without meeting the new requirements. Such practices may be partially responsible for disappointing effects of graduation requirements on student achievement and college-going rates (Holme, Richards, Jimerson, & Cohen, 2010; Plunk et al., 2014; Reardon, Arshan, Atteberry, & Kurlaender, 2010).

The effectiveness of accountability policies also relies on outcomes of consequence that educators understand and accept as valid measures of academic success. This concept appears throughout literature on accountability, though under different phraseology: "coherent and good targets" (Porter Chester, & Schlesinger, 2004), "validity of outcomes chosen" (Schildkamp & Visscher, 2010), or a "coherent vision for success" (Wilcox & Angelis, 2011).

Given the difficulties and challenges to gaining teacher buy in for accountability, in our work, we operationalize *systemic performance accountability* as the degree to which adults receive regular oversight in their duties and responsibilities and are provided with frequent feedback for improvement, and there is a system of rewards and consequences in place related to this system of accountability.

## Connections to external communities

*Connections to external communities* is our final component and refers to robust connections and relationships between schools, families, and other community agencies. The literature on high schools and parent and community relationships is limited, especially when compared to the vast

conceptual and empirical literatures on parental and community engagement in elementary schools and in education in general (e.g., Wells, Gifford, Bai, & Corra, 2015). The larger literature's focus on elementary schools does not take into account the unique features of high schools, or the unique developmental needs of adolescents. While there is agreement with the notion that "families, communities and schools hold shared and overlapping responsibility for the healthy development and the social and academic success of all children" (Davies, 1995, p. 267), less is understood as to how these aspirations are fulfilled in high school. To the extent that the literature on the relationships between high schools and student achievement does address external constituencies, the focus is primarily on parents, with much less attention to the larger community in terms of social agencies, businesses and community assets. There is, however, a growing literature on business partnerships as high schools design and implement career-ready standards and "academies," schools-within-a-school that focus on themes or specific areas of study to connect to the workplace.

The empirical research in high schools is clear: parental support and parent involvement matter, as these provide sources of social capital. The existing literature suggests that much like other components of effective high schools, connections to external communities tend to enhance the high school student experience through developing attachments and social networks, while lack of connections seems to contribute to alienation and disengagement. Interestingly, much of the empirical research on high schools specifically is based on NELS 88 data, or other longitudinal data from late 1980s.

The parental involvement literature primarily relates to what actions or activities of parents are important for high school student achievement and graduation, and how schools can help develop parent involvement. In terms of what aspects of parental involvement are important for positive student outcomes in high schools, Crosnoe (2001) explains that from an adolescent development perspective, parent involvement in high school has four aspects: "parents' management of their adolescents' careers (e.g., helping to select courses), active assistance (e.g., helping with homework), encouragement of educational goals, and attendance at school events (Miller, 1995)" (Crosnoe, 2001, p. 212). Strayhorn (2010) reported similar findings in studying Black high school student achievement in mathematics. As part of a longitudinal study of nine high schools in two states in the late 1980s, Crosnoe (2001) found that in general, parent involvement in the above areas decreases over time in high school. The largest decrease is of parents of students in college-preparatory tracks, while general and remedial-track parental involvement is more stable over time. In a more recent study, Crosnoe and Schneider (2010) found that students with lower test scores in 8th grade were more likely to enroll in higher-level math classes in 9th grade when they discussed course selection with their parents. Englund and colleagues (2008) concluded that

parent-adolescent relationship are very important in understanding high school dropout and that teachers can help support students if they do not have positive relationships at home.

As noted, most researchers explain the importance of these results in terms of social and cultural capital in an adolescent developmental framework and the importance of positive parent-child relationships in helping adolescents navigate the high school experience. It should be noted that this approach has also been criticized in terms of the "highly defined, social constructed scripts" for parent involvement (Smrekar & Cohen-Vogel, 2001, p. 75), one that is often rooted in one-way communication, rather than a partnership of overall support and development, taking into account the cultural contexts and needs of families.

Research on *how* to involve parents is less prevalent as it pertains to high schools. Much has been written about the importance of understanding cultural perspectives and barriers from parents' points of view, creating a caring, welcoming climate. Bauch and Goldring (2000) found in a study of high schools of choice that a supportive school environment, a caring atmosphere, and requiring parent volunteering influence the opportunities teachers' perceive that the school provides for parent involvement at school, and the extent to which the school seeks parents' advice, provides information to parents, and initiates contacts with parents. In particular, the organizational quality perceived by teachers that most characterizes a communal school organization, a caring atmosphere, appears to have the greatest impact on opportunities for parent involvement. Further, a supportive school environment has the greatest influence on the school's provision of information to parents.

Taking into account these perspectives of two-way partnerships, moving beyond parents to broader community agencies, and fostering stronger parent-student relationships, our broader work operationalizes *connections to external communities* as schools where there are diversified strategies for involving parents from all subgroups, support for student initiatives to create linkages between the school and external communities, and connections with the community that strengthen the school, such as vocational training opportunities.

## Conclusion

The implications of this framework and approach for school leaders suggest that leaders focus on school culture through agreed-upon norms and routines anchored in the core components. It suggests that leadership in high schools requires articulating, engaging in, and supporting routines and practices to bring the essential elements to the forefront of the entire school community. This is in stark contrast to the notion that leaders are responsible for obtaining and implementing a particular set of programs (such as ninth-grade academies). The high school leader is thus responsible for

seeding a culture that attends to and focuses on the essential components. This includes such actions as leading changes or improvements in instruction, and using multiple forms of data to provide more frequent, specific feedback and to engage teachers in ongoing reviews and discussions of their students' progress. In addition, leaders would focus on establishing more systemic routines that provided greater, and more widespread, opportunities for faculty to connect with and get to know their students (see Huff, Goldring, & Guthrie, 2012).

The framework can also point to the need for refining our understanding of just what specific leadership practices matter most in improving student achievement in high schools. Grissom et al. (2013) have found that specific practices such as teacher coaching, evaluation, and developing a school's educational program positively predict achievement gains, while principals' time spent on brief, informal classroom walkthroughs may actually be negatively associated with achievement gains. They call for more study and definition of what comprises effective instructional leadership in different contexts. The essential components offer a framework for examining the high school leadership context in more depth. We suggest that focusing future inquiry into the leadership practices that specifically bring to the fore these essential components can assist in deepening the understanding of effective high school leadership, change the ways in which principals allocate their time and resources, and provide a roadmap for professional development and training.

Although the literature reviewed in this article is not definitive, and it does point at the lack of depth of empirical research on high schools, it also suggests that these components are the most plausible places to focus indepth inquiry into how to change high schools so more students reach successful outcomes. Further, the literature that we review is, on the whole, culturally neutral and does not directly address challenges associated with leading successful high schools in increasingly socially, economically, culturally, and linguistically diverse contexts. To not acknowledge the large role that factors external to school policies and practices contribute to the challenges high schools face in effectively educating struggling students is to paint an incomplete picture. As Rothstein (2004) delineates, housing policy, health policy, child-rearing styles, and summer learning opportunities, among other factors, contribute to the challenges schools face in educating low-income students. Further, research shows a strong relationship between concentrated poverty in schools (poverty levels greater than 75%) and low achievement and, as schools continue to re-segregate, it is reasonable to expect that this problem of low achievement will persist (Boger, 2005; Horn & Kurlaender, 2009; Mickelson, Smith, & Southworth, 2009; Orfield & Lee, 2005; Rothstein, 2004).

In spite of the influence of external factors on educational outcomes, we submit that there is much that schools *can* do to improve educational outcomes for students from historically neglected groups. Our review of the literature suggests that cohesive and coherent implementation of these eight components is essential for the creation, transformation, or sustaining of an effective high school, as measured by student achievement and attainment. However, no component is sufficient, in and of itself, to create or sustain an effective high school. The components improve student outcomes by overlapping, intertwining with, and supporting each other to foster the conditions necessary for increased attachment and engagement to the school on the part of all school community members. For instance, a rigorous and aligned curriculum, when not implemented with quality instruction, can have little effect. However, without the systematic use of data, school leaders and teachers may not be aware to what degree quality instruction is occurring. Without systemic performance accountability, school leaders and teachers will have little accountability for implementing quality instruction, and a school without a widespread culture of learning and professional behavior may lack the necessary structures for professional development and collaboration to improve instruction. As such, these eight components reviewed and conceptualized herein, with learning-centered leadership and a rigorous and aligned curriculum as the anchors, taken together, are the essential components of effective high schools. We set forth the hypothesis that trying to change the "DNA" of high schools in a fundamental way through implementing and enhancing the work of teaching, learning, and leading around these core components will greatly enhance the engagement, commitments, and achievements of high school students and the adults who guide, teach, and mentor them. In order to improve academic outcomes for *all* high school students, policies and practices must be implemented that address these components in sum, rather than implementing discrete or piecemeal strategies focused on individual components.

## Funding

## Note

1. The authors recognize this review does not encompass the full body of literature on effective high schools, but for the scope of this article, we limit our review to peer-reviewed journals.

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