EXHIBIT D-1

Research Report

Success in High Poverty Schools: Uncovering the "Secrets" of Student Achievement in Schools with High Concentrations of Poverty

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BUREAU OF LEGISLATIVE RESEARCH
One Capitol Mall, 5TH Floor | Little Rock, Ark., 72201 | (501) 682-1937

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INTRODUCTION AND PURPOSE OF THIS REPORT

Why are some schools in settings with high concentrations of poverty succeeding in student achievement gains? What practices, policies, or other influences are responsible for these successes? Does existing research uncover the "secrets" to overcoming the "odds of failure" in schools with high concentrations of poverty that struggle with achievement? Many answers to these questions are emerging in the professional literature, and they are the focus of this report. While consensus on "what works" to enhance student performance in struggling schools has not been achieved, common themes are found throughout the research literature on achievement and low-income student performance (Chenoweth, 2007; Coley & Baker, 2013; Darling-Hammond, 2010a, 2010b; Hanushek & Woessman, 2010; Ladd, 2011; Marzano, Pickering, & Pollock, 2001; Morgan, 2012; Odden, 2009; Reeves, 2010). These themes are found in studies using divergent methodologies, including case studies (e.g., Chenoweth, 2007), quantitative procedures (e.g., Hanushek & Woessman, 2010), and meta-analyses (e.g., Borman et al., 2003).

In a landmark study, Revees (2003) presented primary themes that have become prevalent in subsequent reviews and research on "what works" in "turning around" academically low-performing schools (Chenoweth, 2007; Herman et al., 2008; Ladd, 2011; Marzano, Walters, & McNulty, 2005; Odden, 2009). Reeves (2003) studied schools where more than 90 percent of the students were eligible for free or reduced-price lunch, 90 percent of the students were members of ethnic minorities, and more than 90 percent of the students were meeting or exceeding state standards. He found that while economic deprivation clearly places children at a disadvantage in achievement because of limited exposure to rich learning environments, these deficits can be significantly offset by high quality teaching and leadership. His empirical observations are buttressed by more recent research and reviews (e.g., Chenoweth, 2007; Coley & Baker, 2013; Darling-Hammond, 2010a; Morgan, 2012; Odden, 2009; OCED, 2011; Paine & Schleicher, 2011).

The "secrets" to success of schools with high concentrations of poverty, according to Reeves (2003), are not found in proprietary programs (also, see Haycock, 1999). Rather, his research, in concert with other studies (e.g., Dobbie & Fryer, 2011a, 2011b; Preston et al., 2012), finds that the most potent influences on student achievement are quality of teaching and leadership (Darling-Hammond, 2010a, 2010b; Marzano et al., 2001, 2005; Odden 2009). The good news about these findings is that quality of teaching and leadership are factors over which schools exercise considerable control, and they can be addressed without expensive proprietary programs. These influences and other key contributors to achievement in high-poverty schools are discussed in the sections that follow.

The quest for effective interventions in schools with high concentrations of poverty is paramount because poverty and its associated consequences place children at a disadvantage upon entry in school (e.g., Coley & Baker, 2013; Currie, 2009; Kaminski et al., 2013: Ladd, 2011). Numerous studies have found that children living in poverty enter school with significant language and cognitive skill deficits (e.g., Coley & Baker, 2013; Currie, 2009; Duncan & Murnane, 2011; Ladd, 2011). Children's early learning environments differ profoundly according to parents' income. For example, children in poverty are far less likely to have books and a computer at home, to be read to by parents, to visit libraries or museums, or to take trips that provide geographic and historical knowledge than their more privileged peers. Three-year-olds living in poverty possess about half of the vocabulary of their more affluent peers (Coley & Baker, 2013; Currie, 2009; Duncan & Murnane, 2011; Ladd, 2011).

REVIEW METHODOLOGY

It is a daunting task to try to summarize valid and reliable evidence on effective educational interventions with students generally, and with students living in poverty in particular. The professional literature on educational intervention is vast, and replete with advocacy discussions and secondary research consisting of opinion surveys and non-experimental designs. This report relied on evidence from primary experimental and quasi-experimental studies, meta-analyses, and narrative reviews based on rigorous

selection criteria. Research from proprietary education programs and partisan organizations and "think tanks" was not used.

In sum, an effort was made in this report to obtain objective evidence based on rigorous study methodologies, rather than on advocacy positions and secondary reviews that may reflect ideological and political opinions. Unsystematic secondary reviews are often infused with interpretations of research findings based on predetermined ideological frameworks. However, primary research, narrative reviews, and meta-analyses found in peer-reviewed journals must meet specific methodological criteria to be published. Other types of publications were used if they specified rigorous methods of conducting research or selecting studies reviewed (Rossi et al., 2004). The What Works Clearinghouse criteria for rigor of research served as the guidelines for selecting research in this report (http://ies.ed.gov/ncee/wwc/).

MAJOR INFLUENCES ON ACHIEVEMENT IN HIGH POVERTY SCHOOLS

While there is never a "silver bullet," involving a single factor that boosts student achievement, the cumulative impact of certain identified influences has been shown to be effective in enhancing performance among children living in poverty (Coley & Baker, 2013; Duncan & Murnane, 2011; Herman et al, 2008; Kaminski et al., 2013; Magnuson, 2013; Reeves, 2010). The following headings identify the major influences on achievement found in the professional literature.

Taken together, the intervention research literature indicates that it is the combined effects of these influences that results in maximum effectiveness on student achievement. In practice, the influences indicated by headings in this report are interrelated, or overlapping, and operate in concert with one another. They are presented under separate headings for ease of discussion and to emphasize their unique contribution.

EFFECTIVE TEACHING

Research studies have demonstrated that teachers influence student learning more than any other single factor within the school context, and the effects of teaching on student achievement are cumulative (e.g., Barber & Mourshed, 2007; Behrstock & Clifford, 2009; Daley & Kim, 2010; Goe, 2007; Hightower et al., 2011; Lankford, Loeb, & Wyckoff, 2002; Rand Corporation, 2012; Rivkin, Hanushek, & Kain, 2005; Sanders, Saracho, & Spodek, 2007). In an oft-cited national survey, Rowan, Correnti, and Miller (2002) found that the differences in student achievement can be 9 months or more - essentially a full school year of learning - between the most effective and least effective teachers.

Recent evidence on the condition of education in this country by the U.S. Department of Education (2012) raises serious questions about the effectiveness of teaching. For example, during most of the 20th century, the United States possessed peerless mathematical prowess, measured not only by the depth and number of the mathematical specialists, but also by the scale and quality of its engineering, science, financial leadership, and even by the extent of mathematical education in the broader population (U.S. Department of Education, 2008).

However, the average U.S. mathematics literacy score (487) on the Program for International Student Assessment (PISA) in 2009 was lower than the average scores of the 34 OECD (Organization for Economic Co-operation and Development) countries (U.S. Department of Education, 2011). The U.S. mathematics literacy average score in 2012 was not measurably different from any earlier comparable time point (2003, 2006 and 2009). Average scores in mathematics literacy ranged from 613 in Shanghai-China to 368 in Peru. The U.S. average score was 481, which was lower than the OECD average of 494 (OECD, 2013). The lack of proficiency in math led to the creation of a National Mathematics Advisory Panel in April 2006, which concluded:

- Differences in teachers account for 12% to 14% of total variability in students' mathematics achievement gains during an elementary school year.

- When teachers are ranked according to their ability to produce student achievement gains, there is a 10 percentile point difference across the course of a school year between achievement gains of students of top-quartile teachers versus bottom-quartile teachers.
- Teachers must know the mathematical content they are responsible for teaching in detail and its connections to other important elements of math, both prior to and beyond the level they are assigned to teach.
- Teachers, especially those below high school, do not know enough math to teach it. A college major, or even a concentration, in math is not required to teach math in virtually all states.

At the same time, defining and measuring effective teaching is complicated and lacks consensus (Hightower et al., 2011). Evidence supporting various teacher attributes is piecemeal and mixed. For example, having an advanced academic degree appears to be significantly related to student performance only in math and science (Goe, 2007; Hightower et al., 2011). Research has demonstrated that having a bachelor's degree is necessary for teaching in early childhood programs, but it must include specialized training relating to classroom practice that results in quantifiable teacher-quality improvements (Pianta & Hamre, 2009).

Studies support a positive connection between teacher certification in mathematics and student achievement in math at the high school level. However, research has not identified such a link for other academic subjects in high school or elementary school (Goe, 2007; Goldhaber & Brewer, 2001; Rice, 2003; Rowan et al., 2002). There is solid evidence that math teachers need specific coursework to effectively teach in that subject, while similar evidence for science teachers is weaker.

Results also show that preparation of teachers in a more selective college program contributes to greater achievement for students in elementary school, and especially in high school. There is also empirical support for the contention that teachers with higher cognitive abilities are better able to influence student achievement (Rice, 2003; Rockoff, Kane, & Staiger, 2008). In fact, research indicates that cognitive abilities of teachers are more robust predictors of student achievement than any other single measure (Rockoff et al., 2008).

Research also indicates that teachers with more than three years of teaching experience are more effective than inexperienced teachers, but the relationship between experience and student achievement is not statistically significant after about three to five years (Goe, 2007; Hightower et al., 2011; Rice, 2003; Rivkin et al., 2005; Rockoff, 2004; Rockoff et al., 2008). However, an aggregated statistical relationship does not ensure that individual teachers with experience are effective teachers. Statistical relationships are indicative of general patterns, not of individual effectiveness.

In fact, many experts have concluded from research that teachers' demonstrated knowledge and skills in the classroom offer the best basis for hiring and retention decisions (Bueno, Darling-Hammond, & Gonzales, 2010; Darling-Hammond & Haselkorn, 2009; Rivkin, Hanushek, & Kain, 2005; Rockoff et al., 2008). Teachers must have a thorough command of their subject, and the skill to provide differentiated instruction to students with diverse abilities and deficits.

Alan Odden (2009) lists hiring effective teachers and offering intensive professional development as key strategies for raising student achievement. His perspective assumes a plentiful supply of candidates from which to select the most effective teachers. However, countless studies have shown national shortages of highly qualified teachers generally, and more particularly in certain subjects (e.g., special education, math) and in school districts with high concentrations of poverty (Haycock & Crawford, 2008; Kasprzak et al., 2012; Lankford, Loeb, & Wyckoff, 2002; McLaren & Rutland, 2013; Presley, White, & Gong, 2005). Minority students and students in poverty too often have been taught by unlicensed, out-of-field, and inexperienced teachers (Haycock & Crawford, 2008), who did not have a strong academic record in their college years.

Yet, research and experience do not seem to offer reliable or practical remedies to the unequal distribution of effective teachers across school districts. Onsite interviews with Arkansas principals in Adequacy Studies, by the Bureau of Legislative Research (BLR), support other research that indicates districts with

high concentrations of poverty typically are located in settings that do not appeal to most teachers (e.g., Currie, 2009; Ladd, 2011). Historically, conventional policy efforts, such as higher salaries and paying moving expenses, have not proved to be an attractive incentive for teachers to relocate (Ladd, 2011). The BLR's onsite interviews and superintendent surveys have shown that many schools with high concentration of poverty in Arkansas rely on Teach for America Corps (TAC) (http://www.teachforamerica.org) in hiring new teachers, often in critical subjects such as math and science. According to onsite interviews with Arkansas principals, even these young TAC teachers tend to relocate to wealthier, higher-paying districts within a short period of time.

PROFESSIONAL DEVELOPMENT

Haycock and Crawford (2008) observe that an essential factor leading to effective teaching is ongoing, individually-tailored professional development (PD). In the present education policy environment, improving quality of instruction has become a high priority in U.S. schools (Blank & de las Alas, 2009; Darling-Hammond et al., 2008, 2009). The increasing emphasis on teacher quality, including teacher preparation, mentoring, PD, and evaluation of classroom instruction, is at the heart of efforts to improve the academic performance of our public schools (Darling-Hammond et al., 2008, 2009; Wei et al., 2009).

National studies on what distinguishes high-performing, high-poverty schools from their lower-performing counterparts consistently identify effective school-wide collaborative professional learning as critical to student achievement gains. Yet, based on a series of studies at Stanford University, researchers concluded that as a nation we have failed to leverage this evidence to ensure that every educator and student benefits from highly effective professional learning (Darling-Hammond et al., 2009; Wei et al., 2009; Wei, Darling-Hammond, & Adamson, 2010). To meet federal requirements and public expectations for school and student performance, the nation needs to bolster skills and knowledge to ensure that every teacher possesses the ability to teach increasingly diverse learners, who have differing capacities and challenges (Fulton & Britton, 2011; Thoonene et al., 2011; Yoon et al., 2007).

Effective instruction requires a comprehensive, in-depth knowledge of content, and an array of teaching skills to present complex ideas to a diverse group of learners (Darling-Hammond et al., 2008; Fulton & Britton, 2011; Marzano, 1998; Thompson & Goe, 2009; U.S. Department of Education, 2008). Complete mastery in teaching presupposes the flexibility to match instruction to learning styles and abilities of students (Darling-Hammond et al., 2008).

In an effective professional learning system, school leaders work with academic coaches and other teachers to create a culture, structures, and dispositions that promote continuous incremental PD aimed at identifying individual teacher and student needs, instructional strategies to address those needs, and data-driven evaluations of teaching (Wei et al., 2009). The continual deepening of knowledge, skills, and application is an integral part of the responsibilities of teaching (Wei et al., 2010; U.S. Department of Education, 2008).

Research indicates that effective PD presupposes a sequence of developmental learning, consisting of individually-tailored instruction, modeling, practice teaching, and observational feedback from peers and coaches, and regular evaluation based on a variety of indicators (Baker et al., 2010; Blank & de las Alas, 2009; Daley & Kim, 2010; Yoon et al., 2007).

In a National Staff Development Council (NSDC) report, researchers from Stanford University wrote:

> "*Professional development is a key strategy available to schools and school systems for improving teaching quality. To ensure effective teaching in every classroom, educators must have opportunities each day to refine and expand their practice, reflect on how their practice impacts student learning, and engage in ongoing improvement to address learning challenges in the school. States and school systems have the authority and responsibility to establish policies to guide effective professional learning and to monitor its implementation and impact. Unfortunately, implementation as well as the impact on students is inconsistent state to state."* (Wei et al., 2010, p. 2).

Regarding the current condition of PD in this country, researchers at Stanford University found that opportunities for sustained, collegial PD of the kind that produces changes in teaching practice and student outcomes were much more limited in the United States than in the most high-achieving nations abroad (Darling-Hammond et al., 2008, 2009; Wei et al., 2009, 2010).

Within the United States, these researchers found that more teachers had access to PD directly related to the content they teach, and they spent more time on these subjects than did teachers a decade earlier. However, there had been a decline in the intensity of PD in all other areas of professional learning during this time-span. Furthermore, in areas like reading instruction, uses of computers, teaching of English language learners and special education students, U.S. investments in teacher learning appear to be increasingly focused on the least effective models of professional development—the short-term workshops that research suggests are unlikely to influence practice and student achievement (Wei et al., 2010).

More generally, existing research clearly affirms that single-session, fragmented workshops have little if any positive impact on teaching or student achievement, whereas individually-tailored, developmental PD plans, consisting of modeling, practice teaching, and classroom feedback from peers and academic coaches, are effective in enhancing instruction and student performance (Baker et al., 2010; Darling-Hammond et al., 2008, 2009; Wei et al., 2010). Evidence indicates that the following features of PD are related to knowledge accumulation, enhanced teaching skills, and increased student achievement:

- PD focused on specific curriculum content and pedagogies needed to teach that content effectively.
- PD offered as a coherent part of a whole school reform effort, with assessments, standards, and professional development seamlessly linked.
- PD designed to engage teachers in active learning that allows them to make sense of what they learn in meaningful ways.
- PD presented in an intensive, sustained, and continuous manner over time.
- PD linked to analysis of teaching and student learning, including the use of formative assessments.
- PD supported by coaching, modeling, classroom observation, and feedback.
- PD that is connected to teachers' collaborative work in school-based professional learning communities and learning teams.

PROFESSIONAL LEARNING COMMUNITIES

Research suggests that an ideal forum for ongoing, individualized professional development (PD) for teachers is professional learning communities (Darling-Hammond & McLaughlin, 1995; Dufour & Marzano, 2011; Dufour et al., 2006; Odden, 2009). Professional learning communities (PLCs) refer to teams of teachers, principals, other staff, and parents who meet regularly for professional development, coordinating instruction, curriculum planning, and student assessment and lesson planning. As studies reveal more about how teachers learn, many researchers and practitioners have begun to place greater emphasis on collaborative learning in professional learning communities (Darling-Hammond & McLaughlin, 1995; Dufour & Marzano, 2011; Dufour et al., 2006; Odden, 2009). The literature increasingly describes how teachers learn by working with their colleagues in PLCs, and engaging in continuous dialog and examination of their practices and student performance to develop and enact more effective instructional practices. In ongoing opportunities for collegial collaboration, teachers have an opportunity to learn about, try out, and reflect upon new practices in their specific setting, sharing individual knowledge and expertise with one another. To characterize what she observed occurring in productive teacher learning communities, Little (1990, 2003) developed a construct she termed "joint work," which requires norms of mutual aid over privacy and "thoughtful, explicit examination of practices and their consequences" (p.520).

Joint work can be found in shared planning activities and collaboration on curriculum, when teachers work in grade-level teams that share students or content goals, and when teachers observe and critique each other's instruction based on a shared understanding of effective teaching and goals for student learning. Interdependence between teachers is cultivated through these activities. Collaborative or joint work promotes mutual problem-solving, and the creation of a shared technical language and agreement on sound practices (Dufour & Marzano, 2011; Odden, 2009). PLCs provide an ideal forum for teachers to

examine and interpret test data, and conjointly devise individualized learning plans for students who are academically struggling. They also serve as a forum for evaluating and adjusting or modifying lesson plans and curriculum, and discussing issues that may affect student performance such as discipline or hunger among children living in poverty.

A number of large-scale studies have demonstrated that collaborative, job-embedded, professional learning that is focused on student performance has resulted in changed practices and improved student achievement (Wei et al., 2009, p.11). At the same time, few existing studies have been designed in such a way as to allow for causal inferences about the impact of particular interventions on student learning. However, a longitudinal quasi-experimental study of the impact on student achievement of grade-level teams provides empirical evidence of the effectiveness of professional learning communities for increasing student achievement (Saunders, Goldenburg, & Gallimore, 2009). This study found that in the nine Title I schools in which a grade-level teaming strategy was implemented, students outperformed their peers in six matched schools in the same large, urban district on standardized achievement tests with large significant differences.

Principals should be ex officio members of the PLCs, especially when curriculum and other administrative changes are being considered for adoption. To the extent circumstances permit, tutors and parent representatives should also participate in at least some of the PLC meetings (Dufour & Marzano, 2011; Odden, 2009).

Tutors are crucial to raising student performance in schools with high concentrations of poverty, and effective tutoring requires tutors to participate in student assessments and curriculum discussions. Circumstances are likely to curtail regular attendance among tutors at PLC meetings; however they should be present as often as possible for discussions involving their tutoring area and students (Dufour & Marzano, 2011). Regular attendance at PLC meetings may not be feasible for parents, but including parents in operational meetings and decision-making does increase their more general involvement in their children's school activities (Bifulco & Ladd, 2006).

FROM SOLOIST TO CONDUCTOR: A NEW PARADIGM ON SCHOOL LEADER

The importance of effective school leadership, and the accompanying need to provide principals with more appropriate training to meet today's needs, are finally receiving long overdue attention (The Wallace Foundation, 2008). Teachers have the most immediate in-school effect on student success. However, there is a consensus emerging that the principal is best positioned to ensure teaching and learning are maximized, especially in schools with high concentrations of poverty. Student achievement is the result of dynamic, interacting forces, both in school and in the larger community, and the principal is the catalyst.

A primary reason principals have become a focus of attention is the linkage that has been established between effective leadership and student learning (Haycock, 2007). A seminal 2004 study, *How Leadership Influences Student Learning*, found that leadership was the second most important school-based factor in children's academic achievement, and it noted that there were few, if any, cases of troubled schools "turning around" without effective leaders (Leithwood et al., 2004). In 2010, the same researchers (Louis et al., 2010) replicated these findings.

What exactly is it that effective principals do that ripples through classrooms and boosts learning, especially in high poverty schools that are struggling academically? Since 2000, The Wallace Foundation, which has supported projects to promote education leadership in 24 states, and published 70 reports on the subject, has been trying to answer that question. A recently published *Wallace Perspective* report states that five practices in particular seem central to effective school leadership (The Wallace Foundation, 2012):

1. Shaping a vision of academic success for all students, one based on high standards;
2. Creating a climate hospitable to education in order that safety, a cooperative spirit, and other foundations of fruitful interaction prevail;

3. Cultivating leadership in others so that teachers and other adults assume their part in realizing the school vision;
4. Improving instruction to enable teachers to teach at their best and students to learn at their utmost; and
5. Managing people, data and processes to foster school improvement.

PRINCIPALS' IMPACT ON STUDENT ACHIEVEMENT IN HIGH POVERTY SCHOOLS

It should be noted that principals have greater impact on student achievement in the most challenging schools – specifically, high-poverty and high-minority schools as well as low-performing schools -- than principals in less challenging schools. For example, a study by the CALDER Center found that the impact of principals, as measured by change or value-added scores, was nearly twice as large in high-poverty schools as in schools with less poverty (Branch, Hanushek and Rivkin 2012). Using value-added scores, the same study found that having a highly effective principal increased students' achievement from the 50th percentile the 58th percentiles in just one year. The authors note that this effect is commensurate to the effect of reducing class size by five students. The Wallace Foundation (2012) has calculated that principals account for about a quarter of the student achievement in a school. According to statistical analyses, effective principals also reduce absences and increase graduation rates significantly more in comparison to less effective principals (Branch et al., 2012).

Conversely, rapid turnover and inexperience among principals lead to declines in student performance, whereas hiring a new principal with experience can minimize the negative impact of the change in leadership (Beteille, Kalogrides and Loeb 2011).

LEADERSHIP TRAINING

The ***New Leaders for New Schools (NLNS)*** (http://www.newleaders.org/) program has sought to transform school leadership across the country, with a special focus on disadvantaged urban school systems. The New Leaders program partners with 10 districts nationwide to recruit and train exceptional leaders to become outstanding principals in urban public schools. Potential new leaders enter the applicant pool through a nomination process and a selective evaluation of their beliefs and orientation toward student achievement, knowledge of teaching and learning, and demonstrated strategic management and leadership qualities. Leaders admitted to the program engage in a rigorous four-week training period that focuses on developing instructional and organizational leadership skills. After this initial training, leaders engage in a year-long residency in an urban school, during which they work with a mentor principal and attend two week-long seminars. The program pays salaries for participants during the training residency.

The RAND Corporation (Burhauser et al., 2012) conducted a five-year evaluation of the impact of the NLNS model and found that graduates of the program have significantly impacted education in their schools. Students in elementary and middle schools led by NLNS principals for at least three years made academic performance gains faster than comparable students in their districts. In high schools led by NLNS principals, graduation rates exceed district averages. In addition, a number of NLNS schools have been identified as the most-improved or highest-performing schools in their respective cities and states.

SHARED LEADERSHIP

The National Association for Elementary School Principals (NAESP) (http://www.naesp.org) created a professional development workshop for principals and directors of early-childhood centers called **L*eading Early Childhood Learning Communities: Professional Development for Leaders***. These workshops are based on the standards established in NAESP's (2008) guide for leading early-learning communities. These standards include: enhancing classroom learning by engaging families and communities to support children at home; fostering collaborative teaching communities by giving educators the time and freedom to work with one another to improve teaching strategies; enacting appropriate interventions for students with developmental differences; and providing resources that enable teachers to implement developmentally

appropriate practices. During a seven-day period, these workshops engage principals in a variety of activities that are intended to enhance their appreciation for the importance of the whole child approach to early-childhood learning and provide them with a set of strategies for incorporating effective early-learning principles and practices into schools. These trainings are used by individual community program providers and are featured in the National Association for the Education of Young Children's annual conferences.

NAESP (2008) developed ten principles for effective leadership. The top two principles are:

1. **Build principals' capacity to provide instructional leadership.** Principals must have time and resources to develop the knowledge and skills they need to lead high-performance schools, as well as the resources to function effectively as instructional leaders in their buildings.
2. **Provide support, funding and flexibility for alternative leadership arrangements.** For principals to perform their instructional leadership functions effectively, they need to share the management functions of the school.

Two prevailing themes found throughout the current literature involve principals assuming the primary role of curriculum leader, while sharing leadership with teachers who have the capacity to encourage and reinforce critical elements of teamwork. These elements of teamwork entail commitment to high academic expectations, collaboration, mentoring, rigorous data-driven curriculum development, consistent discipline, and supportive relationships between all adults and children in the school (e.g., Barber & Mourshed, 2007; Behrstock & Clifford, 2009; Burkhauser et al., 2012; Leithwood et al., 2004; Louis et al, 2010; Marzano et al., 2005; Mendals, 2012; Porter et al., 2008; Portin et al., 2009). Researchers also observe that effective leaders delegate clear responsibilities of leadership to teachers based on their demonstrated expertise and interests, recognizing that no one person has the knowledge, experience, and capacity to be in charge of all phases of educating students (McGee, 2002; The Wallace Foundation, 2012).

Furthermore, it is common to read in the literature on effective school practices that assistant principals frequently assume the administrative role and duties, freeing the principal to engage teachers as their curriculum leader. The emphasis on curriculum leadership instead of administration has led to increasing concentration on curriculum management in education programs in institutions of higher learning (e.g., Glatthorn & Jailall, 2008; Marzano et al., 2005; Odden, 2009; The Wallace Foundation, 2012). This arrangement of responsibilities has been linked to student achievement (The Wallace Foundation, 2012).

Furthermore, faculty meetings and team meetings are devoted to curriculum and PD issues, examination and interpretation of student assessment data, and differentiated instruction of individual students who are struggling academically (Center for Public Education, 2012; McGee, 2002; The Wallace Foundation, 2012). Administrative issues are addressed in other venues such as e-mail.

The principal becomes the catalyst for developing a culture of high expectations, mutual respect and support, and liberal encouragements between all children and adults participating in the education enterprise. Everyone involved is held accountable to high standards. However, the level of expectations is tempered with consideration for individual challenges and deficits. Differentiated instruction and teacher-student interactions are infused with encouraging and supportive comments (Center for Public Education, 2012; The Wallace Foundation, 2012). Positive messages abound, whether in personal interactions or displays on the walls. Principals lead by example by treating teachers and students with respect, and regularly providing students with accolades in assemblies and special ceremonies, on wallboards, and in interactions in the hallways and classrooms.

RESPONSE TO INTERVENTION (RTI)

Students' low achievement in math and reading is of particular concern to educators. The foundation skills in math and reading underlie content taught in all subjects. The National Mathematics Advisory Panel (NMAP) Report released in 2008 summarized the poor showing of students in the United States on international comparisons of mathematics performance such as the Trends in International Mathematics and Science Study (TIMSS) and the Program for International Student Assessment (PISA). Their survey of algebra teachers identified key deficiencies of students entering algebra, including aspects of whole

number arithmetic, fractions, ratios, and proportions. The NMAP concluded that all students should receive preparation from an early age to ensure their later success in algebra. In particular, the report emphasized universal assessments to identify children in the early grades that need intervention to prevent and remedy problems learning foundational knowledge and skills. They noted that early screening would be especially important for children living in poverty because they enter school with many deficiencies. The same recommendations have been made regarding reading (Shanahan et al., 2010).

A subsequent panel at the Institute of Education Sciences (Gersten et al., 2009) recommended the Response to Intervention (RTI) framework to help struggling students prepare for later success in math and reading. RTI begins with high-quality instruction and universal screening for all students. Whereas high-quality instruction seeks to prevent content difficulties, screening allows for early detection of individual deficits. Intensive interventions are then provided to support individual students in need of assistance with learning math and reading. Student responses to intervention are measured to determine whether they have made adequate progress and (1) no longer need intervention, (2) continue to need some intervention, or (3) need more intensive intervention. The levels of intervention are conventionally referred to as "tiers." RTI is typically thought of as having three tiers. Within a three-tiered RTI model, each tier is defined by specific characteristics (Gersten et al., 2009).

Tier 1 involves instruction that all students in a classroom receive. It entails universal screening of all students, regardless of proficiency, using valid measures to identify students at risk for future academic failure, so that they can receive early intervention. In Tier 2 interventions, schools provide additional assistance to students who demonstrate difficulties on screening measures or who demonstrate weak progress. Tier 2 students receive supplemental small group instruction aimed at building targeted proficiencies. These interventions are typically provided for 20 to 40 minutes, four to five times each week. Student progress is monitored throughout the intervention.

Tier 3 interventions are provided to students who are not benefiting from Tier 2 and require more intensive assistance. Tier 3 usually entails one-on-one tutoring along with an appropriate mix of instructional interventions. In some cases, special education services are included in Tier 3, and in other cases special education is considered an additional tier. Ongoing analysis of student performance data is critical in this tier. Typically, specialized personnel, such as special education teachers and school psychologists, are involved in Tier 3 and special education services. For some severe problems associated with the learning difficulties, referrals are made to professionals outside the school district, such as mental health centers or physicians.

RTI intentionally cuts across the borders of special and general education and involves school-wide collaboration. Therefore, RTI is intended to inform teachers, special educators, school psychologists and counselors, as well as administrators (Gersten et al., 2009). RTI interventions typically focus on students in kindergarten through grade 8. This broad grade range is in part a response to the report of the National Mathematics Advisory Panel (2008), which emphasized a unified progressive approach to promoting mathematics proficiency for elementary and middle schools. Moreover, given the growing number of initiatives aimed at supporting students to succeed in algebra, the panel at the Institute of Education Sciences (Gersten et al., 2009) believes it is essential to provide tier 2 and tier 3 interventions to struggling students in grades 4 through 8.

Reading is a foundation skill in every academic course, so RTI reading interventions apply to all elementary students (Shanahan et al., 2010). Details about screenings, measures used, and interventions lie beyond the scope of this report, but may be found in other publications (e.g., Gersten et al., 2009; Shanahan et al., 2010).

RTI is an especially useful process for identifying low-income children who are struggling as a result of growing up in poverty. RTI provides a systematic set of steps to identify problems, and their severity, in early grades so progressively intensifying intervention can remedy them in order for normal learning to occur. This type of intervention is critical for students entering school with many skill deficits as a result of poverty (Kaminski et al., 2013; Ladd, 2011).

Evidence in support of the use of RTI to screen for early reading problems and to remedy them so children can be more successful in their academic progress is provided according to the tiers just discussed. For example, the What Works Clearinghouse review of research (Gersten et al., 2009) finds solid evidence for the sensitivity (identifying children at risk) and specificity (identifying children at low-risk) of existing screening tools that measure word identification, phonemic awareness, and rapid naming skill. They also find strong evidence for providing intensive, systematic instruction on foundational reading skills in small groups to students who score below the benchmark on universal screening.

Gersten et al. (2009) also report that regular process monitoring in Tier 2 is essential to identifying which students need to continue intensive instruction at that level, and which students need to be considered for more intensive intervention in Tier 3. Tier 3 is intended for students who need more intensive intervention than is being given in Tier 2. Tier 3 interventions typically focus on greater individualization of instruction and on addressing problems that are interfering with learning, such as social and emotional problems. Gersten et al. indicate that the evidence in support of the effectiveness of Tier 3 is less convincing than for other tiers, but they conclude that there are promising results. Based on these findings, they support the utility of Tier 3 in the RTI approach. It should be noted that the rigorous methodological criteria for assessing evidence led to the cautious interpretation of Tier 3 findings by the What Works Clearinghouse (Gersten et al., 2009).

Finally, a critical element to the RTI process is having a professional (e.g., social worker, nurse) to facilitate, coordinate, and evaluate the collection of various services needed by individual children. This professional should be knowledgeable about ecological systems perspective on the effects of poverty, and the various services available in the community to address complicated problems stemming from bio-psychosocial forces (Bronfenbrenner, 1979; Kail & Cavanaugh, 2010).

IDENTIFYING WHAT WORKS FOR STRUGGLING READERS - CASE FOR TUTORING

The importance of getting children off to a good start in reading cannot be overstated. In the elementary grades, success in school is virtually synonymous with success in reading. In other words, reading undergirds every other subject, and students will continue to struggle in these other courses until sufficient reading capabilities are acquired (Slavin et al., 2010). Reading also has been shown to be predictive of long-range outcomes, such as continued academic failure, repeating grade levels, suspensions from schools, delinquency, and ultimately dropping out of school (Slavin et al., 2010).

Furthermore, reading failure is not distributed randomly, but is concentrated among schools with high concentrations of poverty and limited English proficiency. It is in the early elementary grades where the gap in performance between children of different incomes first appears, and this gap is one of the most challenging policy issues in U.S. education (Curry, 2009; Kaminski et al., 2013; Slavin et al., 2010).

Slavin et al. (2010), at John Hopkins University, did an extensive search of hundreds of studies to examine the most effective approaches to enhancing reading. They chose reading because skills involved are integral in all other subjects. Furthermore, tutoring in reading provides the most efficacious means of elevating achievement. These researchers focused on studies of schools or classrooms that compared randomly assigned or well-matched control groups. They also concentrated on studies of programs that had at least 12 weeks duration, and specific measures of reading content in all classes.

Slavin et al.'s (2010) review grouped reading interventions into six categories: (a) one-to-one tutoring by teachers, (b) one-to-one tutoring by paraprofessionals and volunteers, (c) small group tutorials, (d) classroom instructional process approaches, (e) classroom instructional process programs with tutoring, and (f) instructional technology.

ONE-TO-ONE TUTORING

One-to-one teaching from qualified teachers and reading specialists was found to be the most effective for struggling readers. It is the most expensive solution, but Slavin et al. assert that the expense may be

justified because it can make a substantial difference to children at a critical point in their reading development, and therefore reduce later needs for special education or remediation. They state that *Reading Recovery* (http://readingrecovery.org/) is the most widely researched and used tutoring program in the world. *Reading Recovery* provides extensive training, observation, and feedback to qualified teachers, who deliver daily 30-minute lessons to the lowest 20–30% of children in their first years of elementary school until they are reading at the expected level for their age. A *Reading Recovery* session involves re-reading a familiar book, independent reading of a text at the child's level, teaching letter knowledge, composing and writing a sentence, re-constructing a cut-up sentence, and introducing a new book. The books are leveled readers with predictable text. Over the years, *Reading Recovery* has added more of an emphasis on phonics and decoding skills.

Teacher training for *Reading Recovery* involves about 75 contact hours and includes live observations through a one-way glass screen and feedback from expert teacher leaders. The training takes place over an entire school year concurrent with practice with children.

Across all qualifying studies, Slavin et al. (2010) found that tutoring delivered by qualified teachers and paraprofessionals has a strong, positive effect on student performance, and *Reading Recovery* has a consistently significant, but weaker, effect. In the years since *Reading Recovery* was introduced, many other one-to-one tutoring programs with a phonetic emphasis have been developed and evaluated. These include programs such as *Auditory Discrimination in Depth*, *Early Steps/Howard Street Tutoring*, *Reading Rescue*, and *Targeted Reading Intervention*. Studies Slavin et al. reviewed indicate that these programs have stronger effects on achievement than *Reading Recovery.*

ONE-TO-ONE TUTORING BY PARAPROFESSIONALS AND VOLUNTEERS

One-to-one tutoring by certified teachers is expensive, and in high-poverty communities with shortages of teachers, allocating qualified staff to small numbers of children may be hard to justify. For those reasons, many schools have long used paraprofessionals or volunteers as tutors, usually with materials specifically designed for this purpose. Slavin et al. (2010) review of research found that paraprofessionals, who use structured, intensive tutoring programs, were more effective than *Reading Recovery*, although they were considerably less effective than regular teachers using phonetic tutoring. Volunteers were not effective in tutoring, unless they were trained to use a structured, phonetic program.

Slavin et al. (2010, p. 8) conclude, "What these findings imply is that schools might use a mix of teachers and paraprofessionals as tutors, using the qualified teachers as leaders and to work with the most difficult children."

SMALL GROUP TUTORIALS

The most common form of supplementary teaching for struggling readers is additional teaching in small groups, typically 30–45 minutes daily. Small group tutorials are potentially more cost-effective than one-to-one tutoring from teachers, because several children are taught at the same time, and the group setting creates possibilities for children to learn from each other as well as from the teacher. On the other hand, small group teaching can simply offer more of the same type of teaching that has already failed to work in the classroom. Furthermore, it can be difficult to coordinate with regular classroom lessons, and it does not allow teachers to tailor teaching to students' needs as much as one-to-one instruction does. Slavin et al. (2010) found that small group tutorials had a positive effect on achievement above *Reading Recovery*, but considerably below the effect of one-to-one tutoring by qualified teachers.

CLASSROOM INSTRUCTIONAL PROCESS APPROACHES

One potential solution for many struggling readers is to adapt the way that teachers conduct their normal lessons. According to Slavin et al. (2010), the inclusion of various forms of cooperative learning and phonics-oriented class programs could be particularly beneficial for students who would otherwise have difficulty in learning to read. Of course, the use of effective classroom strategies does not preclude individually targeted interventions for the (hopefully) small number of children who may still need them.

Slavin et al. found that the effect sizes across 16 studies of classroom instructional process programs were very positive for students at the lowest performance levels in their classes. The weighted mean effect size was +0.56, similar to the findings for one-to-one phonetic tutoring. These effects were markedly more positive for low achievers than they were for students generally. Eight of the 16 studies involved forms of cooperative learning (*CIRC*, *PALS*, and same-age tutoring). Other particularly promising effects were found for programs that utilize structured, systematic, and phonetic approaches to reading instruction: *Direct Instruction*, *Project Read*, *RAILS*, and *Precision Teaching* (Slavin et al., 2010).

CLASSROOM INSTRUCTIONAL PROCESS PROGRAMS WITH TUTORING

This category includes research on a single program, *Success for All*, which provides extensive school staff training and materials to improve all aspects of school organization and functioning. *Success for All* (http://www.successforall.org/) focuses in particular on those aspects relating to reading, and also provides tutoring to struggling children, mostly in first grade. The classroom interventions use a structured, fast-paced approach with a strong emphasis on cooperative learning, phonics, meta-cognitive skills, and frequent assessment. Parent involvement and interventions for behavior and other non-academic problems are also emphasized. In contrast to one-to-one tutoring programs such as *Reading Recovery* – which provide intensive tutoring during first grade, but no intervention afterwards – *Success for All* continues to provide classroom-level interventions (though not tutoring) throughout elementary school.

The weighted mean effect size for the lowest achievers in *Success for All* across nine qualifying studies was +0.55, commensurate to the effect size for phonetic tutoring programs. Also, in most of the *Success for All* studies, the program was provided over a period from three to six years, and they generally found stable or increasing effect sizes over the years (Borman et al., 2003; Slavin et al., 2010).

CONCLUDING REMARKS ABOUT INTERVENTIONS WITH STRUGGLING READERS

Across all methods of tutoring, all successful programs have a strong emphasis on phonics. One-to-one tutoring programs conducted by teachers had a much more positive weighted mean effect size (+0.69 in nine studies) if they had a strong phonetic emphasis. One-to-one tutoring programs with less of an emphasis on phonics, specifically *Reading Recovery* and *TEACH*, had a weighted mean effect size of +0.23 (Slavin et al., 2010). The effect size for a phonetic emphasis was 3 times larger than not emphasizing phonics.

Longitudinal studies of three to six years indicate that *Success for All* tutoring has long-term positive effects on achievement, especially if followed-up with effective teaching (Borman et al., 2003; Slavin et al., 2010). *Success for All* was one of the three comprehensive school reforms that were found to be consistently effective in raising student performance in the landmark meta-analysis by Borman et al. (2003).

AFTER-SCHOOL PROGRAMS

STAFF

Approximately 15% of all students nationwide are involved in some type of after-school program (ASP), including tutoring, sports, and clubs (Mahoney, Levine, & Hinga, 2010). Overall, the evidence suggests that participation in ASPs can positively affect the academic, social-emotional, and physical well-being of young people, including long-term educational attainment and occupational success. However, both the direction and magnitude of associated effects depends on program quality (Durlak et al., 2010; Mahoney et al. 2010; Smith et al., 2010). Although many factors influence the quality of a program, available research indicates that competencies of staff who lead ASPs are a critical determinant (Durlak et al., 2010; Mahoney et al., 2010; Smith et al., 2010). Despite the established links between staff, quality of program offerings, and child outcomes, few ASP providers receive the type of formal education and training that would be likely to facilitate their ability to provide quality programming (National After-school Association [NAA], 2006).

Efforts to train and prepare after-school educators are in their infancy. Various preparation models are currently being developed and implemented that include training through workshops, professional meetings, and online programs and webinars (Mahoney, 2010).

Two-thirds of after-school staff have a 2-year college degree or higher and 55 percent have a 4-year degree or higher. Many after-school staff work part-time and hold multiple jobs. Twenty-seven percent of full-time and 53 percent of part-time staff hold a second job. Many see a job in after-school as supplemental or temporary, and yearly turnover is as high as 40 percent (The After-School Corporation, 2009; Yohalem, Pitman, and Edwards, 2010). Although some of the degreed workers are educated in areas that might inform their after-school practice (e.g., early childhood education), very few have a formal education or credentials in after-school work. Approximately 40% of the workforce involves part-time staff members who plan to stay less than 3 years (Mahoney et al., 2010).

Mahoney et al. (2010, p. 90) concludes, "Only a small fraction of the after-school workforce receives training through activities designed for working in after-school settings and the effectiveness of these approaches is highly questionable and the opportunity to receive such training is infrequent."

EFFECTIVENESS OF AFTER-SCHOOL PROGRAMS

The Harvard Family Research Project (2008, p. 1) concludes:

> *"Well-implemented [after-school] programs can have a positive impact on a range of academic, social, prevention, and other outcomes, particularly for disadvantaged children and youth. However, that is not the end of the story. Not all research and evaluation studies have shown benefits, and this has provoked much useful discussion and research inquiry about the conditions necessary to deliver effective services that improve educational, social, prevention, and health outcomes."*

Harvard Family Research Project (HFRP, 2008) has developed and maintains an accessible national database of after-school program evaluations, and their narrative review draws from that set, as well as from recent meta-analyses and syntheses of after-school evaluations. While hundreds of after-school evaluations have been conducted in the past 10 years and are included in the HFRP database, their review is based on the subset of seminal research and evaluation studies employing an experimental or quasi-experimental design to determine effects. Studies included in this set are evaluations of large multisite and single site after-school programs; evaluations of school- and community-based models; evaluations assessing a narrow to broad range of outcomes; key developmental research studies; and key meta-analyses and research syntheses.

HFRP's (2008) narrative review indicates after-school programs are impacting academic performance in a number of ways, including moving the needle on academic achievement test scores. For example, a recent meta-analysis combined the results of 35 quasi-experimental and experimental studies of after-school programs for at-risk youth and found that programs demonstrated positive effects on both reading and math achievement (Lauer et al., 2006).

A 2-year longitudinal investigation, *Study of Promising After-School Programs,* examined the effects of participation in quality after-school programs among almost 3,000 youth in 35 elementary and middle school after-school programs located in 14 cities and 8 states. New findings from that study indicate that elementary and middle school students who participated in high-quality after-school programs, alone or in combination with other activities, across 2 years demonstrated significant gains in standardized math test scores, when compared to their peers who were regularly unsupervised after-school participants. Further, regular participation in after-school programs was associated with improvements in work habits and task persistence (Vandell, Reisner, & Pierce, 2007).

Studies of after-school programs and initiatives repeatedly underscore the powerful impact of supporting a range of positive learning outcomes, including academic achievement, by affording children and youth opportunities to learn and practice new skills through hands-on, experiential learning in project-based after-school programs (HFRP, 2008). For example, evaluations of *Citizen Schools*, which provides hands-on apprenticeships, academic skill-building activities, leadership skills development, and homework help found

that participants outperformed comparable nonparticipants on many measures of academic success, such as selecting higher quality high schools, school attendance, promotion rates, lower suspension rates, and some measures of grades and test scores (Fabiano et al., 2006).

Beyond academics, numerous after-school programs focus on improving youths' social and developmental outcomes, such as social skills, self-esteem and self-concept, initiative, and leadership skills. A meta-analysis of over 70 after-school programs that attempted to promote personal and social skills found that across studies, after-school programs could improve youth self-esteem and self-confidence, particularly in programs with a strong intentional focus on improving social and personal skills (Durlak & Weissberg, 2007).

In addition, research and evaluation studies have demonstrated the positive impact of participation in after-school programs on a range of prevention outcomes. For instance, a longitudinal study of the effect of participation in Los Angeles BEST programs on juvenile crime tracked students over 9 years. Results indicated that participation in LA's BEST was significantly related to lower incidences of juvenile crime (Goldschmidt, Huang, & Chinen, 2007). Project Venture, which provides skill-building, community service, and leadership opportunities and outdoor experiential learning activities, reduced youths' increasing substance use over time (Carter, Straits, & Hall, 2007).

Together, existing studies point to after-school programs' potential power to promote the general health, fitness, and wellness of young people by keeping them active, promoting the importance of healthy behaviors, and providing healthy snacks (HFRP, 2008).

CONCLUSIONS ABOUT AFTER-SCHOOL PROGRAMS

While it is true that after-school programs have the potential to impact a range of positive learning and developmental outcomes, the reality is that some programs do not succeed in bringing about positive outcomes (HFRP, 2008). Research and evaluation point to three primary and interrelated factors that are critical for creating positive settings that can achieve positive youth outcomes: (a) access to and sustained participation in the program; (b) quality programming and staffing; and (c) promoting strong partnerships among the program and the other places where students are learning, such as their schools, their families, and other community institutions (HFRP, 2008).

EFFECTS OF SUMMER SCHOOL

During summer vacation, many students lose knowledge and skills. By the end of summer, students perform, on average, one month behind where they left off in the spring (McCombs et al., 2011). Summer learning loss disproportionately affects low-income students. While all students lose some ground in mathematics over the summer, low-income students lose more ground in reading, while their higher-income peers may even gain reading skills. Most disturbing is the evidence that summer learning loss is cumulative; as time elapses the difference between the summer learning rates of low-income and higher-income students contributes substantially to the achievement gap (McCombs et al., 2011). As a result, educators and policymakers are increasingly promoting summer learning as a key strategy to improving the achievement of low-performing students (Burkam et al., 2004; Downey, von Hippel, & Broh, 2004; McCombs et al., 2011).

Research generally indicates that summer learning programs can be effective in improving student achievement (McCombs et al., 2011). One of the most commonly cited investigations of the overall effectiveness of summer learning programs is the thorough meta-analysis conducted by Cooper et al. (2000). They found that effect sizes for remedial summer programs varied from 0.24 to 1.50, with an average weighted effect size across the programs of +0.2 (p. 52). However, when the authors restricted the analysis to the four studies that used a random assignment of students, they found that the average benefit was smaller (effect size of +0.14) but still exceeded the estimate of average summer loss.

A more recent narrative review by the RAND Corporation identified 13 experimental or quasi-experimental studies of nine summer learning programs published since 2000 (McCombs et al., 2011). The programs studied included voluntary classroom-based, mandatory, and at-home programs, and, in general, the studies found effect sizes that were commensurate to Cooper et al.'s (2000) estimate from the random assignment studies. Some of the programs targeted the early primary grades (K–2), while others were for upper-elementary students. The student populations targeted by the programs varied and included students at risk of retention, low-income students, students in districts with high proportions of low-income and minority students, and all students in a district.

Three studies of mandatory remedial classroom-based programs in three school districts have concluded that the programs were effective (Jacob & Lefgren, 2004; Matsudaira, 2008; McCombs, Kirby, & Mariano, 2009), at least in the near term. Studies of voluntary elementary programs also found positive effects from summer programs (Borman, Benson, & Overman, 2005; Borman, Goetz, & Dowling, 2009). However, other studies found no overall effects among students who were part of the treatment group (Kim, 2004; Kim and Guryan, 2010).

The RAND Corporation researchers interpreted their findings, similar to Cooper et al. in their earlier meta-analysis, as suggesting that many types of summer learning programs have the potential to reduce summer learning losses, but they are not guaranteed to be effective (McCombs et al., 2011, p. 28). Based on their extensive narrative review of methodologically sound studies, these RAND researchers identified key components of quality summer learning programs: (a) small class size ($\leq$ 20),(b) differentiated instruction, (c) high-quality instruction, (d) aligned school year and summer curriculum, (e) engaging and rigorous academics, (f) maximized participation and attendance, (g) sufficient duration, (h) involved parents, and (i) evaluation of effectiveness. Briefly, small classes allow greater individualized (differentiated) instruction. High quality instruction generally is achieved by selective hiring and ongoing, job-embedded PD. Effective summer programs are carefully aligned with prior learning and future learning in the regular school year. Experts recommend expanding curriculum beyond remediation through innovative teaching of students on how to think and solve problems. Innovative teaching can increase interest and attendance. McCombs et al. (2011) indicate that sufficient duration varies widely according to experts and circumstances, but the primary point is that it takes time to intervene effectively in the summer.

Harvard Family Research Project (HFRP, 2006) also prepared a narrative review of existing research on summer school programs that met these selection criteria: (a) research reported formative, implementation, and outcome findings; and (b) evaluated a program with a focus on improving learning and school performance. Their review identified six common challenges to implementing high quality summer programs:

1. Developing programming with intentionality and quality;
2. Building positive and individualized connections with youth;
3. Recruiting and developing highly skilled staff;
4. Developing a clear link between summer programming and education during the regular school year;
5. Engaging community members, groups, and institutions in programming; and
6. Establishing strong, supportive relationships with participants' families.

Improving the effectiveness of summer school programs requires the ***intentional linking*** of program goals, program elements, participant outcomes, and evaluation. For instance, Halpern (2003) examined which after-school literacy programs were most effective and found the only significant difference between effective and ineffective programs was intentionality in planning and program design. Designing activities with program goals in mind is a critical part of building a more intentional program. Designing intentional program elements and activities requires sufficient time for thoughtful planning in the embryonic stage and as program development progresses.

Owing to the diversity of backgrounds, learning styles and capacities, and familial situations, summer programs typically find building positive, individualized connections with all youth to be a major challenge. However, when programs were able to build these connections, the benefits were manifold. Positive and

individualized connections can facilitate trust between staff and youth, make youth more excited about and engaged in the program, and allow staff to tailor programming to youths' interests and needs. Programs find it useful to hire some teachers and staff who already have positive relationships with youthful participants and their families, and/or are intimately familiar with living conditions of program participants (Chenoweth, 2007; Duncan & Murnane, 2011; HFRP, 2006).

Establishing effective summer school education and programs requires **hiring and developing knowledgeable teachers and staff** who are highly skilled in presenting differentiated instruction to a diverse population of students (Curry, 2009; Ladd, 2011; Magnuson. 2013). This is a serious challenge because evaluations have found that highly skilled, experienced teachers typically treasure their vacation time in the summers. Special incentive packages may be needed to entice experienced effective teachers to summer programs (HFRP, 2008).

Often parents and other community members have intimate knowledge of individual students' circumstances and can offer insight and useful assistance, and they may have topical expertise that would augment the summer learning experience (Bifulco & Ladd, 2006; Ingram et al., 2007; Magnuson, 2013).

Collaborative relationships and academic linkages between summer school teachers and staff and regular faculty are essential to developing a seamless connection between courses presented in the normal school year and teaching in summer school (HFRP, 2008). These partnerships facilitate planning a curriculum in the summer that augments the coursework being taught in the normal school year, and they provide summer teachers advanced information about needs of individual students.

Since summer programs often have limited resources and capabilities, **linking with other community entities** can help them maximize the beneficial experiences they offer to youth. By engaging key persons in the community, programs can leverage resources not usually at their disposal and thereby facilitate enhanced quality programming (HFRP, 2008).

Relationships with parents can provide valuable information about students' needs and circumstances, and help parents better support their children's learning and development at home (HFRP, 2008). Regular communication is especially important to encouraging and supporting parents living in poverty, who tend to devalue their importance to their children's education and to think they do not have the ability or resources to be of assistance (Ladd, 2011).

DEVELOPING EFFECTIVE COMMUNICATION WITH PARENTS

Developing effective communication channels between programs and families can mutually benefit both families' and schools' abilities to serve the needs of youth. Parents are more likely to become involved in their children's coursework when they receive regular - at least weekly – ongoing communication about details of assignments, including specific reading, instructions for completing assignments, examples of correct answers, grading, and comments on assignments (HFRP, 2008; Sheridan, 2012).

Parents must have details about assignments to be able to properly assist their children to learn, complete homework, and seek help from teachers and other staff when necessary. These details are critical to getting parents, who live in poverty, involved in their children's education (Bifulco & Ladd, 2006).

The Bureau of Legislative Research's onsite interviews with principals and case studies have indicated that teachers often do not provide this level of detail to parents, and some schools report limited communication with parents. One aspect of this lack of communication with parents is that there are still homes that do not have computers and internet access. However, these schools do not seem to use other modes of communication to regularly communicate with parents

EFFECTIVE EARLY CHILDHOOD EDUCATION PROGRAMS

A recent systematic narrative review, by experts from John Hopkins University, points out that the education of young children who are at risk of school failure is widely recognized as an important factor in

determining future achievement (Chambers et al., 2010). These experts also note that various researchers have found that for each dollar spent on pre-school, approximately four to eight dollars is saved in later social service costs to society. In addition to short-term effects on academic achievement, long-term effects of several programs include fewer arrests, fewer teenage pregnancies, and higher employment (Chambers et al. 2010). Recent brain research and studies of cognitive development are providing evidence that early education is crucial to getting children off to a good start in education and in life more generally (Bowman, Donovan, & Burns, 2001).

While evaluations of Head Start and other early childhood programs in the U.S. and other countries have clearly shown positive effects of early education, in comparison to no services, an essential question before researchers and policy-makers currently is what kind of preschool programs are most effective for educating young children. Which particular programs have positive outcomes and what elements of these programs contribute to their effectiveness?

SPECIFIC PURPOSE OF THIS REPORT REGARDING EARLY CHILDHOOD EDUCATION

Of special interest in this report is a review of evidence for the effectiveness of pre-school or early childhood, programs for young children who are at risk of academic failure due to poverty (Ladd, 2011). Most research on pre-school interventions has focused on whether these interventions influence future school success. The advantage of the narrative review conducted by researchers at John Hopkins University (Chambers et al., 2010) is the comparison of different types of interventions.

The John Hopkins researchers also used the What Works Clearinghouse's (WWC) rigorous criteria in selecting studies (http://ies.ed.gov/ncee/wwc/). The WWC is an initiative of the U.S. Department of Education's Institute of Education Sciences. These criteria eliminated studies of the impact of interventions on children's social and emotional development because the vast majority was based on teacher and parent ratings instead of objective measures (Chambers et al., 2010). Studies included randomized and matched experimental and quasi-experimental designs.

The John Hopkins University review used a form of best evidence synthesis, adapted for use by the What Works Clearinghouse for more general studies of education interventions (Slavin, 2008). Best-evidence syntheses apply consistent, well-justified standards to identify unbiased, meaningful information from experimental studies, and pooling effect sizes across studies in well-defined rating categories.

FINDINGS REGARDING PRE-SCHOOL PROGRAM EFFECTIVENESS

To make their findings for each program more useful to policy-makers and practitioners, the John Hopkins researchers presented evidence for effectiveness on a rating scale of six categories:

- Strong Evidence of Effectiveness
- Moderate Evidence of Effectiveness
- Limited Evidence of Effectiveness: Strong Evidence of Modest Effects
- Limited Evidence of Effectiveness: Weak Evidence with Notable Effects
- Insufficient Evidence of Effectiveness
- No Qualifying Studies of Effectiveness

Descriptions of this rating scale may be found in Chambers et al. (2010, p. 11). Because of the length of this report, the findings of the John Hopkins researchers (Chambers et al., 2010) are summarized, according to their rating scale, in Table 1 in the Appendix. For example, strong evidence of effectiveness on student achievement outcomes were found for the following programs: (a) *Curiosity Corner*, (b) *Direct Instruction*, (c) *ELLM*, (d) *Interactive Book Reading*, and (e) *Let's Begin with the Letter People*. Chambers et al. (2010) present a description of these programs and the studies that examined them. As one example, *Curiosity Corner* is a comprehensive cognitive-development program created by the *Success for All* Foundation (*www.successforall.org/*). It aims to develop the attitudes, skills, and knowledge necessary for later school success with an emphasis on children's language and literacy skills. The program comprises

two sets of 38 weekly thematic units, one for three-year-olds and one for four-year-olds. Each day teachers present children with learning experiences through sequential daily activities.

Curiosity Corner was one of 14 curricula evaluated in a randomized study as part of the Preschool Curriculum Evaluation Research project conducted by John Hopkins researchers (Chambers et al., 2010). Eighteen high-poverty, pre-school sites in three states with 215 children were randomly assigned to implement *Curiosity Corner* (intervention group), or continue their regular instruction (control group). Adjusting for pretest scores, there were no significant differences between these groups at the end of pre-school, but there were significant differences favoring *Curiosity Corner* pre-school on literacy (+ 0.39), language (+ 0.15), phonological awareness (+ 0.25), and mathematics (+ 0.18) at the end of kindergarten. These effect sizes are comparative strong, and similar sized effects were noted by Chambers et al. with other pre-school programs classified as "*strong evidence for effectiveness*."

NO EXCUSES APPROACH IN 90/90/90 SCHOOLS

A particular educational framework that has garnered considerable empirical and advocacy support has been called the "no excuses" approach, and it was adopted by Reeves' (2003) "90/90/90 schools." The label "90/90/90 schools" was coined by Reeves (2003) to designate schools in Milwaukee, Wisconsin that had the following characteristics: 90% or more free- and reduced-price lunch children, 90% or more minority children, and 90% or more of the students met the state academic standards in reading and another area. That label has been broadly applied to describe successful academic performance in schools with high percentages of minority students and students living in poverty.

The educational practices of "90/90/90 schools" are noteworthy because of the longstanding assumption of an inextricable link between poverty and achievement. Reeves' (2003) evidence from high-poverty schools in Milwaukee refuted that assumption. He identified five education themes that clearly differentiated these high performing "90/90/90 schools" from lower performing schools:

- A laser focus on academic achievement
- Clear curriculum choices
- Frequent assessment of student progress and multiple opportunities for improvement
- An emphasis on nonfiction writing
- Collaborative scoring of student work

LASER FOCUS ON STUDENT ACHIEVEMENT

The laser focus on student achievement was visibly omnipresent in tables, charts, and graphs in hallways, classes, and offices. School trophy cases were full of exemplary essays and other projects. Awards and other forms of recognition were prevalent in assemblies and ceremonies. Ongoing praise and encouragement were commonplace in greetings and conversations between staff and students, including non-teaching staff. All staff was encouraged to reinforce achievement among students.

The accountability system in use by these schools forced leaders and staff to identify five areas in which they would measure improvement, instead of the more common approach of identifying a large number of unfocused efforts to improve. The focus on improvement is especially important in schools where students often lack academic skills upon entry.

Improvement goals were stated in precise measurable terms, and measured with valid and reliable instruments.

CURRICULUM CHOICES

The heavy emphasis on achievement led to curriculum choices, spending more time on the core subjects of reading, writing, and math and less time on other subjects. Reeves (2003) observed that, despite a disproportionate emphasis on core subjects, the schools he studied significantly out-performed their peer

schools on science tests as well. He argues that this evidence supports the point that tests of other subjects rely heavily on the core skills taught in reading, writing, and mathematics.

FREQUENT ASSESSMENT OF STUDENT PROGRESS WITH MULTIPLE OPPORTUNITIES FOR IMPROVEMENT

Most children living in poverty enter school with knowledge and skill deficits (Ladd, 2011). The consistent message throughout "90/90/90 schools" is that the penalty for low performance is not a summative low grade, with limited if any feedback, followed by a forced march to a new topic. Rather, student performance below proficiency is followed by multiple opportunities to learn more and improve performance. Evidence indicates that students become discouraged and limit their efforts with "one-shot assessments" that emphasize deficits and provide no opportunity to improve upon their performance. In a classroom scenario in which there are multiple opportunities to learn, children feel more secure to make the effort to learn challenging material.

Students in "90/90/90 schools" were given an opportunity to use "real time" feedback to make corrections until they understood the concepts and skills being taught, instead of just receiving a final grade and negative comments with no reprieve. Feedback was offered in a more supportive and encouraging manner than the more conventional approach to grading.

WRITTEN RESPONSES IN PERFORMANCE ASSESSMENTS

The most important common characteristic of high-performing "90/90/90 schools," according to Reeves (2003), was the requirement of written responses in performance assessments. Written responses provide more diagnostic information about student performance than alternatives, and students demonstrate the thinking processes they employed in formulating their responses. Often the primary purpose of assessment is to reveal the underlying thinking processes that led to responses. In addition to teaching knowledge and skills, a major goal of instruction is stimulating and defining thinking processes.

Students process information in a much clearer way when they are required to write, and written responses provide teachers with a rich record of how the student arrived at the responses provided. In contrast to binary or multiple-choice responses typically used, written performance assessments allow teachers to diagnose obstacles to learning or misunderstandings. For example, assessing written assignments allow teachers to discern whether the challenges faced by a student are the result of vocabulary, misunderstood directions, reasoning errors, or a host of other problems that are not revealed by other forms of testing.

Reeves (2003) notes that the link between time spent on writing and student achievement in other subjects (e.g., science) was striking, and he argues this correlation gets to the heart of the curriculum choices schools must make. He reported that more than 80% of the 135 elementary schools in his study showed significant improvement in science, despite sacrificing time in science to practice reading and writing.

EXTERNAL SCORING

While many schools continue to rely upon the idiosyncratic judgment of individual teachers to define and measure performance, the high-achieving schools in Reeves (2003) study developed common assessment practices and tools. They reinforced those practices through regular exchanges of student assignments between teachers. In the highest achieving schools, principals also were involved in these exchanges of student work. In order to engage in exchanging student work for purposes of assessment, it is imperative that faculty have uniform criteria for evaluating their work. The degree of agreement among teachers in their use of performance assessment scoring can be measured by "inter-rater reliability" (Rossi, Lipsey, & Freeman, 2004). In this case, reliability refers to consistency between evaluators. The process of checking inter-rater reliability itself typically results in greater agreement between teachers on performance of individual students.

TEACHER COLLABORATION

It is noteworthy that none of Reeves' (2003) "90/90/90 schools" used proprietary programs. Instead, the "90/90/90 schools" dedicated specific periods of time to teacher collaboration, curriculum issues, coordination of lessons across subjects and grade levels, and individual students' performance and problems. Teachers worked together to arrive at consensus on criteria for proficiency and how to measure student performance. Teachers also used this collaborative time to learn from one another, and give each other feedback based on classroom observations of one another. Stated succinctly, considerable mentoring and professional development occurred during these collaborative meetings between teachers, and between teachers and instructional facilitators, including principals. Principals assumed the role of curriculum leader, while assistant principals handled discipline and most of the administrative duties.

Time for collaboration came from virtually eliminating faculty meetings devoted to administrative announcements and concerns -- administrative issues were largely handled in written correspondence, including e-mail.

DISCUSSION AND CONCLUSIONS

This report broadly examined the research literature on improving student achievement, particularly in high poverty schools, to develop a collection of interventions commonly found to be effective. The intervention research literature indicates that it is the combined effects of various interventions that result in maximum effectiveness on student achievement rather than discrete strategies. The influences of interventions are interrelated and operate in concert with one another. For example, the "no excuses" approach, found to be effective in so called 90/90/90 schools, is made up of a collection of strategies and practices, not a single intervention. It holds all students (no excuses) to high expectations, while offering multiple opportunities to learn correct responses, and consistent encouragement, support, and affirmation.

Additionally, the effects of all educational interventions largely depend on the quality of the intervention. Collectively, the research literature not only provides guidance on what interventions are effective, but how such interventions should be implemented.

The analysis in this report relied on objective evidence based on rigorous study methodologies, rather than on finding advocacy positions and secondary reviews that may reflect ideological and political opinions. Research from proprietary education programs and partisan organizations and "think tanks" were not used. The studies, narrative reviews, and meta-analyses examined in this report identified quality teaching and school leadership as the most robust predictors of student achievement.

QUALITY TEACHING

Research indicates that teachers who have the largest impact on student achievement have a thorough mastery of the subjects they teach, allowing them to effectively diversify instruction to address the variety of abilities and needs of students. Mastery includes not only the particular courses taught, but also foundational and extended knowledge and skills in the subject area.

QUALITY LEADERSHIP

High quality school leaders also have a significant impact on student achievement, and education research has identified characteristics that effective principals commonly share. In the most academically successful schools, principals assume the role of curriculum leader, while delegating major responsibilities to instructional facilitators and teachers, who have demonstrated aptitudes and performance to assume leadership responsibilities, such as team leaders and meeting facilitators. The specific duties of leaders in this shared leadership configuration are largely defined conjointly by members of a professional learning community.

To enhance the skills and knowledge of teachers and school leaders, the educational research literature identifies the shared leadership fostered through PLCs and professional development among the strongest contributors to student achievement in low-poverty and high-poverty school districts.

PROFESSIONAL LEARNING COMMUNITIES

Research also indicates that effective teaching can be fostered through quality professional learning communities (PLCs), which serve as ideal forums to address many aspects of teacher and curriculum development. Research also suggests that principals' skills can be effectively enhanced through membership in a PLC, and through other professional development provided by the educational cooperative and institutions of higher education.

Experts recommend that PLCs be reserved for professional development (PD), teaching and data analyses and discussions, and planning and evaluation of curriculum. Included in teaching and data analyses are discussions of differentiated instruction of individual students and modifications in lesson plans based on empirical findings.

PROFESSIONAL DEVELOPMENT

The research literature shows that dedicated and concentrated periods of professional development instill and enhance the knowledge and skills that promote student performance. Job-embedded PD by instructional facilitators who model instruction in classes, observe teachers, and provide immediate feedback based on observations is most effective. PD that leads to improved student performance offers opportunities for conceptual discussions about teaching and for feedback from teachers observing one another in class. Research supports the contention that the most effective PD involves immediate feedback from respected colleagues and instructional facilitators. According to this research, the least effective PD is one-time workshops with no follow-up practice or feedback.'

The educational literature identifies a variety of other related processes and interventions that lead to significant student achievement, particularly among low income students. An important caveat seen throughout seminal research and reviews is that the effects of all educational interventions depend on the quality of the intervention. Quality includes the fidelity of the implementation of the intervention. For example, many principals in the BLR surveys report that they have PLCs, however, probing details often reveals they are referring to traditional faculty meetings instead of forums that deal with issues like PD and curriculum development.

INTEGRATION OF CURRICULUM

It is especially important in schools with high concentrations of poverty to have curricula that is integrated and coordinated across grade levels and subject areas. Research indicates that every course should have some content from other subjects to reinforce the integration of learning. For example, math problems should include reading, science, social studies, and history. Furthermore, summer school courses should be linked to and augment courses taught in the regular nine-month program. PLCs also offer a forum in which to develop seamless, integrated curricula that align subjects, grade-levels, tutoring, and summer school.

QUALITY TUTORING AND AFTER-SCHOOL PROGRAMS

Research indicates that quality tutoring is one of the most significant contributors to student achievement—if it is provided under certain conditions. Both the direction and magnitude of associated effects of tutoring and after-school programs (ASP) depends on program quality. The literature notes that quality tutoring programs commonly have: (a) clearly stated goals and objectives, (b) responsible supervision and well-defined structure, (c) skilled and knowledgeable staff, (d) intentional programming, and (e) strong partnerships.

According to research, tutoring also should be based on content and skills being taught in regular classes, and tutoring is most effective when the tutor is either a certified classroom teacher or a trained professional. Although many factors influence the quality of a program, available research indicates that competencies of staff who lead ASPs are a critical determinant. Studies indicate that volunteers and untrained tutors do not provide effective tutoring. Despite the established links between staff, quality of

program offerings, and child outcomes, few ASP providers receive the type of formal education and training that would be likely to facilitate their ability to provide quality programming.

Extra time for academics by itself may be necessary but may not be sufficient to improve academic outcomes. Balancing academic support with a variety of engaging, fun, and structured extracurricular or co-curricular activities that promote youth development in a variety of real-world contexts appears to support and improve academic performance. Beyond academics, numerous after-school programs focus on improving youths' social and developmental outcomes, such as social skills, self-esteem and self-concept, initiative, and leadership skills.

QUALITY EARLY CHILDHOOD PROGRAMS

Children from low-income families, on average, score far below their peers from higher-income families in early vocabulary and literacy development, in early math, and in the social skills they need to get along well in their classrooms. This gap in school readiness typically receives less attention than the test score gaps that hound these children throughout their school careers, or the vast gulfs in high school graduation rates and college enrollment rates that are the end results. There is solid evidence that preschool can provide the developmentally stimulating experiences that many children growing up in poverty lack. To offset poverty effects, preschool must provide an enormous early boost that changes the academic trajectory of a child. Only a high-quality, well implemented preschool program will do the job. Lower-quality programs, and poorly implemented programs, do not have a significant impact on poverty because they do not make that life-changing difference.

RESPONSE TO INTERVENTION

The RTI process is especially useful for identifying low-income children who are struggling academically. The process provides a systematic set of steps to identify problems, and their severity, in early grades so progressively intensifying intervention can remedy them in order for normal learning to occur. Evidence supports of the use of RTI to screen for early reading problems and to remedy them so children can be more successful in their school career.

PARENT COMMUNICATION

Regular electronic communication with parents concerning reading, assignments, homework, and class activities encourages more parent involvement in their children's education. However, parents are able to become truly involved in their children's school work only when communication is ongoing, detailed, and mutually informative. Too often electronic communication with parents, if it exists at all, is a perfunctory exercise where parents are presented with too little information to be truly helpful to their children.

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APPENDIX A

TABLE 1. EVIDENCE OF EFFECTIVENESS OF EARLY CHILDHOOD PROGRAMS

Strong Evidence of Effectiveness	
Six early childhood programs produced strong evidence of effectiveness, with a sample size weighted effect of at least + 0.20 in at least two studies, at least one of which was randomized.	
1. Curiosity Corner 2. Direct Instruction 3. ELLM	4. Interactive Book Reading 5. Let's Begin with the Letter People 6. Ready Set Leap
Moderate Evidence of Effectiveness	
Five Programs had at least one randomized or two match students and a weighted mean effect size of at least + 0.20	
1. Breakthrough to Literacy 2. Bright Beginnings 3. DLM Express Plus Open Court	4. Pre-K Mathematics Plus DLM Software 5. Project Approach
Limited Evidence of Effectiveness: Strong Evidence of Modest Effects	
Three programs met the criteria for moderate evidence of effectiveness with weighted mean effect sizes between + 0.10 and + 0.19 on one or more outcome clusters.	
• Doors to Discovery • Language Focused Curriculum • Literacy Express	
Limited Evidence of Effectiveness: Weak Evidence with Notable Effects	
Three programs had a weighted mean effect size of at least + 0.20, but did not qualify for moderate evidence of effectiveness due to insufficient numbers of students in studies.	
• EMERGE • PATHS • Sound Foundation	
Insufficient Evidence of Effectiveness	
• BELL • Creative Curriculum • DARCEE • Dialogic Reading • Ladders to Literacy	• Montessori • Project Construct • REDI • Tools of the Mind • Waterford
No Qualifying Studies	
• High Scope • Reggio Emilia • Scholastic Preschool	• Abecedarian • Building Blocks • Early Authors Program

Note: Effect sizes of + 0.20 are considered high for an intervention effect (or impact).