RESEARCH REVIEW SUPPORTING THE NEBRASKA POVERTY PLAN COMPONENTS

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Prepared by
Kerry Englert, Ph.D.
Seneca Consulting, LLC
for
REL Central at McREL
and
The Nebraska Department of Education

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Executive Summary

In Nebraska, pursuant to Nebraska statutes 79-1013 and 79-1014, districts may submit a Poverty Plan, a Limited English Proficiency (LEP) Plan, or both by October 10th to be used in calculation of state aid for the following fiscal school year. The poverty plan is meant to specifically address the needs of students qualifying for free or reduced-price lunch. District poverty plans are approved or disapproved by the Nebraska Department of Education and are used to determine resource allocation and technical assistance from the state.

Districts submitting poverty plans are required to explain how they will address each of 13 components identified within the legislation. The Nebraska Department of Education requested this research review in order to determine which components have the greatest potential of positively impacting student performance. If the components identified in the legislation are not among them, the state may request a reduction or change in the components required. The information from this report is also expected to be used by NDE staff to provide technical assistance to districts and support schools in making improvements.

The 13 required components represent a range of issues in the education literature. Of these 13, researchers found sufficient evidence to provide summaries of 10 components.[1] A search of the research literature identified numerous articles relating to each of the components. For each component, the research varied in quality and quantity, which often limited the conclusions that could be drawn. Summaries of each of the ten components are presented below:

Attendance. The research on attendance confirms the negative impact of truancy on student achievement as well as on other student outcomes (e.g., drop-out rates). A variety of contributing factors can increase truancy, such as unemployment and family illnesses. Program effects found in the research for strategies that mitigate these problems tend to be small. However, strong, high-quality partnerships between schools, communities, and families can improve attendance and thus, student learning (Sheldon, 2007; Nauer, White, and Yerneni; 2008).

Student Mobility. High student mobility can be traced to myriad factors, including homelessness, migrant work, and family school choice. Each of these issues has a variety of impacts on student achievement and presents unique circumstances that often require different solutions. The research recommends several strategies related to student mobility, including implementing programs to reduce mobility, and offering support to mobile students to mitigate negative impacts (Popp, Stronge, & Hindman, 2003).

Parent Involvement. Parent and family involvement in schools includes a range of practices and policies, from in-school activities, such as parents volunteering in school, to home-based strategies, such as parents helping students with homework. This body of literature has garnered much attention in recent years, resulting in a wealth of information regarding the most effective ways to engage parents in their child's education. Overall, the research results are positive regarding the effects of parent involvement on achievement (Jeynes, 2003; Jeynes, 2005). Researchers emphasize the importance of schools working in concert with parents and

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[1]The Nebraska poverty plan specifies 13 areas for consideration; however, two were not included in this document because of the lack of specific evidence (evaluation of effectiveness elements and coordination of early learning centers) and parent involvement at the district level was combined with parent involvement at the school level).

families and using a strengths-based perspective that emphasizes the positive aspects of different cultures, attitudes, and languages (Orozco, 2008).

Class Size Reduction. Reducing the number of students in a class is often viewed as a way to better focus instruction and provide students with specific feedback, which would logically improve student learning. In general, the research supports this notion (Shin & Chun, 2009; Ceci & Konstantopoulos, 2009). However, reducing class size is not without its critics; some research indicates that the benefit is not as great as might be expected, and the associated resources (i.e., hiring high quality teachers and finding additional class space) can be prohibitive (Januszka & Dixon-Krauss, 2008).

Teaching Time. Schools allocate a certain amount of time per day for instruction, but this time is often consumed with non-instructional tasks such as roll call, announcements or other disruptions. Therefore, when considering instructional time, close attention should be paid to the *actual* time students spend learning versus *the allotted* instructional time (Aronson, Zimmerman, and Carlos, 2001). Research indicates the importance of increasing the time students spend actively engaged in the learning process as a means of directly improving achievement without requiring an increase in the length of the school day (Hattie, 2009; Smith, 1998).

Early Childhood Programs. Giving our youngest students high-quality education opportunities can provide them with a strong academic foundation. This is especially important for students in poverty, because often public education is their primary source of early academic enrichment. Research shows that a range of early childhood programs (e.g. preschool, full day kindergarten) can impact achievement (Cooper, Allen, Patall, Dent; 2010; Hattie, 2009). However, two areas should be considered when implementing programs; namely, developmentally appropriate curriculum and sustaining strong academics in subsequent grades.

Student Access to Social Workers. The research linking social workers with academic achievement is sparse. However, the limited evidence cites the importance of the social worker in supporting at-risk students in meeting their academic goals. Further, schools in which social workers proactively engaged all students and focused on using strategies that met professional standards tended to be higher achieving (Fitch & Marshall, 2004; Robinson, Stempel, & McCree; 2005).

Supplemental Learning Opportunities. The focus of this component is on extending the learning day/year (i.e. afterschool and summer school programs) in order to provide greater opportunities for increasing academic instructional time. In general, research indicates that lengthening the school day or year can improve achievement (Cooper, Charlton, Valentine, Muhlenbruck, & Borman; 2000; Lauer, Akiba, Wilkerson, Apthorp, Snow and Martin-Glenn; 2004). High-quality extended learning opportunities provide promise for improving multiple social and academic outcomes if they focus on students' academic needs (Princiotta & Fortune, 2009).

Mentoring Teachers. Most of the research on teacher mentoring focuses on teacher outcomes, such as retention and instructional quality, as opposed to student learning and achievement. In general, research indicates that mentoring can positively impact collegiality, can increase reflection, and add to professional growth (Ehrich, Hansford, & Tennent, 2004). Other

research contradicts these findings indicating that mentoring programs have mixed impacts on teacher retention (Parker, Ndoye, & Imig; 2009) and student outcomes (Fletcher & Strong; 2009).

Professional Development. There is a dearth of high quality, experienced educators who are willing to serve in our most at-risk schools (Birman, Boyle, Le Floch, Elledge, Holtzman, Song, Thomsen, Walters, & Yoon; 2009). One way to ameliorate this is by providing professional development (PD) opportunities. Offering both teachers and administrators rigorous, high quality PD aimed at developing their skills and pedagogical knowledge works toward improving instruction and thus improving student achievement (Blank & de las Alas; 2009; Togneri & Anderson, 2003).

These ten components allow schools to look at a range of potential solutions when serving students in poverty. However, there are two themes that the research literature presents that policymakers might consider in reviewing the poverty plan topic areas: **context and quality**.

First, it is critical to examine the **context** of the problems that schools face and apply programs specific to that context. For example, attendance problems may be attributed to a range of causes (i.e. homelessness). Poverty planning should expect the school to take its particular situation into account when developing the plan. Second, schools and districts might consider issues of program **quality** and implementation. It may be that schools have programs in place but they might not have sufficient rigor or schools might not be implementing them effectively. For example, at-risk students may in fact need access to social workers, but the school but the school might also focus on teachers' use of effective, research-based instructional strategies to help their student population with language development.

Overall, across the ten components in this review, seven have somewhat moderate research evidence for the possibility of improving student outcomes (*attendance, student mobility, parent involvement, teaching time, early childhood programs, access to social workers*, and *supplemental learning opportunities*). Two of the ten topics (*mentoring teachers* and *professional development*) focus on improving teacher quality; however, the relationship of teacher quality to student achievement has not been well documented.

Introduction

Nebraska school districts submit a Poverty Plan in support of their calculation of state aid. The instructions for the plans specify thirteen components that school districts must address when developing their plan (Schoonover, 2010). This research review focused on ten of those components for which research linking the component to improvements in student outcomes was available. In general, the research highlights some important considerations and complexities. Not surprisingly, there is no one area that alone will ameliorate low achievement for at-risk students. A multitude of issues within the context of high-poverty schools influence student success, and those issues can vary widely. Each district's poverty plan, then, should examine the specific issues and needs relevant to that district. Through that examination, districts can begin to identify and tailor research based solutions to best address their most pressing problems.

Methodology

Research Question

To what degree are the components in the Nebraska Poverty Plan supported by research related to improving student achievement?

Literature search methods

REL Central librarians conducted multiple searches to identify relevant, high-quality literature in each of the 10 components (attendance, student mobility, parent involvement, class size reduction, teaching time early childhood programs, access to social workers, supplemental learning opportunities, teacher mentoring, and professional development). Maura McGrath, Research Librarian, and Linda Brannan, Lead Consultant, both professional librarians, conducted the literature searches. Following are the resources consulted:

- IES-supported organizations and websites, including the Regional Educational Laboratories website, the What Works Clearinghouse, The Center on Instruction, Center on Innovation and Improvement, National Comprehensive Center for Teacher Quality, and National High School Center.

- Other U.S. Department of Education-supported organizations and websites, including the National Partnership for Quality Afterschool Learning and Center for Research on Education, Diversity & Excellence (CREDE).

- Bibliographic databases, including ERIC, Academic Search Premier, Educator's Reference Complete, Academic Onefile, and Proquest.

- Google Scholar

- Websites of nationally-known research and policy organizations including National Association for Education of Young Children, Rand Corporation, Education Commission of the States, National Council of State Legislatures, Education Sector, The Education Alliance, National Governors Association, and Council of Chief State School Officers.

- Reference lists of relevant documents identified through searching.

- Comprehensive meta-analyses and relevant literature reviews were also referenced and included in the review (Englert, Apthorp, & Seebaum; 2009; Germeroth, Barker, Arens, & Wang; 2009; Hattie, 2009; Marzano, 2000).

- Additional relevant studies were also identified after reading articles from the initial search.

Each librarian identified and used key terms and synonyms relevant to the topic for searching. Following are keywords used to conduct searches: extended school day, extended school year, OST, afterschool, year round school, early childhood education, student attendance, transportation, student mobility, student supports, class size, parent involvement, community involvement, outreach, school restructuring, school improvement, new teacher mentoring, induction, professional development, social workers, counselors, meta-analysis. Searches were conducted for literature published in the most recent five years (2005 to 2010); however, works by seminal authors and key organizations were included from outside these years.

How articles were summarized and reviewed

All articles derived from the literature review were categorized into the component areas. These articles were then reviewed to determine the relevance to the component and whether or not they included evidence of the impact of the topic on student learning. Because the focus of the review was to examine the impact of the component on student achievement, any article that did not include this information was not immediately reviewed. However, if the research was limited in the component area and if articles discussed other academic outcomes (i.e. dropout rates, attendance) or provided context, they were included in the review. The research articles included in this review varied in type and rigor and included meta-analyses of multiple studies, literature reviews, and single studies that used a variety of methods (i.e. randomized controlled trials, descriptive research). The method used, as well as how it was used, determines the nature of the conclusions that can be drawn from this review. When available, we focused first on meta-analyses as an important source of research information because they report the net results of multiple single studies. These syntheses (meta-analyses) often use an effect size to indicate the combined impact of the separate studies and thus, effect sizes are reported when available.[2]

Attendance

Working definition

It stands to reason that increased attendance is directly related to student academic success, because students cannot learn the material if they are not in school. For this review, we included studies that examined how strongly attendance was related to student achievement and also provided evidence of what worked to improve attendance. This included schools that offered transportation options, provided positive motivating tools for attendance, offered family support, and followed-up on attendance issues.

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[2] An effect size provides evidence of the magnitude of group differences. This statistic is generally considered to be "small" if it is between .20 and .50, "medium" if it is between .50 and .80, and "large" if it is greater than .80 (Cohen, 1988).The effect size is the difference between the two groups expressed in standardized units. An effect size is the mean of one group minus the mean of a second group, all divided by the pooled standard deviation.

Research Studies Reviewed

Most studies were descriptive in nature or focused on evaluations of specific programs. One study employed a quasi-experimental design (Sheldon, 2007) and there was one meta-analysis that included attendance as an outcome variable (Wilson, Gottfredson, & Najaka, 2001). This meta-analysis used an effect size to indicate the combined impact of the separate studies. The research speaks to why attendance is an important factor for student learning and achievement or discusses specific programs to mediate truancy. However the connection between a program and improved achievement is not frequently examined.

Findings

Absenteeism is a large and often underreported problem. Nationally, on average, 10 percent of kindergarteners are chronically absent and miss more than 10 percent of school per year (Chang, 2010). Locally, the numbers can be much higher in certain schools, such as those in large, high poverty, urban areas (Sheldon & Epstein, 2004). Nauer, White, and Yerneni (2008) found that in New York City, 20 percent of students in grades K-5 missed a month of school or more per year.

The link between the number of unexcused absences and poor student outcomes is noteworthy. Low attendance is related not only to decreases in student achievement (Gottfried, 2009) but also correlates to increases in drop-out rates and substance abuse (Sheldon, 2007). This is a problem that perpetuates itself because high absenteeism for younger students is a strong predictor of truancy in later elementary and secondary grades (Spencer, 2009). Schools with attendance issues should monitor and seek to remediate early truancy problems as soon as they become apparent to break that pattern (Spencer, 2009; Chang, 2010).

Research indicates that truancy is caused from myriad problems and a complexity of risk factors (Weissbord, 2008). Schools, then, can have different sets of reasons for truancy issues (i.e. homelessness, unemployment, familial). In order to mitigate attendance issues, a variety of support from community agencies and schools is required. A one-size-fits-all solution is not always appropriate and schools must incorporate their own context into the truancy solution (Teasley, 2004). One meta-analysis concluded that individual programs to reduce truancy and dropout produce small overall effects (ES=.16). Researchers concluded that single program solution would not have large effects and schools might benefit from offering multiple solutions (Wilson et. al., 2001). In poverty planning, schools need to ask questions based on their issues and populations about what mix of programs will work.

Most of the research studies on attendance are from specific program evaluations. Researchers found that implementing *strong, high quality* partnerships between schools, communities and parents improves attendance (Sheldon, 2007; Nauer, White, and Yerneni; 2008). In particular, programs that explicitly involved school staff or community social services reaching out to families translated quickly into improved attendance. Frequent, positive dialogue between school staff and parents was the key to improving attendance.

Student Mobility

Working definition

Research on student mobility focuses on students who frequently change schools for various reasons (i.e. homelessness, migrant families, school choice). For the purposes of this literature

review, we included studies that highlight the issues and consequences as well as programs designed to reduce mobility and mitigate the associated negative outcomes.

Research Studies Reviewed

The literature in this component focused on several areas. First, research studies identified and explained the problems associated with mobility such as low achievement, increased dropout rates, and difficult social adjustments (Gruman, Harachi, Abbott, Catalano, Fleming; 2008; Hattie, 2009; Popp, Stronge, & Hindman, 2003; Rumberger & Larson; 1998). Second, other studies provided descriptive evidence that examined ways to reduce mobility or to mitigate the impacts that mobile students face. This research tended to focus on particular populations of mobile students, such as migrant and immigrant students (Ream & Stanton-Salazar; 2006; Popp, Stronge, & Hindman; 2003). The literature review also includes two meta-analyses.

Findings

The effects of student mobility can be substantial, ranging from poor academic performance to social issues. Hattie (2009) found a negative effect size of -0.34 on achievement for mobile students. This means for that for students who changed schools, their achievement was approximately 1/3 of a standard deviation below their peers who did not move. Hattie cites evidence that the effects were consistent across socio-economic status and the number of times a student changed schools. Mobility further complicates students' ability to satisfy graduation requirements in high school, thus increasing dropout rates (Meeker, Edmonson, & Fisher; 2008).

Mobility occurs for a variety of reasons (i.e., homelessness, migrant employment, military transfers, or families choosing a school that's a better fit for their child) each of which requires an issue-specific solution (Weissbourd, 2008). The research literature suggests several ideas. First, schools must be held accountable for monitoring and mediating mobility and its effects. With the increased pressure for student achievement under NCLB, school staff may encourage students to transfer to different schools as a means to reduce numbers of low-achieving students (Ream & Stanton-Salazar; 2006). Second, schools should examine the reasons for high mobility rates and seek means to alleviate the effects. For example, providing homeless families with bus passes or alternate transportation may help keep students in one school (Zehr, 2010), or linking with community agencies might provide needed support and resources to stabilize families. Conversely, when parents choose to change schools, school staff can discuss how mobility affects students and offer strategies to mitigate the consequences (Popp, Stronge, & Hindman, 2003). Finally, when transfers do occur, schools and teachers can provide supportive environments (Gruman, Harachi, Abbott, Catalano, Fleming; 2008), and social workers can monitor students who have transferred to provide social and academic remediation (Popp, et al, 2003).

Parent Involvement

Working Definition

Practices to increase parent involvement include helping parents support their child's education at home and encouraging involvement in school activities. For this report, we define parent involvement as any policy, practice or procedure aimed at producing a meaningful relationship between the school and the families of their students.

Research Studies Reviewed

There is a wealth of research in the area of parent involvement, as indicated by the number of original studies and meta-analyses of varying quality and focus (Jeynes, 2003). A major source of information in this topic area resulted from multiple research syntheses. However, many of the primary studies often did not include key information such as student cognitive ability, demographics, and program specifics, which limited the information about what strengthens or moderates the relationships of parent involvement to achievement (Erion, 2006; Mattingly, Prislin, McKensie, Roderiquez, & Kayzar, 2004). Further, many single research studies are not based on methods that lead to causal conclusions; even if a strategy has some relationship to achievement, it often can't definitively be said to cause the improvement (Hill & Tyson, 2009; Jeynes, 2005).

Findings

Overall, studies found a positive relationship between parent involvement and student achievement. Weiss and Stephen (2009) state, "The research makes it clear that parents' or caregivers' behaviors, practices, and attitudes at home—as well as their involvement with school and other institutions—strongly influence children's learning." (p. 12). Hattie (2009), in a synthesis of multiple single studies found moderate effects of parent involvement (at 0.51). While these findings indicate that parent involvement is important overall, Hattie also specifically indicates that certain factors such as parents' expectations and aspirations for their child's education are the most critical. The lowest effects were seen in areas that were more punitive, such as parents enforcing rules and monitoring homework. Hattie concludes that parent involvement would be most effective when schools "work in partnership with parents to make their expectations appropriately high and challenging, and then work in partnership with children and the home to realize, and even surpass, these expectations (p. 70). Marzano (2000) confirmed the importance of parent involvement with smaller but still positive effects (0.26) for specific aspects of parent involvement (i.e., a productive written exchange between schools and parents, including parents in decision making for policies and curriculum, and providing parents access to school staff).

School level can further complicate parent involvement. Middle and high schools present a complex environment for parent participation. Parents are often intimated by their child's higher level of work, a larger school setting, and multiple subjects taught by an array of teachers (Beyer, Patrikakou, & Weissberg, 2003; Hill & Tyson, 2009). However, the importance of parent involvement persists, albeit in different ways. Because adolescence is a time for students to exert increased independence, parent involvement that supports students moving toward autonomous decision making tends to be the most effective. For example, providing parents with an understanding of academic expectations, goals, and purposes that they can use to support their child were positively related to achievement. Conversely, areas associated with more parental control, such as monitoring and helping with homework, were not related to achievement. These findings were consistent across racial and ethnic groupings. Overall, parent involvement programs can support adolescents if the programs are based in positive and productive ways that acknowledge students' developmental and social needs (Beyer et al, 2003).

Additional meta-analyses provide insight into the outcomes of parent involvement for students of different racial and ethnic groups, and in different school contexts. Across student subgroups, effects of general parent involvement strategies were small but consistent (ranging from 0.22 to 0.48) with a greater effect seen for African American students (Jeynes, 2003) and medium effect sizes for students in urban schools (0.70 to 0.75) (Jeynes, 2005). With regard to specific practices, researchers studying urban and minority students found effects ranging from medium effects for high parental

expectations, parents communicating with their child about school, and parental attendance with lower effects for parents encouraging outside reading and enforcing household rules for school and leisure activities (Jeynes, 2003; Jeynes, 2005; Sheldon, 2003)

Although overall, the research supports parent involvement, policy considerations and interventions should address specific issues. Researchers emphasize the importance of schools working in concert with parents and families. Pomrantz, Moorman, and Litwack (2007) state, "in designing interventions, attention needs to be given to fostering involvement that is autonomy supportive rather than controlling, process rather than person focused, characterized by positive rather than negative affect, and accompanied by positive rather than negative beliefs about children's potential." (p. 399-400). This positive approach is true for all students, but is especially relevant for immigrant families for whom overcoming school cultural and language barriers is difficult and intimidating but is essential for promoting student success (Turney & Kao, 2009). Educators should approach families from a strengths-based perspective that emphasizes the positive aspects of different cultures, attitudes, and languages and further, "educators must set aside preconceived notions of low-income parents as not having anything to offer to the education of their children." (Orozco, p. 34, 2008).

Class Size Reduction

Working Definition
Reducing the number of children in classrooms is a policy that has received a great deal of attention in recent years. It is generally promoted as a method of improving student achievement by allowing for more focused instruction and feedback. Given the many studies on this topic, it is no surprise that definitions on class size and implementation vary. For the purposes of this report, we define class size reduction as a practice that reduces the number of students in a classroom for all or part of the school day.

Research Studies Reviewed
Research on class size has produced some of the highest quality studies in education. Original studies have been conducted on large-scale initiatives in several states, including Indiana, Wisconsin, Tennessee, and California who have initiated class size reduction programs. Many school districts have also taken on initiatives on a smaller scale (Shin & Chu, 2009). Most of the studies report student achievement as the main outcome measure and some studies report mitigating factors such as teacher quality and instructional practices. The research reviewed for this report included several meta-analyses and single studies.

Findings
This wealth of research provides extensive information for an examination of the overall effects of reducing class size as well as data on the mediating effects of specific variables (i.e. demographics, program effects) on student achievement. In a large study on the effects of the California class size reduction program, researchers found that reducing class size improved student achievement across all demographic groups (i.e. high and low SES, and minorities) (Jepsen & Rivkin, 2007). The effects tend to be higher in the lower grades. This is consistent with other research supporting positive effects (Shin and Chun, 2009; Tienken and Achilles; 2009; The Center for Public Education, 2008).

Although overall the research tends to be favorable, Hattie (2009) reports the effects to be surprisingly small relative to other interventions studied (ES=.21). Hattie posits that this lower effect size might be due to a lack of support or training for teachers on how best to maximize the benefits of smaller classes. "With smaller classes goes the plea there could be more feedback, more interaction with students and between peers, more diagnosis, and so on." (p. 88). When teachers find themselves in classrooms with fewer students, they do not necessarily change their pedagogy accordingly.

As a caution, some research on class size reduction programs report neutral or contrary findings. Watts and Georgiou (2008) found that after controlling for socio-economic status, the effects of reduced class sizes were negligible. Further, Ceci & Konstantopoulos (2009) cite research that indicates that even while all students benefit from smaller class sizes, "the 'haves' often gain more than the "have-nots." In fact, when placed in smaller classes, children in the top 10 percent of the score distribution often gain two to four times more than those in the bottom 10 percent." (p. 2). Other critics argue that class size reductions can be extraordinarily costly. In one example, Florida is projected to spend approximately 9 billion dollars to fully implement their class size reduction initiative in 2010 (Januszka & Dixon-Krauss, 2008).

The research literature specifies effective characteristics of programs that reduce class sizes (Hattie, 2009; Januszka & Dixon-Krauss, 2008; The Center for Public Education, 2008) including: fewer than 18 students per class, quality teachers who are well trained and supported to fully maximize the benefits of a smaller class size, a span of at least three grade levels, and the inclusion of younger students (i.e. K-3)

Teaching Time

Working Definition

Because student academic outcomes are tied to teaching and pedagogical practices, it is reasonable to assume that the amount of time a teacher spends providing instruction can impact student achievement (Hattie, 2009). Much of the research on time focuses on *allotted* instructional time or the length of the school day, the amount time dedicated to *engaged* learning time (as opposed to taking attendance), and *actual* learning time (Aronson, Zimmerman, and Carlos, 2001).

For this component, we focused on research examining the latter two time constructs. First, we considered school-level policies that protected instructional time (i.e., not interrupting instruction time with announcements). Second, we considered research that examined how teachers managed their classrooms to maximize instructional time (i.e., minimizing disruptive behavior). Finally, we considered the impacts of the time students spent actively learning the curriculum.

Research Studies Reviewed

To best inform this topic, we focused on meta-analyses, literature reviews, and single studies that examined the relationship between instructional time and achievement. The studies found involved naturally occurring differences in the use of time or were descriptive or correlational in design. Although these provide some indication of relationships between programs and achievement, we cannot conclude that an approach causes improvement in student achievement.

Findings

The research supports the notion that achievement is not linked simply to the amount of allotted time for students to be in school but rather the amount of time students spend actually engaged in learning (Aronson, Zimmerman, and Carlos, 2001). Hattie (2009) describes time on task and its relationship to achievement (ES=.38). Hattie's review cites studies that found that approximately half of student time is not used efficiently. Thus, the issue becomes not about extending time in school, but rather, making student time more productive. Further, Fisher found many things that reduced instructional time in the school he studied. He argued that "simply using the full amount of time allocated could improve achievement and move this school from just about average to higher levels of performance." (Fisher, 2009, p. 173).

In one research study conducted in the Chicago Public Schools, teachers reported that there was not enough time available to teach students the required materials (Smith, 1998). In fact, the study revealed that in Chicago schools there is a considerable amount of time spent on "annual and daily start-up routines, special programs and events, holiday slowdowns, test preparation periods, and a steep drop in academic work during the last six weeks of the school year" (p. 3). The factors contribute to students receiving about 500 hours of instructions instead of the intended 900. Smith argues that several changes such as better time management and a longer school day could provide the necessary instructional time to improve achievement.

An additional distraction from teaching time is disruptive behavior. Schools and classrooms that support and stipulate policies describing rules and codes of behavior in a positive and productive way can facilitate the protection of instructional time. Research has shown that fewer disciplinary problems can relate to increased achievement and reduce achievement gaps (Borman & Rachuba, 2001; McCollum, 1995; Raudenbush & Bryk, 1989). When instructional time is protected, more time can be spent engaging students in learning, thus promoting academic achievement (Creemers, 1994; Hallinger & Heck, 1996; Heck, 2000; Marzano, 2000). Principals can actively support this effort by minimizing school level interruptions and reducing diversions that take away from instructional time thus improving student achievement (ES=0.24) (Waters, Marzano and McNulty, 2005).

Early Childhood Programs

Working Definition

Early childhood programs can provide a foundation for student learning and have the potential to support later academic growth. This report defines early childhood programs as those that support young students' academic growth through the first grade. Typically, research in this area focuses on several factors, including the amount of time children spend in education settings daily (full day versus half day kindergarten), the age and grade ranges of the students (preschool, kindergarten), and skill development (Hattie, 2009).

Research Studies Reviewed

Early childhood education has been studied extensively over the past several decades. We focused on meta-analyses, literature reviews and single studies that examined early childhood education and its relationship to achievement. It is important to note that most studies examined were of naturally occurring differences, descriptive or correlational in design. These provide some indication of relationships between programs and achievement but do not allow for conclusions regarding a direct

cause (Cooper, Allen, Patall, Dent; 2010). Early childhood programs may also impact social outcomes that ultimately mediate achievement (i.e. socialization, attendance, first grade readiness).

Findings

Children living in poverty more frequently suffer exposure to environmental stressors (i.e., unstable home life, higher neighborhood crime rates, and pollution) and often start school unprepared (Germeroth, Barker, Arens, & Xu, 2009). These children must rely on the public schools to help them "catch up" with their peer and early childhood programs often provide students opportunities to mend social and academic deficits.

Hattie (2009) found that preschool programs, including kindergarten, were moderately related to achievement (effect size of 0.50). However, these effects diminished over time which might suggest the need for ongoing support to maintain achievement levels in later grades (in Alexander, Entwisle, and Olson, 2007; Hattie, 2009; Germeroth et al, 2009). One exception to the diminishing effects may be for girls. In an extensive study of the effects of Head Start, researchers found that it improved achievement and social outcomes (i.e., reduced suspensions or expulsions) for girls ages 7-17 but not boys (Myungkook, 2010). More positively, Germeroth et al. (2009) cite research that suggests other academic and social outcomes such as grade retention and special education placement are reduced for students who attended preschool.

For kindergarten much research compares half versus full day programs. Cooper et al. (2010) found that children attending full day kindergarten (FDK) performed better academically at the end of the school year compared to their half day counterparts. They stress that more than simply adding time to the school day this creates additional opportunities for the school to provide specific programs. They also found that full day programs had a much greater effect for urban versus non urban students. However, the effects of FDK disappeared by the end of third grade (Cooper et al., 2010). This may indicate a true leveling off or may be attributed to other reasons. "FDK may not be the "magic bullet" that alters permanently poor and minority students' academic trajectories. Rather, with regard to academics, FDK is probably best viewed as one in a continuing series of interventions needed to alter the academic success of students who enter and continue in school with disadvantages." (Cooper et al., 2010, p. 66).

The nature and quality of early childhood programs are also important. Schools might look to specific programs such as scaffolding writing and reading to support the development of cognitive skills for young children which are derived from theoretically based research (Bodrova, Leong, Gregory & Edgereon; 1999; Leong, Bodrova, Hensen, & Henninger, 1999). Programs that offer analytic and problem solving in mathematics and evaluative feedback can also support student learning (Georges & Pallas, 2010; Stuhlman & Pianta, 2009). And finally, the What Works Clearinghouse offers program suggestions with demonstrated efficacy in improving achievement for kindergarten students including Little Books, Success for All, and Lexia (in Englert, Apthorp, & Seebaum; 2009).

Thus, the research suggests that there are benefits to most children in receiving early educational opportunities. The programs discussed above may work to address gaps in knowledge or fill in prerequisite skills for children in poverty. The research in early childhood suggests that while availability of programs is important, quality and content are crucial especially when at-risk children are often less likely to be placed in high quality programs (Germeroth, et al., 2009).

Student Access to Social Workers

Working definition

A main objective of "school social work is to remove barriers to a student's success in school." (Jonson-Reid, 2009, p. 67). For the purposes of this component, we considered a more liberal definition of social worker, to include school and community social workers, school counselors, and school psychologists.

Research Studies Reviewed

Because this is an emerging area of study, the research literature was limited in terms of the evidence linking social workers to student achievement (Kutash, Duchnowski, & Lynn; 2006). There is, however, a preponderance of research on the importance of adult support (e.g. mentors, social workers, guidance counselors and community members) on the academic achievement of students which indicates that programs can positively impact a range of student outcomes (i.e. social, health, and academic) (Greenberg, Weissberg, O'Brien, Zins, Fredericks, Resnik, & Elias, 2003). Other research focuses on the impact of specific programs (i.e., mental health services) on associated outcomes (i.e., decreasing substance abuse or depression). This presents a more complex and complicated body of research than simply examining student access to social workers and its relationship to achievement. Recent research does emphasize the importance of monitoring the impact that school social workers have on student learning, which may increase the amount of relevant information on this topic (Sabatino, 2009).

Findings

In a descriptive study, Fitch and Marshall (2004) found that schools with higher numbers of guidance counselors tend to be higher achieving. They also found that counselors in these schools spend more time with program management and ensuring that their programs meet professional standards. They caution that these schools tend to be more affluent which limits the generalizability of the findings. An additional study of schools that were making unexpected gains in student achievement showed similar results. Counselors in these schools were more likely to be part of the academic team and actively monitor all students' achievement. This allowed them to identify problems and provide mediation. Conversely, counselors in 'average impact' schools only met with students when there was an identified problem (Robinson, Stempel, & McCree; 2005)

Limited evidence of specific programs directed by or involving school counselors were found to be somewhat effective in improving achievement. For example, Diversi and Mecham (2005) found Latino students benefitted from an after-school program that provided support for students who were struggling academically and socially. The program provided support from guidance counselors and mentoring from college age students who had been trained in issues of culture and adolescent development. Ultimately, the participant students formed trusting relationships with the adult mentors and were able to improve their GPAs through empowering and engaging them in school (Diversi & Mecham, 2005).

Supplemental Learning Opportunities

Working Definition
This component area focuses on the effects of programs such as "summer school, extended-school-day programs, or extended-school-year programs" (Schoonover, 2010). The research literature expands this definition to include other relevant learning opportunities encompassing a variety of times such as before-school, weekend, and evening programs. Program content typically focuses on tutoring and mentoring that take place in a variety of settings such as schools, community centers, and churches (Princiotta & Fortune, 2009). An important goal of these programs is often to provide additional support for at-risk students because these "students are less likely than their more affluent peers to have educational resources outside of school and therefore may benefit more from increased school time."(Silva, 2007, p. 2).

Research Studies Reviewed
Supplemental learning opportunities have been the subject of much research and thus a productive body of literature describes and highlights the issues, and the associated program impacts. We focused on meta-analyses, literature reviews and single studies to provide a context for the topic and examined relationships between extended learning opportunities and the relationship to achievement. There are however few studies that permit making a direct relationship to indicate cause (Borman, Goetz & Dowling; 2009).

Findings
Research indicates that lengthening the school day or year may improve achievement by extending learning time (see also *Teaching Time*). School staff members in ninety percent of schools where the school day or year is lengthened report that the extended time is very important to meeting their educational goals (Farbman, 2009). In a limited data analysis, the Center for Time and Learning found a significant correlation between the length of the school day and achievement (.29-.43 for 7th and 10th grade reading and mathematics).

While extending the learning time can improve outcomes, "the critical factor for policymakers to consider is the *quality* of educational time [emphasis added]" (Aronson, Zimmerman, and Carlos, 2001, no page number). High quality extended learning opportunities (ELOs) provide promise in terms of improving multiple social and academic outcomes. However, ELOs that are poorly implemented and designed can negatively impact students (Princiotta & Fortune, 2009). In general, out-of-school or extended day programs should consider several factors to effectively promote student learning, such as a focus on improving academic achievement, providing instruction tailored to the needs of individual students, incorporating and continually monitoring the most promising programs, and developing a strong workforce (Beckett, Borman, Capizzano, Parsley, Ross, Schirm, & Taylor, 2009; Princiotta & Fortune, 2009).

Summer school
Summer vacation in America provides an extensive break from school in contrast with many of other countries. Students in the United States average 180 days of school per year, in comparison to Japan and South Korea, whose students attend school for 243 and 220 days, respectively (Alexander et al., 2007). The effects of the summer break have been well studied over the past two decades. In a rigorous meta-analysis, researchers showed decreases in achievement over the extended summer

vacation equating to a learning loss of about one month (Cooper, Nye, Charlton, Lindsay & Greathouse, 1996).

This achievement drop-off is especially evident for low-income students. Low-income students are at particular risk of summer academic losses because it is those students who rely most heavily on school to provide rich learning experiences (Alexander, et al., 2007). Over the summer break, "disadvantaged children essentially tread water" (p. 19) while their most well-off peers make consistent gains. In fact, researchers found that children of different economic backgrounds grow academically at the same pace while in school and thus they make the argument that the summer drop-off factors heavily into the achievement gap. This is "*a large enough difference to account for almost all the increase in the achievement gap across social lines registered during the elementary school years*" [italics added] (p. 19). Summer school offers a possible solution to mitigating the summer drop off and potentially reducing the achievement gap.

Specific summer school programs seem to have an important impact on achievement. In their comprehensive review, Cooper, Charlton, Valentine, Muhlenbruck, and Borman (2000) found the effect size of summer school to be small but meaningful at 0.2. Summer school programs were successful both in terms of advancing student knowledge as well as for remediating weaknesses. These effects were greater for higher achieving, high-SES students as compared with lower achieving, low-SES students. The effects of summer school can also impact the youngest learners. In a recent rigorous study, Borman, Goetz & Dowling (2009) found significant impacts of a summer school program for kindergarteners (adjusted effect sizes ranged from 0.36-0.51). Further, both parents and students viewed the program positively.

Extended day
Lauer, Akiba, Wilkerson, Apthorp, Snow and Martin-Glenn (2004) found that extended day programs had small but positive effects on students' achievement "overall effect sizes ranged from 0.06 to 0.13 for reading and 0.09 to 0.17 for mathematics" (p. 2). The Harvard Family Research Project (2008) cites additional research showing improvements in other outcomes when students attend extended day programs such as improved attitudes toward school, better attendance, higher homework completions, and lower dropout rates.

The impact of an extended school day is perhaps best exemplified by the Harlem Children's Zone. This broad program uses a "whatever it takes" philosophy when educating the high-risk students it serves (Tough, 2008). The approach includes providing a wealth of programs from early childhood through college. An important component is early-day, after-school, and weekend programs for academic tutoring and mentoring. Research on the program is still in its early phases but the results are promising because they have essentially eliminated the Black/White achievement gap by increasing student achievement by an impressive 1.3-1.4 standard deviations (Brooks, 2009).

Year-Round and Extended-Year Schools
Many school districts are moving to year round schools as a means of alleviating overcrowding as opposed to specifically improving student learning and while these schools don't necessarily increase the number of days students are in school, they do provide for shorter vacation periods. Given the focus of this policy on reducing crowded schools, the research on the impact on student achievement is sparse. Some research does indicate schools with an altered schedule (e.g., year-round or extended-year) have decreased the summer achievement drop-off and improved academic outcomes (Silva, 2007). These programs are not without controversy, however. In one example,

Edison schools found that extending the school year was too expensive and was resisted by both students and teachers. They instead switched to extended-day practices to provide additional instructional time (Silva, 2007).

Mentoring Teachers

Working Definition
Communities of teachers within schools can provide supportive structures for new teachers. Mentoring and coaching offer a structure for teachers that allows for collaboration, sharing, and critiquing (McREL, 2005). This may be crucial to teachers in schools serving at-risk students. "Indeed, we find that a "support gap" exists: new teachers in low-income schools receive significantly less assistance in the key areas of hiring, mentoring, and curriculum than their counterparts working in schools with high- income students." (Johnson, Kardos, Kauffman, Liu, & Donaldson, 2004, p. 2).

Research Studies Reviewed
We found limited research on this topic related to student achievement: only one literature review and several single studies. Thus, we included some studies that focused on other outcomes that might indirectly influence achievement (i.e., changes in teacher practice and teacher retention). Many of these studies examined naturally occurring differences (e.g., descriptive or correlational), which provide some indications of relationships between programs and outcomes but a causal relationship cannot be made.

Findings
In an extensive literature review on mentoring and related outcomes, Ehrich, Hansford, Tennent (2004) examined 300 research articles. These included studies in different fields such as business, medicine, and education to understand outcomes for both mentors and mentees. In general, they found that positive outcomes included collegiality, increased reflection, and professional growth. The researchers also noted negative program perceptions from participants including a lack of time and poor mentor/mentee matches either professionally or personally.

While studies examining the impact of mentoring on student achievement are few (Fletcher & Strong, 2009), there are some indications that specific types of mentoring may have some positive effect on achievement. Fletcher and Strong (2009) found that when mentors were fully released from teaching, the students of the mentees had greater academic gains than expected relative to mentors were not released from teaching duties. Additional research finds "strong relationships between measures of mentoring quality and teachers' claims regarding the impact of mentors on their success in the classroom, but weaker evidence of effects on teacher absences, retention, and student achievement" (Rockoff, 2008, no page number).

Changing teacher practices can be difficult, and research confirms that mentoring is a complex construct that requires a range of skills and training to maximize mentors efficacy (Hobson, Ashby, Malderez, Tomlinson, 2009). The perceptions held by mentors may be influenced by the kinds and quality of mentoring experiences they have had and thus, selection of the appropriate mentor is critical (Murdock & Maor, 2009). Mentors not only need to be effective teachers, but also good

leaders and communicators in order to provide the necessary support for novice instructors (Rowley, 1999).

Professional Development

Working Definition
Professional development (PD) encompasses a range of programs and policies to promote educators' knowledge. High quality and sustained PD may improve teacher and administrator practices which in turn can promote student learning. When considering PD, we included research based on improving the practice of teachers and administrators in the field as opposed to pre-service programs and undergraduate or graduate programs embedded within a school or department of education.

Research Studies Reviewed
We focused first on meta-analyses, literature reviews, and single studies that examined PD for teachers and administrators and its impact on student achievement. Many studies on PD focus on changing educator behaviors and knowledge and not on how the PD mediates changes in student learning. Therefore, the research in this area is not as extensive as might be expected.

Findings
Without question, teachers and school leaders play a central role in student achievement. Research indicates that the overall quality of a teacher has the biggest impact on the educational experience of students (Levin & Quinn, 2003). In a comprehensive meta-analysis of school factors correlated with student achievement, Marzano (2000) found that teacher practices account for almost twice the variance in student achievement relative to other school wide practices. Further, Waters, Marzano, & McNulty (2003) found an average effect size between principal leadership and student achievement of 0.25. According to Leithwood, Day, Sammons, Harris, & Hopkins, (2006) "There is not a single documented case of a school successfully turning around its pupil achievement trajectory in the absence of talented leadership" (2006, p. 5). However, research indicates that few qualified and experienced educators are willing to teach at-risk students (Birman, Boyle, Le Floch, Elledge, Holtzman, Song, Thomsen, Walters, & Yoon; 2009; Englert, Apthorp & Seebaum, 2009). PD offers a means for improving the capacity of educators currently teaching in high poverty schools.

Often, research on professional development focuses on changing educator behavior and practice arguably important mediators of student achievement (Hattie, 2009). In research that focuses on changes in student achievement, a medium effect size of 0.62 results with effects being higher for at-risk students (Hattie, 2009). Blank and de las Alas (2009) also found lower but still significant and positive effects of PD on student achievement in their meta-analysis (ES=0.16-0.21).

Limited research has been conducted on the specific effects of PD on achievement for at-risk populations. However, in a review of literature on the topic, Englert, Apthorp and Seebaum (2009) concluded that training of teachers of English language learners and minority students might include factors such as ways teachers can incorporate students' culture and language in the classroom in order to make instruction relevant to students. Further, PD should educate teachers about ways students learn (i.e., what student mistakes might be attributed to language deficiencies rather than content knowledge) (Hill & Flynn, 2006; Waxman & Tellez, 2002).

The quality of the PD also is critical. The meta-analyses indicate that PD is most effective when it is sustained over a period of time, is provided by external experts, develops knowledge and abilities specific to improving student achievement, is content specific, provides support from mentors or colleagues, and increases teachers conceptions about what students can learn (Hattie, 2009; Blank & de las Alas, 2009). Other researchers add that PD should be coherent, and provide opportunities for active learning such as observing and being observed (U.S. Department of Education, 2009; National Staff Development Council, 2001).

While the importance of strong building leadership is well documented in the research literature (Marzano, Waters & McNulty, 2005), PD strategies to support and develop administrators are limited (Gilrane, Russell, & Roberts, 2008). Some research suggests the importance of PD for leaders should be based on a few core elements. For example, the Wallace Foundation (2008) listed instructional leadership as one of the most important areas for providing professional development to school leaders with regard to school improvement. Leadership PD should also emphasize researched based instructional strategies and "a deep understanding of teaching, learning, and school improvement." (National Institute on Educational Governance, 1999, p. 13). Further, evidence specific to the importance of leader PD in high-poverty school districts indicates that principals trained to build instructional knowledge, conduct classroom observations, and provide feedback to teachers on instruction were more likely to improve student achievement (Togneri & Anderson, 2003).

Discussion

This document provides a general overview of some important areas for consideration in improving high poverty schools. The literature reviewed represents only a fraction of available research, and readers are encouraged to directly read the cited articles and explore additional sources for further information. It is also important to note that the quality and quantity of the research varied considerably across the components. For example, for the component, *Access to Social Workers,* limited information and research was available. This limitation should not necessarily be interpreted as an indication of a lower effect but rather the need for more research in this area. Because the quality and quantity of research varied, readers are cautioned against making comparisons of effect sizes across components.

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