

**TARGETED LITERATURE REVIEW OF MAJOR
CONSTRUCTS AND THEIR COMPONENTS: EVALUATING
THE NATIONAL SCHOOL DISTRICT AND NETWORK
GRANTS PROGRAM**

MARCH 13, 2002

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INTRODUCTION

The Bill & Melinda Gates Foundation has committed \$350 million to its National School District and Network Grants Program. Focusing on the challenge of providing an effective secondary education for all students, especially the most disadvantaged, the foundation is supporting small schools as a corrective to the large, impersonal “shopping mall” high schools of the past 50 years. To this end, the foundation is funding what it sees as promising schools, districts, and networks of districts or schools engaged in 1) converting large schools into smaller learning communities, 2) establishing new smaller model schools and replicating them, and 3) restructuring large high schools in other innovative ways besides converting them into smaller units.

This Literature Review provides background information on research that speaks to the various dimensions of the foundation initiative. It is designed to be a targeted review of key constructs of the foundation’s initiative and to provide definitions and examples of research pertaining to those constructs. It has been used in tandem with the conceptual framework both to guide the development of the evaluation’s research design and to indicate the contributions of this study to the wider research environment.

In the sections that follow we first describe the types of activities that several reform organizations are currently undertaking to address problems found in large high schools, all of which are also being pursued in the foundation’s initiative. We then discuss the specific strategies and outcomes in which the foundation has expressed a particular interest (and in which it has invested) and discuss these in the context of the education, sociology, psychology, political science, and economics research literatures. We move from there into a discussion of the factors that are known to influence the success of reform activities. We divide these factors into three categories: factors found at the level of the grantee (including vision, implementation strategies, and grantee capacity); at the level of the school (including organizational capacity); and at the level of the national, state, district, and local environments, which form the contextual backdrop for these reform efforts. Finally, we end with a brief discussion of intervention strength: its components and implications for successful education reform.

BACKGROUND LITERATURE ON TYPES OF EDUCATION REFORM STRATEGIES

We begin this review with a general discussion of a wide range of education reform strategies that currently are being pursued by many different school reform organizations in the United States. Figuring most prominently among these efforts are 1) the creation of small schools, 2) the restructuring of existing schools 3) the creation and replication of model schools, and 4) the conversion of large comprehensive schools into smaller learning communities. Although organizations undertaking these four strategies may engage in more than just one of these approaches in any one jurisdiction, for analytical purposes, we distinguish the boundaries demarcating these four and describe their various features and goals.

Creating Small Schools

Over the past decade, a number of reform efforts have been aimed at reducing the size of the learning communities within which students reside. Although these efforts take multiple forms (e.g., breaking up existing large schools, creating new schools, reducing class size), their common purpose is to provide students with a more personalized environment that addresses their individual needs and learning styles. Among the many supporters of the small schools movement are the Bill & Melinda Gates Foundation, the Annenberg Foundation, and the Carnegie Foundation. In addition to the \$350 million that the Bill & Melinda Gates Foundation has committed to the improvement of American schools through the creation, replication, and scale up of small high schools, the Annenberg Foundation has committed \$500 million to reform urban high schools, emphasizing the importance of reducing school size, and one of the Carnegie Foundation's major goals for middle schools has been "to create small communities for learning" (Carnegie Council on Adolescent Developments, 1989, p. 9). Across the country, the size of learning communities is being reduced with support from governmental agencies and the philanthropic community.

Recently, school size has received much attention in the scholarly and policy literatures, as well as in the popular press. According to one scholar in a recent issue of *Educational Leadership*, at least part of this interest in reducing school size stems from intensive pressure placed on schools through the standards movement of the past decade (Wasley, 2002). In all states but one, education departments have instituted standardized assessments that are used to make "high-stakes" decisions about students—such as whether they will be promoted to the next grade or be able to graduate.

Smaller schools are thought to be able to produce learning environments that allow students to perform better on these assessments. Another factor contributing to the recent interest in small schools stems from “the increasing consensus among educators and the public that *all students can learn*” (Wasley 2002, p. 6, emphasis added). While educational theory of past generations has emphasized the ability of a *proportion* of school children to learn well, writes Wasley, the work of cognitive scientists, biological neurologists and educators now emphasizes the ability of *all* children to learn. With this goal in mind, all approaches that may facilitate children’s learning should be explored with greater seriousness. School size has been on the list as one of those approaches and has received renewed interest in recent years.

Because elementary schools tend to be somewhat smaller than high schools, the focus of scholarly work on school size has been on high schools (Cotton, 2002). This focus dates as far back as the late 1950s. James Bryant Conant (1959), for example, argued that schools with approximately 400 students are sufficiently large, though he favored schools somewhat larger. About 30 years later, Goodlad (1984) advocated for schools between 500 and 600 students. Garbarino (1980), echoing Barker and Gump (1964), described minimal advantages for high schools with more than 500 students (see Lee, 2000, for a review of the literature). More recently, Lee and Smith (1997) examined the size of high schools that appears to work best with respect to learning and the equitable distribution of learning. They concluded that learning was higher in middle-sized schools (i.e., 600 to 900 students) compared with larger or smaller schools, but that learning was more equitably distributed in smaller schools. They ended their study with a number of observations, including the findings that school size has important effects on learning; many high schools should be smaller than they currently are; and high schools can be *too* small. While some researchers have offered specific recommendations for size, others, such as Deborah Meier, have refrained from assigning a specific number to “small schools,” preferring, instead, to describe size in relation to a school’s ability to provide collaborative opportunities for its faculty and parents and to provide the possibility for personalization and safety for students (1998).

One of our evaluation team members was part of a group of researchers at the University of Michigan that sought to better understand how size affects the functioning of high schools. Specifically, this research team, headed by Valerie Lee, wanted to know why size matters for student learning. The researchers conducted a qualitative study of small and large high schools in one Midwestern state, focusing on two features expected to explain the relationship between size and

learning—curriculum and social relations (Lee, Smerdon, Alfeld-Liro, & Brown, 2000). In this study, Lee and her colleagues spoke with teachers, administrators, and students about the academic offerings and social relationships in such schools. From the literature and their own prior research, team members expected that academic offerings would be less diverse and more academically focused in smaller schools, and that social relations would also be more intimate and positive in smaller schools. What they found, however, was that although the smaller public schools in their sample did offer a more focused (and less diverse) academic program than larger schools, administrators and teachers often still wanted to offer the type of curriculum taught in large, comprehensive, “shopping mall” high schools (Powell, Farrar, and Cohen, 1985). In other studies, however, researchers have suggested that when run effectively, small schools do focus their curricula more narrowly on base courses in core curricula areas and that, with as few as 100 to 200 students, these small schools can compete with much larger high schools in offering advanced math, science, and other core courses (Haller et al, 1990; see also Cotton, 2002).

On the issue of school climate, Lee’s team found that social relations were more positive and intimate in the smaller schools they studied, many of which were located in rural districts. They were surprised to find, however, that this situation did not always benefit all school members. Some school members reported that they preferred anonymity, which only large schools can offer, particularly because they felt that their reputations or those of their families followed them at school. The study ended on a cautionary note: “The nation cannot expect that the generally perceived problematic nature of contemporary U.S. high schools is going to be solved just by making them smaller” (Lee et al, 2000, p. 165).

At a broader level, this cautionary note has also been struck by several recent studies that warn that small schools, alone, cannot fix all that ails American secondary education. There is no “silver bullet” to improving schools that, for years, have been failing to educate students well. One recent study (Howley 2002) warns against academic research that “portrays small schools as superior on virtually all measures of concern” (p. 27). Another researcher warns that “reducing the size of a school is a necessary—but not a sufficient—step toward improving school quality” (Noguera, 2002, p. 61). Among the other necessary components that must be in place, Noguera argues, are a clear mission, skilled and knowledgeable teachers who know how to encourage students to take responsibility for their own learning, effective leadership, and a plan for change that comes from within the school culture, not one that is imposed on it.

Research has found that when small schools are developed under these conditions, small school size has an indirect effect on student achievement. According to one researcher, “school size acts as a facilitating factor for other desirable practices. In other words, school characteristics that tend to promote increased student learning—such as collegiality among teachers, personalized teacher-student relationships, and less differentiation of instruction by ability—are simply easier to implement in small schools” (Visher, Teitelbaum, & Emanuel, 1999, p. 21).

Restructuring Schools

Apart from reducing school size, some reform efforts have focused on restructuring schools so that they better support teachers’ work and students’ learning and the equitable distribution of learning. Conley (1993) defines school restructuring as activities that “change fundamental assumptions, practices, and relationships, both within the organization and between the organization and the outside world, in ways that lead to improved and varied outcomes for essentially all students” (pp. 8–9). Newmann highlights the ambiguity that accompanies this concept, defining a restructuring school as “one that has made major departures from conventional practice in numerous ways, which could include anything from site-based management to heterogeneous grouping” (Newmann quoted in Brandt, 1995, p. 70). In one study they conducted, Newmann and his colleagues describe 36 such departures from routine practice (Brandt, 1995).

Many findings have emerged about restructuring from Newmann’s and his colleagues’ work, some of which will appear below in the section on student assessment. Concerning equity and student learning, a study using National Education Longitudinal Study (NELS) 1988 data shows that restructuring high schools, in contrast to traditional ones, offer enhanced conventional achievement, such as performance on standardized tests. In addition, Newmann and colleagues found that restructured schools have equitable effects on both students’ opportunities to learn and their achievements (Newmann & Wehlage, 1995). Nevertheless, Newmann and Wehlage also note that structural changes alone do not guarantee success: there is tremendous variability in the quality of instruction and the quality of student work in restructured schools. They explain that “most restructuring efforts—site-based management, team teaching, cooperative learning, alternative scheduling—are simply tools educators can use to get more authentic learning. But like hammers and screwdrivers,” their effectiveness depends on their purpose and on how they are used. “Not all schools use the tools the same way” (Brandt, 1995, p. 71).

Supplementing Newmann's and his colleagues' research on restructuring and its effects on student learning and equity, Lee and Smith (2001) write that restructuring activities may target three general domains:

- Reorganizing instruction (such as by creating mixed-ability classes to replace tracking; developing a cooperative learning focus for classrooms; facilitating independent study in different curriculum areas; and allowing flexible time for classes)
- Altering authority and expertise in the school (such as by creating interdisciplinary teaching teams, allowing students to evaluate teachers, and allowing staff to solve school problems)
- Personalizing relationships within the school (such as by using parent volunteers in the schools; keeping students in the same homeroom for several years, providing common planning time for teachers, and creating schools-within-schools)

Lee and Smith (2001) use organizational theory as a lens for examining these three domains, particularly as they may be seen to exist on a continuum from “bureaucratic” to “communal” organizational forms. They characterize restructuring as activities that move away from a bureaucratic organizational form (e.g., organizations that promote specialization and differentiation, feature top-down hierarchies, and promote formal goals and expectations) and move toward a communal organizational form (e.g., organizations that promote shared responsibility, shared commitment to a common set of goals, lateral communication and power in decision making, and greater personalization and individual discretion).

Creating and Replicating Model Schools

Several school reform efforts today seek to create a school (or a number of schools) featuring a set of reform designs, which then can be used as a template to some degree for reproducing those reform components. The actual designs in the model school may be rooted in a variety of curricular approaches (such as core knowledge or common focus), and/or they may feature a variety of particular strategies (such as school-within-a-school, technology-infused programs, block scheduling, school-business partnerships, magnet schools, and charter schools).

Model schools are designed, then, for the benefit of students not only in the home school, but also in future “replication” schools. The New American Schools Development Corporation, for example, was established in 1991 to fund the development of organizations that would create designs, or models, for “break the mold” schools and that would help replication schools implement

designs on their own home sites (Bodilly, 1998). Some reforms prescribe a “tight” model for replicating components of the design (such as the Core Knowledge model), whereas others propose a “looser” adaptation of principles (such as the Coalition of Essential Schools or Expeditionary Learning).

Whatever the level of prescriptiveness, replication may occur along a number of dimensions:

- Organizational structure
- Goals, missions, and visions
- Policies and procedures
- Instructional materials
- Assessment strategies

As suggested by this list (and as will be discussed in later sections of this document), there are practical and philosophical challenges to replication, particularly in terms of implementation. Many model school designers (particularly those selling intellectual property) expect that contracting schools will duplicate their models with a high degree of fidelity. Others believe that such duplication is impossible. One prominent reform effort that uses model schools, but that distances itself from the concept of replication, is the Coalition of Essential Schools (CES) (CES, 2000). In rejecting the idea that CES National can provide a “blueprint” that must be “implemented” by partner schools, this national organization argues 1) that unique local contexts require specially tailored reform that “blueprint” models cannot meet and 2) that teachers and administrators at treatment schools must feel ownership of reform. CES is one education reform design that encourages school communities to redesign curriculum, instruction, assessment, and organizational structures in keeping with a set of principles that CES lays out, but also always according to their own priorities and context.

Converting Existing Comprehensive Schools

Large schools neither nourish the spirit nor educate the mind....What big schools do is remind most of us that we don't count for a lot.

—Deborah Meier, 1995

Following from their experience as failing comprehensive schools, some large schools in this country are undertaking projects to convert into smaller schools. This movement reverses the trend, prevalent in the United States from the 1940s to the 1990s, of the widespread consolidation of

schools. According to the National Center for Education Statistics (1999), in 1930, 262,000 U.S. public schools served 26 million students; by 1999, approximately 90,000 U.S. public schools served about 47 million students (see also Wasley, 2002). As these numbers indicate, during the past 70 years of the 20th century, this country has experienced an enormous increase in student enrollment, while vastly reducing the number of its high schools (Annie E. Casey Foundation, 2001). According to the U.S. Department of Education, more than 70 percent of today's students attend high schools with more than 1,000 students (McNeil, 2000). Historically, the rationale for creating large schools has been to (1) offer a wider curriculum to students, (2) provide teachers with options for grouping students according to their ability, and (3) take advantage of economies of scale and, simultaneously, place less strain on community resources (Wasley and Fine, 2000).

As indicated in the section on small schools above, however, research has demonstrated that large schools and high enrollment often create impersonal, institutional environments that make students feel alienated, teachers disempowered, and parents disenfranchised (Lee et al., 2000). These effects are often borne more heavily by disadvantaged students. Bickel, Howley, Williams, and Glascock (2001), for example, found an interaction effect between school size and students' economic status: as school size increases, performance decreases for economically disadvantaged students. Less advantaged students end up in the largest classes, with the least experienced teachers, and the least engaging curriculum and instructional strategies (Oakes, 1987; Wheelock, 1992; Wasley, 2002). In other words, "school size imposes increasing 'achievement costs' in schools serving impoverished communities" (Bickel et al, 2001, p. 2).

Conversion is an attempt to modify preexisting school facilities by retrofitting them to accommodate smaller learning communities. Some reformers view this option as "an effective way to improve education without incurring [the] construction costs" associated with building new autonomous small schools (Raywid, 1995; see also Merrigan, 2002, for an overview of the literature on conversions). High schools have implemented a variety of different models to downsize into smaller learning communities, each typically serving 200 to 500 students (Gregory, 2001). Reported models include: house plans, minischools, multiplexes, career academies, learning communities, clusters, charters, and schools-within-schools (Cotton, 2002). These models differ in degrees of separateness, distinctiveness, and autonomy, as well as in terms of organizational structure and practice (Raywid, 1995). For instance, the house plan generally refers to a program in which teachers and students remain together over a portion of the students' careers, and it is usually

overlaid upon the department structure of the traditional host school. Schools-within-schools, meanwhile, are generally more autonomous than houses, with their own personnel, budget, and programs, authorized by the board of education or superintendent (Raywid, 1995). It should be noted that the nomenclature of conversions can be confusing, since practice within any single model varies substantially, and different adopters use terminology in a highly idiosyncratic way (Raywid, 1996).

In their separate reviews of the research on large school conversions, both Raywid (1995) and Irmsher (1997) suggest that breaking up schools into smaller units can re-energize schools and improve student outcomes. Irmsher goes on to note that the most successful school transitions “have been based on the principles of cohesion, autonomy, focus or theme, and a constituency assembled on the basis of shared interests.”

Reasons for failure are more ambiguous. At the most general level, bureaucracy and centralization—with their tendency toward institutionalization—make organizational change difficult (DiMaggio & Powell, 1991). At a more specific level, Irmsher writes: “While the reasons for downsizing failures are still sketchy, reports usually cite one of three shortcomings: insufficient faithfulness to the small-school concept, insufficient autonomy and separateness, or failure to couple changes in the school culture with structural changes” (1997). Adding even further specificity to this account, Allen, Almeida and Steinberg (2001) found “five key tensions or challenges,” that schools face during their restructuring process:

- Schools are finding it challenging to focus their efforts simultaneously on implementing new district initiatives directed at preparing students for high stakes tests and on restructuring the school into small learning communities using inquiry-based, contextual learning strategies (p. 9).
- Schools are struggling with tensions resulting from how to fully cluster students and teachers into small learning communities (p. 12).
- A strong curricular leader is essential to developing a strong and effective small learning community. Schools are using a variety of approaches to ensure effective leadership (p. 13).
- In going wall-to-wall with small learning communities, schools are balancing the desire of teachers for input into staffing decisions with the need to ensure that students have equal access to a range of pathways (p. 16).
- As schools have formed more small learning communities, bilingual programs within those schools have struggled to maintain basic services to bilingual students and to ensure equitable access to upper grade pathways; inadequate levels of staffing have compounded the problem (p. 17).

Like the small schools movement, conversion is designed to bring personalization to teacher-student relationships and focus in academic activities. While more research is being conducted on this strategy as conversions come on line, converting large underperforming schools currently is the restructuring strategy least documented in the research literature.

THE BILL & MELINDA GATES FOUNDATION EDUCATION REFORM STRATEGIES

The Bill & Melinda Gates Foundation has identified each of the strategies above as a valuable model of high school reform and has invested in grantees that pursue these strategies. While funding these various approaches, the foundation is also focusing on a particular set of components that it has identified as leading to effective high schools, instruction, and student outcomes. These components include seven attributes of effective high schools, three attributes of effective teaching and learning, and seven attributes of effective districts.

In this section, we situate these attributes in the research literature. We ask if and how the seven attributes of effective learning find support in studies about the social organization, academic organization, and normative climate of schools. We go on to conceptualize the three attributes of effective instruction in terms of scholarly research on teaching—known alternatively as “authentic instruction,” “teaching for understanding,” “student-centered instruction,” or “constructivist” teaching.¹

We end the section with a discussion of the student outcomes that the foundation has expressed most interest in—students’ demonstration of learning, college preparedness, ability to engage in postsecondary education, and labor market participation and citizenship—and add a short description of research on outcomes for underserved students.

¹Because the grantees in this study are predominantly networks and urban grants which fund small high school models (and not generally district grantees, which may direct funding to elementary, middle, or high schools, and which are not exclusively small), we do not expressly investigate the research on districts in this literature review.

Attributes of Effective High Schools

Embedding Foundation Definitions of Effective High Schools in the Research Literature

In their effort to fund projects that successfully restructure schools, the Bill & Melinda Gates Foundation has identified seven attributes of effective high schools:

- Common focus on a few key, research-based goals
- High expectations, with all students completing a rigorous course of study
- Small, personalized learning environments
- Respect and responsibility among students and among teachers and between these groups
- Time to collaborate and the inclusion of parents and the community in an education partnership
- Emphasis on performance, with student promotions based on demonstrated competency
- Technology tools for designing and delivering engaging and imaginative curricula

Our framework for understanding these attributes begins with three broad constructs that have been used by researchers to discuss school quality: social organization, academic organization, and normative climate. We locate each of the attributes within these three important areas of high school characteristics. We use this framework to discuss the extent to which these attributes have already been studied by education scholars and other researchers, and to see if they might help extend theory on small high schools by introducing future research questions.

In the education literature, *social organization* is a concept used to characterize the personal and professional relationships that exist among individuals within schools. We understand the foundation's attributes of 1) personalization and 2) collaboration to be aspects of such relationships and, thus, may be investigated as components of the school's social organization. The *academic organization* of a school refers to such features as the division or integration of schools' curricular content and students' opportunities to learn—such as the grouping or tracking that takes place in the school, the number of academic courses available, and variation in students' courses of study in the same school. The foundation's attributes of 3) common focus, 4) performance-based instruction/learning, and 5) the integration of technology into the curriculum can be said to reflect

such features of the curriculum and, thus, may be examined as dimensions of academic organization. Finally, the *normative climate* of the school represents the norms, values, and mores that characterize the environment of the school. The foundation's attributes of 6) high expectations and 7) respect and responsibility reflect norms, values, and mores of school members and, therefore, can be explored as dimensions of the normative climate of the school.

Although several of the seven attributes may be rightly said to fall into more than one of these dimensions (for example, common focus clearly falls under the social organization and normative climate of schools, as well as under academic organization), by discretely locating the attributes in these three broader constructs, we are able to draw on a body of theoretical and empirical research to tease out those aspects of the attributes that researchers have already explored. In the sections that follow, we describe each of these attributes and their related underlying constructs in more detail. We also include a discussion of additional important social organization, academic organization, and normative climate elements not covered by the seven foundation attributes.

Social Organization

When we speak of a school's social organization, we focus on the relationships that govern multiple interactions in the school—among administrators, teachers, and students. These relationships include the teachers' professional community, the degree to which students are known well by adults in the classroom and in the school as a whole, students' learning environments, and the school's governance and decision-making processes. Of the seven attributes the foundation has identified as being critical to effective schools, we think that collaborative instructional activity and personalization most clearly fall under the broader construct of social organization. Here we draw on a research base that defines, measures, and investigates these dimensions and relates them to student outcomes.

- ***Time to collaborate.*** The foundation proposes that time to collaborate is a central attribute contributing to schools' effectiveness in educating students. We address this attribute by thinking about how collaboration is related to three broader social organization concepts: teachers' professional community (and the way this community provides opportunities and/or constraints to collaboration), students' engagement in cooperative learning environments, and schools' systems of governance and decision-making (and the way these systems provide opportunities and constraints to collaboration).

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- A. *Teachers' professional community.* According to Marks, Secada, and Doane (1996), one key component of a school's social organization is the professional community shared by teachers, which centers on the intellectual mission of the school and teachers' contributions to that mission. Professional community and shared vision are characterized by a number of dimensions, including 1) the degree to which collaborative instructional activity is encouraged among colleagues in the same and different disciplines (Ancess 1997); 2) the degree to which instruction is "deprivatized" in the school, and teachers "open their classroom doors and share their work with peers" (Sebring et al, 2000); and 3) the presence of reflective professional dialogue that occurs in the school. This last dimension concerns teachers' engagement in conversations about practice, student learning, and pedagogy (CES, 2000).

Marks and her colleagues (1996) argue that the intellectual quality of professional community infuses school policies, programs, and practices and informs teachers' expectations for students' behavior and performance. The quality of the professional community also generates social support for achievement among students—that is, it creates a normative climate that encourages intellectual effort (discussed in more detail below). The effect of professional community—and the collaborative relationships included therein—on student outcomes is expected to be indirect.

- B. *Students' cooperative learning opportunities.* Classroom learning environments are another dimension of schools' organization. Cooperative learning—in contrast to competitive or individualistic methods—exists when classrooms are set up so that students can work together to accomplish shared learning goals (Cohen, 1994; Johnson & Johnson, 1999). Cooperative learning occurs when students work together in groups small enough so that each student can participate on a collective task, and when the groups are expected to carry out their task without direct and immediate supervision of teachers (Wisconsin Center for Education Research, 2002). This form of learning has been studied widely, and it has been found to vary significantly from site to site. An overview of current research (Johnson, Johnson, & Stanne, 2000) finds that if cooperative learning is implemented effectively, the likelihood of positive results on student learning is quite high, although results are not guaranteed.
- C. *Governance and decision making.* The governance and decision-making structures that are in place in schools are a third dimension of social organization. Lee and Smith (2001) discuss the authority that teachers do or do not have in a school structure to collaborate in crafting curriculum; participate in decision making concerning teaching methods and classroom environment; share in resource and management decisions; and influence a wide range of school issues, including how instruction is organized. These authors refer to studies that suggest that teachers' sense of empowerment and control are enhanced in decentralized governance structures, and that their sense of authority may be indirectly linked to student outcomes through teachers' increased efficacy and commitment, which, in turn, may shape their practice and sense of responsibility.

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- **Personalization.** According to the work that Theodore Sizer has done with the Coalition of Essential Schools (CES), personalization is measured by the degree to which students are known by adult professionals in their school. Sizer, among others, argues that the ratio of students to teachers should be significantly lowered from their numbers in traditional high, middle, and elementary schools. Research suggests that personalization may allow teachers “to know and share information about students’ emotional, academic, and social needs, strengths, and weaknesses”; to create “strategies and interventions that are developmentally appropriate” for their different students; and to develop effective partnerships on behalf of students with parents and other teachers (CES, 2000). Sebring and colleagues (1996) stress the importance of students’ being known, but also feeling cared for. There is some evidence suggesting that students who believe that they are cared for and matter put more effort into their schooling, which, in turn, affects their learning (see Smerdon, 1999 for a review of the literature).

Other features that are elements of social organization and which are said to typify smaller schools more than larger schools, include keeping students clustered throughout their high school years and encouraging parent and community involvement.

- A. *Clusters.* Clustering students into teams for their high school years is an effort to enhance personalization (Fine & Somerville 1998). Ideally, teachers who have the same students in their homerooms for grades 9–12, for example, have the time to develop an historical knowledge of these students, and their engagement in classes, with their peers, and with their families.
- B. *Parental and Community Involvement.* Encouraging community and parent involvement in the decision-making structures of the school has been found to profoundly affect the social organization of the school (Small Schools Workshop, 2001, Wasley et al, 2000). According to one study, community and parental involvement improves “schools’ services to families by making schools more accountable to parents, strengthening ties between schools and families traditionally underserved by schools, and better serving students by taking advantage of parents’ rich stores of knowledge about their children” (Lugg, 2002, p. 72).

Academic Organization

According to the research literature, schools’ academic organization has several key dimensions, among them: 1) the degree to which there is a “common focus” in the school; 2) the degree to which students have equal opportunities to learn or, instead, are divided into different tracks; and 3) their course-scheduling practices. We will discuss each of these briefly. At the end of the section, we will also address two of the foundation attributes that also seem to fit under the category of academic organization—performance-based learning and the integration of technology into the curriculum.

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- **Common focus.** In traditional high schools, the curriculum is often divided into discrete subjects, typically organized by departments (Lee & Smith, 2001). High school students usually attend a class focused on mathematics, for example, then move to English class, then to science, and so forth. Generally speaking, the curriculum of most American high schools is not organized so that mathematics and English are taught in an integrated manner.

In small schools, some research suggests, it is easier and more valuable for students when faculty reject traditional subject specialization “in favor of integrating the curriculum” (Cotton, 2002, p. 37) and create cohesive curricula—in which “the many subject and course offerings fit together and create a solid, well rounded education” (Fine and Sommerville, 1998, p. 106). Frequently, small schools are said to be able to offer a “thematic focus” (Cotton, 2002), which may be a specialized curriculum, “such as a career area, an instructional approach such as project-based learning, a broad topic such as the sea, or some other organizing principle” (p. 26). The director of the Center for Reinventing Education, Rick Lear, describes common focus this way: “Out of the universe of things we could do, these are the things we will do, and we will do them very, very well...New small schools should be elegant in an aesthetic or mathematical sense, with nothing wasted, nothing extra” (2001, p. 1; see Cotton, 2002, p. 26). Common focus is a way of organizing the academic offerings in a school so that the curriculum provides a more coherent presentation of knowledge. Electives—offered prodigiously by large high schools—are de-emphasized, while basic core courses are seen as optimal occasions for learning.

- **Detracking.** Traditional American high schools (large comprehensive schools) are generally organized so that different students have very different learning opportunities (Oakes, 1985). Assigned to different “track” levels, or ability groupings, high school students experience vastly different content and instruction. Those in the “lower” or “general” tracks receive both learning content and methods that are less stimulating than those in the “higher” tracks, and they are left out of course sequencing that provides access to higher level courses (for example, lower track students may never get exposed to Algebra). Such tracking has been found to be detrimental to students’ performance and future opportunity, particularly to students who come from economically disadvantaged and minority backgrounds (Rosenbaum, 1976; Oakes 1985).

Small schools proponents argue, and researchers have found, that small schools are more adept at offering high-quality curriculum to all students in the school. According to Mohr (2000), many effective small schools are organized in heterogeneous groupings, and teachers are learning to meet students’ individual learning needs through the use of groups, anecdotal evaluations, and individual conferences. Mohr writes, “this means knowing students in a way that is much more thorough and much more personal than is possible in large high schools (p. 150).

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- ***Flexible scheduling.*** Another element of academic organization that researchers argue is important to small learning environments, but which is not explicitly identified among the foundation’s seven attributes, is flexible scheduling. As Cotton writes in her recent review of the small schools literature, “Many researchers have pointed out that the rigid scheduling of teacher and student time in the typical comprehensive high school has more to do with controlling students’ behavior than with providing meaningful learning experiences for them” (2002, p. 25). In contrast, in small schools that are run well, flexible scheduling allows teachers to change their teaching schedules as needed to collaborate with each other on multidisciplinary teaching, provide opportunities for their students to learn outside the classroom in the community, and offer sustained blocks of learning. Flexible scheduling by itself cannot create better learning, but in concert with quality curriculum content, it can facilitate better learning opportunities, according to many researchers.

 - ***Performance-based learning and integration of technology into the curriculum.*** In addition to the three components described above, two of the foundation’s seven attributes of effective schools may also be defined as features of academic organization—*performance-based teaching and learning*, and *technology integration*. Fred Newmann, along with his colleagues in a host of articles, has been at the forefront of describing the need for performance assessments that can supplement the emphasis placed on standardized testing in today’s school environment, and he and his colleagues have developed a rubric for conducting these assessments. We provide a more in-depth look at performance-based learning in the section below called “Attributes of Effective Learning.” In addition, the integration of technology does not characterize the traditional high school curriculum. It is proposed that technology may provide additional opportunities for students to gain access to information, and that it may give them important skills for the future (Baker, 1999). At present, little research exists on the role of technology in smaller learning community settings.

Normative Climate

The final construct that we examine is the normative climate present in schools, which refers to the values, norms, and mores that characterize the environment, or climate, of schools. Here, we describe normative climate as a multidimensional construct consisting of the following dimensions: a safe and orderly climate, relational trust and mutual respect, academic press, and students’ sense of belonging.

- ***Safe and orderly climate.*** Safety and order are essential elements of an effective learning environment (American Association of University Women, 1992). Prior research identifies safety and order as important characteristics of school climate (Lee, Chen, & Smerdon, 1996). Examples of measures of a safe and orderly climate include school problems perceived by students and teachers (e.g., physical conflict among students is not a problem at this school), safe school environment perceived by students and parents (e.g., school is a safe place), orderly environment perceived by teachers and students

(e.g., cutting class is not a problem at this school), and orderly classroom perceived by students (e.g., students disruptions inhibit learning).

- ***Relational trust and mutual respect.*** The construct of relational trust and mutual respect combines the foundation’s attribute of *Respect* with related constructs found in the literature on normative climate. By relational trust, researchers characterize school members’ (teachers’, parents’, students’, and administrators’) perceptions of their relationships with, as well as their attitudes toward, one another (Sebring & Bryk, 2000). For example, principals can facilitate trust, according to Sebring and Bryk (2002) by being accessible, demonstrating integrity (articulating values and conforming to them), providing basic resources for their teachers, and taking a personal interest in the well-being of others. Relational trust, like personalization, is expected to have indirect effects on student outcomes. It is said to create an environment of social support that is expected to lead to higher levels of commitment and effort on the part of students.

- ***Academic press and High Expectations.*** According to Lee, Smith, Perry, and Smylie (1999), academic press refers to the extent to which school members, including teachers and students, “experience a normative emphasis on academic success and conformity to specific standards of achievement” (p. 10). Academic press includes a number of dimensions:
 - Specific direction for student work and academic attainment (e.g., amount and content of homework assignments, specific standards for student achievement)
 - High expectations for student learning
 - Incentives that motivate students and teachers to achieve at high levels (e.g., stakes attached to performance—grade-level promotion)

As indicated in the second bullet, above, the foundation’s attribute of *high expectations* is a basic component of academic press. High expectations can be communicated in a variety of ways, from expecting all students to meet explicit standards of learning, perform satisfactorily on standardized tests, graduating from high school, and going on to college. In a study of Chicago Public Schools, Lee and her colleagues (Lee et al, 1999) found a strong relationship between academic press and student achievement.

- ***Student sense of belonging.*** Students’ sense of belonging refers to the psychological environment created by students’ perceptions of their relationships with teachers and peers (Smerdon, 2002). Definitions of perceived belonging place particular emphasis on how students themselves make meaning of their relationships with other school members—how they perceive those relationships, interpret them, and react to them (DeGroot, 1997). Arunkumar and Maehr (1997) define perceived belonging by students’ responses to such items as “I feel like a real part of this school” and “I am proud of belonging to this school” or by students’ perceptions of their relationships with teachers *and* peers (e.g., “I am treated with as much respect as other students”; “other students like me the way I am”; and “the teachers here respect me”). Prior research suggests that

students' sense of belonging is related to their academic self-efficacy and their grades (Roeser, Midgley, & Urdan, 1996).

In general, research suggests that schools with a positive normative climate (stressing safety and orderliness, respect and responsibility, academic press, and students' sense of belonging) provide a strong, supportive environment, which encourages students' intellectual efforts and academic achievements. Such support fosters a sense of confidence and psychological safety that allows students to ask for help, admit errors, take risks, and experience failure as they make their way down the learning path (Lee et al, 1999).

Together, schools' social and academic organization, combined with their normative climate, create the context for the teaching and learning that can take place in their classrooms.

Attributes of Effective Instruction

Foundation Definitions of Effective Instruction (Classrooms)

As indicated in the section above, the Bill & Melinda Gates Foundation has identified seven key attributes of high-performing *schools*—common focus, high expectations, respect and responsibility, among others—which we have examined in the context of education research on schools' social organization, academic organization, and normative climate. These organizational features of schools are expected to influence students' intellectual efforts as well as teachers' instructional practices. The foundation has also identified three key constructs describing powerful or effective instruction:

- Students' active inquiry (rather than passive learning)
- Students' in-depth learning and application of their attained knowledge (as opposed to superficial or merely “testable” knowledge)
- Students' high performance on both real-world tasks and standardized tests, or performance assessment

This description of powerful instruction comes from the National Academy of Sciences study called *How People Learn* (Bransford, Brown, & Cocking, 1999), which evaluated and synthesized developments in the science of learning. The contributors to *How People Learn* posited that effective instruction begins with what learners bring to the setting (e.g., academic content and cultural practices and beliefs). The creation of new knowledge, the authors demonstrated, begins

with learners' current knowledge. Environments that foster *active learning or inquiry* attempt to help students make connections between their previous knowledge and academic tasks. They encourage students to take control of their own learning and to extract underlying themes and principles from their learning exercises. Environments that foster active learning focus on sense making, self-assessment, and reflection on what worked and what needs to be improved. They encourage students to transfer their learning to new settings and events. Students develop a flexible understanding of when, where, why, and how to use their knowledge to solve new problems.

Deep understanding requires well-organized knowledge of concepts, principles, and procedures of inquiry. *In-depth learning* requires a knowledge base that includes both a set of facts and some clearly defined principles. Again, learning begins with students' current knowledge. Learning happens when students expand their understanding of a given topic and extend it to new situations. Deep learning happens when students are able to use their understanding of a topic to construct their own ideas of the principles that govern that topic. The argument for learning of this sort is that students become deeper in their thinking, they can work backwards to consider the problems being posed, and they do not look just for the "right" answer.

Assessment and feedback are crucial for helping people learn. To be most helpful, assessment should mirror good instruction, happen regularly as part of instruction, and provide information about the levels of understanding that students reach. Assessment should reflect the quality of students' thinking, as well as the specific content they have learned. If students are learning for deep understanding, assessments should make their thinking visible; and they should measure students' reasoning, understanding, and complex problem solving (Darling Hammond, Aness, & Falk, 1995). They should mirror the process demands and performance required by students' learning tasks. The content and process demands of performance assessments should align with teachers' and students' performance objectives. According to some research, the use of performance-based assessments has led to improved student learning (Hill, Foster, & Gendler, 1990), particularly for disadvantaged students (Howley, 1994; Klonsky, 1995). Feedback opportunities allow students to revise and improve the quality of their thinking and understanding (Bransford et al., 1999).

Embedding Foundation Definitions of Effective Instruction in the Literature

These notions of powerful instruction are aligned with a long tradition of progressive education—alternatively called authentic instruction, teaching for understanding, student-centered instruction, and constructivist teaching. Underlying this tradition is the notion of students as active learners and of teachers as guides, or coaches, in the learning process (NASSP, 1996; Cohen, 1988; Conley, 1993; Newmann, Marks, & Gamoran, 1996; Sizer, 1992; McLaughlin & Talbert, 1993).

The theory of constructivism is based on the idea that people learn better by actively constructing knowledge and by reconciling new information with previous knowledge. The theory rests on several assumptions: 1) some of our notions of what constitutes “knowledge” may be culturally constructed, rather than truth or fact; 2) knowledge is distributed among group members, and the knowledge of the group is greater than the sum of the knowledge of individuals; and 3) learning is an active, rather than passive, process of knowledge construction (Conley, 1993). Like current definitions of instruction, constructivism has two components: 1) in the method of delivery (i.e., teaching methods) and 2) in its content (i.e., intellectual quality).

Although a move toward constructivist teaching is now an active reform issue, it has a long tradition in the philosophy of education. At the beginning of the century, John Dewey called for an end to the traditional drill-and-practice method of instruction that was prevalent then (and that has powerful proponents now). Dewey’s conception suggested that knowledge and instruction should build on students’ experiences, rather than be viewed as fixed or determined (Dewey, 1902). The Bill & Melinda Gates Foundation, the Coalition of Essential Schools, and the National Association of Secondary School Principals in partnership with the Carnegie Foundation for the Advancement of Teaching, among others, have all called for such instructional changes.

Desired Student Outcomes

The Bill & Melinda Gates Foundation has focused attention on generating positive change across a number of student outcomes, both while students are in school and once they leave school. These outcomes include demonstration of 1) learning, 2) college preparedness, 3) ability to engage in postsecondary education, and 4) labor market participation and involved citizenship. We outline each of these constructs, as the foundation has defined them and as they are described in the

education literature. We devote a small special section to work that examines outcomes for underserved students.

Foundation Definitions of Student Learning

The learning outcomes identified by the foundation are as follows:

- Literacy in reading, writing, and presentation
- Scientific literacy
- Mathematical competence
- Working knowledge of content
- Problem-solving facility (ability to solve complex, real-world problems)
- Ability to use technology as a tool

Without covering each of these learning outcomes in great depth, we note that by scientific literacy, for example, the foundation means that students in foundation-supported schools should be engaged in scientific exploration and discovery that highlights the application of scientific knowledge to modern real-world contexts. When the foundation speaks of mathematical competence, it means that students should have a command of basic computational skills required in the modern workplace and in everyday adult life. And in a cross-disciplinary sense, by problem-solving facility, the foundation indicates that schools should expect students to move beyond the ability to recall, and toward a complex understanding of the topics discussed in students' courses. Students should demonstrate problem-solving skills with an eagerness to pose questions, explore possible solutions, and apply knowledge to real-world situations. Students should feel confident about solving problems and in using reasoning and critical-thinking skills (Bill & Melinda Gates Foundation Request for Applications Appendix A, 2000).

In addition to these particular skills, the foundation expects students to demonstrate the following outcomes in funded schools:

- High school graduation with a meaningful diploma
- Demonstrated competence through a variety of measures
- Good attendance
- Continuation (staying in school and grade-level promotions)

Embedding Foundation Definitions of Student Learning in the Literature

In-School Outcomes

As mentioned in an earlier section of this document, the foundation’s parameters of student learning resonate with work being conducted in the area of “authentic achievement,” or “authentic performance,” supported by Fred Newmann and his colleagues (e.g., Newmann & Wehlage, 1995; Newmann, Bryk, & Nagoaka, 2001). The authentic intellectual work movement criticizes “back-to-basics” teaching and learning styles (which include didactic teaching methods and student memorization) and promotes, instead, assignments and teaching that demand more complex intellectual work. According to Newmann et al. (2001), “students should be expected to interpret and synthesize information, show relationships between various kinds of information, explain why some answers are better than others, and solve unfamiliar problems that might have more than one plausible solution” (p. 10). We find clear connections between Newmann’s and colleagues descriptions of authentic learning and Foundation descriptions of scientific literacy and problem-solving facility, for example.

Treating learning as a desirable outcome requires that it be measured in a reliable way. Research indicates that two dimensions can be used to describe in-school learning; these dimensions are school engagement and student achievement. We take on a description of engagement measures first, since we consider engagement to be a contributing variable to student achievement. In the section on measuring achievement, we include additional information on assessing “authentic learning,” as discussed by Newmann and his colleagues.

Student engagement. One desirable student outcome is student engagement, which is an intermediary variable that operates between effective schooling and student achievement. The emerging body of theoretical and empirical work on students' engagement with school suggests that engagement is an essential step for understanding the process of student learning. Newmann, Wehlage, & Lamborn (1992) define academic engagement as students' psychological investment in, and effort directed toward, learning. Researchers have defined academic engagement as having both behavioral and psychological dimensions. Behavioral dimensions are typically defined by students' preparedness, attendance, and time spent on academic work (Finn, 1989; Finn & Voelkl, 1993; Lee et al., 1996; Lee & Smith, 1993, 1995; Marks, 1995). Psychological constructs are defined by students' enthusiasm, interest, and intensity (Newmann et al., 1992). Studies of alienation, or *disengagement*, typically examine the same student behaviors as engagement studies, only in reverse: class skipping, tardiness, absenteeism, school violence, and vandalism (Natriello, 1984; Newmann, 1981).

Measures of engagement are used as both dependent and independent variables. Research that examines student engagement typically takes one of two approaches: 1) focusing on school characteristics that enhance engagement or 2) estimating the relationships between engagement and achievement. To date, studies relating school characteristics to engagement dominate the emerging body of research examining student engagement. The limited work that does explore this second strand reports no association between psychological measures and achievement (Newmann et al., 1992)—most likely because of measurement difficulties—and only a small association between behavioral measures and achievement (Smerdon, 1999). The links among student engagement, high expectations, and improved performance have been examined by Brophy (1983), Covington (1992), Cooper & Tom (1984), Firestone & Rosenblum (1988), and Raudenbush (1984).

Student achievement. When seeking to measure student achievement, researchers have most commonly depended on traditional standardized tests, although innovative assessments are beginning to be used more widely (Newmann, Bryk, & Nagoaka, 2001). To measure student achievement in new model schools, for example, RAND researchers (Berends, Kirby, Naftel, & McKelvey, 2001; Mitchell, 1996; Glennan, 1998) examined performance trends in New American Schools (NAS) using state and district tests. They examined school-level scores in reading and mathematics because these subjects are central to reform. They made comparisons between NAS and non-NAS schools in their partner jurisdictions so that they had controls for model effects. However, they discovered limitations in using these data as markers of student progress. First, they found that differences

between treatment and control schools were not nearly as great as achievement differences *within* schools. Second, grade-level scores over time reflect the performance of different cohorts of students. Third, these scores are heavily influenced by family background variables. Fourth, the data reported by districts and schools sometimes do not support clear interpretations over time. Fifth, the data cannot be compared or summarized across jurisdictions. Other researchers have followed this approach and found these same limitations (Gamoran, 1992, 1997; Lee and Bryk, 1988).

This is not to suggest that test scores are meaningless as measures of student achievement. Rather, changes in expectations surrounding student work (as discussed above) create the necessity for supplementing this form of measuring and assessing student work. Acknowledging this, researchers have tried to dig deeper into student learning outcomes and to provide alternative means of measuring student work. For example, Newmann, Lopez, and Bryk (1998) sought to examine what they call students' "authentic intellectual work." To do this, they asked teachers to provide their research team with two typical assignments and two challenging assignments that they had given students, along with the students' written responses to those assignments. The team then used a rubric that they had designed to measure authentic achievement in writing and mathematics, and they scored students' assignments on the construction of knowledge and disciplined inquiry (Newmann et al., 2001). Reformers at Harvard University's Project Zero have followed similar approaches.

In addition to in-school outcomes, the foundation expects that smaller school size may also affect students' post-school achievement. The following sections describe three of these areas.

College Preparedness and College Entrance

Definitions of College Preparedness and Postsecondary Education

In addition to the learning outcomes described above, the foundation delineates a set of measures for college preparedness and successful college participation (Bill & Melinda Gates Foundation Request for Applications 2000, Appendix A). These milestones for college preparedness are:

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- High school continuation (staying in school and attaining grade-level promotions)
 - Participation in college-preparatory activities, including taking college entrance exams
 - High school graduation with a meaningful diploma
 - Acceptance into college

Measures of postsecondary education include the following:

- College acceptance
- College matriculation
- College completion

Embedding Foundation Definitions of College Preparedness and Postsecondary Education in the Literature

“College” in the United States is a vastly variable institution, ranging from 2-year public colleges (“community” or “junior” colleges) to 4-year elite private universities. It is also stratified along numerous social dimensions: community colleges are more likely than 4-year institutions to enroll academically less well prepared students, minority students, part-time students, poorer students, commuter students, older students, and first-generation college students. A major challenge for school reform at the secondary level is to offer students of all backgrounds greater opportunities to high-quality postsecondary education.

Labor Market Participation and Citizenship

Definition of Labor Market Participation and Citizenship

Besides preparing students for college admission, entrance, and completion, foundation-supported schools are also expected to prepare students for gainful employment and the obligations of citizenship. Concerning the latter, for example, students are expected to have substantial knowledge of the values on which the United States was founded. This includes an understanding of the nation’s history, culture, diverse demography, political system, and economic system. Moreover, students should be familiar with the global context within which the United States acts (Bill & Melinda Gates Foundation Request for Applications 2000, Appendix A).

Embedding Foundation Definitions of Labor Market Participation and Citizenship in the Literature

Labor market participation. Compared with other industrial countries (Japan and Germany, in particular), the United States does little to help its high school or college graduates prepare for and find jobs, or even to be well informed about the world of work. “Work-bound” students graduating from high school see little “articulation” between school and work (Stinchcombe, 1964) and so have less motivation to stay in school and take seriously their academic courses. Meanwhile, employers often complain about schools’ negligence in teaching students basic skills, but then do not engage in practices that reward students for staying in school and learning to read and do higher-level math (such as offering apprenticeships during high school or good entry-level jobs to graduates) (Rosenbaum & Binder, 1997).

Citizenship. What it means to be a well-educated and acculturated citizen of the United States and the world is a concept continuously in flux, reflecting political, social, and cultural movements of the day. For example, the notion of what constitutes “American values” has been widely debated at all levels of society, but particularly in its schools (Glazer, 1997; Hunter, 1991)—and this is not just a relic of the 1960s and 1970s. In fact, at all times in our nation’s history, the role of schools in the making of America has been a central conversation. At present, multiculturalism, globalization, and equity are at the center of this ongoing debate.

Outcomes for Underserved Students

Foundation Focus on Underserved Students

Access to higher education can provide unique opportunities for low-income students and minority students. A recent College Board report indicated that more than 40% of children from high-income families received a bachelor’s degree within 5 years of high school graduation, whereas only 6% of students from the lowest-income group received the same level of achievement in this timeframe. Given this fact and the fact that students of color are persistently underrepresented in higher education, the foundation aims to reduce the barriers that prevent low-income students and minority youth from attending college (Bill & Melinda Gates Foundation Request for Applications 2000, Appendix A).

Embedding Foundation Definitions of Focus on Underserved Students

Concern for the equality of educational opportunity and the equity of educational outcomes has driven research that focuses on students who are least successful in school—students who are typically called “disadvantaged” or “at risk.” Natriello, McDill, & Pallas (1990) draw distinctions among the culturally deprived, the educationally deprived, and those at risk. We give a quick overview of these definitions and then expand the list to a fourth type of disadvantage to incorporate the role that schools play in creating and maintaining disadvantage (i.e., the interplay between student and school).

Cultural deprivation is a concept derived from an earlier research concept, the culture of poverty—a controversial area, particularly when applied to largely African American urban centers (Katz, 1989). In educational discourse, cultural deficit theories suggest that differences in achievement are due primarily to experiential deficits in early childhood, such as those stemming from low socioeconomic status, single-parent homes, minority status, and an environmentally induced lack of work ethic. Wilson (1987) and Ginsburg (1972), among others, have critiqued these approaches on methodological as well as conceptual grounds, giving evidence, for example, that economic conditions *external* to the family influence poverty and family structure, more so than race-specific cultural patterns. In addition, cultural deprivation models focus on individual responses to factors external to the educational system. This is interpreted by some as relieving those who are entrusted to educate these young people of their responsibility to be successful in this endeavor (Edmonds, 1986; Neisser, 1986).

A second definition, in direct contrast and often in response to criticisms aimed at the cultural deficit perspective, directs attention away from individual students or families and toward educational processes. Educational deprivation models frequently explore differential learning opportunities in schools, as well as high variation in staff expectations for students, school climate, course-taking patterns, and disciplinary environment. In addition, these models demonstrate the variation in education provided to students *within* schools, such as through tracking (Rosenbaum, 1976; Oakes, 1990) and differing rates of grade retention (Meisels & Liaw, 1993). Minority and low-SES students are more likely than their counterparts to be enrolled in the general and vocational tracks and to be held back in school.

The “at risk” designation should take both personal attributes and external events and conditions into account. Whereas the cultural deprivation model places the “burden of guilt,” or responsibility, for poverty (or other attributes, such as low school achievement) on individuals who are said to have learned bad habits in their families, communities, and other *cultural* contexts, the educational deprivation model emphasizes the *structural* opportunities and constraints that students face daily in their schools. In this project, we emphasize the interplay and overlap between individual, cultural, and school factors, which cause certain groups of students to perform at low levels. Although low-income or low-performing students are disadvantaged in terms of educational outcomes generally, the impact of social status or academic performance on students’ educational opportunities, experiences, and outcomes is mediated by the schools they attend. Initial differences owing to social and academic disadvantage are often exacerbated by unequal access to opportunities and experiences in high school.

FACTORS THAT AFFECT EDUCATION REFORM STRATEGIES, WITH A FOCUS ON THE FOUNDATION INITIATIVE

Myriad factors affect the shape and the progress of reform in any given site. As we have seen in prior sections, the research literature in the fields of education, sociology, and psychology (among others) provides needed background for determining how reform strategies might be pursued (creating small schools, replicating the model, converting existing large schools) to achieve desired student outcomes (students prepared for citizenship, college work, and gainful employment). What we have not yet addressed are the factors which influence how well the reform will succeed in actual school settings. As we describe below, these factors can be categorized into three groups: 1) those at the level of the grantee, 2) those at the level of the school, and 3) those at the level of the environment encompassing the school, or its social context.

Factors Affecting Implementation at the Level of the Grantee

At the level of the grantee, we have identified three distinct sets of factors that strongly influence how reform will proceed in any given case. These three sets of influential factors are the grantee’s vision, the grantee’s implementation strategy, and the grantee’s capacity.

Grantee's Vision: Goal Setting and Coherence of Goals

When we refer to grantees' visions of effective schools, we are talking about their ultimate goals for the schools they hope to create or transform. Or, as Jacqueline Ancess (1997) has written:

Launching a school is a statement of belief in the possibilities of education—the belief that education can make a difference in the lives of individuals and in the life of our democracy. The vision is a statement that embodies and unfolds the school's beliefs about teaching and learning and how they occur. The vision is the architecture of ideas that guides the design and development of the school. It articulates what the school values and believes is important. It states how those values and beliefs will be enacted. It communicates the expectations for the school to members of the school community and to the outside world. The vision tells parents and students what they will be getting and where they will be going when students attend the school (p. 1).

Grantees may articulate in this vision a number of dimensions for how their schools should work, including a description of schools' expected organization and governance, modes of instructional goals and organization, ideas for developing and replicating forms of curriculum and instructional practice, plans for creating school structure, ideas about crafting partnerships or involvement with community and parents, and potential modes of reaching their target population.

Goal setting. There is substantial evidence that coherence in vision, as well as in design and implementation, is essential for the successful reform of schools. High-performing schools have clear goals and a school mission related to high student achievement for all students. With well-defined goals, schools can more easily agree how to focus their resources and shape their actions (Newmann & Wehlage, 1995). The success of school change depends on teachers in the school agreeing on the need for reform and on the school's mission, focus, and goals (Muncey & McQuillan, 1993, 1996; Timar, 1989). Shared vision and clear goals facilitate the building of a professional community among teachers (Louis, Marks, & Kruse, 1994; Newmann et al., 1996; Sebring & Bryk, 2000) and are also critical elements for student success (Hill, 1995). Effective goal setting relies on school actors' ability to determine the time and effort necessary to reach their goals, to prioritize specific goals (not just "doing our best"), to select goals that are challenging but attainable, and to get reliable and timely feedback on activities involved.

Coherence. Despite strong evidence showing the benefits of a school's coherent vision and instructional programs for student outcomes, most high schools offer programs that fall far outside the fold of coherent models. Among many other things, coherence is missing in large comprehensive high schools, or "shopping mall high schools," many researchers argue (Powell et al, 1985).

According to Powell and his colleagues' study of large schools, the shopping mall high school seeks to provide something for everybody, but in many cases, these schools' variety, choice, and neutrality are counterproductive for students. According to these authors, it is the average student who finds himself or herself most lost in comprehensive high schools; those who are neither the "trouble makers" nor the "gifted" receive the least attention (Powell et al, 1985). Research findings from thousands of observations in 15 high schools suggest that the varied curricula that support special students allow average students to drift through school. Schools must be restructured to motivate the average student.

Besides schools' failure to provide coherent programs for their students, many researchers have found that education reform, itself, often lacks coherence. At both the district and the school levels, reform efforts are often marked by a lack of consistency at the levels of vision, strategy, and materials. Too frequently, report these researchers, districtwide and whole-school reforms have been woefully incoherent (Tyack & Cuban, 1995; Cuban, 2001). For example, in a study of 57 districts, where five types of reform were tried, Hess (1999) documented a pattern of incoherent innovations, which were largely symbolic, politically motivated, or both—aimed more at the needs and interests of adults in the system than at the needs of students.

Grantee's Implementation Strategies

In addition to varying by their particular vision and the degree of coherence of that vision, grantees funded by the foundation's initiative also vary in the strategies they select for reform. Implementation strategy may be defined as the collection of intended actions on the part of the grantee to produce the desired relationships and outcomes in the schools with which they work.

When grantees implement a reform design, they must make decisions about a number of important strategy dimensions, including the following:

- The *degree of implementation* that schools are expected to follow their model. Models can be developed as "blueprints" (high level of implementation prescriptiveness) or as more flexible, "socially constructed" designs (low level of implementation prescriptiveness). Associated concepts include implementation fidelity and strength
- Their model for *replication*, which involves several of the same issues experienced in implementation
- Their ideas for *scale up*, or the means by which grantees plan to increase the number of schools engaged in reform without the assistance of funding agencies

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- The *soundness of their business plan* for developing and marketing their products and services to schools
 - Their strategy for *site selection*
 - Their *point of intervention*, or where in the system they intend to target reform (some possible points of intervention are instruction, student recruitment, and school governance)

Degree of implementation. There is debate in the research literature over what the term implementation actually means when it comes to incorporating externally developed reform design in new settings. One common meaning concerns the “faithfulness” of the implementation, or the “degree to which what was intended to happen in a site actually did happen.” Important in this definition is the emphasis on fidelity to the model: architects of the program intend and expect to implement their model in a setting with some degree of faithfulness to the original model. The way to measure implementation, according to this first meaning, is to look at the attributes of the program in its model form and gauge the extent to which those attributes show up in the implementation site.

A prime example of this first approach to implementation can be observed in the RAND research of the New American Schools program (Bodilly, 1998). In Bodilly’s report, we see measures of the degree of implementation at the school level (rated as “beginning,” “moderate,” and “substantial”) and then an examination of various factors that have influenced the degree of implementation, such as design team characteristics and planning at the school site.

The implications of using this approach to study reform implementation are clear: Bodilly and her colleagues (and others using this definition of implementation) assume that prior to the implementation of the model in the school, the reform design can be objectively described so that the “degree” or “fidelity” of implementation by the school can be objectively measured. Researchers using this approach assume that the “thing” being implemented—that is, the intent behind the program—can be defined clearly and objectively and thus can be used as a clear standard against which to measure the degree of implementation by the school.

A second common, but very different, meaning of implementation concerns how school personnel respond to the reform design once it has been put in place in their facility. By this definition, implementation concerns how the reform process actually unfolds in a school setting as “a social, negotiated feature of school life” (Datnow, Hubbard, & Mehan, 1998, p. 1). This definition privileges the process of interpreting and incorporating externally designed reform into a social

context, and it calls attention to the political, economic, social, and cultural conditions that enable possibilities and impose constraints on the incorporation of reform elements. It also calls incomplete any definition of implementation that assumes that the process is unidirectional, technical, mechanical, and rational (Havelock, 1969). Researchers using this definition—in contrast to Bodilly and others—generally assume that the program being implemented is intrinsically ambiguous and must be “socially constructed” in the course of implementation. Hence, no single objective set of criteria is available for measuring the degree of implementation.

Associated theories of what reform actually is—a “blueprint” in the first definition and a “social construction” in the second—are radically different, and they have implications for evaluation research. The blueprint approach sees the reform design as programmatic, which leads to one clear path for investigation: determining whether the blueprint was followed with a high degree of fidelity. Researchers traveling this path ask evaluative questions that include whether school staff read the blueprint and whether they had access to all needed materials to follow it. That is, did schools use the assessment tools that the model indicated, and did they provide the professional development available? The social construction camp, in contrast, views reform as a potentially mysterious object to those charged to follow it. Written in an obscure language, targeted toward groups of students who may or may not exist in the school, based on materials and concepts no one clearly recognizes—externally designed reforms often pose a challenge to school staff comprehension. In cases such as these, argue constructionists, school staff members try to make sense of the design by using their prior experience, knowledge, and materials. An evaluation of an implementation that uses this second definition must highlight the processes of meaning-construction that occur in the school and portray their effects on the resulting school systems.

The “objective” camp is often accused of being top-down, while the social construction camp is argued to be bottom-up, or non-directional.

A third path for approaching implementation may represent a compromise between these two poles (Majone, 1984). This third way is sympathetic to the constructionists’ critique of the blueprint approach, arguing that simple measures of fidelity cannot capture the complexities of reform, but it also supports evaluating the ultimate program developed in the school on its relationship to the original model. It expects that the ultimate program would neither end up being a one-to-one instantiation of the model, nor result in reform so far a field from the model (because of local

politics, culture, and organization) that it bears no similarities to the original design plan. We will explore this third approach to implementation in terms of School Capacity in a section that follows.

Replication. Closely related to the issue of implementation is the issue of replication, or taking a model from one school setting and implementing it in a second. Like the process of implementation (adapting an original model to school setting X), the process of replication (adapting a model from school setting X to school setting Y) involves a number of issues having to do with the prescriptiveness of the originating reform design.

Any model of school reform will include multiple features to be replicated, including approaches to curriculum, instruction, and student recruitment, among others. Each feature may have varying degrees of specificity. For example, some models may be based on some general principals for curriculum development, whereas others may present a detailed, prepackaged curriculum that replicates are expected to follow. Logically, one might assume that models and replicates will be more similar when features of the model are more specified. In this framework, the degree of replication is assessed by the degree of correspondence of key elements between the model and the replicate.

Defining the elements and the criteria for correspondence is a highly subjective process, however, that needs to be approached very carefully. Information on assessing replication can be found most directly in the literature in policy and program implementation dating to the 1970s. Contributors to this genre include Pressman and Wildavsky (1984) and Havelock (1973), among others. In the field of education specifically, major contributions have been made by Berman and McLaughlin (1977) and Loucks and Hall (1977).

Taken collectively, this body of literature suggests the following propositions:

- Implementation (replication) is a social/organizational process that proceeds in recognizable stages over time.
- A new instance of a program (or a school) is never identical to its model; it will differ from the model to some degree on some elements, such that replication is a matter of degree. The more complex the model, the greater the range of changes that can be expected in its replications. Often, what are claimed to be replications may bear only a passing resemblance to the original model.
- The elements making up a model may have a greater or lesser degree of specificity, or a mix of some highly specified elements and some minimally specified elements.

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- Fidelity is a measure of the degree of correspondence between the elements of the model and the elements of the replicate. Fidelity is no guarantee that the replicate will produce the same outcomes as the model, given the influence of many other factors, including the culture and social organization of the school and outside environmental conditions (to be discussed below).
 - The most effective *replicates* are not usually the most faithful *replications*. Rather, successful replicates, like other program implementations, develop from a process of “mutual adaptation” of the model and the setting into which it is being installed (Brown & Duguid, 1996).

Researchers have noted that the push for fidelity to a model often comes at the expense of local adaptation. Cuban (2001), for example, writes that many reform developers demand fidelity to the design as an attempt at “quality control.” In requiring so much fidelity, however, they become hostile to teachers’ adaptations. And yet, teachers’ adaptations to their own contexts are crucial—without adaptation, reform faces serious obstacles.

Scale-up. In addition to the strategies that grantees must craft to implement their models and replicate sites, *scaling up* is a third process of central importance to the foundation initiative. The phrases *scaling up* or *going to scale* are used interchangeably by many reformers to refer to a process or strategy for changing a policy, a program, or a practice across an entire education system. The changes are sufficiently large and diverse that norms of practice are changed, and the spread of reform throughout the system becomes virtually self-sustaining. The difference between replication and scaling up, then, lies in the reform’s ability to thrive and multiply without the assistance of outside agents, such as funding agencies.

Researchers have identified three different types of scale-up in the education setting: scaling up *schools*, scaling up *systems*, and scaling up *demand*. Scaling up schools means increasing the number of schools engaged in reform. When New American Schools (NAS) entered its scale-up phase, for example, it sought to transform 30% of the schools in its partner jurisdictions (Bodilly, 1998).

Scaling up schools leads to the second kind of scale-up, scaling up systems. NAS provides a useful example to define this term, as well. Scaling up systems means creating a critical mass of reforming schools in districts or states. NAS’s idea was that developing this critical mass would prompt the creation of policies and practices in districts and states that could then be tapped to support the operations of future innovative schools. Such policies and practices include changes in

budgeting, hiring and promotion, professional development, accountability, scheduling, and management and governance (Bodilly, 1998).

The third type of scale-up refers to creating national, state, and local demand for schools that effectively teach all students, regardless of background. The idea behind the scale-up of demand is that information disseminated about the success of school reforms, in conjunction with community outrage over failing schools, will drive demand for innovative schools. This demand may contribute to a renewed commitment to and understanding of changes needed to address the needs of all students.

In addition to discussing the level of scale-up activities, Bodilly (1998) also writes about the factors at the level of the grantee, the school, and the environment that promote scale-up. She says that scale-up is promoted by organizations that:

- have a stable team with the capacity to field qualified personnel to serve schools;
- effectively communicate their school models to school personnel, providing direction and guidance through adequately specified and accessible demonstrations, principles, policies, plans, and materials;
- effectively market their models and get the fees and other resources required by their models;
- emphasize the core elements of schooling: curriculum and instruction, student assignment, assessment, and professional development; and
- support implementation with whole-school training, extensive training days, common planning time, and facilitators.

These are the primary ways that grantee activities may affect scale-up. But we must also bear in mind the constructionist critique of such a list, as both overly technical-rational and unidirectional. Constructionists such as Hugh Mehan and his colleagues (for example, Datnow, Hubbard, & Mehan, 1998) warn us not to get overly attached to a laundry list of factors when we are looking for grantees' impact on scale-up, given what we know about the ambiguity that surrounds the interpretations of implementation and training. School personnel's actual understanding of these provisions will inevitably also affect the scale-up process. Nevertheless, Bodilly's list can sensitize us to some of the influences on scale-up that grantees may have. In later sections of this document, we address scale-up as it is affected by school and district conditions—again, keeping in mind constructionist critiques of such a list of factors.

Soundness of business plan. NAS’s experiences in the area of selecting design teams to develop products and services for partner schools also are instructive for grantees’ development of their business plans. Glennan (1998) describes how NAS initially selected design developers to include in its demonstration project on the basis of the qualities of the designed product and the capabilities of the group making the proposal to carry out the development of the product. “Had NAS recognized from the beginning that the product was going to be a service (design-based assistance),” however, “and that the organizational capability to deliver the service would be crucial to its success, it might have framed the request for proposals somewhat differently” (p. 56). For example, NAS might have highlighted organizational capabilities to manage operations, market services, and provide quality control, as well as to see its own activities as similar to those of a venture capitalist.

One area that NAS design teams found especially challenging was in the “mismatch between [schools’ or districts’] traditional purchasing practices and design teams’ products” (Glennan, 1998, p. 60)—in particular, teams’ ability to demonstrate the effectiveness of their designs to the schools that were considering purchasing its reform ideas. Anecdotal evidence and demonstration sites went some way toward addressing schools’ concerns, as did being associated with a prominent reform initiative, but schools or districts paying for a product often wanted greater evidence that the reform model would be effective in their home site. One aspect of this problem is that the design teams were developing a product that had, to date, no existing, regularized, large-scale market—an issue that also challenges the Bill & Melinda Gates National School District and Network Grant Program grantees in their development of business plans.

Another source of tension in the area of business plans emerged for the NAS design teams in debates over implementation (Glennan, 1998). On the one hand, the design teams were attempting to create innovative school designs for new learning environments, and they resisted compromising their design, implementation strategy, and technical assistance to satisfy their clients’ needs. They also had financial incentives to retain as much authority over these areas as possible. On the other hand, as we have seen in the sections on implementation and replication above, districts or schools often prefer to tailor the external reform design to their local context, perhaps by buying only segments of the reform design or by using local trainers. As a result of these tensions, NAS found that one of its areas of emphasis in the future would be to help designers “make markets” for their products.

Strategy of site selection. “Failure to enter the school in a positive light,” warns Bodilly (2001), “often permanently prejudice[s] the design team’s efforts in that school” (p. 100). For this reason, the selection of sites, and the process through which the reform agents (such as foundation grantees) go about making their site selection decisions, is a crucial step. Research supports the contention that reform mandates often fail because school staff who implement them do not adequately believe in them and are not adequately motivated to sustain them. For this reason, it is crucial to select sites that already are committed to the reform and to further develop the trust and enthusiasm necessary to sustain design implementation. In keeping with this knowledge base, the Coalition of Essential Schools (CES), for example, requires that schools get the “overwhelming support of the school faculty and its appropriate governing board” before applying to become a partner school (CES, 2000, p. 5).

In a different report on NAS, Bodilly (1998) found that replication processes benefited greatly if model designers kept the demands of scale-up in mind as they selected initial sites.

Point of intervention. Because schools are complex organizations, grantees must determine what they consider to be effective leverage points, or targets, of intervention. Cohen and Ball (1999) point out that interveners differ markedly in their targets: some focus on students, for example, whereas others focus on teachers, curriculum and instructional materials, or the environment in which instruction takes place (by restructuring school organization or adding resources).

In assessing these various points of intervention, Cohen and Ball (1999) suggest that a change in teachers has the greatest potential for strong effects, compared with changes in other areas, because teachers play a mediating role in instruction. These authors also argue that interventions that target the interaction of the three elements of the instructional unit (teachers, students, and materials) may have the greatest effect.

Whether external support providers can or will effectively influence instructional interaction in the classroom, however, is in some doubt. Some past research has found that external partners are most helpful at the school (organizational) level, rather than at the teacher level, because the partners were unable to give the intense assistance to teachers necessary to help them develop skills within their own classrooms (Cox, 1983). Similarly, others point out that support providers generally spend inadequate time in the schools and lack a strong vision for instructional improvement (Chimerine, Haslam, & Laguarda, 1994). Another limitation of any external support is that the partners depend

not only on their own strategies and the intensity of their assistance, but also on the school context and the behaviors of school staff (Cohen & Ball, 1999; Sunderman & Nardini, 1999).

Together, the strategies that grantees use to implement, replicate, and scale up their models—as well as their strategies concerning their business plan, site selection, and point of intervention—are predicted to strongly influence the success of the schools they are supporting.

Grantee's Capacity

Research suggests that aside from a coherent vision and explicit implementation strategies, external providers (“grantees,” in the foundation’s initiative) improve the odds of reform success if they can develop what is known in the research literature as capacity. Capacity is the human, material, and social resources that external providers bring to their work with schools and networks. In other words, capacity is the capability of providers (in this case, grantees) to help schools meet the challenges laid out in their reform models. Key features of capacity follow:

- Social capital
- Mechanisms for organizational learning
- Development and marketing of intellectual property
- Financial resources
- Quality and stability of leadership and staff

Capacity can be defined at both the level of the grantee (which we attend to here) and at the level of the school (which we address later in this review).

Social capital. Social capital refers to the institutions, relationships, and norms that shape the quality and quantity of social interactions in a social sphere—whether at the level of society as a whole, some smaller sector of wider society (such as a local community), the institutional level (such as a school system), or, still smaller, the level of an organization (such as a school or corporation) (Coleman, 1988, 1990). Whereas economic capital refers to monetary resources and human capital refers to the properties of individuals (such as talent, skills, and knowledge), social capital refers to the connections that exist among individuals—the social networks and the norms of reciprocity and trustworthiness that arise from them (Putnam, 2000; Cohen & Prusak, 2001). Without social

capital—and the relationships of trust that ongoing contact generates—cooperative action is problematic.

We can easily see the usefulness of social capital as a factor that affects the success of reform activities. Applied at the grantee level, social capital consists of the stock of active connections among grantee leaders and education thinkers and leaders, for example, and the trust, mutual understanding, and values that they share to make cooperative action possible in the schools they are supporting. To what degree are grantee officers part of national discussions on education reform, which provide the basis for innovative program directions? How can leaders use their participation in these circles as leverage at multiple levels of their operation—with national funders as well as with the schools they are working with? Have leaders developed relationships of trust with district officials or state departments of education so that they may push innovative reform without incurring sanctions? These constitute the types of questions we may ask of grantees' social capital.

Social capital is also a major determinant of reform success at the level of the school, which we discuss in a section on school factors, below.

Mechanisms for organizational learning. A second way we might describe grantee capacity is to think about grantees as organizations that must make decisions at every juncture in the process of developing their projects, and to consider whether they are making these decisions effectively. One contributor to decision making is organizational learning—the mode of interacting with the internal and external environments, as they affect the organization.

One of the most interesting debates today among scholars in the area of organizational learning concerns 1) whether the results of organizational learning occur in the minds of *individual* organization members or whether they are visible, rather, in the *relations among individuals* and 2) whether organizational learning *reinforces* existing action patterns in organizations or *causes them to change* (Cohen & Sproull, 1996). Although both of these central debates are of interest in the study of school reform, we focus on the second and ask whether (or when) actors in organizations (such as grantee organizations) use their experience as a rationale for staying on a particular course without diverging, or as an indicator that change and innovation are called for. By applying this question to school reform efforts, we can study several different topic areas, including whether grantee and school organizations do the following:

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- Use information from data systems to guide improvement
 - Record experience in narrative ways
 - Study and understand their mistakes and failures
 - Avoid spurious inferences from their successes
 - Learn from the experiences of other organizations, especially their failures
 - Draw on the literature and experts in organizational processes

One problem that organizations (such as grantees) encounter is that although they want to learn from their experience, frequently that experience is meager and leads them to infer inaccurate lessons from those events (March, Sproull, & Tamuz, 1996). Further, failures and successes are felt acutely, or “richly,” by organizations because of the serious consequences of both types of events. Because of this depth of feeling, organizations may inaccurately generalize from those experiences as they seek to avert future failure and to duplicate success (March et al, 1996). However, historical events are single data points, with limited lessons for future organizational life. Yet, that is not how organizations interpret them. Grantees in the foundation’s initiative may especially suffer from the pitfall of “samples of one or fewer,” (March et al, 1996) since they have few counterparts in the world of education: their activities have few precedents, whereas their decisions attract a good deal of attention.

A second important issue in the field of organizational learning concerns organizations’ will to innovate (and in the case of grantees, to allow schools to innovate with their models). Similar to the discussion of implementation specificity and fidelity in earlier sections of this review, we might think of grantees as being more or less inclined to allow schools to engage in innovative practices with their models. Organizational learning can be read as a willingness to trust actual practice (that is, what goes on among practitioners, such as teachers) and not just as a reliance on espoused practice or canonical training (such as the practice laid out in the design model) to guide activity (Brown & Duguid, 1996). Researchers who think of organizational learning in this way argue that reliance on espoused practice can blind an organization to the actual—and usually valuable—practice of its practitioners, or employees. But it is the actual practice of those in the organization that determines its ultimate success or failure.

Financial resources. Among the many other types of human and social resources that intermediary education organizations develop to increase their capacity is financial capital. Financial resources may come from private sources, such as foundations; public sources, such as school districts or federal grants; or the community, such as support from partnering businesses, parents’ fundraising, or other local agencies. Reform is costly, potentially involving professional development, technical assistance, on-site coaching, changes in the physical plant, curriculum materials, and technology equipment, among many other components (Jordan, McPartland, Legters, & Balfanz, 2001; CES, 2000). Financial stability and breadth facilitate the ongoing assistance that design teams (grantees) are able to provide to schools.

Development and marketing of intellectual property. Intellectual property is another dimension of grantees’ capacity, which has implications for their efforts in replicating and scaling up, as well as in increasing their financial capital. The experiences of the NAS design teams, as described in Glennan (1998, p. 61), should be useful for Bill & Melinda Gates Foundation grantees as they make decisions about the development and marketing of their intellectual property. To develop into self-sustaining organizations that can work with many different schools, grantees will likely have to develop the capacity to:

- market their products and services to schools that are a good match,
- price their products and services so that they are both acceptable to clients and sufficient to cover their costs, and
- continue to develop and refine their products.

As far as marketing was concerned in the NAS demonstration, the design teams—although expected to be independent from NAS—found it beneficial for NAS to play a central role in marketing activities, particularly in the area of “reaching national policy and practitioner audiences” (Glennan, 1998, p. 62). Most design teams also professed the value of working as collaborators in the area of innovative design, even while they were also competitors—a potentially helpful insight for Bill & Melinda Gates Foundation grantees.

Pricing products and services also proved challenging for design teams, particularly for organizations unfamiliar with cost-for-service procedures. Involved in the process are determining what the design organization’s own costs are for providing discrete services to customers; determining which services and materials are essential; and setting prices for those products and

services for different clients on the basis of customization of design implementation, level of school readiness, and geographic location of the school (Glennan, 1998, pp. 63–65).

Quality and stability of leadership and staff. The experiences of design teams involved in the NAS initiative illustrate the quality and stability issues that are likely to affect foundation grantees as they develop capacity. As Bodilly and her colleagues (1996, p. 104) indicate, progress in school sites depends significantly on the readiness of teams “to undertake their mission. Readiness [is] indicated by a team staffed to produce the changes proposed, a fully developed design with concrete models to offer sites,” and strong support and technical assistance available for school personnel. In particular, Bodilly et al. go on to suggest that “a capable design team includes a stable and established leader, or set of leaders; an experienced staff dedicated to the ideas of the design and capable of serving the needs of [school] sites; and, when called for, the proven working partnerships described by the design vision” (p. 107). In addition, grantees should have the capacity to provide on-site training to school staff on materials, models, and the processes for change. The implication of such activities is that grantees must develop their own staffs who understand the design of the reform.

INTERVENTION STRENGTH

Once grantees have selected strategies for pursuing their objectives, we can use a framework developed by Porter and his colleagues to think about the results we are likely to see in the future. This framework analyzes variation in intervention strength as occurring along four dimensions: prescriptiveness, consistency, authority, and power (Porter, Floden, Freeman, Schmidt, & Schwille, 1988). As we saw earlier in this review, prescriptiveness refers to the degree of specificity of the reform model, as it applies in unique school sites. A model with broad standards of implementation would be less prescriptive than a model with an elaborated scope and sequence of activities and content areas, which, in turn, would be less prescriptive than a mandated curriculum and instructional materials. Consistency refers to the coherence among different reform strategies and reform elements. Program authority may derive from varying sources, such as professional expertise or official sanction. And reform designs get their power from the extent of the resources committed to their enactment as well as from the constellation of rewards and sanctions accompanying them.

It is important to note that these attributes of reform design are not necessarily additive or even altogether independent of one another. For example, consistency among reform designs may have a multiplicative (rather than merely additive) effect on the strength of each. By contrast, a high degree of prescriptiveness may actually undermine a reform's authority by failing to honor the professional knowledge and discretion of teachers. Intervention strength, therefore, may derive more from achieving a proper *balance* of the components outlined by Porter et al., rather than from high levels of each. The bottom line is that for reform to have an impact on how secondary schooling is delivered to students, implementers need to know what the reform designers want them to do, the reform goals have to be consistent with other demands on practitioners' attention and time, and the practitioners need to have a reason to expend effort in the direction of the reform. The authority and incentives behind the policy are meant to provide that reason.

Factors Affecting Implementation at the Level of the School

Just as several grantee-level factors can influence the reform process, multiple school-level factors also can potentially affect successful reform, including the school's development of human, material, and social capital; the school's encouragement of organizational learning; and access to technical assistance. These components must be developed on site to handle the demands of the reform model.

School's Human, Material, and Social Capital and the Creation of School Organizational Capacity

A consistent finding in the research literature is that the degree and speed of implementation are greatly influenced by the individual and collective capacity at the school site. At least three types of capital contribute to organizational capacity. The education and sociology literatures define human capital as the knowledge and skills that individuals develop and maintain. In the area of school reform, a few of the most important types of human capital are teacher content knowledge and pedagogical skills, the quality and stability of school leadership, and the degree of parental involvement that can be developed at the site. Material capital consists of the resources that organizations can acquire to initiate and sustain their activities and includes such important goods as financial resources and adequate space facilities. Social capital, as we saw in the section on grantee capacity, consists of the networks of relations that organizations have that encourage trust and

information sharing and, ultimately, cooperative action. In developing a storehouse of capital, schools build capacity.

The effect of having a stock of human and material capital (and the resulting organizational capacity) on the shape and progress of reform is substantial. For example, we can look at a range of implementation activities that are affected by the amount of capital possessed by any single school. Thinking of capacity as a process of problem solving, for instance, we can ask whether school personnel have the human capital for dealing with the inevitable problems that occur as implementation unfolds. For example, do school leaders have the skills for innovating when the model does not indicate particular action? (Brown & Duguid, 1996). Thinking of implementation as human relations, we can investigate whether school staff have the human and social capital for dealing with interpersonal conflict, team building, and motivation. We can also inquire whether human capital exists in the form of leadership ability (e.g., the processes to focus attention) (O'Day, Goertz, & Floden, 1995); whether social capital exists for dealing with politics (are processes in place to bargain for resources and deal with opposing forces?); whether human and material capital exist for planning (processes to decide who does what, when they do it, and what materials they have to do it); and whether the human and social capital exist in the school to learn by imitation (are processes in place to facilitate learning from other organizations?).

Although the examples above range across categories of human, social, and material capital, research suggests that among the most important forms of school capital for successful reform is the human capital that is developed among faculty. This form of human capital results in instructional capacity, which is presumed to be key for improving student learning. Most capacity-building strategies in education today target individual teachers. O'Day et al. (1995) identify four dimensions of individual teacher capacity: knowledge, skills, dispositions, and views of self.

Individual educator capacity is not enough to ensure student learning, however. Beginning with the effective schools research and continuing through literature on organizational learning and complexity, analysts have also focused on the organizational aspects of capacity (Purkey & Smith, 1983; Levine & Lezotte, 1990; O'Day et al., 1995; Newmann & Wehlage, 1995; Mohrman & Lawler, 1996). Much of this literature has examined the characteristics of high-performing schools, on the assumption that these characteristics should be promoted in less successful ones. These characteristics include a shared vision focused on student learning, common strategies for engendering that learning, a culture of professional collaboration and collective responsibility, high-

quality curriculum and systematic monitoring of student learning, strong instructional leadership (usually from the principal), and adequate resources. More recent research has especially noted the importance of professional community (McLaughlin & Talbert, 1993; Newmann & Wehlage; 1995) in which information and authority are shared (Mohrman & Lawler, 1996; Darling-Hammond, 1996).

Cohen and Ball (1999) have brought together and further complicated the two levels of capacity. They argue that at its base, instructional capacity is “a function of the interaction among [teachers, students, and educational materials], not the sole province of any single one, such as teachers’ knowledge or skill, or curriculum” (p. 2). Moreover, because the instructional unit (teachers-students-materials) is nested within the organization, interaction with and management of the environment are integral to understanding instructional capacity. Aspects of environment management include the coordination of instruction among classrooms and individuals, opportunities for professional learning, normative structures, and incentives.

Scale-Up

In addition to school capital and capacity, another school-level factor found to affect the speed and progress of reform is the school’s approach to scale-up. We began a discussion of scale-up in the grantees’ strategies section of this Literature Review, where we defined the concept of “bringing reform to scale” and indicated the multiple grantee-level factors that influence the spread of reform (e.g., grantees’ decisions about the intervention specificity they expect in schools and grantees’ provision of technical assistance to schools). In this section, we discuss the school-level factors that also affect scale-up. We list items that schools may consider in their attempts to apply an externally designed reform model (the “objectivist” approach to scale-up), while also understanding that scale-up is not a unidirectional, top-down process (i.e., that schools reinterpret the model and adapt its tenets to their local context).

In studying New American Schools, Bodilly (1998) found that scale-up is more likely if schools are well informed about the model when they select it, and if the school has stable leadership. In addition, school staff need opportunities to observe the reforms in use, and they require that school leaders give clear signals about the priority of implementing reforms in their classrooms. They look for clarity and consistency in verbal messages, resource allocation, time allotment, and the efforts of school leaders (Glennan, 1998). They need extra time for learning and redesign. Finally, there should be compelling reasons for taking on the work and risk of reform to counteract teachers’ risk;

the possibility of inadequate performance and lower student achievement; and negative reactions from colleagues, students, parents, and policymakers.

Bodilly (1998) says that scale-up is greatest, then, when the following conditions are in place:

- School staff believe that district leadership is stable, they strongly support the effort, and they clearly communicate their support.
- There is no political crisis.
- There is a relatively strong culture of trust between the central office and the schools.
- School staff have some autonomy (in budgeting, scheduling, hiring and supervision, professional development, and management) commensurate with that needed to implement the model.
- The school's accountability system supports the reform.
- Additional resources are provided for professional development and planning.

Professional Development

The final set of factors at the level of the school that bears on reform success is the provision of professional development—specifically, the quality, content, and intensity of professional development that is provided for teachers and the mentoring of principals (Bodilly 1998). A key feature of schools' human and material capital, and organizational capacity, is the consistent structuring of opportunities for teachers and administrators to learn what is needed to improve practice.

Criticisms of current professional learning opportunities among teachers are well known. Surveys of staff development find that it generally consists of “unfocused, fragmented, low intensity” activities, such as short-term workshops with little or no follow-up (Corcoran, 1995). Little (1995) has argued persuasively that conventional professional development is based on a transmission model of learning that is inappropriate for current reform goals and contexts.

Meanwhile, studies of effective professional development have delineated several characteristics found to be related to increased teacher capacity. In their synthesis of the literature, Newmann, King, and Youngs (2000) conclude that effective professional development focuses on instruction and student outcomes in teachers' specific schools; provides opportunities to teachers for inquiry, help, and feedback; and provides external expertise while also respecting teachers' own

learning and expertise. Other researchers have documented the relative effectiveness of professional development that focuses on the content that students are to learn, and how best to teach it (Cohen & Hill, 1998; Kennedy, 1998; Corcoran, Wang, & Foley, 1999).

These findings are consistent with the recent emphasis on content knowledge and pedagogical content knowledge in studies of teacher capacity. In addition, evidence is emerging that this content-based professional development must be of high intensity and sufficient duration before it will have a measurable effect on practice (Hawley & Valli, 1998). A recent quantitative analysis of NSF's Local Systemic Change initiative, for example, found that only after about 80 hours of professional development did teachers use inquiry-based teaching practices significantly more frequently than they did before training. And the larger change in this method came only after 160 hours (Supovitz & Turner, 2000).

Organizational Learning

Just as grantees benefit from productive organizational learning in the course of their activities so, too, do reforming schools benefit from studying and understanding their own mistakes and failures, learning from other organizations' experiences, and avoiding spurious inferences from their success (among other dimensions of learning). Although other components to schools' organizational learning exist (and are listed in the grantees' capacity section of this review), we focus in this section on schools' ability to trust their actual practice in implementing reform, as it unfolds during the process of restructuring, rather than to depend too heavily on the canonical practice they receive from grantees' models.

As we also saw in the section on grantee implementation strategies, mutual adaptation between the grantee's model and the school's implementation of that model is inevitable—according to constructionist theory, adaptation is in the very nature of human endeavor. In the case of externally designed school reform, mutual adaptation requires the sites' willingness and capacity to innovate, as opposed to sticking to a prescribed, abstract script. Replicates that do innovate, or “mutually adapt,” are likelier to be successful than those that are beholden to the original model in all respects (Cuban, 2001). To the degree that schools are tied to any particular concept in the abstract, they may miss opportunities to be willing to learn from their mistakes, and to change. Learning from mistakes, adapting practice—these are both features of an *innovative* organization (Brown & Duguid,

1996). When organizations (in this case, schools) are not overly tied to the “canonical,” directive, abstract model of their reform, they are likely to be better able to innovate and adapt.

Factors Affecting Implementation at the Level of the Environment

Michael Fullan and several of his collaborators (Fullan, 1982, 1991; Fullan & Pomfret, 1977; Fullan & Miles, 1992) and others (Vanterpool, 1990; Marsh, 1992) have written extensively about a variety of factors that affect successful reform implementation. These factors range from those at the level of the reform design itself to those at the level of the national educational and political structure. Fullan (1991) has described four types of factors that combine to determine an innovation’s success in getting implemented in schools, in ascending order of environmental magnitude:

- Attributes of the reform innovation itself (the aforementioned grantees’ vision, strategy, and capacity)
- Characteristics of the school as a unit [the aforementioned schools’ human, material, and social capital (or organizational capacity); access to technical assistance; capacity for organizational learning]
- Characteristics of the school system (such as the district attributes that facilitate or hinder a model school’s efforts to implement reform)
- Factors external to the local school system (such as the political, cultural, and structural contexts in which the reform is taking place)

In other words, as the RAND evaluation of the New American Schools reform indicates, program implementation requires significantly different sets of behaviors for students, teachers, principals, and administrators, and those groups respond to and are driven by many varying incentives other than those offered by a design team (Bodilly, 2001, p. 13; Gitlin & Margonis, 1995; Cuban, 1984; Huberman & Miles, 1984). In this section of the review, we address the last two of Fullan’s four factors, drawing attention, in particular, to the statewide, district, and community contexts in which reform takes place.²

²Because all grantees share the same national context (which means that there is no variation to analyze), we spend little time discussing this factor in this document. However, it should be noted that the national context—such as the increasing national funding of charter schools—may bear significantly on these reform efforts over the next 5 years.

National, State, District, and Local Contexts

When Fullan says that national environmental conditions influence reform success, he refers to such factors as the current state of secondary schools in the aggregate, the national climate for education reform now in place, and current levels of federal funding of schools. State conditions include such factors as variety among states in their development and implementation of challenging content standards, assessments, and other statewide reform efforts. At the district level, reform efforts encounter varying professional development programs for teachers and an array of standards selected for assessment. Finally, at the level of the community, factors such as parents' interest and involvement in the change effort, or the business community's interest and involvement, will influence the path of reform.

According to Mazmanian and Sabatier (1989), reform is particularly difficult when multiple levels of government are involved, significantly different behaviors are called for, the tasks and behaviors are those of a large and diverse group, and the participants have varying incentives to change (Bodilly, 2001). A long line of implementation studies directed at school reform indicates that difficulties arise because policymakers cannot mandate what matters most. Environmental stability, competing centers of authority, contending priorities or pressures, and other aspects of the social-political milieu can influence profoundly the willingness to implement reform designs. According to one scholar, change is ultimately a problem of the smallest unit (McLaughlin, 1987, pp. 172–173; Bodilly, 2001).

Larry Cuban argues that community support is mandatory if reform is to be implemented. “Unless, classroom and school interventions begin with or result in community support, the reform, like a heart transplant patient, is unlikely to survive. The political factor of mobilizing parental and community support for school reform can be seen again and again from the introduction of public kindergartens in the 1870s to the math and reading wars of the 1990s” (Cuban 2001, p. 9).

Conditional Effects

Besides the effects of national, state, district, and local community policies that shape the success of reform activities, numerous other factors affect successful reform implementation. To take stock of these factors, we might pose the question: “What types of reform work under what conditions?” Or, to put it another way, “To what extent, and in what ways, are reform efforts—such

as the foundation’s initiative on small high schools—helped or hindered by context?” Context is assumed to include political, economic, social, and cultural components, such as the following partial list.

One set of contextual factors comprises political and community support for the reform. To study this set of contextual factors, we might borrow theory from social movements research to think about the ways that reformers “frame” their efforts in an attempt to persuade and mobilize support for their cause (e.g., targeting support from parents, teachers, and the business community). Following Binder (1999, forthcoming) and Davies (2000), there is a growing literature on the rhetoric and images that education reformers use to make their case for change. In Colorado, for example, a good deal of discourse surrounds the shootings that took place at Columbine High School in 1999 and the way small schools can help avert future tragedies of this sort. We should also pay attention to any local, district, state, and national arguments being made against the reform effort (by unions, for example), which are known in this literature as counterframes.

Also from the social movements literature, we can think about the “political opportunities” that exist for these reforms at any given time (McAdam, 1996). Relevant questions in this area of inquiry might include how the grantees take advantage of political cleavages or alliances in the system to make inroads for their cause (e.g., political conflict among district administrators or political alliances that grantees forge with superintendents).

CONCLUSION

In this literature review we have attempted to describe and define a large number of constructs that make up the complex small high schools initiative funded by the Bill & Melinda Gates Foundation. Beginning with a description of the attributes the foundation uses to define its objectives, we then situated those attributes in research drawn from the education, sociology, psychology, economics, and history fields. In doing so, we attempted to demonstrate state-of-the-art knowledge about small learning communities, specifically, while also suggesting key ideas from non-education scholarship that can be used to think broadly about this initiative. Ranging from sociological theory on implementation to psychological studies of how the brain works in learning contexts, to organizations theory on institutional decision-making, this review provides a broad base for thinking theoretically about the work that is being done by grantees, schools, and students.

GLOSSARY OF SELECTED TERMS

Grant Definitions

This first section of this glossary defines the major categories of grants in the foundation’s program: district, network, urban school, technical assistance, and advocacy. The term *intermediary* is also defined below.

These categories are by no means distinct; in many cases, grantees combine aspects of several. For example, BayCES has aspects that suggest that it could be a network (because it supports the development of a number of small schools), a technical assistance grant (because it provides assistance to the district and schools), or an urban school grant (because it focuses on school reform within the single district of Oakland). For this reason, each definition is supported by a classic example—one that clearly qualifies as this type of grant. Also offered here in some cases are important dimensions of variation (ways in which particular grantees may differ from the classic model) that may be salient to both the classification and the evaluation of grantees.

District Grants

Definition: Funding given to a particular district to support the implementation of its vision for whole district reform.

Classic example: Coventry: The school district is receiving funding to improve the assistance it provides to schools undergoing reform. The support is not limited to high schools or to small school models.

Issues: Existing district grants follow the Washington State grants model and may be seen as “exceptions” to the foundation’s overall small schools grant portfolio, which generally targets funding to establish, support, and replicate small high schools.

Network Grants

Definition: Funding given to an organization to support the demonstration and replication of a model for small effective high schools. Network organizations work fairly directly with schools; schools are their point of entry, not districts.

Classic example: High Tech High, which has received money from the foundation to support the instantiation of a school model in San Diego (a school currently in its first year) and the replication of that model to nine other sites in the United States (many still to be selected)

Important dimensions of variation: Networks vary according to the *prescriptiveness* of their model (how tightly specified the school vision and design are, to which the replicate sites are expected to adhere), the degree of *technical assistance* provided to replicates, and the degree to which they strive to support the development of a *learning community* across replicate sites (creating a “network” of replicates in the classic sense).

Urban School Grants

Definition: Funding given to an organization, usually outside the district itself (an intermediary), that works closely with districts to support secondary school reform, by restructuring or redesigning existing schools, launching new schools, or a combination.

Classic example: New Visions: New Visions is working closely with the New York City public school system, private partners, and the community to implement school reform throughout the city, driven by a recently adopted program of higher academic standards for all students.

Technical Assistance Grants

Definition: Funding given to an organization whose primary role is to support districts, schools, and grantees who are working to enact secondary school reform.

Classic example: UW Center for Reinventing Public Education: UW is providing direct support to schools undergoing conversion as well as generating best practice information and training coaches to support school change.

Important dimensions of variation: Technical assistance grantees vary in the *level to which support is targeted* (district or school), and the *closeness of ties to a particular district* (working entirely within a district, as is BayCES, or offering broader support services to a broad range of people who are engaging in school change).

Advocacy Grants

Definition: Funding given to an organization working to promote a more positive policy environment for school change. For evaluation purposes, advocacy grants are treated similarly to technical assistance grants.

Classic example: Community Studies, Inc.: Funding is given to advocate for the use of performance assessments in the state and to develop new approaches to performance assessment that might substitute for or supplement current standardized tests.

Intermediary

Most network grantees (e.g., High Tech High Foundation), urban high school grantees (e.g., CSC/U Minn), and technical assistance grantees (e.g., UW) are also considered **intermediaries**, which can be defined as any educational entity that operates “outside the system” (not a school, a district, or a state education agency); it is often a university, foundation, or private enterprise. An intermediary can be a grantee or a partner who plays a role in school reform (e.g., an organization that offers professional development assistance to a grantee). Because one of the foundation’s primary goals with this grant program is to define new organizational structures outside calcified districts to drive change more effectively, the concept of “intermediary” is important. But because it describes such a broad range of grantees with widely varying goals, we have chosen not to use the term *intermediary* as one of our primary grant categories (district, network, urban school, TA, advocacy).

Other Definitions

Assistance strategy: Network and urban grantees’ efforts to improve the capacity of the local educational agencies and to support the work of school-level reformers. Technical assistance is the planned and ad hoc support that grantees offer their district and school partners in implementing their models.

Capacity: Jurisdiction (district or state), grantee, or school capability to follow through on a planned reform or activity (e.g., the capacity of a school to develop a professional learning community or to introduce site-based management). Organizations’ staffing and funding levels, physical facilities and materials, or policies may or may not provide sufficient support for planned

changes or for implementing specific reform components. For schools, some capacity issues are addressed by the foundation's Attributes for Effective Schools, but the term *school capacity* relates more broadly to a school's capability to enact reform.

Coherence: Alignment or consistency among the grantee's vision, policies, and the activities to improve teaching and learning. Activities may pertain to curriculum, instruction, assessment, facility design, school governance, teacher professional development, and community and parent involvement.

Comprehensiveness: The extent to which the grantee's program (design, TOC, strategy, model) targets the entire system of key influences on teaching and learning and the relationships among these influences. These influences might include teacher classroom practices, parent involvement, community involvement, teacher professional development, student engagement, assessment practice, availability and quality of instructional materials for students, curriculum, and school and instructional leadership.

Depth of implementation: The penetration of the school model; the extent to which the school model is taking hold. The model has fully taken hold when the school practices are consistent with the intentions of the school model designers and school-level reformers are as invested in the model as is the grantee. This is a measure of the extent to which the major components of the school model are present.

Grantee strategy: The grantee's planned approaches for achieving its goals. These include the strategies for school implementation, school replication, networking, scaling up, and sustaining the schools and network (see individual definitions for these terms).

Intervention strength: The prescriptiveness, consistency, authority, and power of an intervention. *Prescriptiveness* refers to the degree of specificity in the policy; *consistency* refers to the coherence among different policies and policy elements; *policy authority* may derive from varying sources, such as professional expertise or official sanction; policies get their *power* from the extent of the resources committed to their enactment as well as from the constellation of rewards and sanctions accompanying them.

Networking strategy: Plan for creating and supporting an effective network of grantee schools (note that the taxonomy refers to grantees' efforts to develop professional communities or networks of professionals across replicate sites).

Prescriptiveness and specificity: Prescriptiveness can refer to the specificity of a school model, implementation plan, or replication strategy; it refers to the explicitness with which a program's content and plans for action are articulated. Specification will vary with the purpose and content of the grantee's program. Some grantees are demonstrating and replicating specific school models; others offer guiding principles for effective schooling and allow school-level reformers to specify their programs.

Resource leveraging: Using existing resources to obtain new resources for reform; using current resources as a marker of the promise of a program in soliciting additional support.

Replication: The act of or the result of implementing a particular vision of schooling in new schools according to a shared understanding of the vision. The vision to be replicated may be instantiated in a *school model* (represented either in a particular school or learning environment design or in a set of principles to guide design) or a *process* for enacting reform. New schools that result from the replication of a model or process are known as replicates.

Scale-up: The act of or the result of establishing an infrastructure to replicate a school model to new schools that number an order of magnitude beyond the original 8 to 10 replicates. Whereas the act of replication is understood as the ability to replicate a model or process several times, scaling up the model entails a system of supports for large-scale replication. The degree of scale-up may be represented in many ways, including the number of new schools and students nationwide or the penetration of the new model within a particular district or state.

Scaling-up strategy: Plans to scale up from a handful of replicates to many more sites (e.g., ways to ensure the adoption of instructional practices at all sites; ways to collect and share information that leads to continual organizational learning and improvement).

School implementation plan: Specification and sequence of activities required to achieve the school model; the steps required to put in place the structural components of the model, including recruiting teachers, training principals, providing professional development, creating school management teams; involving parents and communities, designing facilities, gathering or creating curriculum materials and resources, and designing assessment systems.

School model: Instantiation of the vision; specification of the school and classroom processes, practices, and policies believed to lead to effective learning environments.

School replication strategy: Strategies to effectively replicate a model school or process (e.g., prescriptiveness; recruitment and selection of sites; point of entry).

Supportive infrastructure: A conducive operating environment for reform; state and district policies and practices for hiring, resource allocation, curriculum, instruction, standards, assessment, teacher professional development, and school organization and governance that are consistent with the major tenets of grantees' models; jurisdiction policies work for (rather than impede) implementation of the major components of the school models.

Sustainability strategy: Plans to sustain grantees and their schools after foundation funding ends (e.g., leverage existing resources at the district, state, and private foundation levels).

Theory of change: Includes the long-term outcomes that the program strives for, the strategies that are intended to produce change, and the contextual factors that may affect the implementation of activities and their potential to bring about the desired outcomes. The links among activities, outcomes, and the contexts for the initiative are also part of the theory of change.

Tight and loose: Descriptors of the prescriptiveness ("tight") or lack of prescriptiveness ("loose") in the replication expectations of a school model. A tightly specified model prescribes in detail the school design that replicates must adhere to. A loosely-specified model might offer instead only a set of principles or a process that can be used to enact any of a variety of replicate school designs.

Vision: The goals of the initiative, the grantees' goals for student accomplishment and teachers' professional lives, the types of school and classroom practices that lead to effective schooling and improved student learning.

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