A McREL Report Prepared for

Stupski Foundation's Learning System

Pedagogy

About McREL

Mid-continent Research for Education and Learning (McREL) is a nationally recognized, private, nonprofit organization dedicated to improving education for all students through applied research, product development, and service. Established in 1966, McREL now maintains a staff of around 110 in its Denver, Colorado, office.

This report is part of a larger set of reports prepared by McREL for the Stupski Foundation. The views, findings, conclusions, and recommendations expressed herein are those of the authors and do not necessarily express the viewpoint of the Foundation. Please e-mail any inquiries to Linda Brannan at info@mcrel.org.

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Table of Contents

Executive Summary 1
Introduction 5
Findings 11
Discussion & Recommendations 33
Final Thoughts 45
References 49
References Reviewed but Not Cited in This Report 55
Appendix 61

Executive Summary

This document is one of eight reports prepared to support the development of a new learning system, a development effort that is the first step in a major initiative undertaken by the Stupski Foundation. The Foundation endeavors to improve the life options of all students, especially disadvantaged urban youth of color, whom we refer to as "Our Kids," by fundamentally redesigning the education system.

This report was created collaboratively by researchers from McREL with guidance from officers of the Stupski Foundation. Its purpose is to provide members of a "Design Collaborative" team—consisting of practitioners, parents, students, and researchers—with a review of key findings from existing literature to support their efforts to develop the pedagogy component of the Stupski Foundation's Learning System.

Research methodology

McREL researchers, in collaboration with Stupski Foundation staff members, generated the following research questions to guide this review:

1. How can teachers adapt the principles of effective pedagogy to differentiate instruction and meet the needs of all learners in order to help Our Kids be challenged, motivated, and successful?
2. How can teachers create structured, challenging, yet nurturing classroom environments to ensure that Our Kids are engaged and successful learners?

McREL researchers used these questions to guide the literature search to find relevant research articles on how to provide instruction for Our Kids. This search was an iterative process influenced both by the results of research reviewed and by the changing focus of the search area. The retrieved articles were wide ranging in their methodologies, content, and intended audience. A secondary search was conducted during the writing and quality assurance process. The intent of this search was to ensure the inclusion of important authors in the area of pedagogy that might have been missed during the initial search. In total, this resulted in the identification of 131 articles and the summarizing of 77 articles.

Key findings

Findings are presented in three areas represented by the two research questions and an additional area comprising teacher training:

Adaptive and differentiated instruction

The following findings emerged from the research regarding the application of different pedagogical practices that support adaptive and differentiated instruction to engage underserved students:

- Differentiated instruction provides a theory and methodologies for adjusting instruction based on a student's academic readiness.
- Culturally relevant pedagogy provides a grounding framework for supporting the meaningful incorporation of students' language and cultural experiences.

- Students who are educated in a culturally relevant classroom acquire new knowledge more readily because teachers build on students' existing knowledge base.
- Processes that involve "role fluidity," such as cooperative learning and peer tutoring, provide distinct learning advantages for all students and are especially effective for those of color and poverty.
- To teach effectively, teachers must develop the ability to recognize gaps in students' prerequisite knowledge and skills and be able to use a variety of instructional strategies to bridge these gaps.
- As technology related skills continue to be a major gatekeeper to high-paying jobs and advanced education, schools need to provide those opportunities for student success and equity.
- When technology is used appropriately, it can serve to motivate students through engaging projects and targeted instruction.

An environment that is both academically rigorous and nurturing

The following findings emerged from the research on the use of high-order thinking skills and increased expectation of students, as well as creating nurturing and supportive classroom environments:

- High teacher expectations of students are critical to student success.
- A pervasive belief among teachers is that high-poverty students cannot perform high-level work (Foster, 2008), and a belief among students is that no one cares about them. However, when students are cared for by teachers, the experience can be transformative—drop-out rates are lower, there are fewer behavioral problems, and achievement increases.
- The distinct need for teachers in diverse classrooms to connect with their students in meaningful ways becomes central to, and student/teacher relationships are strongly connected with, student achievement (Hattie, 2009).
- The lack of supportive mechanisms and lowered expectations in the classrooms of Our Kids is a significant issue in educating underserved students (Wyner, Bridgeland, & Dilulio, 2007; Haberman, 1991).
- Teachers who present challenging concepts and support the development of complex thinking improve student achievement (Dalton, 1998).

High-quality teacher professional development

Undergirding the success of sound pedagogical practices (as well as the implementation of other components of the Learning System) is high-quality and sustained professional development. Findings in this area support the notion that:

- Professional development is more successful in terms of supporting long-term change when it is sustained over a period of time compared to "one shot" training.
- The efficacy of professional development on student outcomes is higher when developed and provided by an external expert.
- Professional development should challenge teachers' conceptions and assumptions about how students learn.

- Professional development is most effective when supported by, and inclusive of, school leadership.
- When teaching Our Kids, it is critical that professional development provides teachers with ideas for incorporating students' cultural backgrounds, engaging students in thinking critically.
- Professional development also should provide teachers with the skills for understanding how students learn. For example, certain mistakes might appear to represent lack of content knowledge, when in actuality, they might be indicative of low English proficiency.

Recommendations

Based on these findings, we offer five options for how the Design Collaborative might proceed. We recognize that the Design Collaborative might act on a select number of the options based on considerations of costs, advantages, and disadvantages. Proceeding with all five options was recommended by one reviewer of this report, but doing so would necessitate the highest level of support and training for teachers.

Option 1:
Support teachers to better utilize methods and theories of culturally relevant pedagogy and differentiated instruction

Because Our Kids represent diverse backgrounds, in terms of race, ethnicity, language, knowledge and skills, it is important that we develop new and better ways to address their instructional needs. Adapting instruction is a critical component to improving the engagement and learning of Our Kids. Differentiated instruction and culturally relevant pedagogy are two approaches developed to serve learners who are marginalized in traditional classrooms. They focus on aligning instruction relative to students' academic or cultural backgrounds.

In general, differentiated instruction provides guidelines to teachers with students at differing levels of academic readiness in their classrooms by not only focusing on helping students acquire content knowledge, but also helping students take charge of their learning. While different in its theoretical framework, culturally relevant pedagogy has many complimentary aspects (Santamaria, 2009). It, too, addresses classroom diversity, but through a cultural lens. Culturally relevant pedagogy provides a way for teachers to address the "problem of discontinuity between what students experience at home and what they experience at school in the speech and language interactions of teachers and students" (Ladson-Billings, 1995, p. 159). And while complex, both strategies lend themselves to broad applicability across contexts and content areas.

Option 2:
Implement a pedagogical program based on the notion of "role fluidity" to give students a central voice in the classroom

Role fluidity is composed of strategies prevalent in pedagogical literature that explicitly allow student voices a central role in the classroom. These practices include cooperative learning and peer tutoring—that when adapted and implemented appropriately for students of color and poverty—provide opportunities for students to act as teachers and collaborators. Role fluidity can also include student-led whole-class discussions or activities. All are ways to give students *power* to engage in their own learning. For example, active student participation, and even student criticism and critiques of the learning environment, allow for student/teacher role switching (Donnell, 2007). While this presents a daunting

proposition for many teachers because it requires giving up some control, it allows for the honoring and placement of student voices.

Option 3: Use technology to engage students and enhance pedagogy

Technology holds great promise for engaging urban students and enhancing learning opportunities. Several areas present themselves in technology; namely, computer-aided instruction, learning management systems, and expanded opportunities for distance learning. However, for this to occur, schools serving Our Kids need more access to computers and software, adequate professional development, and technology programs that support adaptive instruction and promote higher order thinking over basic skill acquisition.

Option 4: Guide teachers in creating academically rigorous and positive classroom learning environments for Our Kids

Research shows that the environment teachers create in their classrooms—including how they manage student behavior, classroom discourse, and the relationships they build with students—is crucial to student success. Our Kids, in particular, benefit from classroom environments that are on the one hand, challenging and structured, while on the other, nurturing and tailored to student needs (Delpit, 2006). Teachers need to be "warm demanders," creating classroom environments that embody high expectations of Our Kids, while at the same time providing them with the supports and encouragement they need to succeed (Ware, 2006).

Option 5: Implement pedagogical programs based on developing higher order thinking and subject-specific skills

After reviewing numerous articles on pedagogical practices, the team reached the conclusion that Our Kids do not require a new kind of pedagogy; rather, they require more intentional use of existing proven practices. This option calls for helping teachers develop more awareness of the unique learning needs of Our Kids, as well as better knowledge of when and why to use particular teaching strategies to meet those learning needs. To help Our Kids become more successful learners, teachers need expert understanding of how to apply and adapt rigorous instructional practices and which teaching strategies to use to address specific needs.

Final thoughts

The literature reviewed for this report provides an indication of the challenges and complexities inherent to implementing sound instructional practices. While pedagogical modifications can certainly be made in a discrete manner, we contend that a more powerful and sustained approach is examining specific connections to and aligning pedagogy with other components of the Learning System. Further, when implementing systemic programs, additional consideration regarding how to best disseminate and bring programs to scale is critical.

Introduction

Purpose of this document

This document is one of eight reports prepared to support the development of a new learning system, a development effort that is the first step in a major initiative undertaken by the Stupski Foundation. The Foundation endeavors to improve the life options of all students, especially disadvantaged urban youth of color, whom we refer to as "Our Kids," by fundamentally redesigning the education system.

The report was created collaboratively by researchers from McREL and officers of the Stupski Foundation. Its purpose is to provide members of the Design Collaborative team with a review of key findings from the existing literature regarding critical research questions related to the pedagogy component of the Learning System and to offer recommendations for the development of this component. Together, the reports cover these topics:

- Assessment
- Curriculum
- Pedagogy
- Student Supports
- Systems Diagnostics
- Leadership
- College Readiness
- Our Kids

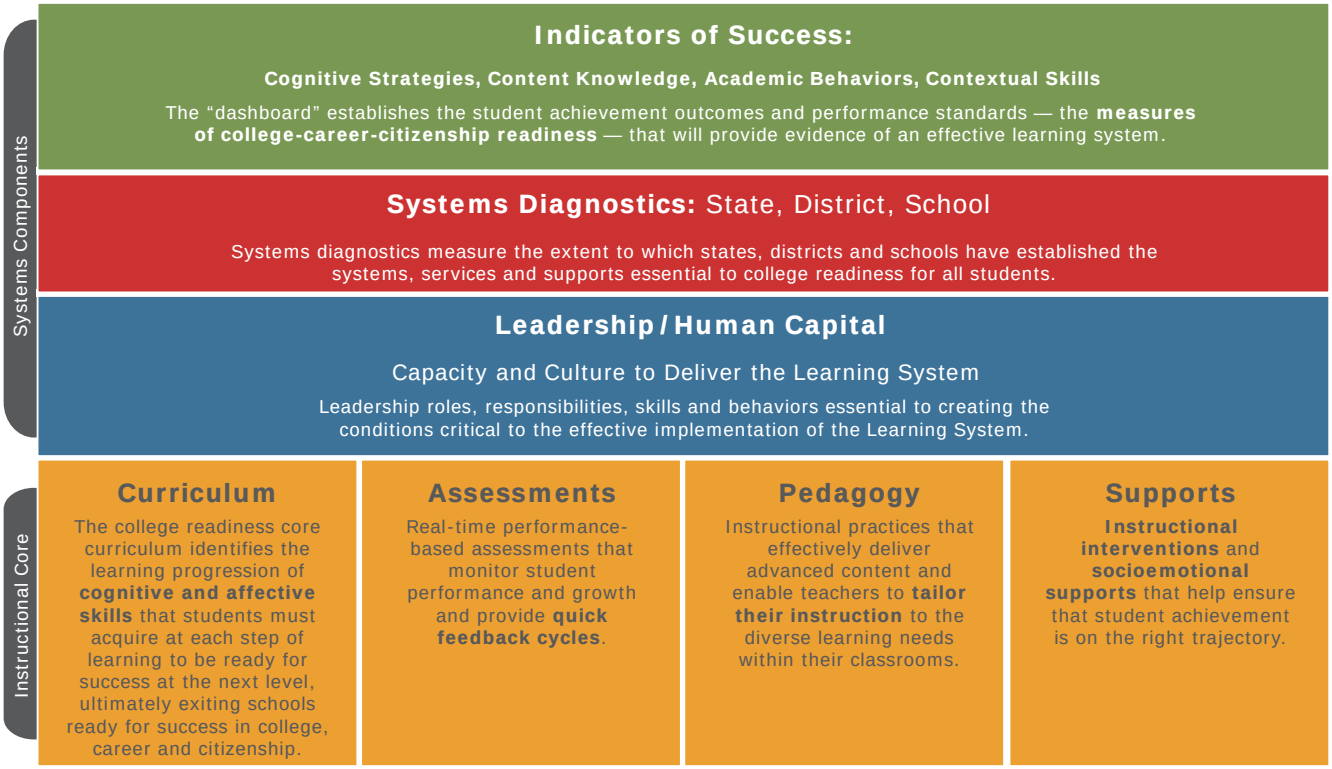
The first section of this report provides salient findings that emerged from the literature review. The second section offers a discussion of the findings along with several recommendations—framed as five key options—for how the Design Collaborative might proceed. A brief concluding discussion follows. Summaries of the studies and literature reviewed for this report are provided as separate documents.

About the Learning System

The Learning System is the product of the Stupski Foundation's extensive examination of research, best practices, and theories of action for improving education opportunities for all children. It is deeply rooted in the Foundation's mission to foster innovation in public school systems so that all students graduate ready for college, career, and success—as well as the notion that the United States' education system, in its current state, is incapable of accomplishing this goal. As stated on the Foundation's Web site, "The basic components of what public education systems need to teach all students to world-class standards, particularly those students for whom public schools are their only option, do not exist in any coherent, accessible or evidence-based way" (Stupski Foundation, n.d.).

Thus, the Foundation has focused its philanthropic efforts on supporting the "fundamental reinvention" of the American system of public education into one that prepares all children for the challenges of life, career, and citizenship in the 21st century. To accomplish this objective, the Foundation launched a multi-year, cross-sector collaboration among researchers and practitioners from inside and outside education to develop a new and comprehensive learning system. In its June 2008 *Strategy and Program Overview,* the Foundation posited that this system includes seven components, shown in Figure 1 (see p. 6). The indicators of success are dependent on a definition of college readiness, which is addressed in the respective report. Although Our Kids is not an explicit component of the Learning System, it is the foundation for the work the Foundation is committed to in the education sector. As such, the populations of students of color and students of poverty warranted a separate report.

Figure 1: The Learning System



About "Our Kids"

The Stupski Foundation is committed to addressing the academic needs of underserved populations, in particular, students who are of color *and* in poverty (which comprises 42% of African American students and 37% of Hispanic students) (Duncan & Magnuson, 2005). Despite a dramatic rise in minorities enrolling in college (a 50% increase from 1995–2005), fewer minorities appear to be graduating. As shown in Figure 2 (see p. 7), in 2006, fewer minorities aged 25–29 reported having obtained an associate degree or higher than their older peers (aged 30 and over) (American Council on Education, 2008). This trend marks an important reversal in advances in educational opportunities for minorities and may mark the first time in history that a generation of students has demonstrated less educational attainment than its predecessors (American Council on Education, 2008).

About pedagogy

The topic of pedagogy in education research is perhaps one of the most central issues when discussing improvements to the education system for Our Kids. Pedagogy is the means by which teachers relay and convey content

knowledge and skills, pay attention and respond to student interpretations, and provide ongoing challenges and feedback. Pedagogy is the day-to-day, minute-by-minute, cumulative work "of conjectures, explanations, proofs, arguments, and evaluations" (Hattie, 2009, p. 27). Pedagogy is teaching, and teaching is when "questioning and dialogue largely replace lecturing and the teacher becomes an instructional coach who designs learning activities, facilitates discussion, and guides students through the process of learning" (Neal, 2008, pp. 196–197). Teaching is the intersection between content and outcomes that personalizes, nurtures, and propels learning. The blueprint or roadmap for learning is the curriculum. The litmus test for learning is assessment, and in between, is pedagogy. In this report, we synthesize research on effective pedagogy for helping all of Our Kids graduate ready for college, career, and success.

Overview of methodology

McREL researchers followed a five-step process for translating findings into recommendations.

Step 1: Identification of key hypothesis

After conducting an initial survey of relevant literature, Stupski Foundation staff members identified the following hypothesis to guide the pedagogy literature review:

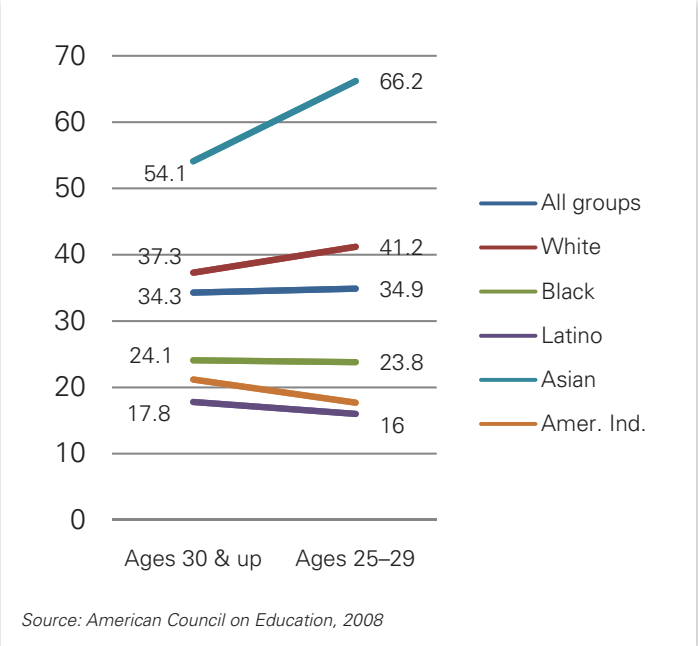
Current pedagogical practices inadequately prepare Our Kids for college or the workplace.

Step 2: Identification of research questions

McREL researchers, in collaboration with Stupski Foundation staff members, generated these questions:

1. How can teachers differentiate instruction and adapt the principles of effective pedagogy to meet the needs of all learners in order to help Our Kids be challenged, motivated, and successful?

Figure 2: Percentage of U.S. adults with associates degree or higher, 2006



Source: American Council on Education, 2008

2. How can teachers create structured, challenging, yet nurturing classroom environments to ensure that Our Kids are engaged and successful learners?

Step 3: Literature search

The pedagogy team utilized the two research questions to focus an "informed brainstorm" session to use our expertise in instruction and with Our Kids to generate search criteria. We agreed to limit our search to articles more recent than 1998, unless we identified a definitive piece in the field, as noted by more recent researchers. These terms guided our search for literature in several journal databases (e.g., Academic Search Premier, JSTOR, ERIC, Proquest, Academic Onefile, Educators Reference Complete), sites funded by the U.S. Department of Education (e.g., ERIC, What Works Clearinghouse, Doing What Works, National Laboratory Network, and those of national comprehensive centers and

national education research centers), and other sources, including Google Scholar and Educational Policy Analysis Archives. Sources were searched by the following keywords:

- Achievement gap
- African American students
- At-risk students
- Bilingual education
- Culturally relevant pedagogy
- Differentiation
- Diversity
- English-language learners
- Grouping practice
- Instructional practices
- Language minority students
- Literacy
- Low-income students
- Mathematics achievement
- Multicultural education
- Pedagogy of poverty
- Poverty
- School reform
- Teacher leaders
- Teaching methods
- Teaching practices
- Tracking
- Urban schools

A secondary search was conducted during the writing and quality assurance process. The intent of this search was to ensure the inclusion of important authors in the area of pedagogy that might have been missed during the initial search. Staff involved in the quality assurance process suggested the addition of 12 authors/researchers, which represented 16 articles. Additionally, there were four articles added during the writing process that provided context (e.g., IES surveys, newspaper articles). This ensured the inclusion of relevant and seminal authors in the final report. Five additional articles and innovations were identified during the writing process through pedagogy team discussions and Stupski team leader meetings. In total, 131 articles were identified for pedagogy with 77 summarized and included separate documents.

We initially began this project with a focused effort on uncovering specific pedagogical strategies effective for Our Kids. However, as we progressed through the review of literature, the research team became more focused on the central question, "Do Our Kids require *different* pedagogy than all kids?" After identifying, cataloging and summarizing articles related to pedagogy, the research team determined that Our Kids do *not* require a different set of instructional strategies. However, they do require *more intentional use* of strategies that are known to be effective for all kids.

Step 4: Identification and Cataloging of Findings

The research team cataloged findings from the summarized articles using the following identifications:

- Counterproductive *orthodoxies* (conventional ways of providing education which may be impeding student success)
- *Unmet needs* (areas where students are not yet well served by the current system of education)
- *Next practices* (a program or practice that needs to be developed, adapted, invented, and tested in response to an unmet need)
- *Promising practices* (practices based on research but not supported by rigorous efficacy data)
- Current *best practices* (practices demonstrated by research to be effective in improving outcomes for students)

Step 5: Generation of recommendations

In the final phase, research team members collectively reviewed key findings from the literature review in light of the following questions:

- What are the critical unmet needs related to this component of the Learning System?
- What is missing in current practices within this component of the Learning System?
- What is working and why?
- What is *not* working and why?
- What are the biggest misalignments between research and current practice?
- What things should educators do differently in light of the research findings?
- Where is the knowledge base too inconclusive to guide education innovation?
- Where is more research needed to advance practice?

Responses to these questions were synthesized into recommendations, presented here as options for further action. These options include best or promising practices that should be *adopted* and scaled up or *adapted* to new settings or areas where there are gaps in practices that require new innovations to be *invented.*

Overview of the literature base examined

The area of pedagogy presented a substantial challenge to the members of the research team. The sizeable body of literature in this area allowed for a distinct opportunity for the team to construct the report in myriad ways. We began the process by searching the pedagogy literature for practices that would illuminate the question of—what effective practices exist for children of poverty and color. We found a wide variety of quantitative and qualitative studies. While these studies represent a large body of knowledge, the team began to see a pattern—pedagogical practices that best serve Our Kids, as described in the literature, were also the ones that work best for all students. That is, students of color and poverty need instruction that engages them in complex thinking, is challenging and rigorous, and is delivered by high-quality teachers who can identify weakness and make appropriate changes to meet students' needs. We therefore refocused our search on ways to adapt and implement pedagogy to specifically meet the needs of Our Kids.

The expanded searches uncovered a substantial amount of literature on implementing pedagogical strategies and adaptations for underserved students. These strategies included culturally relevant pedagogy, high expectations and rigorous instruction, general and content-specific instructional strategies, computer assisted instruction, and student grouping structures (e.g., peer tutoring, cooperative learning). The pedagogy team sorted and clustered articles as they related to each other and had ongoing weekly discussions relating the literature to conceptual understandings.

A predominant area in the literature on adapting pedagogical strategies and, in fact, adapting the classroom environment itself, is the notion of culturally relevant pedagogy. This characteristic is represented by incorporating meaningful

and student-centered examples, contexts, and exercises. Pedagogy more inclusive of students' communities and backgrounds allows teachers to build on students' existing knowledge, thus allowing students to acquire knowledge more readily (Padron, Waxman, & Riveria, 2002a). Further, and not surprising, classrooms that include culturally relevant practices increase student engagement because the work is focused on what is important to the students. While many of the culturally relevant studies are descriptive in nature, they provide important insights into what practices engage diverse groups of students (Foster, 2008; Ladson-Billings, 1995; Ware, 2006).

Many prominent authors also discuss a range of characteristics encompassed by culturally relevant pedagogy including high expectations, cooperative learning, and nurturing classroom environments. Additional studies on these specific characteristics are supported by an array of research evidence. For example, allowing students opportunities to construct their own knowledge via cooperative learning or peer tutoring represents a preponderance of research including case studies, quantitative studies, and meta-analyses (Barley, 2002; Chang, 2008; Hattie, 2009; York-Barr, Ghere, & Sommerness, 2007). Other studies examined the specific use of different applications of technologies to address a range of instructional issues, including distance learning and expanded learning opportunities.

The research team also concluded that it was critical to consider additional mediating factors in implementing and sustaining good instructional practices for Our Kids. A key factor is the notion of providing high-quality, sustained professional development. There are complexities to the programs and practices presented in this report. It is critical to ensure their success by providing teachers with the support indicated in the professional development literature in general, such as sustained, school-level support (Hattie, 2009; Padron et al., 2002a) or teacher coaches (Knight, 2007). Further, many programs provide specific advice for teacher training, such as increasing training on how to address the cultural and linguistic differences represented in classrooms (Waxman & Tellez, 2002).

Through the literature review process, it became apparent to the research team that the search could not be confined to a specific type of research (e.g., randomized control trials, experimental designs, meta-analyses). Doing so would eliminate a significant number of studies representing important processes and programs for underserved children. For example, classroom walkthroughs potentially provide important formative information to teachers. This practice has a great deal of support and is widely implemented but has little supporting research evidence. Therefore, we included a variety of research literature in order to provide the Design Collaborative with sufficient information to inform its work.

Findings

The topic of pedagogy in education research is perhaps one of the most central issues in improving the education system for Our Kids. The means by which teachers relay and convey information to students, pay attention and respond to student interpretations, and scaffold next steps is crucial in the learning process. As research by Marzano (2000) found, teacher practices account for almost twice the variance in student achievement that is accounted for by school practices, indicating the significance of the role that teachers play in student achievement. Furthermore, and critical to the dialogue in helping linguistically and culturally diverse students, teacher practices play a significant role in closing the achievement gap within schools (Wenglinsky, 2004). Oakes (2003) also cites teacher quality as a key factor in student learning and states that good teaching can have a greater positive impact on student achievement than a student's home environment. Poorly qualified teachers, however, are likely to spend more time on drill exercises, whereas highly qualified teachers use a wide range of teaching strategies based on students' abilities and interests.

The "pedagogy of poverty" initially described by Haberman (1991) refers to a teaching style often observed in urban schools. The pedagogy of poverty is characterized by an authoritarian teacher—giving directions, transmitting knowledge, enforcing rules—and the passive student—receiving information and obeying directives. Deep, relational, and critical thinking and debate do not occur; rather, these practices situate children in classrooms void of meaning and focused on the drudgery of seat work, which still persists in urban settings (Delpit, 2006; Donnell, 2007). This often results in student passivity and teacher burnout (Haberman, 1991). Further, low expectations and reduced access to advanced instruction perpetuate low achievement (Flowers & Flowers, 2008). Thus, the impetus becomes to renew our focus on engaging students in meaningful and rich learning activities.

Further, the sustainment of good pedagogy relies on a system of supports that allows teachers to take risks and make the big changes required to meet the needs of Our Kids. For example, teachers might lack the requisite knowledge and skills to implement a given practice, make modifications, or switch from one strategy to another. They might not have the teacher colleagues with whom they can reflect on their practices or school leaders who provide instructional leadership. Ultimately, all teachers need some assistance in implementing the best, most appropriate strategies, which requires a network of support and resources ranging from teacher professional development to instructional materials. Teachers need a deep and broad reservoir of tools at their disposal when making strategic decisions about instruction.

Adaptive and differentiated instruction

A substantial body of evidence on pedagogical practices provides insight into ways of improving instruction. However, a gap persists between research findings and the pedagogy practiced in urban settings. We contend that teachers need support in order to develop more awareness of the unique learning needs of Our Kids as well as better knowledge of when and why to use particular teaching strategies. As Tomlinson (1999) argues, instructional practices should consider differences in student learning; what works for

one student might not work for all. Teachers must effectively modify pacing, curriculum, and content to meet the needs of individual learners.

Thus, an examination of how pedagogy might be adjusted and applied to serve the learning needs of Our Kids is warranted. Several relevant and important strategies bear further consideration. Strategies for differentiating instruction based on student culture, experience, and academic readiness include role fluidity, culturally relevant pedagogy, differentiation, diagnostic teaching, tutoring, and use of technology enhancements and applications. Better implementation of high-quality practices can result in improved student learning and achievement across student groups.

Differentiated instruction

> *"Differentiation, fully understood, is concerned with developing not only content mastery but also student efficacy and ownership of learning."* –Tomlinson (2008, p. 30)

It is true that students come to school with a variety of experiences, knowledge, abilities, and academic skills. They are met by instruction focused on fulfilling the content coverage determined by curriculum guides, state standards, or standardized lesson plans. This stands in contrast to differentiated instruction (DI) that uses the student as the starting place. It is through the process of understanding individual students that we can better adapt instruction to meet all students' learning needs for not only developing understanding of classroom materials but also engaging them in the learning process.

A core principle of DI is the importance of teachers learning about their students. Teachers must know their students in order to provide relevant and interesting content, and to measure student progress to learning goals. Learning profiles can assist teachers in this effort by providing a method for collecting important student background information that includes not only academic data, such as state assessment results and grades, but also family characteristics, interests, and hobbies (Anderson, 2007). Researchers in DI advocate "that armed with assessment information and other knowledge about a student—the teacher should adapt teaching plans to attend to learner readiness, interest, and preferred modes of learning" (Tomlinson, 2008, p. 27). Tomlinson proposes three main areas as encompassing differentiation: content, process, and products.

- DI calls for setting clear goals for learning based on content standards. *Content* refers to many artifacts of academics such as standards, curriculum materials, or, in general, what the teacher wants the students to learn (Tomlinson, 1999; Tomlinson, 2003).

- When DI is properly implemented, students are presented with a variety of activities to help them learn the material in a way that is meaningful and engaging. *Process* is the component that encompasses these classroom activities, such as cooperative learning, whole class instruction, engaging all learners, and balancing teacher- and student-directed tasks in a way that helps students use and develop skills and knowledge (Santamaria, 2009).
- Assessment is a critical component of DI because it gives teachers important information about student progress and weaknesses. *Products* are the ways students demonstrate success toward the learning goals (Tomlinson, 1999; Tomlinson, 2003). Students should be allowed to demonstrate their knowledge through the application of different forms of assessment, such as paper-and-pencil tests, journaling, homework, essays, and classroom discussions.

These three areas can be adapted, or "differentiated," based on the readiness of the student, and while teachers provide direction and facilitation of the process, an effective differentiated classroom also empowers the student to make decisions and choices about his or her learning. This might include allowing students to choose from an array of assignments, setting their own learning goals, and establishing a timeline for completing projects.

It is important to note that differentiating instruction is not a simple task. It requires teachers to build an understanding of their students and their individual capacities. This is central to beginning the process of identifying ways to facilitate individual learning and provide rigorous learning opportunities for a range of students, including English-language learners, learning disabled students, and gifted students (George, 2005). In order to provide a range of opportunities, teachers also need a deep knowledge of, and the ability to apply, an array of instructional strategies (Anderson, 2007). This, of course, requires a comprehensive program of training and supports to continually develop teachers' abilities to implement DI (Tomlinson, 1999). Finally, teachers need to understand the dangers of attempting too much differentiation. Tomlinson (2003) warns that it would be insurmountable to teachers and would detract from some of the necessary, whole class, non-differentiated activities that lend to cohesion and consistency.

Key finding

Differentiated instruction and culturally relevant pedagogy provide ways for instruction to meet the needs of students academically and culturally.

Culturally relevant pedagogy

> *"All knowledge is related to our experience in the social and cultural worlds that we inhabit, and all knowledge comes to us as it passes through social and cultural systems and institutions through the socializing of norms, values, conventions, and practices."* –Nasir, Hand, & Taylor (2008, p. 187)

To actively engage students, effective teachers in urban schools incorporate issues that are important to students into their instruction. Culturally relevant pedagogy provides a grounding framework for supporting the meaningful incorporation of students' language and cultural experiences. Acknowledging students' backgrounds and experiences in the classroom increases engagement through contexts that they understand and are meaningful (Padron et al., 2002a). Further, students who are educated in a culturally relevant classroom acquire new knowledge more readily because teachers build on the students' existing knowledge base (Padron et al., 2002a). As Ladson-Billings (1995) argues, culturally relevant pedagogy is the key

Caveat regarding research on culturally relevant pedagogy

While there is widespread appeal in the education community for pedagogy that encompasses the elements of cultural relevancy, there is little experimental research to support specific practices (Flowers & Flowers, 2008; Nasir, Hand, & Taylor, 2008). Implementation of such practices might be difficult without specific research supporting professional development content and curriculum materials. However, the descriptive research cited provides a strong rationale for the central role of culture in integrating and validating student experiences and knowledge in the classroom.

to the success of African American students because it allows them to be successful without losing their cultural identity. She states that "the trick is getting them to choose academic excellence" (p. 160). This, in turn, improves their self-concept because they are allowed to act as experts when utilizing existing cultural skills and languages, which then translates into enthusiasm and motivation. Further, if we shift classroom cultures from more Eurocentric to more pluralistic, students might feel less of the tension often associated with Ogbu's notion of oppositional culture—that students of color might "perceive and define school learning as an instrument for placing their cultural identity with the cultural identity of the 'oppressors' without full reward or assimilation" (Ogbu, 1987, p. 334).

Culturally relevant pedagogies provide a way for teachers to address the "problem of discontinuity between what students experience at home and what they experience at school in the speech and language interactions of teachers and students" (Ladson-Billings, 1995, p. 159). Complex, culturally relevant pedagogy does not call for a complete transformation of a teacher's practice but can be implemented broadly or subtly within current frameworks that the teacher might be using, such as cooperative learning or distance learning. It is embedded in "teacher practice and continually evolving through teachers' reflections on their interactions with their students, their students' communities, peers, and others" (Nasir et al., 2008, p. 219). Culturally relevant pedagogy becomes a strategic way for teachers to adapt their current practices in order to better engage their students by acknowledging their students.

These strategies also lend themselves to broad applicability across content areas. Lee, Deaktor, Hart, Cuevas, & Enders (2005), for example, employed culturally relevant pedagogy for English-language learners (ELLs) within the context of an inquiry-based science course. The course focused on building literacy and inquiry skills by implementing a progression of units "along a continuum of teacher-explicit instruction to student-initiated exploration" (p. 862). Materials specifically considered students' prior knowledge and backgrounds by incorporating culturally meaningful objects. Professional development provided teachers with ideas for incorporating students' cultural background, engaging students in thinking critically about science concepts and additional theoretical issues such as how "lack of English proficiency can masquerade as lack of science knowledge" (p. 865). This culturally relevant, inquiry-based approach significantly improved students' scientific understanding and literacy.

Mathematics. Nasir et al. (2008) discuss the power of culturally relevant pedagogy in mathematics because it calls on teachers to look for ways to meaningfully consider and capitalize on important facets of their students' lives. However, implementing culturally relevant methods in mathematics

is not without its challenges. There is inherent difficulty in developing meaningful examples targeted to students' abilities. This implies finding problems that are not overly simple—construction projects that only require students to conduct basic arithmetic, for example—but conversely do not force complicated ideas, such as those involving complex statistical processes. Teachers must also acknowledge and confront the cultural stereotype of the mathematician as a geeky white male. The stereotype must give way to *all* students succeeding in mathematics and appreciating "the beauty of the subject" (Triesman, 1992, p. 368).

Language Arts. Other examples of culturally relevant pedagogy pervade the language arts research literature. Many involve teachers incorporating the use of "home language" while acquiring formal English language skills (Alim, 2005; Ladson-Billings, 1995; Lee, 2008). This can be an important strategy in engaging students and allowing them to demonstrate what they already know while introducing aspects of formal English. The use of storytelling, for example, in African American classrooms not only engages students but provides teachers with opportunities to learn about their students (Flowers & Flowers, 2008).

While these programs explicitly acknowledge the importance of respecting language differences within the classroom, implementation is not without issues. Alim (2005) provides one example of the importance of considering larger social and political factors. A reading program with demonstrated success of supporting and advancing reading skills through the incorporation of home language was ultimately discontinued because the community showed "outrage against the use of BL (black language) in schools (p. 27)." Alim (2005) recommends increased public outreach and communication as a means to potentially temper some of these strong reactions.

Fluidity of student roles

> *"Teachers who can challenge, negotiate, and reconstruct the parameters of their daily work with pupils are most likely to facilitate successful learning for urban pupils."* –Donnell (2007, p. 239)

Role fluidity refers to strategies that explicitly provide student voices a central role in the classroom. These practices, also referred to as "joint productive activites," include cooperative learning and peer tutoring that, when adapted and implemented appropriately for underserved students, provide opportunities for students to act as teachers, collaborators, and co-conspirators. Role fluidity can also include student-led, whole-class discussions or activities, giving students power to direct their own learning. For example, active student participation and even student criticism and critiques of the learning environment allow for student/teacher role switching (Donnell, 2007). While this may present a challenging proposition for many teachers because it requires giving up some control, it honors student voices.

The substantial research in this area indicates powerful effects of joint productive activities in improving student learning (Apthorp, Igel, Allen, Clark, & Gopalani, 2008; Barley, 2002; Dalton, 1998; Englert, 2002). For example, processes such as cooperative learning and peer tutoring provide distinct learning advantages for all students (Hattie, 2009) and are especially effective for traditionally underserved students (Ladson-Billings, 1995; Waxman & Huang, 1997). These

Key finding

Students' voices need a central role in the classroom so that students develop ownership and understanding of the content through discussion, negotiation, explanations, and modeling.

methods allow students to learn by engaging, challenging, and mentoring each other. This fulfills both academic roles (e.g., increasing comprehension, problem-solving ability, communication skills) and social ones by ensuring each student has a friend (Hattie, 2009). The combined positive social and academic outcomes can be effective in all classrooms but especially powerful in diverse settings where students might feel disengaged or unsuccessful within the confines of a teacher-directed class. Certainly, cooperative learning and peer tutoring are not panaceas for improving student learning and engagement; in addition, teachers require training and support to ensure they can implement them effectively.

Distinct advantages of supporting role fluidity become evident for teachers, as well. Donnell (2007) writes about "getting to we" in her research of novice teachers in urban schools and their use of joint learning. Beginning teachers who saw the importance of learning from their students and the power of reciprocal teaching were able to transform the learning environment and build relationships with their students. These teachers demonstrated the importance of constructing knowledge with their students rather than just acting as dispensers of knowledge. Ultimately, the teachers gained confidence in their abilities as new teachers and thus increased their sense of efficacy.

The challenge for teachers who plan to use joint productive or group activities is selecting and directing the appropriate grouping structures. Salomon and Perkins (1998) argue for "spirals of reciprocity" (p. 20) whereby the typical teacher-led, large student group is greatly enriched by various forms of group interactions and that "well-designed instruction therefore involves different learning systems at different moments in synergistic interaction" (p. 20). This presents teachers with a complex system of knowing when and how to present different grouping activities. Professional development in this area might help teachers in addressing these intricacies in their classrooms. Further, additional research on the use of different grouping structures with diverse students might illuminate when and how to conduct cooperative learning arrangements to best serve student needs.

The urban classrooms of San Diego's High Tech High provide powerful examples of role fluidity. This school serves a diverse racial and ethnic student body in grades K–12 and sends 99 percent of its students to college (Rubenstein, 2008). Some important features of High Tech High are the connectedness to the local community and business organizations, in particular. Students and teachers utilize this partnering to focus heavily on involving teams of students in real-life, project-based activities. In one such activity, teams of engineering students pair with a community groups—one team designs signs for the Humane Society while another team works with the San Diego Oceans Foundation to design protective enclosures for sea bass. In another class, pairs of students worked together to isolate DNA in meat with the goal of developing a new tool to help conservationists identify

illegally poached meat in African markets. As is typical at High Tech High, students present their final class projects to an audience of teachers, parents, peers and community members. For these students, collaboration, teaching, and self exploration integrate to form a powerful learning experience. While additional research may be necessary to understanding the intricacies and challenges of such environments, this example indicates how collaboration motivates students through meaningful, real-world experiences, which, in turn, develop social and academic skills.

Assess and develop prerequisite knowledge and skills

In addition to the relevance of a student's values, experiences, and communication styles, there is the relevance of a student's prerequisite knowledge and skills. When students do not know letter names and sounds, effective teachers teach them; when students do not know the branches and functions of the government, effective teachers teach them. What is important for effective teaching is the ability to recognize gaps in prerequisite knowledge and skills and be able to use one or more of a variety of instructional strategies and approaches to bridge these gaps. "Although it is important for children to have the opportunity to 'discover' new knowledge, we must not fool ourselves that children need only, for example, a 'literacy rich' environment to discover literacy" (Delpit, 2006, p. 228). Children need opportunities to learn from direct instruction as well as opportunities to discover for themselves.

Four research-based approaches that address possible gaps in Our Kids' prerequisite knowledge and skills for beginning reading are (1) class-wide peer tutoring (CWPT), (2) Little Books, (3) Success for All, and (4) Lexia. Each of these approaches has demonstrated strong effects on Our Kids' general reading achievement in the elementary school grades as evident in the What Works Clearinghouse reviews of the relevant efficacy research (see Table 1, p. 18).

Several of the effects sizes for these interventions are large. Take, for example, the effect of class-wide peer tutoring on reading achievement in Chapter I schools; an effect size of 0.35 would close the reading achievement gap by half between low- and middle-income children in 4th grade (Hill, Bloom, Black, & Lipsey, 2008). Of course, closing the achievement gap by half is precisely that. If eliminating achievement gaps is a goal, it is important not to get sidetracked by the promise of a silver bullet. Teachers, the school community, and the children themselves need many tools and information at their disposal to invest in learning and achieve academic excellence. Together, the efforts are additive. When the goal is academic success for a productive life after high school, the best efforts of all of a system's components must be engaged.

Using technology as a means to adapt pedagogy to improve student learning and engagement

> *"For more than half a century, a technology revolution in education has been just around the corner, yet it never quite arrives…the revolution has remained elusive."* –Chambers, Slavin, Madden, Abrami, Tucker, Cheung, et al. (2008, p. 1)

The research in technology-based instruction offer several advantages toward the goal of bettering education for Our Kids. First, well-designed, technology-based applications have the

Key finding

Computer-based instruction that exposes Our Kids to technology-rich environments helps to ameliorate their lack of computer access at home, which is critical to their participation and success in an increasingly technology-driven world.

potential to transform teacher-centered, traditional learning environments prevalent in many high poverty schools into ones that are student-centered and individualized (Padron, Waxman, & Rivera, 2002b), allowing students to take more active roles in their learning: "Instead of delivering knowledge, teachers are facilitators of knowledge" (p. 8). This can lead to students who are more excited by and engaged in learning. Further, computer-adaptive instruction often provides immediate feedback to students regarding their progress and areas of weakness and provides opportunities for more tailored instruction (Waxman & Tellez, 2002). A range of current applications in computer-aided instruction, from tutoring to teacher-managed instruction, already exists to improve outcomes for underserved students (Akiba, 2002; Gersten, Ferrini-Mundy, Benbow, Clements, Loveless, Williams, et al., 2008).

Table 1: Urban-situated Beginning Reading Intervention reports

Intervention	Description	Sample	Grade	Effect Size on General Reading Achievement
Class-wide peer tutoring (CWPT)	Peer-assisted learning and tutoring	6 Chapter 1 schools	1st graders followed through 6th grade	0.35
Little Books	Thematic books with high frequency words and simple sentences read aloud to and interactively with children	Urban & rural schools Canada consistently scoring below national norms	Kindergarten	0.31
Success for All (SFA)	Comprehensive program addressing reading, writing & oral language development. Tutoring provided by certified teachers to students performing below expectations	CA schools with 47%–98% FRL	Kindergarten	0.23 0.34 0.27
		Chapter 1 schools in Baltimore, MD	PreK, K, & 1st grade	0.19 0.58 0.54
		Schools with 63% or higher FRL in Clover, WA	Kindergarten	0.04
		7 Title I schools in Ft. Wayne, IN	Kindergarten	0.15
Lexia	Computerized reading program teaching phonics and providing independent practice	Urban elementary schools with 50% or higher FRL	Kindergarten	0.27

Note. Information in this table was located by searching each WWC Beginning Reading Intervention report with ratings of effectiveness in the "Comprehension" or "General reading achievement" domain and searching each report with the keyword *urban* to identify effect sizes reported from studies including children attending urban schools (What Works Clearinghouse, 2007).

Second, exposing children to technology through computer-based applications helps address the current technology gap in this country. A National Center for Education Statistics report (Wells & Lewis, 2006) indicated that while almost all schools had Internet access, schools with high levels of minority students and larger schools predominant in urban settings had higher student-to-computer ratios. Shaffer and Gee (2005) also cite differences in the lack of technology-based resources between affluent students and students in poverty. Schools bear a responsibility of bridging this technology gap because classrooms become one of the only places where students of poverty can access a computer and the Internet in order to attain skills and knowledge inherent in those resources. Technology-based instruction provides a potential solution for underserved students by exposing them to a range of technology-rich activities.

Third, technology can be an efficient and effective tool to systematically integrate information and evaluate progress toward goals. This presents a substantial area for technological integration in improving schools by including the use of systems to evaluate instruction practices and student learning.

Tutoring programs. Technology-based tutoring programs show significant potential for positively impacting student outcomes by providing individualized student support and feedback (Akiba, 2002). A recent study of a specific computer-aided tutoring program used in conjunction with Success for All (SFA)—an effective research-based intervention (Borman, Hewes, Overman, & Brown, 2003)—demonstrates a powerful application for specifically addressing the instructional needs of underserved students (Chambers et al., 2008). This program features short and engaging animated videos on phonics and vocabulary that supplement students' current classroom lessons. The computer-aided tutoring program also assesses students and

Key finding

Technology has the potential to expand learning opportunities for students by tailoring instruction, engaging students, and providing immediate feedback.

provides tutors with student-specific strategies to address identified weaknesses. The tutors then provide focused and tailored instruction to assist students in overcoming any deficiencies in their understanding. The results significantly improved reading achievement for students in the treatment group. This is a powerful example of a technology-based application working in conjunction with and increasing the effectiveness of an already proven intervention.

Expanding learning opportunities. Arguably, technology-based interventions work most effectively when combined with other key elements identified as critical to the education success of Our Kids. For example, implementing a technology application guided by culturally relevant pedagogy might be even more effective than a technology implemented using more traditional pedagogies. This was illustrated in a research study on a technology-based science intervention, The Kids Global Scientist Weather Program, implemented in a low-performing Detroit school (Songer, Lee, & Kam, 2002). This program sought to rectify many of the issues that befall science classes in high-poverty, high-minority schools. Namely, students view science as irrelevant in their lives, and their apathy is exacerbated by inadequate science facilities, large class sizes, and teachers who are inexperienced (Songer, et al., 2002).

Researchers developed The Kids Global Scientist Weather Program as a means to address the prevalence of a pedagogy of poverty. The program utilized an inquiry-based approach where students took responsibility for their learning, built connections between science and students'

experiences, and promoted in-depth content knowledge and problem-solving abilities. The program also integrated teacher learning through fostered conversations to build a community of support and allowances for teachers to adapt the program in their own classrooms. The specific technology applications included an online component where students and teachers could talk to volunteer scientists and track current weather patterns and images, and a CD-ROM containing archival information on storms. Students gathered and synthesized data, communicated their findings, and made predictions. The program culminated in students making predictions about weather patterns.

The program resulted in several positive benefits for teachers and students. Namely, students began to understand the relevance of science in their lives and to derive personal meaning from the science program through the technology applications. Students also developed their understanding of the science content and how to participate in inquiry learning. Throughout the course, students became more excited about and engaged in science. Teachers reported that their disenfranchised students were actively participating and receiving passing grades, "some of them for the first time ever" (Songer, et al., 2002, p. 143). Teachers also gained important pedagogical skills and knowledge specifically related to better implementation and integration of technology as well as developing fluency with technology.

Technology is not a "solution" for improved instruction in urban settings. Simply improving access to computers will not improve student learning and could possibly act as a detriment if computers are only used to promote basic skills. However, the scope of these examples shows that when used effectively, technology can improve instruction for Our Kids in a variety of ways.

Key finding

Technology can provide a powerful means of engaging students in a variety of ways from expanded learning opportunities to individualizing instruction.

Distance learning. The previous examples show how technology can reengage students who might not have physically dropped out of school but have disengaged or become disinterested. However, technological innovations can allow us to reach students who have in fact dropped out or can't attend school (e.g., due to illness). In one example, Westwood Community School District outside of Detroit, Michigan, implemented a distance learning program based on a successful program developed in the United Kingdom. The goal of Westwood Cyber High School is to reengage students in order to provide them the requisite skills for college or future employment. Students referred to the program by a teacher, parent, or social service agency engage in a project-based program of study. Students fulfill course requirements either completely online or via a technology center staffed with mentors who provide student support. While results are still

pending for the Michigan program, data from the original UK program indicate high success rates, with 61 percent of students going to college and 18 percent employed.[1] While this program shows great promise, additional formal research on challenges and impacts of distance learning is essential.

Instruction management and assessment Systems. Technology can also assist teachers in managing their instruction through the rapid identification of student strengths and weaknesses. Using an instructional management program, Accelerated Mathematics, teachers implement research-based pedagogical strategies such as cooperative learning, academic focus, positive classroom environment, and clear expectations in urban elementary schools (Ysseldyke, Spicuzza, Kosciolek, Teelucksing, Boys, & Lemkuil, 2003). Students engage in tasks aligned to their current achievement level based on computer-based assessments. The management system synthesizes data for individual students and the class as a whole. Teachers can then utilize the information to purposively differentiate instruction based on their students' strengths and weaknesses. Student achievement significantly increased in urban schools implementing this management system.

Another promising technology-based system currently in use is the adaptation of walkthroughs using handheld computers. In general, walkthroughs provide a focused process by which principals, curriculum coordinators, or other teachers spend a brief period of time in classrooms throughout the school to provide feedback to teachers on schoolwide or departmentwide practices (Downey, Steffy, English, Frase, & Posten, 2004; Martinez-Miller, & Cervone, 2008). While walkthroughs are already lauded in education as a means to increase teacher collegiality and support instructional change (D. Stecklein, personal communication, June 19, 2008), programs such as Power Walkthrough®[2] and TeachScape's Classroom Walkthrough[3] provide additional data analysis capabilities and structure via a focused classroom observation protocol loaded on a PDA. The protocol is based on a set of research-based instructional strategies deemed to be important to successful classroom instruction. School administrators and teachers visit classrooms in their school frequently and for short intervals to obtain a broad array of information on program implementation and the use of instructional strategies. Typically, feedback to individual teachers aligns with previously set goals, which can range from providing differentiated instruction to increasing student engagement. These programs also provide simple tools for synthesizing data from their observations, which is useful in directing future staff development. While anecdotal evidence suggests that teachers and principals find this tool positively impacts teaching strategies, formal research studies are critical to building an understanding of the intricacies of effective implementation.

An environment that is both academically rigorous and nurturing

Research indicates that the environment teachers create in their classrooms, including how they manage student behavior, classroom discourse, and the relationships they build with students, is crucial to student success (Delpit, 2006; Pianta & Walsh, 1996; Ware, 2006). Our Kids, in particular, benefit from classroom environments that are on the one hand, challenging and structured, while on the other, nurturing and tailored to student needs. Foster (2008) cites examples in the literature that support a prevalence of teacher beliefs that

[1]See www.westwood.k12.mi.us/buildingwebs/cyberhighschool/index.html

[2]See www.mcrel.org/powerwalkthrough

[3]See www.teachscape.com

students in poverty cannot perform high-level work, and that students believe that no one cares about them. However, when students are in fact cared for by teachers, the experience can be transformative: drop-out rates are lower, behavioral problems are fewer, and achievement increases.

Nurturing environments

> *I have discovered that children of color, particularly African American, seem especially sensitive to their relationship between themselves and their teacher. I have concluded that it appears that they not only learn from a teacher but also for a teacher.* –Delpit (2006, p. 227)

Student/teacher relationships are strongly connected with improved student learning in general (Hattie, 2009) and are specifically important for underserved students (Delpit, 2006). This puts the onus on teachers to be "warm demanders," (Ware, 2006) by creating classroom environments that embody high expectations for Our Kids, while at the same time providing them with the supports and encouragement they need to succeed. Specifically, teachers need to identify with their students and believe in their abilities and their capacities to attain high levels of academic achievement.

According to research on student motivation, the extent to which teachers include students, accept them, and respect them, is critical. Student perceptions of their teachers' preparedness and caring are positively associated with academic achievement (McMahon, Wernsman & Rose, 2009; Murdock & Miller, 2003; Wentzel, 2002). When teachers care, students feel that they belong in the classroom, and when students feel like they belong, their academic self-efficacy is reinforced. Academic self-efficacy drives academic engagement and effort, the value students place on school, and expectations for school success. Teacher caring is most strongly correlated with students valuing school. Valuing school and intrinsic motivation predict persistence in school better than effort or achievement (Murdock & Miller, 2003).

Delpit (2006) argues that African American children place a higher importance on the social aspects of their classrooms relative to their white peers. They seem to value the warmth, connectedness, and security they derive from teacher relationships. Pianta & Walsh (1996) advance the notion that schools need to provide the protective mechanisms that many children of color and poverty are missing in their home lives. This includes caring relationships where teachers make students "feel worthwhile, support their independence, motivate them to achieve, and provide them with support to interpret and cope with environmental demands" (p. 161).

Importantly, Murdock and Miller (2003) compared an **ecological model** with a variable-centered model for explaining student academic motivation and learned that the ecological model was a better predictor. The ecological

Key finding

Our Kids need nurturing, supportive relationships with teachers to provide the supportive mechanisms they might be missing at home.

model assessed the influence of several contextual factors (e.g., peers, parents, and teachers) simultaneously. Having peers who valued school and parents who expected a lot of their sons and daughters in school *together* predicted academic effort. Furthermore, having a supportive teacher did not appear to compensate for having parents who did not value education. The results "add growing support to the notion that students benefit most when there is congruence between the values of home and those of school" (Murdock & Miller, 2003, p. 395).

High expectations

Schools and teachers that consistently improve student learning maintain a commitment to high expectations and rigorous instructional practices (Hattie, 2009). However, more often than not, urban schools do not provide rigorous goals and opportunities for students of color and poverty and instead allow basic skills and lowered expectations to prevail. After years of calling for higher standards and increased expectations, seemingly not enough has changed.

The philosophy of culturally relevant pedagogy embeds the notion of high expectations and many of the researchers in that area present compelling arguments for its incorporation. This intersection demands that teachers relate to students based on their own experiences and couples that expectation with the use of instructional practices designed to promote student success (Ladson-Billings, 1995; Lewis et al., 2008; Ware, 2006). Ladson-Billings further argues that students must make real academic gains, and that high expectations should not be diluted to an exercise in developing self-esteem. In Lipman's (1995) study of three African American teachers at a low-achieving school, she found remarkable similarities that cut across their practices. These teachers exemplified how to set high expectations for their students as illustrated in this example of one teacher's practice:

> With great dignity, she held attentive and respectful students to uniformly high standards of academic performance and behavior. Otherwise unruly students pulled themselves up short as they entered her room. With a respectful, "Good afternoon, Miz McAllister," they sat down and diligently pursued the challenges she set for them. Her patience and humanity contrasted with the deprecation and verbal abuse to which students were subjected by some teachers. (p. 205)

Warm demander pedagogical practices exemplify the philosophy of high expectations and nurturing environments. Ware (2006) examined how two distinctly different African American teachers—one novice and one very experienced—built caring relationships with their students while simultaneously holding them to very high standards. This study examined the connections between shared ethnic and cultural backgrounds of the teachers and students and how those connections influenced instructional practices. In this case, the warm demander pedagogy and culturally relevant pedagogy worked in concert and provided an explanation as to why these teachers were supportive of their students' academic achievement and created a classroom culture of high expectations. "Specifically, teachers who skillfully use warm demander and culturally responsive pedagogies and have a strong sense of racial identity can create a new classroom culture. This culture supports African American students who actively respond to the warm demander teachers' high expectations by embracing a culture of achievement" (p. 452–453).

Key finding

Our Kids need teachers who believe in and support students' capacity to achieve high levels of academic knowledge.

Research indicates the presence of a general racial bias among teachers in American public schools with regards to their expectations for students (Tennebaum & Ruck, 2007). This recent meta-analysis showed that teachers have higher expectations for European American children than African American and Latino children (Tennebaum & Ruck, 2007). These researchers also observed a large amount of variability in the average effect size for racial differences, and that teacher expectations were not a reliable estimate of the differential expectations of all teachers. Further examination revealed that teacher bias varied by region of the United States. The differential expectations favoring European American students were largest in the Northeast, for example, followed by the South and Southwest. Teachers in the Midwest did not differentiate their expectations, and in the West, teachers had higher expectations for ethnic minorities than for European American students.

The literature on setting high expectations for low-achieving students is one of the most dominant and definitive areas in pedagogy (Ladson-Billings, 1995; Lipman, 1995; Ware, 2006). While some of these articles illustrate teachers focusing on basic skills as a requisite to reaching high standards, others promote the importance of embedding discrete skills within the context of larger problem activities (Dalton, 1998; Lee et al., 2005; Ware, 2006). However, educators would be hard pressed to find current articles that promote low standards or minimal skills for underserved youth. The question becomes, why do philosophies of lowered expectations and standards remain entrenched in our urban schools, and how can we change this pattern?

The move to change teacher expectations of students' capacities and student expectations of what they are capable of is one rife with challenges. As Yonenzawa, Wells, & Serna (2002) found in one school, eliminating ability tracking in order to encourage all students to participate in rigorous courses was unsuccessful. In this case, promoting student choice was not effective because simply allowing students to select their courses did not change the fundamental school structure or how students viewed their own capacities. The study showed that a restructuring effort would not be effective unless students are able to change how they see themselves. Further, as Wyner et al. (2007) argued, No Child Left Behind (NCLB) needs to reward schools for focusing on and cultivating high-achieving, high-poverty students. When there are no incentives for moving students beyond "proficient" performance, teachers have less reason to teach to the highest levels of achievement. Another strategy for changing teacher's negative or low expectations is to prove them wrong. Teachers would find "it difficult to retain erroneous expectations indefinitely in the face of conflicting information" (Tennebaum & Ruck, 2007, p. 254).

Classroom management

Effective classroom management strategies are especially critical for teachers working with Our Kids. Teachers need more than the basic strategies promoted for general classrooms because good behavior is culturally and socially constructed (Bondy, Ross, Gallingane, & Hambacher, 2007; Ware 2006). Therefore, teachers need support and specific training to understand and respect the cultural differences present between themselves and their students. The implementation of culturally relevant classroom management (CRCM) practices promotes resiliency in children. Further, developing caring relationships, maintaining high expectations, and allowing space for cultural experiences increases students' belief in their own capacity, which is an important predictor of school success (Bempechat, 1998 as cited in Bondy et al., 2007).

Bondy et al. (2007) examined CRCM practices in three novice teachers identified as effective teachers in high-poverty urban elementary schools. These teachers specifically provided a structured environment that promoted student success. Importantly, the teachers were described as "authoritative" but in a way that students could respect; Delpit made a similar (2006) assertion that students of color will respect *authoritative* teachers but not ones who are *authoritarian*. All of the teachers quickly established a set of rules and expectations for the students during the first few days of the school year. These were continually reinforced and aligned with positive and negative consequences. Students knew their teacher meant business, but the actions were always coupled with humor and terms of endearment to build and sustain the teacher/student relationship. The tone of these interactions was critical to their effectiveness. As Bondy et al. (2007) explained, "The teachers maintained a kind and caring stance as they implemented consequences. They were upbeat, calm, and direct in their interactions, never sounding sarcastic, punitive, demeaning, or threatening" (p. 343). The researchers argued that such a culturally relevant management style would not only allow for a more productive classroom but would directly increase students' resiliency and aspirations.

Promoting higher order thinking and rigorous instruction

> *"Whatever approach or methodology is implemented, however, one factor that is necessary for excellence is that children are demanded to think critically about what they are learning and about the world at large."*
> –Delpit (2006, p. 223)

A natural outgrowth of teachers' high expectations for students is their use of strategies that are rigorous and their teaching of higher order thinking. This report supports the notion that teachers may need a range of strategies to support student learning, which presents a challenge to professional development efforts. Yet, incorporating rigorous pedagogical practices is critical, and we do a disservice to Our Kids by providing them with low-level instruction, no matter how well intentioned. Delpit (2006) argues that often teachers teach a watered-down curriculum in an attempt to be nice or accommodating. She acknowledges the difficulty on the part of teachers to "demand" students to think critically about issues because they may not have been asked to do so in the past.

In a literature review on effective teaching practices, Dalton (1998) found evidence that teachers who present challenging concepts and support the development of complex thinking improve student achievement. For example, she notes that teachers often assume that second-language learners need to know English before being presented with complex mathematical problems. Therefore, ELL students often are

relegated to "drill and kill" type instruction that emphasizes basic skills. She argues that all students can benefit from instruction that challenges them, builds on cultural experiences, explores larger problems, and involves teacher and peer interactions. Further, Waxman and Padron (1995) advocate for the use of Cognitively Guided Instruction (CGI), in that it specifically relates to increased student achievement for ELLs.

In a research synthesis on effective instructional practices designed to help underserved students with meeting standards, Apthorp (2002) specifically examined studies that addressed the efficacy of cognitively oriented instruction, which includes cognitive and metacognitive strategies. Cognitively oriented instruction focuses on engaging students in higher order thinking and is an example of the application of rigorous instruction because it illustrates pedagogical practices that encourage students to use cognitive strategies, higher order thinking, and systematic problem solving. "Cognitively oriented instruction is designed to help students improve the quality of their thinking, become more independent learners, and become proficient in complex, higher order academic tasks" (Apthorp, 2002, p. 47). Most critically, the study points out the need to explicitly teach students metacognitive strategies and skills to organize and learn new material.

Key finding

We do a disservice to Our Kids when we present them with instruction focused solely on low-level skills. Rather, they benefit from instruction that incorporates higher order thinking and complex tasks.

Many researchers include metacognitive and cognitive teaching strategies into larger programs or philosophies:

- Classroom Instruction that Works (CITW) is a framework for an instructional intervention based on an extensive research synthesis (Marzano, Pickering, & Pollock, 2001). The researchers found that instruction in metacognitive and cognitive processes played important roles in learning, and that four systems must work in tandem: (1) knowledge, (2) the cognitive system, (3) the metacognitive system, and (4) the self system. Among these, it appears the self system plays the largest role in success, as it can affect cognitive and metacognitive systems, as well as knowledge domains. Based on this research, even the best instructional strategies or tools are unlikely to have an impact on student learning, if we fail to meet issues regarding student motivation, understanding of expectations, and feedback from teachers.
- Donovan, Bransford, and Pellegrino (1999) further discuss metacognitive strategies and present general instructional guidelines, stressing the importance of using them in a subject-specific manner. They argue that teachers should incorporate three guidelines into their practices based on how students learn. First, students come to school with a variety of preconceptions (both accurate and inaccurate), and teachers need to develop an understanding of those preconceptions and build off of them to shape students' knowledge relevant to the subject area. Second, metacognitive strategies that are embedded within content areas are crucial

to building discipline-based knowledge, so teachers must be knowledgeable about their given content area and teach it in an in-depth manner. This includes providing students with a substantial factual grounding. Finally, metacognitive skills that are specific to the content area should be taught.

While these programs indicate general strategies for instruction on a broad level, as Donovan et al. (1999) argue, they need to be considered within a subject-specific context. In fact, Shulman and Sherin (2004) stress the importance of subject matter on pedagogical practices: "One of the most significant factors influencing the effectiveness of teaching. . . is the teacher's own subject matter knowledge and pedagogical content knowledge (2004, p. 135–136). Several research studies have identified examples of rigorous pedagogy within English language arts and mathematics.

English language arts. Research in advanced skills instruction indicates that such strategies worked equally well for high- and low-achieving students and had no negative bearing on students' basic skills. Knapp and Shields (1995) found that providing meaning-oriented instruction to students of varying abilities in high-poverty schools, versus skill-based instruction, increased students' abilities in problem solving, reading comprehension, and written expression. In addition, research on teaching early literacy in a high-poverty school found that encouraging students in activities associated with higher level thinking, either through complex questions or activities, most supported reading growth. This is particularly powerful when teachers link activities to students' experiences (Taylor, Pearson, Peterson & Rodriquez, 2003).

Similar to Knapp and Shields (1995), McKeown, Beck, and Blake (2009) found that meaning-oriented approaches worked best in moderately high-poverty middle school classrooms. They compared a strategy-based approach and a content-based approach with the traditional basal approach with regards to reading comprehension. When comprehension and recall of narrative and expository texts were assessed, students who received the content approach outperformed those who received the strategy approach and those in the control group. Answering the open-ended questions (e.g., What's going on here? How does all this connect to what we read earlier?) may help students remember what they read while the strategy prompts (e.g., how to summarize, monitor for understanding, etc.) may split students' attention between strategies and content.

Research conducted on the impact of cognitively oriented instruction in reading and writing indicates its potential in promoting student learning. Researchers found programs were particularly effective when they combined both metacognitive and cognitive strategies and were coupled with multiple instructional practices, such as instructional conversations, explanations of strategies, modeling, and different grouping strategies. Further, use of multiple strategies also was effective in cognitively oriented interventions for developing oral and writing skills with the addition of giving students the opportunities to polish their work and present to peer groups (Apthorp, 2002).

Mathematics. The use of rigorous instructional strategies applies to mathematics, as well. In a research review conducted by the National Mathematics Panel (Gersten, Ferrini-Mundy, et al., 2008), the authors found little conclusive evidence to support specific strategies but offered several suggestions to teachers of students who are low-achieving. Importantly, they note the need for "high but reasonable expectations" (2008, p. 6–76). Further, they suggest teachers provide explanations and demonstrations of different strategies, give students opportunities to verbalize their thought processes by asking questions and talking through reasoning and decision-making processes, and have students work together. Other

research specific to Cognitively Guided Instruction (CGI) in mathematics has examined mathematical thinking and supports the use of CGI as a way to help teachers build students' mathematical thinking skills (Carpenter, Fennema, & Franke, 1996; Carpenter, Franke, Jacobs, & Fennema, 1998).

Illustrative examples of rigorous instruction can be seen in programs in two schools that partner with universities. Both the Pruess School (Alvarez & Mehan, 2006) and the Decameron School (Foster, 2008) offer rigorous college preparatory programs for low-income students on college campuses. Rooted in trends in cognitive psychology, the philosophy of the Pruess School is that all students have "the capacity to reason sufficiently well to finish high school and enter college when they are supported with the appropriate academic and social scaffolds" (p. 83). Further, at the Decameron School, teachers model their commitment for the students who, in turn, follow the example through dedication to their studies. There is poignancy for the students in having their school situated on a college campus. Students can see the reality and the possibility of college—there is an understanding of the challenges but also that it is something within their capacity.

High-quality teacher professional development

Too few quality teachers are willing and able to teach underserved student populations. For example, Padron et al. (2002a) referred to the lack of quality teachers for Hispanic students. "At present, nearly 56 percent of all public school teachers in the United States have at least one ELL student in their class, but less than 20 percent of these teachers are certified ELL or bilingual" (p. 9). Haberman (1991) argued that urban teaching and teachers have generally been overlooked by the larger education community because of preconceived notions, such as the inability of teachers and staff to change their practices and the seemingly insurmountable task of providing quality education to students whose socio-economic backgrounds have already predisposed them to failure. However, he argues, teachers can implement strategies that are engaging, relevant, and promote student responsibility and problem solving. The task of providing quality education to Our Kids is not insurmountable.

Key finding

Quality teachers are critical to the successful implementation of good pedagogical practices, but fewer qualified teachers are willing or able to teach underserved students.

Undergirding the success of sound pedagogical practices (as well as the implementation of other components of the Learning System) is high-quality and sustained professional development. Teachers of Our Kids need professional development rich in *content* and productive in *format* so that they feel supported, equipped, and efficacious.

Content

Teachers want more information on how to support student learning in their increasingly diverse classrooms. In Padron et al. (2002a), many teachers reported the need for long-term, sustained professional development to

address the needs of diverse populations, and to support the effective incorporation of new practices and technologies. To teach and learn in a multicultural society, Villegas and Lucas (2002) propose that professional development and teacher education cover six strands of content comprising culturally responsive pedagogy. These strands cover both intellectual and affective acts and knowledge (Lewis, James, Hancock, & Hill-Jackson, 2008):

1. *Sociocultural consciousness.* High-quality professional development for teachers of Our Kids challenges teacher conceptions and assumptions about how students learn and how schools educate. Villegas and Lucas (2002) and others (Lynch & Baker, 2005) suggest focusing on the ways that schools perpetuate social inequalities, opening doors for those who are already advantaged while barring entrances to those who are not.

   In addition to a critical analysis of public schooling, Delpit (2006) suggests teaching pre-service and in-service teachers about diverse types of educational models, including, for example, the ways in which churches and other community institutions are intentionally organized to counter inferiority myths through such activities as "uplifting songs, recitations and performances; high expectations; extensive academic support in and out of school; and regular group meetings to express the expectations of adults that young people must work hard to be free in an oppressive society" (p. 225).

2. *Affirming attitudes toward students from culturally diverse backgrounds.* It is imperative that "teachers know their students well and believe that all students can learn and achieve high levels of academic success" (Talbert-Johnson, 2006, p. 154). Although the difficulties of teaching in urban schools include students "who are disrespectful, uninterested, cannot read, constantly talk, or always get into fights," Delpit (2006, p. 220) urges staff developers to challenge teachers' interpretations of these behaviors and "to look beyond what they think they see in parents and students to what they see in themselves" (p. 220).

3. *Commitment and skills to act as agents of change (nurturing the moral compass).* The critical view of public education as perpetuating inequality needs its companion content that schools are sites of social justice. Delpit (2006) asks teachers "to change their patterns of behavior and dig deep to become the teachers I know they can be—the teachers who can change the lives of the poor children of color that they teach and, subsequently, the failing schools of this country's cities" (p. 220).

   Professional development that focuses on the teacher's role as a change agent provides examples of influential teachers in individuals' lives and teaches about the change process. This content helps teachers understand obstacles to change, collaboration and conflict resolution, the pace of change, and the roles and responsibility of activism and agency (Villegas & Lucas, 2002).

4. *Constructivist views of learning: Learning occurs by using prior knowledge.* "To overlook [prior knowledge] is to deny children access to the knowledge construction process" (Villegas & Lucas, 2002). From this perspective, all students are viewed as capable learners who have ways of seeing, hearing, speaking, and thinking that are resources for further development. A common but easily overlooked strength of children from poor communities is critical thinking. Children of poverty "are accustomed to being more independent. Often they are familiar with real-life problems and how to solve them" (Delpit, 2006, p. 228). This content strand is about connections among academic content, children's strengths, and community-based experiences, for example, metaphors based on

events and features in the children's community (e.g., comparing how a minister is like a president, deacons are like legislators, and the board may be like the senators) (Delpit, 2006).

5. *Learning about students and culturally responsive teaching practices (strands 5 & 6 combined).* High-quality professional development for teachers of Our Kids encourages and supports teachers as they learn about their students and the ways they learn in their out-of-school lives. In a 2002 research synthesis, Waxman and Tellez (2002) recommended several strategies for teachers working with English-language learners, including increased training on how to address the cultural and linguistic differences represented in classrooms. Quality professional development for teachers of English-language learners focuses on how to recognize and adjust for the various stages of second-language development.

   For example, ELLs in the preproduction stage do not yet verbalize (e.g., nod yes and no). With these students, teachers should try out various ways for students to respond physically so they can demonstrate their knowledge (e.g., ask students to "Show me. . ."; "Circle the. . ." ; "Where is. . ."; or "Who has. . .") (Hill & Flynn, 2006). Another example from Hill and Flynn (2006) suggests "Why?" "How?" and "Explain" are productive prompts, and phrases or short sentences are appropriate answers for ELLs in the third stage of second-language acquisition, speech emergence. Grammar and pronunciation errors also should be expected and understood as part of the learning process at this stage. Professional development needs to cover possible misinterpretations when, for example, certain mistakes might appear on the surface to represent lack of content knowledge when in actuality they might be indicative of low English proficiency.

Format

Certainly, the intersection of good theoretical pedagogical practices and the application of those practices is situated in teachers' abilities to implement them effectively. A common theme in the literature is that no matter how good the practice, nothing can be implemented effectively without proper professional development. While there was variation among the authors regarding the nature of the professional development, several generalities cut across the studies.

Ensure it is sustained and long-term. First, teachers report that long-term and sustained professional development is critical to the development of their abilities to implement new pedagogical practices, such as cooperative grouping (Padron, Waxman, & Rivera, 2002a). A one-time training does not allow teachers to integrate the practice into their teaching because there are no opportunities to practice and revisit the issues and barriers to the

Key finding

Teacher professional development is most effective and more likely to lead to long-term change if it is sustained, collaborative, and does not require a radical shift in the teacher's current practices.

implementation. Second, collaborating and sharing ideas and concerns among teachers is critical. Third, professional development is more effective and more likely to be used long-term if it does not radically alter the teacher's current practice but enhances it (Padron et al., 2002a). In-service training provided over time as opposed to a one-day seminar allows teachers more opportunities to reflect on their practices and experiment with new strategies (Waxman & Tellez, 2002; Padron et al., 2002a).

Embed it in professional learning communities. In addition, in order for change to take hold in classrooms, teachers need time to plan and collaborate with other teachers. McKinney & Frazier (2008) found that there is greater potential for sustaining change when teachers collaborate with a lead teacher or mathematics specialist who is familiar with best teaching and assessment practices and who is knowledgeable about how students learn. Similarly, Knight (2007) argues that teachers will only switch to a new instructional strategy if it is easier and more powerful than the teacher's existing practice. One way to accomplish this is via teacher coaches who can explain or model a practice and provide feedback or clarification.

Donnell (2007) also suggests that teachers may benefit from specific support that is based on the context in which they are teaching. She discusses "a situative perspective that emphasizes the role of context and community in teachers' learning" (p. 243). Teachers in urban schools need specific help to support them in dealing with a range of social and racial issues. Teachers might also feel more supported within professional learning communities where they can discuss problems and co-create solutions.

Emphasize reflection and continuous improvement. As asserted by Talbert-Johnson (2006), effective teachers "have the attitude to work at becoming effective teachers" (p. 154). Part of the work is studying the effects of one's own teaching and reflecting on and sharing what works with others (Hattie, 2009). "Teachers need to be aware of which of their teaching strategies are working or not; be prepared to understand and adapt to the learners and their situations, contexts, and prior learning; and need to share the experience of learning in this manner in an open and forthright and enjoyable way with their students and their colleagues" (p. 23).

Quality professional development offers guidance and support for teachers to reflect on the effects of their own teaching and adopt alternatives or make revisions to improve the effectiveness of their practice. Additionally, when adapting to changes involves resources outside the classroom, quality professional development offers ways for teachers to identify and obtain such resources.

Teacher learning, as it applies to improved instructional practice, represents a significant opportunity for improving student learning. Findings from the research literature are consistent with national standards for quality staff development, including content covering equity, community and family involvement, process and contexts involving data-driven decisions, collaboration, and learning communities (National Staff Development Council, 2001).

Discussion & Recommendations

The following options represent the research team's understandings of the literature discussed and insights from other areas of the education field. In addition to the questions described in Step 5 of the Overview of Methodology (see p. 7), these questions were used:

- What current practices have a strong enough evidence base that they should be *adopted* and scaled up?
- What current practices show enough promise in certain contexts that they might be *adapted* for use in settings for Our Kids?
- Where are there sufficient unmet needs and lack of promising practices to warrant the *invention* of new practices?

These options for further action are not necessarily mutually exclusive. The Design Collaborative might ultimately choose a path that integrates several or all of them. In fact, one of the respected reviewers of this report recommended that all five options be considered, and that it would be difficult to have a system of good pedagogical practices that did not include all of them. Nonetheless, pursuit of any particular option presents opportunity costs. To help the Design Collaborative weigh these costs, advantages and disadvantages for each option are presented.

Option 1: Support teachers to better utilize methods and theories of differentiated instruction and culturally relevant pedagogy

Adapting instruction to meet the learning needs of Our Kids is a critical component of their academic achievement. Differentiated instruction and culturally relevant pedagogy both focus on aligning instruction based on where students are academically or culturally. Because Our Kids represent diverse backgrounds, in terms of race, ethnicity, language, and knowledge and skills, it is critical that we employ better ways to address their instructional needs; these two approaches were developed in response to the needs of students who are marginalized in traditional classrooms. In general, differentiated instruction provides guidelines to assist with academic diversity, while culturally relevant pedagogy provides ways to address cultural diversity (Santamaria, 2009).

While different in their theoretical framework, they have many complementary aspects. Specifically, each operates on the assumption that the student is the focus in the classroom. Using differentiated instruction, the teacher builds his or her instruction with consideration for the array of abilities, interests, and effective modes of learning for the students. Tomlinson (1999) advocates that teachers consider issues regarding the content of their instruction, appropriate student activities that develop skills and knowledge, and the products that students produce to demonstrate their knowledge.

Culturally relevant pedagogy nurtures, acknowledges, and incorporates students' cultures in meaningful and powerful ways. Teachers who engage in culturally relevant instruction honor students' backgrounds in appropriate ways by using culture as a bridge to the classroom and into the learning process itself. Ladson-Billings (1995) asserts that teachers must address the "problem of discontinuity between what students experience at home and what they experience at school in the speech and language interactions of teachers and students" (p. 159). Culturally relevant programs support and acknowledge the students' cultures and language and link student learning to home experiences in order to provide learning

opportunities (Dalton, 1998; Sheets, 1995). As is true for all learners, "education is not just about acquiring knowledge, but about learning how to do significant things with what you know. . . about bringing knowledge alive" (Perkins, 2004, p. 18).

In one research study, these methods were jointly examined and the results indicated the potential for joint use in diverse classrooms to support student learning and motivation (Santamaria, 2009). However, effective implementation requires that teachers understand how differentiation can be adjusted to respond to culturally diverse learners:

> Providing authentic examples for ways in which to adjust DI so that it is increasingly culturally responsive will allow educators to develop and extend appropriate pedagogies to larger numbers of children with the most diverse needs. This approach is a fresh one and clearly suggests that teachers 'take different paths to meet learners where they are.' (p. 40)

The use of differentiation and culturally relevant pedagogy each present distinct challenges when used jointly or separately, which we discuss below.

Potential benefits of this option

Increased student knowledge of real-life situations. Padron et al. (2002a) argue that educating students in a culturally relevant classroom allows them to acquire new knowledge more readily because teachers build on students' existing knowledge base. In turn, students improve their self-concepts because they can demonstrate their expertise by utilizing existing cultural skills and languages. This translates into enthusiasm and motivation. Ultimately, an argument can be made that students will do better upon graduation because they can transfer classroom knowledge to real-life situations and are more aware of, and sensitive to, other cultures. Culturally relevant pedagogy also provides a shift from traditional Eurocentric curriculum that can be exclusionary to one that encompasses a range of cultural experiences (Teel, Debruin-Parecki, & Covington, 1998).

Broad applicability across content areas and curricular programs. A great strength of both approaches is their broad applicability across different content areas. While culturally relevant pedagogy can be complex, it does not call for a complete transformation of a teacher's practice or curricular program. It can be implemented broadly or subtly within current frameworks that the teacher might be using, such as cooperative learning, distance learning, or inquiry-based learning. It is embedded in "teacher practice and continually evolving through teachers' reflections on their interactions with their students, their students' communities, peers, and others" (Nasir et al., 2008, p. 219). The examples discussed in the Findings section of this report (see pp. 13–15) show its relevance in mathematics, language arts, and science. Finally, while it is certainly most effective to align culturally relevant

pedagogy with a similarly focused curriculum, it is possible to implement these strategies within an existing program by embedding or supplementing it with culturally relevant examples. Similarly, differentiated instruction provides a method for adjusting the content, student activities and assessments within a range of content areas.

Greater engagement for students, teachers, families and the community. This option potentially provides the mechanisms for both students and teachers to become more engaged in classrooms. Differentiated instruction explicitly focuses on building students capacities to "take charge of their own lives as learners" (Tomlinson, 2008, p. 27). It is easy to see that when incorporating examples of students' lives into the classroom, there is greater potential for them to see the relevancy of their education in their own lives. For example, Sheets (1995) found that Latina and Latino high school students who spoke Spanish at home were often failing sophomore-level Spanish classes. By applying many aspects of culturally relevant teaching, such as an emphasis on a positive ethnic identity and promoting good student/teacher and student/student relationships coupled with higher order thinking, students acquired the requisite skills to pass AP Spanish.

Teachers also benefit from these practices. In culturally relevant pedagogy, when students incorporate their own cultures, language, and experiences into their education, teachers begin to better understand their students and have an opportunity to challenge their own beliefs about race and culture. Donnell notes, "As teachers learn with and from their pupils, they experience changes in how they understand teaching as well as how they enact teaching" (p. 226).

Finally, this option prioritizes a variety of relationships, including connections to parents and the community. Teachers in many of the culturally relevant studies reviewed for this report encouraged and provided opportunities for parents to participate in classrooms in meaningful ways. This occurred either by parents volunteering their time to support academics (Ladson-Billings, 1995) or teachers providing support and counseling to parents on issues of discipline or academic concerns (Lipman, 1995; Ware, 2006). Culturally relevant teachers recognized the important experiences and expertise of parents and their centrality to the learning process.

Potential challenges and drawbacks of this option

Developing targeted culturally relevant examples. As discussed in the findings, Nasir et al. (2008) indicate the difficulty of developing good culturally relevant examples—ones that are both targeted to the correct level of difficulty and interesting to students. For example, when students are learning the mathematical concept of area, exercises range from very easy—calculating the area of a garden—to ones that are very complex—using differential calculus. This challenge is an issue for all content areas and is critical to the successful implementation of these strategies. Thus, in order for the full potential of culturally relevant pedagogy to be reached, teachers need support in constructing high-quality examples that actively engage students while providing meaningful academic challenges. The challenge is compounded when trying to incorporate culturally relevant pedagogy within the context of differentiated instruction because additional examples might be needed to address students' academic diversity.

A need for additional research. While differentiated instruction has a wide variety of associated research, the literature on culturally relevant pedagogy is most often descriptive in nature (Ladson-Billings, 1995; Ware, 2006). While descriptive research provides insight into the characteristics of successful culturally relevant teachers, it may not help the broader teacher population acquire these characteristics.

For example, key characteristics that describe successful culturally relevant teachers are that they are passionate about their profession, the students that they teach, and the communities they serve. The central question becomes how to translate the skills, passions, and knowledge of these teachers into practices that can be learned and disseminated to provide better opportunities for diverse students.

Determining which characteristics of culturally relevant teachers are transferable in a professional development setting and which are not, and how the partial skill set may or may not be effective, is a topic for additional research. Further, the research on the intersection of culturally relevant and differentiated instruction is emerging, and further evidence is needed regarding promising practices and obstacles of using both strategies simultaneously (Santamaria, 2009).

Providing high-quality professional development. A distinct need presents itself for ensuring high-quality professional development focused on implementing specific, culturally relevant strategies and differentiated instructional practices for teachers of underserved students. In general, good professional development needs to be sustained, focused, and allow for collaboration between teachers (Padron et al., 2002a). However, additional information that specifically helps teachers deal with complex issues is needed. In their research synthesis about effective instructional strategies for ELL students, Waxman and Tellez (2002) recommended increased training that addresses the cultural and linguistic differences represented in ELL classrooms.

Successful differentiation calls for teachers to have deep knowledge of a range of strategies in order to address academic diversity. They also need to be able to recognize when to apply those strategies to different situations. This is a tall order to fill and requires ongoing training in effective, research-based practices. Training that incorporates these myriad issues will help ensure that teachers acquire the requisite skills to implement strategies that effectively consider cultural and academic diversity. Further, training is needed to help teachers "distinguish between learning differences/problems and cultural/linguistic diversity to avoid confusing these issues" (Santamaria, 2009).

One example in the literature provides indications of issues that effective professional development might highlight. Within the context of implementing a science program, teachers learned how to integrate objects and examples that were culturally meaningful into their science lessons (Lee et al., 2005). Researchers attributed the success of the program, at least in part, to the professional development program that provided teachers

with explicit instruction on how to incorporate students' cultural background into their teaching and how to engage students in critically thinking about science concepts. Overall, the effort resulted in significant increases in students' scientific understanding and literacy.

Option 2: Implement a pedagogical program based on the notion of role fluidity to give students a central voice in the classroom

Role fluidity consists of strategies that explicitly promote the centrality of student voices in the classroom. The incorporation of practices such as cooperative learning, peer tutoring, whole-group discussions, and student-led activities can provide powerful opportunities for Our Kids when adapted and implemented appropriately. The practices allow students to act both as teachers and learners. Simply, these are ways to give students *power* to engage in their own learning. For example, active student participation and even student criticism and critiques of the learning environment allow for student/teacher role switching (Donnell, 2007). These situations can challenge teachers because the focus of control shifts in comparison to a teacher-directed classroom. Ultimately, these strategies allow room and respect for a diversity of student voices.

Potential benefits of this option

Improved relationships stemming from teachers and students acting as co-learners. Often in urban classrooms, teacher control over the learning environment is placed at a premium, resulting in situations where teachers dispense knowledge and students receive it (Donnell, 2007; Haberman, 1991). However, reciprocal learning between teachers and students can transform the classroom, resulting in joint responsibility in the learning process whereby students are no longer seen as "empty vessels" but "active agents" in their own learning. Donnell (2007) describes the significance of teachers' abilities to "involve themselves and their pupils in reflexive, open, and empowering learning experiences. Teaching thus becomes the generation, rather than the transmission, of knowledge and achievement between teacher and pupil as learners" (p. 228–229). By acknowledging and respecting a diversity of voices, the process improves teacher/student relationships.

Greater student engagement. Examples of teacher-directed classes predominate much of the pedagogical literature for underserved students (Donnell, 2007; Haberman, 1991). A theme that cuts across many studies is the distinct advantage of heterogeneous groupings for underserved students. These structures range from small, mixed-ability groups using cooperative learning strategies to peer tutoring. Through the application of different grouping strategies, students of different abilities learn by engaging and challenging each other (Waxman & Huang, 1997).

Increased student achievement. Numerous studies support the importance of grouping strategies such as cooperative learning and peer tutoring in improving student achievement both in the general population and for underserved students (Apthorp et al., 2008; Barley, 2002; Dalton 1998; Englert, 2002; Hattie, 2009; Ladson-Billings, 1995; Marzano, Pickering & Pollack, 2001; Waxman & Huang, 1997). These methods allow students to learn by engaging, challenging, and mentoring each other. These activities fulfill academic roles such as increasing comprehension, problem solving ability, communication skills, and social abilities (Hattie, 2009). These positive outcomes can be especially powerful in diverse settings where students might feel disengaged or unsuccessful within the confines of a teacher-directed class.

Potential challenges and drawbacks of this option

The need for training in use of effective grouping strategies. The literature on student grouping presents the challenges of providing teacher training to develop appropriate skill sets. Teachers need the knowledge and flexibility to make accurate assessments regarding which grouping strategy is appropriate in a given circumstance. Salomon and Perkins (1998) argue for "spirals of reciprocity," whereby the typical teacher-led, large student group is greatly enriched by various forms of group interactions and that "well-designed instruction therefore involves different learning systems at different moments in synergistic interaction" (p. 20). Research on cooperative learning consistently reports that the effectiveness of different grouping strategies is dependent on teacher training in group facilitation.

The complexity of implementation. Additional research on employing grouping structures with diverse students might illuminate when and how to conduct different learning arrangements that best serve student needs. For example, some studies indicate that heterogeneous groupings do not work as effectively for ELLs. In one study, where students did not have adequate language skills, teacher-directed, small group instruction had a negative effect on student achievement (Chang, 2008). However, York-Barr et al. (2007) found in their study that by combining ELL and English-speaking students and having two teachers doing cooperative teaching (one ELL, the other not) resulted in significant benefits. The complexities of using grouping strategies and applying them in a range of situations with different types of students might warrant additional research in order to provide teachers specific implementation guidance.

Option 3:
Use technology to engage students and enhance pedagogy

Technology holds great promise for engaging underserved urban students and enhancing learning opportunities. Further, the global economy makes it even more imperative that students possess the ability to engage in complex thinking, apply technical skills, and engage in technologically based innovative work (Shaffer & Gee, 2005). Technology areas particularly relevant to instruction are computer-aided instruction, learning management systems, and expanded opportunities for distance learning. However, for technology integration to occur, schools serving Our Kids need increased access to computers and software, adequate professional development, and technology programs that support adaptive instruction and promote higher order thinking over basic skill acquisition.

Potential benefits of this option

Increasing opportunities for students. Technology has the potential to increase access to a greater range of educational opportunities. For example, through technology, students who might drop out of school can engage in distance learning such as that offered at Westwood Cyber High School (www.westwood.k12.mi.us/buildingwebs/cyberhighschool/index.html), a school that re-engages disenfranchised students and provides them the requisite skills for college or future employment.

Addressing the technology gap for Our Kids. Schools serving disadvantaged students provide perhaps the only means for these students to access computers and technology. Affluent children have access and resources to books, computer games, and other technologies, perpetuating a gap between them and children of poverty that our country's public schools must address (Shaffer & Gee 2005). And because technology serves as a major gatekeeper to high-paying careers and advanced educational opportunities, it is critical that schools advance technology in service to Our Kids.

Providing information efficiently to quickly adjust instruction. The potential of technology to vastly improve education through adaptive instruction is great. For example, computer-based assessments designed to quickly identify gaps in knowledge and provide targeted instruction is one intentional and compelling use of technology. In Ysseldyke et al.'s (2003) study, student achievement increased in urban schools that used a computer-based instructional management system. This program specifically assigned students tasks at their achievement levels; students responded to a set of items, and once completed, the program generated feedback information for the teacher on both the student level and for the whole class. Teachers then used this just-in-time information to tailor instruction. The evidence supports the notion that teachers can differentiate instruction when they have access to information about their students' progress.

Engaging and motivating students. Technology has the potential to dramatically increase student engagement when the activities and exercises move beyond basic skills and applications. One pertinent example is gaming. Shaffer and Gee (2005) point to "epistemic games" that, while entertaining and engaging, motivate students by providing them the means to apply and share their knowledge. This immersion allows students to participate in communities, solve complex problems, and present ideas in ways that mirror the actions of professionals who interact and participate within a given knowledge domain. This creates a context where students learn discrete skills and facts while integrating them in a broader context. Finally, the authors stress that incorporating the use of games provides teachers and students with opportunities for ongoing assessment on important skills and abilities. The researchers argue that the combination of skills students develop by using computer games better prepares them to be competitive in a global, technology-based economy.

Potential challenges and drawbacks of this option

Requires a substantial financial investment. It is not surprising that the schools most in need have had limited access to technology-based applications and supports, and that the students with the least access to technology are often the students most in need. This exemplifies an acute problem that warrants our immediate attention: as technology-related skills continue to be a major gatekeeper to high-paying jobs, schools must provide students with opportunities for success

and equity. In order to remove or lessen this significant barrier, a substantial resource investment might be necessary to purchase sufficient computers, software, and Internet connections, and to provide staff training.

Requires easy access to meaningful applications. We also must consider critical issues that act as barriers to promoting a productive, technology-rich environment for Our Kids. Computer-aided instruction needs full and productive integration in the classroom. As mentioned, high-poverty schools tend to lack sufficient hardware, software, or Internet connections. Even when technology is available, it typically becomes a simple substitution for traditional, low-level activities, such as word processing or repetitive tasks, as opposed to promoting higher order thinking or problem solving (Songer, Lee, & Kam, 2002). While engaging students in these basic, "drill and practice" activities may provide some value, efforts need to focus on improving teachers' abilities to use technology for transforming the learning process. This can be rectified through innovative instructional applications coupled with rigorous professional development that ensures teachers can confidently implement programs with fidelity.

Requires high-quality professional development. Students in underserved populations tend to be instructed by teachers with lower levels of training in the use of technology than their peers (Wenglinsky, 1998). The integration of innovative instructional uses of technology with rigorous professional development constitutes a significant challenge. In fact, in a report on technology by the Institute of Education Sciences, the panel observed the following: "Providing sufficient development and training to give staff skills and confidence in the use of technology is widely viewed as an ongoing challenge to schools" (p. 1). Examples such as High Tech High in San Diego place such a priority on teacher education that they have embedded a Graduate School of Education to support teacher growth and learning. High Tech recognizes that ongoing teacher training is important to successfully implement technology and other strategies, such as project-based learning.

Option 4:
Guide teachers in creating academically rigorous and positive classroom learning environments for Our Kids

A critical need in providing a better education for Our Kids is building a supportive environment and creating high expectations in their classrooms (Delpit 2006; Haberman, 1991; Wyner et al., 2007). "Subject to low expectations and unchallenging coursework, many lower-income students with the ability to excel languish in their schools for years, performing well below their potential" (Wyner et al, 2007, p.13). The intersection of supportive mechanisms and high expectations is seen in the philosophy of teachers who are warm demanders, teachers who demonstrate the ability to set academically rigorous goals for their students while caring for and about them.

Potential benefits of this option

Improving student learning. Nurturing relationships help students adjust to school, bolster achievement, and reduce dropout rates. However, students still need teachers who set high expectations and believe they can meet them. It is through teachers' support and fundamental beliefs that their students can succeed that children reach lofty goals. A classroom environment that embodies supportive mechanisms for students becomes crucial to students' sense of safety and well-being. One is reminded of Maslow's hierarchy, where physical needs form the base of the pyramid but right above that are the emotional needs—feelings of safety, belonging, and security. These become requisite for an individual to reach his or her full potential (Costa, 2001). These factors are even more critical to students who may not have support structures in place at home.

Getting kids to college. As in the examples of Pruess School and Decameron, high school programs embedded in college settings show kids possibilities for their lives, and that they can go to college. Capital Preparatory High School in Hartford, Connecticut, is another example of a program that gets kids to college. In fact, the school is so successful that it has a zero percent dropout rate and sends 100 percent of its students (80% are Black and Latino) to four-year colleges. The school's principal couples "tough love and high expectations" (*Black in America 2,* 2008) and holds his staff accountable.

Potential challenges and drawbacks of this option

Immutable patterns of low expectations. Research indicates that teacher beliefs about high-poverty students' inability to perform high-level work are pervasive (Foster, 2008; Hattie, 2009; Wyner et al., 2007). This presents a challenge to educating Our Kids because it requires a shift in teachers' perspectives regarding the abilities of their students. Arguably, students face an uphill battle if their teachers do not believe they can succeed. In addition, creating a school atmosphere of rigor requires a move away from the entrenched philosophies that prevail in too many urban schools. Schools that teach diverse populations often slip into a pattern that Haberman (1991) describes as authoritarian, directive, and limiting. The result is an education that is permeated by low expectations and watered down to basic skills attainment.

Increasing teacher expectations of students' capacities and student expectations of what they are capable of is rife with challenges. How do we change such ingrained patterns? One solution may be to focus our attention on how students are progressing. Hattie (2009) argues that we need to focus our attention on student growth and not our preconceived notions of a student's ability: "Steep learning curves are the right of all students regardless of where they start" (p. 124). We also need to encourage students to set high expectations for themselves, communicating that advanced courses and college are within reach when we give them the skills and tools to get there.

Teachers who lack important skills. How do we support teachers in developing protective structures for Our Kids? And, how do we better identify and recruit teachers who already exemplify these skills? Although caring, supportive examples exist in high-poverty schools, the key is to determine how to make them more of the norm than the exception. Pianta and Walsh (1998) acknowledge the difficulties associated with helping teachers build resiliency in students and create protective factors in classrooms. They cite the importance of giving teachers skills for "communicating with children in ways that improve relationships (finding a message and staying focused on it), handling misbehavior in ways that do not detract from the quality of a relationship, and delivering intensive relationship-improving exercises for targeted children" (p. 415). They also suggest the importance of

school psychologists in facilitating good teacher/student relationships. Their suggestions seem particularly salient in the conversation of building nurturing classrooms regardless of the student population.

Option 5: Implement pedagogical programs based on developing higher order thinking and subject-specific skills

Based on our assumption that Our Kids do not require a new kind of pedagogy, but rather more intentional use of existing proven practices, this option calls for employing rigorous, evidenced-based instructional practices. A natural outgrowth of high expectations is implementing pedagogical programs that reflect rigor and higher order thinking. In general, there are several programs that reflect rigor by incorporating higher level thinking skills, teaching students cognitive and metacognitive strategies that can be applied to general learning or specific subjects. Further, there are researched-based instructional programs that might address possible gaps in Our Kids' subject-specific background knowledge and skills for beginning reading (e.g., classwide peer tutoring, Little Books, Success for All, Lexia).

Potential benefits of this option

Increased student achievement. Knapp and Shields (1995) found that providing instruction that was meaning-oriented to both high- and low-achieving students in high-poverty schools versus skill-based instruction increased students' abilities in higher order skills, such as problem solving, reading comprehension, and written expression. In addition, numerous studies indicate the power of rigorous instruction on student achievement, specifically those programs incorporating cognitive and metacognitive strategies (Apthorp, 2002; Hattie, 2009).

Increased rigor across all content areas. Certainly, high expectations are not tied to a specific content area, and the research points to rigorous instruction being applied in many contexts. The Findings section (see pp. 21–28) outlines many programs that embody rigor and high expectations across different content areas such as mathematics, reading, and science.

Potential challenges and drawbacks of this option

Teacher training and support on rigorous instructional strategies. Many of the pedagogical strategies examined for this report are complex, and no clear consensus identifies a single superior one. For example, The Mathematics Panel advocates the use of a range of different strategies when teaching math (Gersten, et al., 2007). However, one theme consistent across this body of research is the need for high-quality professional development. Donovan et al. (1999) posit sustained and focused professional development for both teachers and administrators as central to implementing principles of learning.

Potential time investment. Many of the identified programs offer fully developed curriculum and pedagogical interventions, and thus, can be implemented quickly relative to the time requirements of developing new programs. However, a prevalent issue is the need for schools and districts to allow adequate implementation time in order to judge a program's success.

Instructional interventions can be complex and often require teachers and principals to invest time in learning new methods and practices. For example, reviewing the implementation of Cognitively Guided Instruction, Apthorp (2002) found that programs tend to lack effectiveness for the first year or two. She emphasizes that "more than a single year of practice and professional development may be needed before cognitively oriented instruction in reading positively impacts student achievement" (p. 39). Additionally, Borman et al. (2003) cite length of the intervention as an issue in changing outcomes in high-poverty schools. They report that the strongest effects are apparent after the fifth year of implementation. While the interventions they studied were Comprehensive School Reform models that sought to change a variety of factors within an existing school setting, this finding bears consideration for all schools attempting to implement change. There are inherent challenges to changing ingrained instructional practices in education.

Final Thoughts

The pedagogical practices and adaptations described in this report offer a focused look at improving instruction for Our Kids. Across this area, however, interconnections among strategies emerge. For example, the philosophy of culturally relevant pedagogy not only considers the centrality that students play in the education process through the inclusion of their experiences, languages, and culture, but it also recognizes the importance of rigor, high expectations, and cooperative learning.

A systemic perspective

The Stupski Foundation recognizes the importance of a systemic approach by advocating a learning system based on substantial educational components. High-quality pedagogy might best be realized within such a high-functioning, integrated system.

One example of a systematic approach is the Harlem Children's Zone (HCZ) (www.hcz.org), a program that takes a broad look at children's needs with its "whatever it takes" approach (Tough, 2008). HCZ offers a wealth of programs, ranging from health initiatives to preschools to charter high schools and college support programs. Specifically, HCZ's Promise Charter Schools embrace many of the factors discussed in this report. These schools embody a "safe school environment"—one that is demanding but nurturing. They believe in extending the traditional school day, providing tutoring programs before and after school and on the weekends. When considering typical results seen in education research and evaluation (e.g., standard deviations of 0.1 and 0.2), student assessment results from HCZ programs are dramatic, with standard deviations of 1.3 to 1.4 (Brooks, 2009). The *New York Times*, in fact, has heralded HCZ the "Harlem Miracle" because of its elimination of the Black/White achievement gap in mathematics (Brooks, 2009).

Despite a need for more research to fully understand the model and how to replicate it, HCZ, and its founder, Geoffrey Canada, have nonetheless attracted the attention of a range of supporters. Canada draws Wall Street investors with his economically driven pitch; namely, the $3,500 HCZ spends on each child yearly trumps the $50,000 that might later be spent on keeping the same child behind bars (Spector, 2009). HCZ's support even extends to the White House, with President Obama citing it as a model for other communities and an intention to replicate the effort in "Promise Neighborhoods," which will expand the model to 20 communities across the country (Aarons, 2009).

Pedagogy's relationship to specific components of the Learning System

Other components within the Learning System bear consideration regarding their intersection with, and support for, improving pedagogical practices. Factors such as the quality of instructional leadership provided by principals, formative assessment practices, and the curriculum taught are critical to implementing high-quality pedagogy. Interventions that are carefully planned and implemented through an integrated approach provide the best hope for achieving the goal of improved educational outcomes for Our Kids.

Leadership

Leadership can be a key factor in the implementation of quality practices sensitive to the needs of Our Kids. The ability of school leaders to provide guidance and support to teachers is critical to the sustained implementation of instructional innovations. Principals and curriculum coordinators can observe and support teachers in implementing new strategies. They can further identify systematic issues that might require action across their entire staff, such as a need for targeted professional development or additional resources. In fact, one of the critical elements cited in sustaining change is principal supported professional development (Hattie, 2009).

Formative assessment

The ways in which formative assessment are used in the classroom to inform teacher practices have significant implications for pedagogy. Teachers can alter their practices, change the pace of a lesson, or provide alternate solutions when they have a better sense of student understanding and comprehension within a given topic area. The interconnectedness of assessment and pedagogy is apparent in the work of Wiggins and McTighe's (2005) theory of "backward design." In this approach, teachers set learning goals, consider a variety of types of assessment evidence by which to gauge mastery, and then determine which teaching strategies or plans to incorporate to achieve the goals.

Often, the integration of assessment and pedagogy is weak because of the prevailing philosophy of assessment as summative exercise. This leads to the adage of "teach, test and hope for the best" (Wiggins & McTighe, 2005, p. 3). As is discussed in the assessment literature and specifically in the formative assessment report of the Learning System, much is known about effective formative assessment as a means to improve instruction. However, additional work needs to be done to provide teachers the support, resources, and tools to better integrate assessment into their instructional practices.

Curriculum

It stands to reason that curriculum is the area with the greatest interconnections with pedagogy. As Donovan et al. (1999) argue, "Teachers work with teaching tools. They are unlikely to change their practice significantly in the absence of supporting curricular materials" (p. 7). It is through the lens of particular instructional materials that pedagogy takes place. A well-conceived curriculum's downfall might result from poor execution due to weak teacher practices. On the other hand, a passionate teacher well-schooled in good instructional practices may not help students if he or she is struggling within the confines of a weak curriculum. Therefore, we acknowledge some of these important linkages as they arose in our review of the pedagogy literature.

Foremost, teachers need congruence between pedagogy and curriculum. Rigorous pedagogical practices are more likely to be implemented if they correspond to a curriculum that is engaging and challenging. When there is congruence between pedagogy and curriculum, teachers can redirect their efforts, putting less effort into supplementing curriculum to ensure it is up to standard.

A struggle with incongruent pedagogy and curriculum is exemplified in a case study of novice teachers (Donnell, 2007). In this example, many teachers struggled with the priorities of a mandated curriculum and exposing students to all of the course material versus a desire to ensure depth of knowledge and understanding. Donnell describes how some novice teachers relied on the pacing of the prescribed curriculum while other "transformative" teachers sacrificed coverage for deeper understanding. One teacher in the study dealt with the issue in this manner:

> Rather than moving ahead with the standard state curriculum required by her school, Lena was determined to start at a curricular place she believed would be meaningful for her pupils. Although she based this decision on her own assumptions about pupils, she also actively considered their needs, interest, engagement, and ultimately their learning as opposed to the pressures to conform to standardization. (p. 240)

Further, several areas discussed in the pedagogy literature dealt with rigor and high expectations. While teachers can decide to hold their students to high standards, it is through the implementation of the curriculum that rigor is fully actualized. A well-articulated curriculum and lesson plans that are focused on real-world issues are essential to planning and developing materials that support culturally relevant instructional practices.

Bringing programs to scale

A wealth of schoolwide models and programs exist that aim to improve educational outcomes of underserved students. In addition, there are many research studies that support their ability to produce good student outcomes. However, programs that are successful in one school or district do not necessarily translate to other settings.

There is much to consider prior to bringing programs to scale and successfully disseminating them to other schools and districts. This examination can include identifying which programs have been disseminated across contexts successfully, which factors contribute to those successes, and why. A recent paper commissioned by the Center on Education Policy (Borman, 2009) provides important insights and offers these suggestions:

- Better research on programs is needed in order to develop our knowledge regarding their effectiveness through mediating and moderating variables.
- The success of several schoolwide programs can be attributed to ongoing professional development and support from the program developer. Successful program have "sustained periods of development, evaluation and refinement and provide clear and replicable strategies for reforming schools" (Borman, 2009, p. 53). These programs provide greater effects than top-down mandates or "home grown" reform.
- Programs must consider site-specific contexts that target the needs and circumstances of particular schools and districts.
- High schools need to become more data driven and accountable with stronger links between schools and the workplace.

- We must continue to support the programs that have shown effectiveness while simultaneously encouraging new innovations through sustained research.

Together, these suggestions support one idea of how best to approach educational reform. Borman (2009) describes it this way:

> . . . an experimental approach to educational reform, an approach in which we continue to evaluate new programs designed to address specific problems, in which we learn whether or not these programs make a difference, and in which we retain, imitate, modify, or discard them on the basis of apparent effectiveness on the multiple imperfect criteria available. (p. 58)

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Appendix

Literature review method

In June 2008, the Stupski Foundation created a conceptual framework for the reinvention of American education. The framework identified seven essential components and focused on delivering 21st century college readiness for all students, but especially for "Our Kids," children of color and poverty. The Foundation explained that "graduating all students from high school with the knowledge and skills that qualify them as 'college ready' is the most meaningful and measurable way to increase life choices and options for all children, but most especially children of color and poverty" (About the Foundation, para. 3).

The Learning System includes four core teaching and learning components: Curriculum, Assessments, Pedagogy, and Supports. Surrounding these components, are three organizational components necessary to support the core: Leadership/Human Capital, Systems Diagnostics, and a Dashboard of College Readiness Indicators (College Readiness Learning System, n.d.).

The Foundation envisions convening a Design Collaborative, a cross-sector group of researchers, practitioners, and designers from inside and outside education, to "define, develop and continually improve" (Design Collaborative, n.d.) all of the components. To orient Design Collaborative members to the accumulated and maturing knowledge base related to each of the components and to children of color and poverty, the Foundation contracted with Mid-continent Research for Education and Learning (McREL). McREL conducted eight literature reviews—one on each of the components plus one on Our Kids—to identify and integrate theories and philosophical perspectives, issues, scientifically based research practices, unmet needs, and innovations relevant to designing one or more of the system components to accelerate learning for Our Kids.

This Appendix contains a description of the review method, including a general explanation of McREL's approach and descriptions of the particular procedures used for each phase of the review: identification of key hypotheses and research questions, literature search, identification and cataloguing of finds, and generating and communicating recommendations.

McREL's overall approach

Since the primary users of the reviews are the members of the Design Collaborative, the qualitative, iterative approach taken for the literature reviews sought to achieve the multiple goals of identifying emerging ideas, counterproductive orthodoxies, and promising practices relevant to the reinvention of the Learning System. Thus, eight research teams were assembled, each with one or more researchers familiar with the respective topic areas.

Qualitative approach. A *qualitative approach* shares several practices with those of *systematic reviews*, including comprehensive searches and transparency to reduce bias, but it differs with respect to inclusion/exclusion criteria. Systematic reviews emphasize explicit and a priori inclusion/exclusion criteria and criteria for evaluating the methodological quality of individual studies, carefully limiting the sources of evidence to support inferences about cause and effect relationships (Cooper, Hedges, & Valentine, 2009). The qualitative approach emphasizes diverse sources and types of evidence and knowledge to support a broader base of inferences (Pope, Mays, & Popay, 2007; Suri & Clarke, 2009).

The qualitative approach is particularly well-suited to the review's purpose and audience because the Design Collaborative needs both empirical studies and other literature to identify possible innovations for the current education system. An assumption underlying the Foundation's work to fundamentally reinvent American education is that the current system fails to deliver college readiness for all students, especially Our Kids. This assumption is supported by research indicating that students of color and in poverty have low high school and college graduation rates, and research from the last two years shows that college graduation rates for minority and poor students have further declined (American Council on Education, 2008). Therefore, a priority for the Foundation's work is to identify innovations that have not yet been studied, with the intent to evaluate their effectiveness. Literature specific to innovations is found outside the traditional scientific or academic journals.

Inclusive approach. McREL researchers adopted an inclusive approach, searching for and including phenomenological reports describing the experiences of Our Kids in and out of school and documenting the challenges and successes of their teachers and educational leaders. The researchers included literature on innovative, emerging models and untested ideas, as well as reports on mature, well-specified models with experimental evidence of effectiveness. Relevant quantitative research literature included correlational and experimental studies and meta-analytic reviews. Narrative reviews of research were included, as were policy briefs and position papers produced by opinion leaders and professional organizations. Literature sources included the World Wide Web, peer-reviewed journals, and practitioner magazines. Each document was identified by type of literature and evaluated in terms of the quality of the supporting evidence. Care was taken to draw only those inferences appropriate to the quality of the evidence.

McREL researchers judged the quality of the evidence in the context of the type of literature or study design and in relation to its relevance to answering particular questions. Guidance from Pope, Mays, and Popay (2007) on conducting reviews in the field of health research supports this approach:

> The inclusion of diverse sources of evidence in a review does not mean abandoning the rigor of a systematic review, but it does mean judging the quality of evidence in context and defining the relevance of evidence to answering specific questions, rather than defining some forms of evidence as intrinsically, and universally, of lower quality than others. (p. 1)

Each research team followed the five or six phases of any review process relevant to a quality knowledge synthesis (Cooper, Hedges & Valentine, 2009; Suri & Clarke, 2009). Table 1(see p. 63) provides a side-by-side comparison of the phases of a systematic review of research (Cooper, Hedges & Valentine, 2009), a qualitative review (Suri & Clarke, 2009), and McREL's approach to this review.

Each team began by drawing from pertinent philosophical and theoretical literature and preliminary discussions with the Foundation to formulate hypotheses and research questions. Each team conducted extensive searches to find as much relevant literature as possible in order to include literature from the scientific and academic journals as well as literature from harder-to-find, cutting edge innovators. Additionally, teams revisited databases and alternative sources to purposefully search for additional literature written by authors identified by one or more stakeholders or to fill conceptual gaps that became apparent during the identification and cataloguing of findings and generating and communicating recommendations phases.

The phased process was iterative (Cooper, 2009) reflecting new understanding and insights as the search, analysis, interpretation, and discussions between component teams and between the

Table 1: Phases of a Literature Review

Phase	Cooper, Hedges & Valentine (2009, p. 8)	Suri & Clarke (2009, p. 414)	McREL 's approach
1	Problem formulation	Drawing from pertinent philosophical and theoretical discussions	Identification of key hypotheses
2		Identifying an appropriate purpose	Identification of research questions
3	Data collection	Searching for relevant evidence	Literature search
4	Data evaluation	Evaluating, interpreting, and distilling evidence	Identification and cataloguing of findings
5	Analysis and interpretation	Constructing connected understanding	Generating and communicating recommendations
6	Public presentation	Communicating with an audience	

Foundation and McREL progressed toward conceptual clarity and the exhaustion of new search hits. The number of documents included in each team's review was extensive, and the types of literature varied representing the experiential knowledge of a diverse group of stakeholders, including researchers, teachers, administrators, program developers, and leaders and scholars at the local and national levels.

Team approach. Teams were composed of researchers and practitioners with different areas of expertise. Teams met weekly, and team leaders from across teams met biweekly. Meetings were used to update other individuals and teams and share resources, pose and address questions, challenge assumptions, provide guidance on interpretation of evidence, open up new areas of consideration, clarify boundaries and overlap between system components, consider alternative perspectives, and develop connected understanding.

Identification of key hypotheses and research questions

McREL teams began by clarifying terms, relationships, and the conceptual scope of each review. Teams read and discussed a document produced during the Foundation's strategy definition process, *Research Guide for CRLS: Outline of Research Questions for Each Component of the CRLS* (n.d.). Included in this Guide were preliminary questions for each literature review. Teams previewed relevant literature, confirmed that the questions could be answered by the extant knowledge base, and posed additional questions when important issues related to accelerating learning for students of color and poverty were identified in the literature but missing in the Guide. The revised set of questions for each system component and Our Kids was reviewed and refined during ongoing dialogue between the Foundation and McREL.

Literature search

Multiple searches were conducted in a phased approach to identify as much literature as possible related to each system component and Our Kids. Teams conducted searches using multiple bibliographic databases: Academic Onefile, Academic Search Premier, Educators Reference Complete, ERIC, JSTOR, Proquest, and PsychInfo. Teams also conducted manual searches of journal and book tables of contents and reference lists of articles. Additional searches were conducted

specifically to identify recent experimental and other research and reviews on the efficacy of interventions for accelerating learning of students of color and poverty. These searches were conducted by visiting the U.S. Department of Education What Works Clearinghouse Web site (http://ies.ed.gov/ncee/wwc/reports/) and the Campbell Collaboration Library of Systematic Reviews Web site (http://www.campbellcollaboration.org/library.php). Relevant documents were identified on state education agency (SEA) Web sites, and SEA officials were interviewed or named as seminal authors or sources of models that had been developed and implemented to monitor and accelerate learning of Our Kids.

Each team identified and used key terms and synonyms relevant to the topic for searching. Searches were conducted for literature published in the most recent 10 years (1998–2008); however, works by seminal authors and other recommended literature were included from outside these years. The search landscape varied for each team based on the topic and relevant sources; for example, while What Works Clearinghouse was a relevant source for the Pedagogy team, it was not a relevant source for the Leadership/Human Capital team. Internal review of search records and results led to additional leads on sources. Searching continued until all recommendations had been implemented and/or few new hits were identified.

Identification and cataloguing of findings

A coding protocol was developed and implemented to categorize the literature. Each team used the same protocol, adding categories and decision rules, as needed to organize the particular literature relevant to their topic. Each team leader and one or more members of each team were trained on the decision rules in the coding protocol and provided follow-up support to resolve uncertainties in its application. Team leaders periodically conducted quality assurance reviews of completed coding sheets and updated the protocol as needed during weekly team leader meetings or discussions with the Foundation. The coding protocol included identifying the following information:

- Full APA reference citation
- Category of literature (i.e., primary and secondary relevance)
- Type of literature (e.g., quantitative study, policy brief, program description)
- Locale
- Outcome
- Grade level
- Program or innovation name and description
- Main findings or points
- A recommendation for or against summarizing and including the selection in an annotated bibliography.

In addition, component teams added to the protocol by categorizing relevance to particular parts of their conceptual model or concept map.

Guidelines were developed and used by teams to identify counterproductive orthodoxies, unmet needs, next practices, promising practices, and best practices based on type of literature and quality of evidence. These were defined in the following ways:

- *Counterproductive orthodoxies:* Conventional ways of providing education which may be impeding success of Our Kids

- *Unmet needs:* Areas where Our Kids are not yet well served by the current system of education
- *Next practices:* A program or practice that needs to developed, adapted, invented, and tested in response to an unmet need related to accelerating learning for Our Kids
- *Promising practices:* Practices based on research but not supported by rigorous efficacy data from randomized controlled trials
- *Best practices:* Practices demonstrated by one or more randomized controlled trials to be effective in improving outcomes for Our Kids

The research team reviewing the college readiness component of the Learning System employed a slightly different process. Rather than using the categories above, this team reviewed literature on college readiness and categorized findings into four essential areas as defined by the Foundation and Conley (2007): cognitive strategies, content knowledge, academic behaviors, and contextual skills.

Component teams met weekly to discuss and categorize findings and to develop a conceptual map of the insights gained from the literature summaries and review. Teams used different conceptual mapping tools (e.g., SmartArt) to organize the insights (findings) and presented and discussed their respective maps at cross-team meetings. Features common across teams' concept maps were identified and a standard framework developed. Teams arranged findings onto the concept maps, identifying conceptual gaps and conflicting or discrepant findings, and returned to searching and reviewing to fill in the gaps and resolve or explain discrepant findings. The conceptual maps served as an organizing framework for report construction.

Generating and communicating recommendations

Working collaboratively, component teams drew conclusions from the insights (findings) derived from the review and identified potential options and recommendations for each component of the system. Teams used an iterative process of identification, reviewing for validity against the knowledge base, and further refinement until they determined they had identified the most promising options and that each was informed by the existing knowledge base.

Team leaders used the outcomes of team discussions and cross-team discussions, literature summaries, and the researcher's own review and integration of the literature to write a draft report of the findings. Draft reports were reviewed by knowledgeable internal experts and revisions in search strategies, interpretations of findings, and/or conclusions were made. Revised reports were reviewed by the Foundation and other outside reviewers prior to final revisions and production.

Although the wide-ranging literature searches produced reports on extensive baseline information related to Our Kids and each system component, the reports are living documents. As living documents, they bridge the creative and scientific enterprises of the past and present, and we envision the need to return to some of them for updating, extending, and drilling-down in the future.

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