McREL'S STUDY OF ACADEMIC SUCCESS IN HIGH NEEDS SCHOOLS: Mid-point Progress and Measurement Viability

Regional Educational Laboratory
Contract #ED-01-CO-0006
Deliverable #2004-11

Prepared by
Helen Apthorp, PhD,
Principal Researcher

Zoe Barley
Kerry Englert
LeAnn Gamache
Patricia Lauer
Becky Van Buhler
Mya Martin-Glenn

November 30, 2004

This document has been funded at least in part with federal funds from the U.S. Department of Education under contract number ED-01-CO-0006. The content of this publication does not necessarily reflect the views or policies of the Department of Education nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

TABLE OF CONTENTS

FOREWORD

This technical report summarizes the progress and preliminary analyses to date for McREL's study of academic success in high-needs elementary schools. Included are descriptions of sampling, participant recruitment, and data collection procedures; summaries of measurement viability findings; and a discussion of data analyses plans. The report concludes with an outline of next steps to project completion planned for 2005.

Last year at this time, McREL submitted the design for this phase of the work which extends a line of research begun as pilot studies in 2001. Additionally, it included the review of four sets of research literature, each related to a different component of school effectiveness. Integrating the four sets of literature, the team developed a comprehensive model of academic success in high-needs elementary schools. Reviewers of the proposal affirmed the value of the research and the soundness of the research design and made useful suggestions for several of the model subcomponents and sampling procedures.

In 2004, the reviewer comments were incorporated into the model, the data collection, and sampling plan. Pools of schools from which to recruit study participants were identified, participants recruited, data collected, and preliminary measurement viability analyses were conducted. Since data collection is still in progress, there are no findings to report yet. Thus, this report serves as an internal document reporting on progress in 2004. As such, the intended audience for this report is primarily the research team, providing an opportunity to take stock of the work in progress, and IES staff.

INTRODUCTION

> *The goal of the No Child Left Behind Act parallels what educators have long set their sights on: to equip every child with the knowledge and skills necessary for success in future schooling and in life (Cicchinelli, Gaddy, Lefkowits, & Miller, 2003, p. 7).*

The goal of the No Child Left Behind (NCLB) Act of 2001 is for all students to demonstrate proficiency in reading and mathematics by 2014. The goal is to be met incrementally by students achieving a prescribed level of progress each year. In 2002-2003, over 25,000 schools did not reach their target for annual yearly progress (AYP) (Quality Counts, 2004). To expand the research base available to educators to guide their efforts to improve student achievement in high-poverty schools, Mid-continent Research for Education and Learning (McREL) is conducting a multistate study of academically successful high-needs schools.

This report provides a summary of progress to date on the study of academic success in high-needs schools and is intended for use by the research team and IES staff. The report begins with a history of the project's origins and a brief review of pilot study findings. The Introduction concludes with an overview of the conceptual framework and the research design. The following section summarizes project accomplishments during 2004 in three areas: sampling, data collection, and measurement viability. In the third and final section of the report, a brief status update and steps to project completion are presented.

PROJECT ORIGINS AND PILOT STUDY FINDINGS

This project was launched in response to the needs of educators for research-based knowledge about academic success in high-poverty schools. Pilot studies were conducted in 2000 and 2001 in 18 elementary schools from two Central Region school districts. All schools in the study were identified as "high needs" based on the criteria that 50% or more of students enrolled were eligible for free or reduced-price lunch. The sample was divided into two groups — one is high performing (with a percentage of students demonstrating proficiency in reading and mathematics at or above state average) and the other low performing (with a percentage of students demonstrating proficiency in reading and mathematics below state average). Several features distinguished the high-performing (HP) and low-performing (LP) high-needs schools.

- Teachers in HP schools demonstrated a stronger sense of responsibility for student learning than teachers in low-performing (LP) schools (Lauer, 2001).

- High-performing (HP) schools provided teachers with Significantly more professional development focused on content standards and diverse learners compared to LP schools (Lauer, 2001).

- Teachers in HP schools compared with LP schools more frequently reported using adaptive instructional practices, including leveled books in reading, as well as tutoring to individualize instruction in both mathematics and reading (Akiba & Apthorp, 2003; Apthorp, 2002).

The distinguishing features of high-performing, high-needs (HPHN) schools in this study — a strong sense of responsibility for student learning, attention to diverse and individual student learning profiles, and an emphasis on content-focused professional development-- are consistent with school-level correlates of academic achievement found in other research (Garet, Birman, Porter, Desimone & Herman, 1999; Goddard, 2001; Hill & Rowe, 1998).

CONCEPTUAL FRAMEWORK AND RESEARCH DESIGN

Subsequent to the pilot studies in 2002-2003, a more systemic view of school success was adopted and four sets of research literature were reviewed and integrated to propose a comprehensive model of how schools are organized for academic success. The model included four key components and posited relationships between the components and a school's academic performance. The model's conceptualization and research base were presented in this study's design proposal prepared last year (Apthorp, 2003). Figure 1 shows the second iteration of the model as revised in response to reviewer comments.

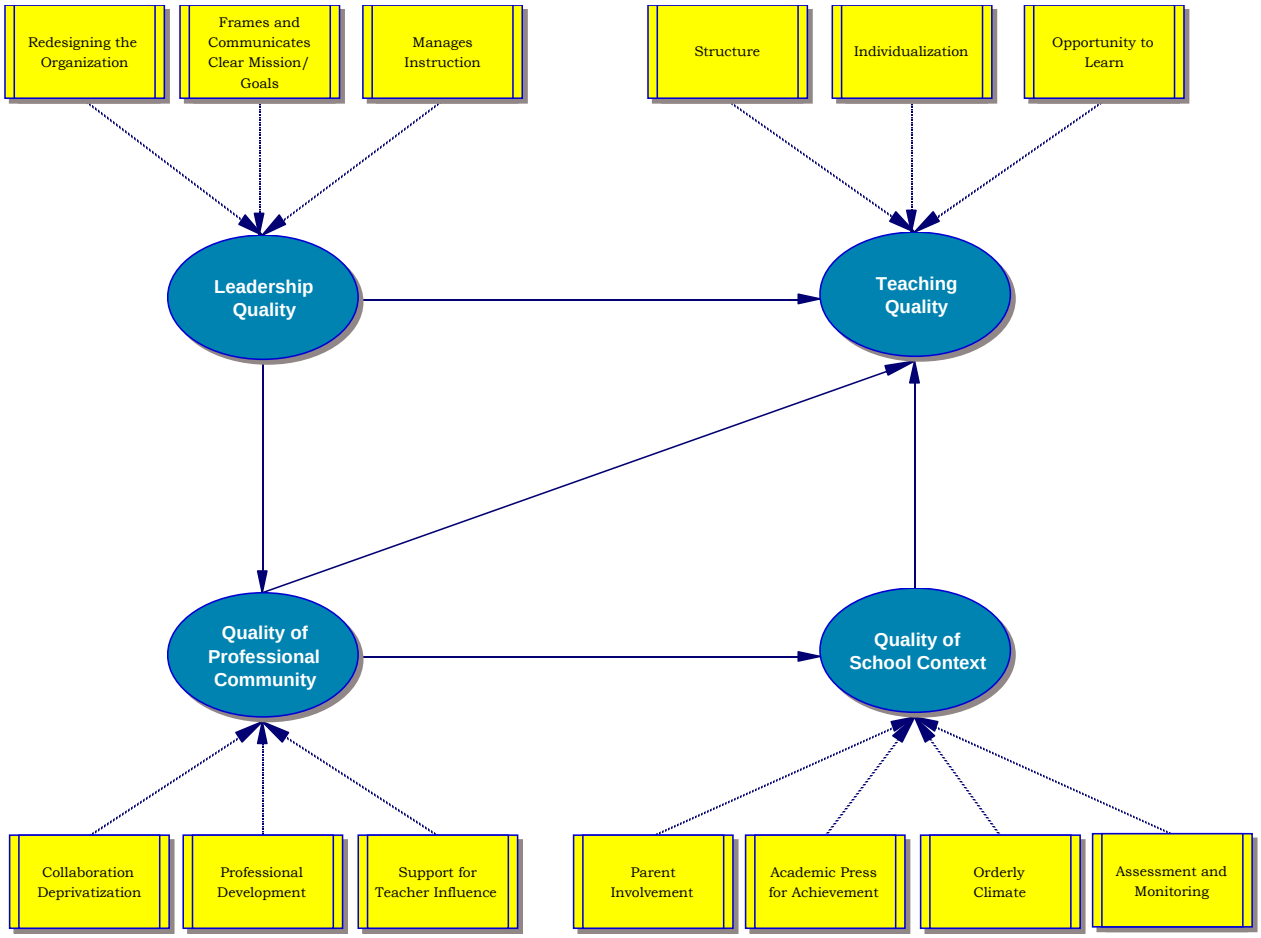

Figure 1. Conceptual model of academic success in high-needs elementary schools.

As shown in Figure 1, the four key components of the model are School Environment, Leadership, Professional Community, and Instruction.[1] In 2003, a nonexperimental quantitative comparative study design was proposed to examine the adequacy of the model (Apthorp, 2003). This design is appropriate for studying relationships between a presumed cause and effect when both are identified and measured but in which other structural features of experiments are missing, such as random assignment (Shadish, Cook, & Campbell, 2002). The design for this project addresses two main research questions which are:

[1] Changes from the original model are in how we define Instruction. Whereas in the original version (see Apthorp, 2003), Structure and Individualizing were not differentiated, in the current model, each are considered separate subcomponents.

1. How do each of the four key components of Leadership, Professional Community, School Environment, and Instruction contribute to school-wide performance in high-needs schools?

2. What is the configuration of relationships among the key components that differentiates high-performing, high-needs schools from low-performing, high-needs schools?

External reviewers provided feedback on the 2003 research proposal, affirming the general soundness of the design, identifying particular aspects of model components that needed clarification, and reiterating the importance of verifying assumptions about the two-group sample proposed for the comparative design. In 2004, we incorporated reviewer suggestions into our sampling procedures and model and instrument development. We established a two-group sample, developed and refined a Teacher and Principal Survey, and collected data. The procedures and results of each of these tasks are described in the following sections of this report.

PROJECT ACCOMPLISHMENTS 2004

In 2004, sampling procedures were implemented and survey instruments were developed. Pools of HP and LP high-needs schools were identified, study participants recruited, teacher and principal data were collected, and measurement viability examined. In this section, challenges and accomplishments with regard to implementation of each of these aspects of the project design are reported.

SAMPLING

Having selected a nonexperimental quantitative comparative study design, a multistage sampling process was proposed (Apthorp, 2003). This process was used to (a) identify high-performing (HP) and low-performing (LP) high-need schools, and (b) create two demographically comparable groups of schools (HP and LP).

High-need schools were defined as high poverty, where high poverty was operationalized as 50%[2] or more of students were eligible for free or reduced-price lunch (FRL). To identify a pool of high-need elementary schools, states for which fourth-grade assessment data in both reading and mathematics were available across three consecutive years were examined first (2000, 2001, and 2002). Eleven states met this criterion (Colorado, Ohio, Georgia, Kansas, Michigan, Minnesota, Missouri, New Jersey, Oregon, Virginia, and Texas). Using the high-needs elementary school populations within each state, a multiple regression analysis was conducted to identify pools of HPHN and LPHN schools. Finally, individual schools were recruited to participate from each state pool of HPHN and LPHN schools.

Identification of HPHN and LPHN Schools

To prepare data for identifying HP and LP high-needs schools, several steps were used. School performance status was calculated (HP or LP). That is, the average percentage of students scoring proficient and above in reading and mathematics in each school identified as high-needs for each of three years (2000, 2001, and 2002) was determined. Correlation coefficients between percentage of students proficient in reading and mathematics were computed to assure that collapsing across reading and mathematics did not mask uneven levels of performance in a given year. In each case, these correlation

[2] Other researchers define high poverty as 75% or more FRL students (e.g., Puma et al., 1997); however, Puma's more stringent definition unduly constrains the sample. A criterion of 50% or more FRL students, nationwide, encompasses 35% of all elementary schools (U.S. Department of Education, National Center for Education Statistics, 2003). A criterion of 75 percent or more FRL students encompasses only 18% of all elementary schools.

coefficients were significant ranging from a low of .55 to a high of .93 (see Table A-1 in Appendix). This suggests that by collapsing performance across two core subject areas, the criterion variable (i.e., school performance) reflects a uniformly high or low level of performance, not that of reading or mathematics alone.

To identify HPHN and LPHN schools, two school composition variables and one community variable were used as predictors of performance status in a multiple regression. Schools whose performance was above (HP) or below (LP) the level predicted were labeled as high- and low-performing, respectively. The predictor variables were selected based on the findings of prior research that identified them as strong predictors of achievement (Heck, 2000), including socioeconomic status (the percentage of students eligible for free or reduced-price lunch (FRL), percentage of minority students, and locale.[3] School data on FRL (2000, 2001, 2002), percentage of minority students (2000, 2001, 2002), and locale were collected from state Departments of Education or in some cases from Common Core data. The average percentage of FRL and the average percentage of minority students were calculated across these three years.

The regression formula was applied to the high-needs schools in each of the 11 states. To identify schools whose performance was above or below the level predicted by the regression, a +.75 residual was used to define HPHN schools and a -.75 residual to define LPHN schools. Use of $\pm$ .75 residuals as the cutoff points has been recommended for creating consistent school effectiveness indices (Crone & Teddlie, 1995). The last step was to eliminate the bottom one third of schools from the HPHN group and the top one third of schools from the LPHN schools based on achievement levels in order to minimize potential overlap. This process yielded a pool of 739 HP and 738 LP schools across the 11 states (for number of schools in each state pool, see Table A-2 in Appendix).

Participant Recruitment

In each school, all teachers and the principals were invited to participate in either the teacher or principal survey. For the purposes of this study, teachers were defined as professionals who provide student instruction as their primary responsibility in either classroom or small group pull-out sessions. This includes special teachers (e.g., music, PE, computer lab, etc.), English as a Second Language (ESL) teachers, Title I teachers, reading teachers, reading or mathematics coaches, and long-term substitute teachers. This definition does *not* include professionals who provide related and/or health services, such as school psychologists, nurses, guidance counselors, speech and language pathologists, or parent liaisons/coordinators.

Participant recruitment began in December 2003 in five of the 11 states and proceeded in three stages. First, district superintendents were contacted through a mailing which was then followed up by phone calls to inform them of the purpose and nature of the study and to ask their approval to contact principals directly. Our correspondence included a list of the possible high-needs elementary schools in the superintendent's district, but did not identify performance categories (HP or LP). Second, and with approval from the district superintendent,[4] principals were invited to participate. Principals either agreed or declined the offer. Participating principals were asked to nominate a site liaison who assisted with data collection. Third, individual teachers were asked for their informed consent to participate.

---

[3] Other variables which describe the composition of a student population and predict achievement include prior achievement, gender, language background, and proportion of special education students (Heck, 2000). The possibility that these variables serve as alternative explanations of observed performance levels will be considered during the data analysis process.

[4] When required, approval to conduct the study also was ought from district research review committees.

Study participation was voluntary, although follow-up opportunities were offered and incentives provided to encourage participation, including:

- an opportunity to contribute evidence to research-based knowledge;
- a minimal data collection burden (no survey distribution; no classroom observations or administration of student assessments; a one-time survey to be completed online at the respondent's convenience);
- a summary report of the study's findings;
- a $30 gift certificate from a national book store for site liaisons;
- a chance for teachers to win a gift certificate from a national book store;
- a $1 gift certificate per teacher to local fast-food restaurant; and
- copies of selected McREL professional publications.

To encourage high-response rates per school, graduated incentives were provided. At minimum, the site liaison's $30 gift certificate was made contingent on a 75% response rate. Response rate was defined to include teachers who declined to complete the survey as well as those who agreed to complete the survey. The second-tier incentive was contingent on an 80% survey completion rate (not counting recorded decisions not to participate). To schools reaching the 80% survey completion rate, two professional products valued at $70 each were provided: *Teaching Reading in Social Studies* by Doty, Cameron and Barton (2003) and *Teaching Reading in Mathematics* by Barton and Heidema (2002). The goal for within school response rate was 70%.

At each potential site location, principal recruitment began as soon as approval from the district was obtained. As soon as approval from the principal was obtained, teacher recruitment began. By April 2004, not enough superintendents and principals had agreed to participate as planned.[5] At least 30 to 50 between-level units (schools) are recommended for multiple group, multilevel modeling (Muthen & Muthen, 2003). Therefore, a second recruitment effort was initiated during the summer of 2004 in the remaining six states (see Table A-2 in Appendix for a list of these six states). Some districts contacted in the spring required more time to respond and their schools became part of the second set of schools.

Thus, data were collected in two waves with two corresponding windows open for access to the online surveys. Initial recruitment efforts resulted in Wave I data being collected from March 1 to June 30, 2004. The second recruitment efforts will result in Wave II data collected from August 23 to October 31, 2004.

DATA COLLECTION

In both Wave I and II of data collection, the site liaisons selected by principals to assist with data collection supplied McREL researchers with a list of teacher and principal e-mail addresses. E-mail invitations and informed consent letters, with the Teacher Survey or Principal Survey, were sent electronically to each teacher and principal respectively. The content of the surveys used in both waves of

[5] The most common reason for declining to participate was a prior commitment to another data collection effort, usually part of ongoing school improvement initiatives (such as Reading First or Comprehensive School Reform) or for accountability or accreditation purposes at the state and/or national levels.

data collection was identical. All respondents were asked to answer questions about activities and practices at their school during the 2003-2004 year. The collection and analysis of Wave II survey data from teachers and principals is now nearing completion.

In Wave I (March 1 to June 30, 2004), data were collected from 38 schools in five states (Michigan, Minnesota, Ohio, Oregon, and Texas). These data were supplied by 25 HP and 13 LP schools. The median number of total teachers per HP school was 21, ranging from 5 to 59. The response rate for teachers in the HP schools ranged from 6% to 100%, with a median of 57%. The median number of teachers per LP school was 22, ranging from 16 to 28. The response rate for teachers in LP schools ranged from 19% to 83%, with a median of 50%.

In all, 449 teachers completed the Teacher Survey and 19 principals completed the Principal Survey. The majority of Wave I teachers (64%) are regular classroom teachers either teaching in the primary, intermediate, or all elementary grades (43%, 39%, and 18%, respectively). The majority (68%) holds a professional certification to teach and all of the respondents, except for one, hold a bachelor's degree. In addition, 44% hold a master's degree and 21% have an education specialist degree. The average number of years teaching is 14 years, with an average of eight years teaching in their current school. Of the 19 Wave I principals who completed the Principal Survey, all hold a principal's certification from their state and a master's degree. None have doctoral degrees. On average, these principals had worked as principals for 12 years, and in their current schools as the principal, on average, for approximately seven years.

MEASUREMENT VIABILITY

Because Wave II data collection and analysis are still in progress, Wave I data were used to examine measurement viability for representing model components and subcomponents. Measurement viability will be reexamined as Wave II data become available. Additionally, as Wave II data become available, assumptions about sample size and characteristics critical to the conduct and interpretation of analyses planned for examining the posited model will be reexamined.

Constructs

Teacher and principal surveys were developed with sections corresponding to each of the key components and related subcomponents identified in the model (see Figure 1). An extensive literature review informed how we crafted the scope and substance of item clusters in each section. A summary of the research literature, originally reported in the study design proposal (Apthorp, 2003), is presented below. In the summary, we define each of the key components, School Environment, Leadership, Professional Community and Instruction, and explain each one's related subcomponents.

School environment. School environment refers to those school-level variables that relate directly to the school environment and cannot be ascribed to a particular position (i.e., teachers, curriculum coordinators, or principals). Rather, these variables reflect policies created at the school, district, or community level that impact the entire school faculty, parents, and students. Four subcomponents define school context.

Assessment and monitoring is defined as an evaluation policy and monitoring system used at all levels and includes testing, identifying learning problems, and providing remediation (Teddlie & Reynolds, 2000; Creemers, 1994). This *assessment and monitoring* system helps teachers focus on important core goals, monitor progress, and provide remedial assistance (McCollum, 1995; Mortimore, Sammons, Stoll, Lewis, & Ecob, 1989; Taylor, Pearson, Clark, & Walpole, 2000).

Academic press for achievement is defined as a school-wide orientation towards high expectations for all students. *Academic press for achievement* is evident in clear academic goals, appropriate use of

homework, and the use of records to monitor student progress toward mastering basic skills (Creemers, 1994; Marzano, 2000). As an indication of the importance of *academic press for achievement*, teachers in effective schools spend substantially more classroom time on academic content than teachers in ineffective schools who instead spend more time managing nonacademic activities, such as preparing for recess and lunch and fundraising (Teddlie, Kirby, & Stringfield, 1989).

Safe and orderly climate is one of the most important variables in helping low-achieving students succeed in school (Borman & Rachuba, 2001). When a school reports fewer incidences of disciplinary problems, there is a decrease in achievement gaps between white and minority students (Raudenbush & Bryk, 1989). A school with an *orderly climate* has policies in place that clearly articulate rules and codes of behavior along with associated rewards and punishments. Faculty and staff practice "thoughtful prevention" of disruptions and are consistent in the way they enforce rules and punishments (McCollum, 1995). This does not mean that the school has a strictly negative or severe environment but, rather, that positive and open interactions between staff and students are encouraged (Rutter, Maughan, Mortimer, & Ouston, 1979; Creemers, 1994; Hallinger & Heck, 1996; Heck, 2000; Marzano, 2000).

Productive parental involvement refers to positive and productive relationships between the school's staff and students' parents. This is indicative of effective schools (Teddlie & Reynolds, 2000). Parents are involved in the school and their voice is present in the school culture and operating principles. In order to accomplish effective *parental involvement*, there must be good written exchange between schools and parents, a parent involvement policy, parent training, and easy access to administrators and teachers with an informal open-door policy (Mapp & Henderson, 2002; Mortimore et al., 1989).

Leadership. As portrayed in recently completed reviews, leadership has three critical effectiveness elements: setting directions, developing people, and redesigning the organization (Leithwood, Louis, Anderson & Wahlstrom, 2004; Marzano, Waters & McNulty, in press). Each of these elements is included in the model's three subcomponents of Leadership as defined and explained below.

Framing and communicating a common mission deals with setting direction. Leadership clearly defines goals that determine the areas in which school staff expend their resources. The focus is on linking beliefs and actions in the school, for example, academic expectations, opportunity to learn (OTL), and time for learning. The principal's values and beliefs are known to teachers and are aligned with the mission and goals. The mission and goals are a prominent part of the day-to-day operation of the school. School goals consistently show up as a significant factor contributing to principals' impact on student achievement (Hallinger & Heck, 1996).

Manages instruction refers to developing and allocating the human and material resources necessary for student learning through governance, school climate and instructional organization (Heck, Larson & Marcoulides, 1990). It includes monitoring and supporting the day-to-day work of teachers in classrooms and ensuring that curriculum, assessment, and instruction are aligned. The principal must be visible and supportive in classrooms, maintain information on student performance that can translate into school and classroom practices, and make available and effective use of instructional support personnel (Levine & Lezotte, 1990).

Redesigning the organization is a function of leadership that is necessary in a high-needs school in order to "beat the odds." This involves modifying school policies, structures, and culture to enable change. The principal must draw on a wide array of knowledge, skills, and tools to accomplish change: incentives and disincentives to make changes aligned with high performance, knowledge and ability to communicate the research basis for changes, willingness to take risks and support teachers in trying new things, and the ability to generate quick wins and sustain the long march to improvement. Levine and Lezotte (1990) also suggest that *redesigning the organization* involves vigorous selection and replacement of teachers,

"maverick orientation," and buffering (i.e., stepping into the middle to release tension, high expenditure of time and energy for school improvement actions, and acquisition of resources).

Professional community. Professional community is defined by shared norms and values, collective focus on student learning, collaboration, deprivatization of practice, and reflective dialogue (Louis, Marks, & Kruse, 1996; Newmann & Wehlage, 1995; Newmann, King, & Secada, 1996). "These elements do not constitute a hierarchy, and school-wide professional community demands at least a minimal level of each of the elements." (Louis, Marks, & Kruse, 1996, p.760). From this and other research on professional community, professional community is defined by three subcomponents: professional development, collaboration and deprivatization, and support for teacher influence.

Professional development within a community of learners as an important aspect of professional community (Smylie, Allensworth, Greenberg, Harris, & Luppescu, 2001). Research supports the importance of two quality features: collective sustained participation (Garet, Birman, Porter, Desimone & Herman, 1999; Newmann & Wehlage, 1995) and reflective dialogue. Reflective dialogue allows teachers to think about, analyze, and share knowledge related to instruction, curriculum, and student learning, which leads to a deeper understanding of teaching (Louis et al., 1996; Secada & Adajian, 1997; Bryk, Camburn, & Louis, 1999).

Collaboration among teachers fosters the sharing of work and expertise, as well as a sense of affiliation and support (Louis et al., 1996; Secada & Adajian, 1997; Newmann & Wehlage, 1995). Work culture is more collaborative in high-performing compared to low-performing schools (Bruner & Greenlee, 2000). Research also indicates that teachers in professional communities are encouraged to work together in one another's classrooms (*deprivatization of practice*) by interacting with one another, observing, mentoring, providing feedback, and sharing expertise (Louis et al., 1996; Bryk et al., 1999).

Support for teacher influence refers to teacher empowerment. Principals and administrators share leadership with staff and create shared ownership with teachers around norms, values, mission, and expectations (Hord, 1997; Louis et al., 1996). In order to accomplish this, democratic school structures are put in place and *teachers have freedom and influence* to respond to issues and offer input (Newmann & Wehlage, 1995, as cited in Louis et al., 1996). A climate of respect from the community, colleagues, and leaders for teachers' input regarding the learning environment supports and sustains this element of professional community (Louis et al., 1996; Bryk et al., 1999).

Instruction. In a standards-based system, instruction is defined by three subcomponents: structure, individualizing, and challenging opportunities to learn. Structured teaching clarifies for students what they should know and be able to do and whether or not they are progressing toward these goals. Individualizing instruction allows every student to begin where they are and learn what they need to become proficient. Challenging opportunities to learn reinforce high expectations and prepare students for unanticipated circumstances in later schooling and in life.

Individualizing instruction involves making a concerted and caring effort to assist rather than dismiss struggling learners (Weber, 1971). *Individualizing instruction* appropriately is closely related to the concept of effective learning time. When time spent on learning is equal to time needed to learn, time is used effectively and achievement growth is likely. As shown in Hill and Rowe's (1998) research, "students make the greatest progress when instruction is pitched at the right level for each individual" (p. 327). Syntheses of research on effective schools confirm that *individualizing instruction* is a significant correlate of academic achievement (Schreerens & Bosker, 1997; Waxman, Wang, Anderson & Walberg, 1985).

Structure in teaching involves communicating clear learning goals, directing student attention to the goals, modeling, scaffolding and cuing student approximations, encouraging students' active engagement, detecting and correcting errors or misconceptions, and appropriately reinforcing students to confirm that what they have learned is important. Research across core subjects in elementary schools, in general and in schools serving low-income students in particular, has consistently shown that a *structured approach to teaching* is associated with greater achievement (Baker, Gersten & Lee, 2002; Good & Brophy, 1986; Fraser, Walberg, Welch & Hattie, 1987; Heistad, 1997; National Reading Panel, 2000; Walberg, 1990).

Challenging opportunities to learn refers to students' frequent engagement in higher-order thinking and problem solving activities. Researchers Teddlie and Reynolds (2000) found that the ability to instill in students a belief that they could learn was critical to the success of low-SES, effective schools. Balancing attention to mastery of basic skills with attention to development of advanced or higher-order thinking is important (D'Agostino & Hiestand, 1995; Knapp & Associates, 1995; Lauer, Palmer, Van Buhler & Fries, 2002; Puma, Karweit, Price, Ricciuti, Thompson, & Vaden-Kiernan, 1997; Wenglinsky, 2003).

Clusters of survey items were crafted from the literatures summarized above to reflect the subcomponents of each key component. The School Environment and Leadership components are addressed in both the Teacher and Principal survey. The Professional Community and Instruction components are addressed only in the Teacher Survey. Item format for the model component sections is a Likert-type scale with responses representing "to what extent" or "agree/disagree" continuums. Survey directions ask respondents to answer the questions in terms of activities and practices at their school during the past school year (2003-2004).

An additional section in each survey asks about the respondent's background, including education level, areas and levels of certification, and years working in their respective position and school. In addition, the Principal Survey includes a section that asks about school funding sources and school programs, in particular, the use of school-wide reform strategies, preschool, tutoring, reading and math curricula/programs, and professional development. Item format for the background and school program sections require yes/no responses, "check all that apply" or fill in the blank.

In December 2003, field tests of each survey instrument were conducted to determine length of time to complete and evaluate and improve clarity of item wording. In January 2004, 60 teachers in four high-needs elementary schools participated in a pilot-test of the Teacher Survey. Reliability analyses on each subcomponent set of items showed adequate internal consistency (i.e., coefficient alphas were .70 or greater) except for one subcomponent. Item revisions were made to improve the one subcomponent set of items prior to collecting Wave I data.

Procedures and Results

For the Wave I data from the teacher and principal survey, classical item analyses were conducted using LERTAP (Nelson, 2000) for the total set of items and for each intended subset of items. At the item level, results were examined to assess the distribution of responses across the response scale. To address the possibility of differential effects of a systematic positive response across items, responses were transformed to nine category z-scores for each item based on the mean and standard deviation. This transformation allowed interpretation along a common scale and ensured that each item reflected the equal weighting in the aggregation for each subscale as intended, based on the current research in this area. Additionally, this helped to ensure the intended placement of the subscales within composite scales. The appropriate subscale scores were then summed to create each of the composite scale scores.

Appropriate use and interpretation of the results of any measurement depend on the extent to which the resulting data reflect the intended construct rather than extraneous characteristics or random variability.

For the intended use of survey results in this study, a primary concern is the appropriate operationalization of the underlying constructs. The intended scope and content of the sets of survey items, the clustering of items into subscales, and the weighting of the subscales for the composites were derived from extensive review of the research literature as summarized above. Based on this information, items were equally weighted within subscales and subscales were summed to yield an unweighted composite.

Generally, reliability is deemed a prerequisite condition for the relevance of a measurement; thus, measures exhibiting low reliability limit the relevance, usefulness, and validity of the results. Because the magnitude of the differences, if any, is unknown for the populations represented by this study, measurement precision and reliability were intended to be maximized in order to be sensitive to small variations in the constructs to be measured. While certain indices of reliability include estimates of variation over time/occasions as well as across items, Coefficient Alpha is often used for surveys such as those employed in this study. This index theoretically ranges from 0.00 to 1.00 and enables calculation of the standard error of measurement (s.e.m.), which provides an estimate of the magnitude of the "grain of salt" to use when interpreting composite scale and subscale scores.

Teacher survey reliability and validity. Information about the reliability of the teacher survey results for the 449 responding teachers is provided in Table 1. As shown in Table 1, all four composite scales evidenced high levels of reliability for this group of teachers, with reliability estimates greater than 0.90. As expected, due to the fewer number of items, subscale reliability estimates were generally less than those for the composite scales; subscale reliability estimates ranged from a low of 0.76 for Assessment and Monitoring to a high of 0.91 for Communication of Mission. Nonetheless, all subscales evidenced either a standard error of measurement of less than 4% or a reliability estimate in excess of 0.75. Thus, for research purposes with this group of respondents, each subscale appears to provide reasonably stable information about the construct measured.

To verify that items were eliciting responses consistent with the scales' constructs for this group of respondents, item level statistics reflecting the correlation of item response to subscale and scale totals were examined. Any item evidencing a correlation less than 0.20 was flagged for additional review (see items marked in bold in Table A-3 in the Appendix). These are potentially aberrant items that can reduce both the reliability and validity of the scales. As shown in Table 1, one Teacher Survey item (in the Redesign Organization subscale associated with Leadership) was flagged for review; a decision about continued use will be made in view of content appropriateness.

Table 1. Reliability Characteristics of Survey for Teachers (Wave I)

Scale	No. of Items	No. of Review Items	Reliability* (Coefficient Alpha)	s.e.m.* (%)
School Environment	**30**	**0**	**0.91**	**5.18 (1.9)**
Parent Involvement	7	0	0.82	2.27 (3.6)
Academic Press	8	0	0.84	2.28 (3.2)
Safe and Orderly Climate	7	0	0.84	2.28 (3.6)
Assessment and Monitoring	6	0	0.76	2.66 (3.7)
Leadership	**24**	**1**	**0.95**	**3.88 (1.8)**
Communication of Mission	7	0	0.91	1.73 (2.7)
Manage Instruction	8	0	0.89	1.90 (3.0)
Redesign Organization	10	1	0.86	2.67 (3.0
Professional Community	**24**	**0**	**0.91**	**4.03 (1.9)**
Collaboration	8	0	0.82	2.17 (3.0)
Professional Development	8	0	0.90	1.91 (2.6)
Support for Teacher Influence	8	0	0.88	2.10 (2.9)
Instruction	**26**	**0**	**0.91**	**4.42 (1.19)**
Individualization	9	0	0.81	2.64 (3.3)
Structure	8	0	0.84	2.15 (3.0)
Opportunity to Learn	9	0	0.90	2.14 (2.6)

*Five response possibilities for n=449 Wave I teacher respondents on item's nine-category z-score continuum

Principal survey reliability and validity. Information about the reliability of the principal survey results for the 19 principal respondents in Wave I is provided in Table 2. Because reliability focuses on random variability in the data and there were only 19 principal respondents, these reliability values may underestimate those that will result with use of the survey across the entire sample. Likewise, the number of potentially aberrant items is likely an overestimate. Even so, all scales and subscales evidenced estimates for the standard error of measurement of less than 5%.

Item level statistics are provided in Table A-4 in the Appendix. Any item evidencing a correlation less than 0.20 was flagged for additional review. As shown in Table 2 below, 15 such items were flagged and are under review; a decision about continued use will be made in view of content appropriateness. For example, in Table A-4 in the Appendix, under School Environment, Item 1-3 with a subscale correlation of .04 has been flagged and is marked in bold. This item, included in the Parent involvement set of items, is about parental support ("My school views strong parental support as an important condition for school effectiveness"). In contrast, items in the same set with high subscale correlation coefficients (i.e., item 1-4 with a correlation coefficient of .58 and Item 1-5 with an item correlation coefficient of .69) are about parent participation (i.e., "My school has a specific parent involvement initiative that encourages parents to participate in decisions about school practices" and "Parents frequently visit my office with their questions and concerns"). Content comparisons such as these, between items with high and low subscale correlation coefficients, are being used to clarify subcomponent substance and make decisions about continued use of flagged items.

Table 2. Reliability Characteristics of Survey for Principals (Wave I)

Scale	No. of Items	No. of Review Items	Reliability* (Coefficient Alpha)	s.e.m.* (%)
School Environment	**30**	**11**	**0.76**	**5.04 (1.9)**
Parent involvement	8	4	0.56	2.88 (4.0)
Academic Press	8	2	0.51	2.45 (3.4)
Safe and orderly climate	7	1	0.68	2.19 (3.5)
Assessment and Monitoring	7	2	0.72	1.99 (3.2)
Leadership	**25**	**4**	**0.89**	**4.64 (2.1)**
Communication of Mission	7	1	0.83	2.09 (3.3)
Manage instruction	8	0	0.80	2.29 (3.2)
Redesign organization	10	3	0.64	3.30 (3.7)

*Five response possibilities for n=19 Wave I principal respondents on item's nine-category z-score continuum

Scale coherence. To examine subscale coherence, items in each subscale that correlated more highly with the overall set of items than with the designated subscale were flagged for further review. The patterns of correlations between subscales and overall scales were examined in order to identify any subscales that appeared to function in an unexpected manner for Wave I respondents. A general expectation was that subscales should be more highly correlated to the overall scale to which it is assigned than to the other overall scales in the survey. This review is preliminary to a more formal confirmatory factor analysis that will be completed when Wave II data become available. Tables 3 and 4 summarize the patterns of relationships of the subscales with the overall scales and the percentage of shared variance for Wave I teachers and principals, respectively. As shown in Table 3, the patterns of relationships between scales and subscales in the teacher survey are generally consistent with that expected for coherent and unique scales. Specifically, the correlations of overall scales to the respective subscales were strong, ranging from approximately 0.47 to 0.93, and subscales exhibited noticeably lower correlations with other overall scales within the survey.

Table 3. Relationships between Teacher Scales and Subscales (Wave I)

	Correlations					Percent Variance Shared			
	Environ	Communit	Lead	Instruc		Environ	Communit	Lead	Instruc
Environ	1.00	0.67	0.78	0.52	Environ	100.0	44.7	61.3	26.6
Communit	0.67	1.00	0.77	0.53	Communit	44.7	100.0	59.7	28.0
Lead	0.78	0.77	1.00	0.47	Lead	61.3	59.7	100.0	22.2
Instruc	0.52	0.53	0.47	1.00	Instruc	26.6	28.0	22.2	100.0
ParInvlv	0.78	0.55	0.61	0.36	ParInvlv	60.2	29.9	37.6	13.1
AcadPres	0.84	0.54	0.67	0.38	AcadPres	70.6	29.4	45.4	14.3
OrdClim	0.78	0.50	0.63	0.35	OrdClim	61.5	24.7	39.8	12.2
Assmt&Mo	0.75	0.52	0.54	0.54	Assmt&Mo	55.5	27.1	29.6	28.9
Collab	0.44	0.78	0.49	0.43	Collab	19.6	60.2	23.9	18.5
ProfDev	0.47	0.83	0.55	0.49	ProfDev	21.7	68.4	30.1	24.1
SupptTln	0.69	0.80	0.80	0.35	SupptTln	47.6	64.3	64.8	12.5

Table 3. Relationships between Teacher Scales and Subscales (Wave I) con'td

	Correlations					Percent Variance Shared			
	Environ	Communit	Lead	Instruc		Environ	Communit	Lead	Instruc
CommMiss	0.77	0.69	0.90	0.42	CommMiss	60.0	47.0	80.8	17.3
ManInstr	0.68	0.74	0.92	0.42	ManInstr	46.8	54.2	84.0	17.7
Redesign	0.70	.070	0.93	0.45	Redesign	48.9	49.5	86.6	20.5
Individz	0.47	0.43	0.41	0.77	Individz	22.3	18.6	17.0	58.5
Structur	0.49	0.49	0.45	0.86	Structur	23.6	24.2	20.3	74.5
OpptLnr	0.31	0.37	0.29	0.80	OpptLnr	9.7	13.8	8.7	64.0

The relationships shown in Table 4 are consistent with generally coherent and unique scales for both *Environment* and *Leadership* within the Wave I data for principals. Correlations of overall scales to the respective subscales ranged from approximately 0.50 to 0.90, and notably lower correlations of subscales were associated with the other overall scale. The one exception is *Assessment and Monitoring* within the *Environment* scale, which evidenced a higher correlation with the *Leadership* scale for the 19 principals responding in Wave I. This unintended relationship will be reexamined for stability with data that become available during Wave II.

Table 4. Relationships between Principal Scales and Subscales (Wave I)

	Correlations			Percent Variance Shared	
	Environ	Lead		Environ	Lead
Environ	1.00	0.71	Environ	100.0	50.6
Lead	0.71	1.00	Lead	50.6	100.0
ParInvlv	0.56	0.21	ParInvlv	30.9	4.2
AcadPres	0.87	0.78	AcadPres	75.4	30.1
OrdClim	0.65	0.22	OrdClim	42.5	4.7
Assmt&Mo	0.61	0.76	Assmt&Mo	37.8	58.2
CommMiss	0.68	0.87	CommMiss	46.1	76.5
ManInstr	0.70	0.91	ManInstr	48.3	83.0
Redesign	0.49	0.83	Redesign	24.4	69.0

CURRENT STATUS AND NEXT STEPS

To summarize, a model was developed to conceptualize how high-needs schools are organized for academic success based on a review and integration of four research literatures in 2003. The model and a research project to examine the model were proposed (Apthorp, 2003). External reviewers of the proposal affirmed the soundness of the design and suggested some revisions in particular model subcomponents and sampling procedures. These suggestions were incorporated in model and instrument development and sampling procedures conducted in 2004.

In 2004, teacher and principal surveys were developed and pools of HP and LP high-needs elementary schools were identified in eleven states. Initially, study participants were recruited in five of the states; a second recruitment effort was later conducted in the remaining six states. This resulted in two waves of data collection: Wave I from March 1 to June 30, 2004 and Wave II from August 23 to October 31, 2004. Survey respondents in both waves answered questions about activities and practices that occurred in their

schools during the 2003-2004 academic year. Survey data from respondents in Wave II not present in the school during the 2003-2004 year were excluded from all analyses.

Also in 2004, using the Wave I survey data, the research team examined measurement viability of the survey scales and subscales for representing model components and subcomponents. Wave I measurement viability analyses suggest that the teacher survey is viable for subsequent model analyses. Analyses are planned for examination of its continued viability once the Wave II survey data become available. Flagged items in both the teacher and principal Surveys are being reviewed for content appropriateness before they are included in the final scales. Also, once additional data are available from Wave II, the functional characteristics of the principal survey can be considered with greater assurance.

Analyses also are planned to examine whether or not it is appropriate to combine Wave I and II data. The demographic comparability of the HP and LP groups of schools also will be examined. Differences between the HP and LP groups will be flagged and adjustments in subsequent analyses will be made to account for effects associated with these differences. Sample size sufficiency will also be examined.

Subsequent data analyses are planned for examining the adequacy of the model. The model posited is complex in terms of the number of variables being measured and the different sources from which data are collected (i.e., principals and teachers). As planned, these data will be analyzed using multiple group, multilevel modeling. Using MPlus, this type of analysis accounts for the nested structure of the data while acknowledging relationships among variables (Muthén & Muthén, 2003). First, using the combined data from the HP and LP schools and Mplus structural equation modeling (SEM), evidence will be generated to answer the question, *to what degree and in what manner are the model components related?* Second, a chi-square test of model fit will be used to determine if the model is appropriate for both HP and LP schools by running Mplus SEM with the HP/LP identifier. Estimates/s.e. (weights of connections) will be examined to learn how the HP and LP models differ. The third stage of the model analysis involves unpacking the model. By using Mplus SEM and removing the fixed operational subcomponents of each component, it will be determined if additional variance can be explained. Finally, we will examine whether the unpacked model is different for HP and LP schools and examine estimates/s.e. (weights of connections) to learn how the unpacked HP and LP models differ.

While the posited model of how high needs schools are organized for success is research-based, it is not yet evidence-based. Results of the model analyses will confirm or disconfirm the adequacy of the model components, subcomponents, and relationships. The research team and others at McREL will use the results to develop or amend tools and guidance for educators when deciding which school practices and activities to pursue for greatest impact on student achievement.

REFERENCES

Akiba, M., & Apthorp, H. (2003). *Standards-based and individualized instruction in mathematics: Preliminary findings from McREL's study of high-performing, high-needs schools* [Technical report #2003-01]. Aurora, CO: Mid-continent Research for Education and Learning.

Apthorp, H. S. (2002). *School practices for helping children meet language arts standards: Preliminary findings from McREL's study of high-performing, high-needs schools* [deliverable #2002-08]. Aurora, CO: Mid-continent Research for Education and Learning.

Apthorp, H. S. (2003). *Research design for McREL's high-performing high-needs schools: Phase II* [deliverable #2003-17]. Aurora, CO: Mid-continent Research for Education and Learning.

Baker, S., Gersten, R., & Lee, D. (2002). A synthesis of empirical research on teaching mathematics to low-achieving students. *The Elementary School Journal, 103*(1), 51–73.

Barton, M. L., & Heidema, C. (2002). *Teaching reading in mathematics* (2nd ed.): A supplement to Teaching Reading in the Content Areas Teacher's Manual (2nd ed.). Aurora, CO: Mid-continent Research for Education and Learning.

Borman, G. D., & Rachuba, L. T. (2001, February). *Academic success among poor and minority students: An analysis of competing models of school effects* (Report No. 52). Baltimore, MD: Center for Research on the Education of Students Placed At Risk.

Bruner, D. Y., & Greenlee, B. J. (2000). Measures of work culture in high and low performance schools. *Research in the schools, 7*(2), 71–76.

Bryk, A., Camburn, E., & Louis, K. S. (1999). Professional community in Chicago elementary schools: Facilitating factors and organizational consequences. *Education Administration Quarterly, 35,* 751–781.

Cicchinelli, L., Gaddy, B., Lefkowits, L., & Miller, K. (2003). *No Child Left Behind: Realizing the vision* (Policy Brief). Aurora, CO: Mid-continent Research for Education and Learning.

Creemers, B. P. M. (1994). *The effective classroom.* New York: Cassell.

Crone, L. J., & Teddlie, C. (1995). Further examination of teacher behavior in differentially effective schools: Selection and socialization process. *Journal of Classroom Instruction, 30*(1), 1–9.

D'Agostino, J., & Hiestand, N. (1995, April). *Advanced-skill instruction in Chapter I summer programs and student achievement.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco. (ERIC Document Reproduction Service No. ED 390 929)

Doty, J. K., Cameron, G. N., & Barton, M. L. (2003). *Teaching reading in social studies: A supplement to Teaching Reading in the Content Areas Teacher's Manual (2nd ed.).* Aurora, CO: Mid-continent Research for Education and Learning.

Fraser, B. J., Walberg, H. J., Welch, W. W., & Hattie, J. A. (1987). Synthesis of educational productivity research. *International Journal of Educational Research, 11*, 145–252.

Garet, M., Birman, B., Porter, A., Desimone, L., & Herman, R. (with Suk Yoon, K.). (1999). *Designing effective professional development: Lessons from the Eisenhower Program.* Washington, DC: U.S. Department of Education.

Goddard, R.D. (2001). Collective efficacy: A neglected construct in the study of schools and student achievement. *Journal of Educational Psychology, 93*(3), 467-476.

Good, T. L., & Brophy, J. E. (1986). School effects. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (pp. 570–602). New York: Macmillan.

Hallinger, P., & Heck, R. H. (1996). Reassessing the principal's role in school effectiveness: A review of empirical research, 1980–1995. *Educational Administration Quarterly, 32*(1), 5–44.

Heck, R. H. (2000). Examining the impact of school quality on school outcomes and improvement: A value-added approach. *Educational Administration Quarterly, 36*(4), 513–552.

Heck, R. H., Larsen, T. J., & Marcoulides, G. A. (1990, May). Instructional leadership and school achievement: Validation of a causal model. *Educational Administration Quarterly, 26*(2), 94–125.

Heistad, D. (1997, May). *Teachers who beat the odds: Value-added reading instruction in Minneapolis Public Schools second grade classrooms.* Minneapolis, MN: Minneapolis Public Schools.

Hill, P. W., & Rowe, K. J. (1998). Modeling student progress in studies of educational effectiveness. *School Effectiveness and School Improvement, 9*(3), 310–333.

Hord, S. (1997). *Professional learning communities: Communities of continuous inquiry and improvement.* Austin, TX: Southwest Educational Development Laboratory.

Knapp, M. S., & Associates. (1995). *Teaching for meaning in high-poverty classrooms.* New York: Teachers College Press.

Lauer, P. (2001). *Preliminary findings on the characteristics of teacher learning in high-performing high-needs schools.* Aurora, CO: Mid-continent Research for Education and Learning.

Lauer, P. A., Palmer, E., Van Buhler, R., & Fries, D. (2002). *The influence on teacher learning on student achievement, revised.* Aurora, CO: Mid-continent Research for Education and Learning.

Leithwood, K, Louis, K. S., Anderson, S., & Wahlstrom, K. (2004). *How leadership influences student learning.* Center for Applied Research and Educational Improvement and Ontario Institute for Studies in Education.

Levine, D. U., & Lezotte, L. W. (1990). *Unusually effective schools: A review and analysis of research and practice.* Madison, WI: National Center for Effective Schools Research and Development.

Louis, K. S., Marks, H. M., & Kruse, S. (1996). Teachers' professional community in restructuring schools. *American Educational Research Journal*, 33(4), 757–798.

Mapp, K. L., & Henderson, A. T. (2002). *A new wave of evidence: The impact of school, family, and community connections on student achievement.* Austin, TX: National Center for Family & Community Connections with Schools, Southwest Educational Development Laboratory. Retrieved February 10, 2003, from http://www.sedl.org/connections/resources/evidence.pdf

Marzano, R. J. (2000). *A quantitative synthesis of research on school-level, teacher-level, and student-level variables related to academic achievement* [REL Deliverable 2000-05]. Aurora, CO: Mid-continent Research for Education and Learning.

Marzano, R. J., Waters, T. & McNulty, B. (in press). *School leadership that works.* Alexandria, VA: Association for supervision and Curriculum Development (ASCD).

McCollum. H. (1995). In Knapp, M. S., & Associates, *Teaching for meaning in high-poverty classrooms.* New York: Teachers College Press.

Mortimore, P., Sammons, P., Stoll, L., Lewis, D., & Ecob, R. (1989). *School matters: The junior years.* Somerset, England: Open Books.

Muthén, L., K., & Muthén, B. O. (2003). *Mplus short courses: Special topics in latent variable modeling using Mplus.* Author. Available from http://www.statmodel.com/handouttoc.html.

National Reading Panel. (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction.* Washington, DC: Author. Retrieved April 20, 2001, from http://www.nichd.nih.gov/publications/nrp/smallbook.htm

Nelson, L.R. (2000). *Item analysis for tests and surveys using Lertap 5.* Perth, Western Australia: Curtin University of Technology (www.lertap.curtin.edu.au).

Newmann, F. M., King, M. B., & Secada, W.G. (1996). Intellectual Quality. In F.M. Newmann and Associates (Eds.), *Authentic achievement: Restructuring schools for intellectual quality* (pp. 161–178). San Francisco: Jossey-Bass.

Newmann, F. M., & Wehlage, G. G. (1995). Successful school restructuring. Madison, WI: Center on Organization and Restructuring of Schools, University of Wisconsin-Madison.

Puma, M. J., Karweit, N., Price, C., Ricciuti, A., Thompson, W., & Vaden-Kiernan, M. (1997). *Prospectus: Student outcomes. Final Report.* Cambridge, MA: Abt Associates, Inc. (ERIC Document Reproduction Service No. ED 413411)

Quality Counts 2004. Standards and Accountability. *Education Week on the Web, 23*(17), 107. Retrieved October 1, 2004 from http://www.edweek.com/sreports/qc04/reports/standacct-t1g.cfm

Raudenbush, S. W., & Bryk, A. S. (1989). Methodological advances in analyzing the effects of schools and classrooms on student learning. In E. Z. Rothkopf (Ed.), *Review of research in education, 15* (pp. 423–475). Washington, DC: American Educational Research Association.

Rutter, M., Maughan, B., Mortimer, P., & Ouston, J. (1979). *Fifteen thousand hours: Secondary schools and their effects on children.* London: Open Books.

Scheerens, J., & Bosker, R. (1997). *The foundations of educational effectiveness.* Oxford, U. K.: Pergamon.

Secada, W. G., & Adajian, L. B. (1997). Mathematics teachers' change in the context of their professional communities. In E. Fennema, & B. S. Nelson (Eds.), *Mathematics teachers in transition* (pp. 193–219). Mahwah, NJ: Lawrence Erlbaum.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for causal inference.* Boston: Houghton Mifflin.

Smylie, M. A., Allensworth, E., Greenberg, R. C., Harris, R., & Luppescu, S. (2001). *Teacher professional development in Chicago: Supporting Effective Practice.* Chicago: Consortium on Chicago School Research.

Taylor, B. M., Pearson, P. D., Clark, K., & Walpole, S. (2000). Effective schools and accomplished teachers: Lessons about primary-grade reading instruction in low-income schools. *The Elementary School Journal, 101*(2), 121–165.

Teddlie, C., Kirby, P. C., & Stringfield, S. (1989). Effective versus ineffective schools: Observable differences in the classroom. *American Journal of Education, 97*(3), 221–236.

Teddlie, C., & Reynolds, D. (2000). *The international handbook of school effectiveness research.* New York: Falmer Press.

U.S. Department of Education, National Center for Education Statistics. (2003). Digest of Education Statistics, 2002. (Table 101: Selected characteristics of students, teachers, parent participation, and programs and services in traditional public and public charter elementary and secondary schools: 1999–2000, p. 125). Retrieved November 6, 2003, from http://nces.ed.gov/pubs2003/digest02/tables/PDF/table101.pdf

Walberg, H. J. (1990). Productive teaching and instruction: Assessing the knowledge base. *Phi Delta Kappan, 71*(6), 470–478.

Waxman, H. C., Wang, M. C., Anderson, K. A., & Walberg, H. J. (1985). Adaptive education and student outcomes: A quantitative synthesis. *Journal of Educational Research, 78*(4), 228–236.

Weber, G. (1971). *Inner-city children can be taught to read: Four successful schools* [CBE occasional papers, number 18]. Washington, DC: Council for Basic Education. (ERIC Document Reproduction Service No. ED 057 125)

Wenglinsky, H. (2003). Using large-scale research to gauge the impact of instructional practices on student reading comprehension: An exploratory study. *Education Policy Analysis Archives, 11*(19). Retrieved July 2, 2003, from http://epaa.asu.edu/epaa/v11n19/.

APPENDIX

Table A-1. Correlations between Math and Reading Assessments Used to Identify High-Performing and Low-Performing, High-Needs Schools

State	Correlations*		
	Between Reading and Math '00 (Zscore)	**Between Reading and Math '01 (Zscore)**	**Between Reading and Math '02 (Zscore)**
Colorado	.848	.866	.851
Georgia		.906	.920
Kansas	.728	.784	.788
Michigan	.851	.875	.823
Missouri	.547	.561	.684
New Jersey	.922	.908	.921
Ohio	.917	.930	.915
Oregon	.850	.808	.890
Texas	.889	.887	.899
Virginia	.855	.896	.856

* All correlations significant at the .01 level.

Table A-2. Number of Schools Identified for Each Sample Pool

Time of Data Collection	State	Number of Schools in Each Sample Pool	
		HP	**LP**
Wave I (Mar 1 – Jun 30, 2004)	Ohio	68	79
	Oregon	32	34
	Texas	291	245
	Michigan	79	73
	Minnesota	17	17
	Subtotal	487	448
Wave II (Aug 23 – Oct 31, 2004)	Colorado	25	27
	Kansas	23	22
	Georgia	71	84
	Virginia	23	51
	Missouri	54	51
	New Jersey	56	55
	Subtotal	252	290
	Total	**739**	**738**

Table A-3. Item Performance Statistics for Teacher Survey (Wave 1, n=449)

School Environment

Res =	1	2	3	4	5	6	7	8	9	other	pol.	mean	s.d.	subscale cor.
Item 1-1			18%	13%	41%	28%					+	4.78	1.05	0.53
Item 1-2	1%	3%	9%		49%	38%	0%				+	5.11	1.04	0.51
Item 1-3	0%	4%	7%	26%		62%	0%				+	5.08	1.28	0.47
Item 1-4	1%	3%	6%		40%	50%	0%				+	5.25	1.05	0.50
Item 1-5	1%	4%		23%		71%	1%				+	5.35	1.15	0.53
Item 1-6		6%	6%		31%	57%	0%				+	5.26	1.16	0.44
Item 1-7		2%	11%	19%	43%	25%	1%				+	4.81	1.01	0.49
Item 1-8	2%	1%		22%	74%		1%				+	4.69	0.74	0.47
Item 1-9	0%	3%		23%		73%				1%	+	5.39	1.07	0.56
Item 1-9		3%	3%	27%		66%	0%			1%	+	5.26	1.12	0.53
Item 1-11	1%		7%	5%	47%	41%	0%				+	5.18	0.92	0.51
Item 1-12		2%	4%	25%		67%	0%			1%	+	5.30	1.08	0.53
Item 1-13	2%	4%		18%	76%		0%				+	4.65	0.82	0.57
Item 1-14	0%	4%	5%	25%		65%	0%				+	5.19	1.21	0.57
Item 1-15	2%		6%	23%		68%	1%			0%	+	5.27	1.20	0.58
Item 1-16	2%	4%	5%	30%		59%	1%				+	5.04	1.30	0.51
Item 1-17	1%	6%	4%		31%	58%	0%				+	5.28	1.18	0.58
Item 1-18		4%	10%	7%	43%	35%	1%				+	4.97	1.09	0.55
Item 1-19	2%		6%	29%		63%	0%				+	5.16	1.19	0.54
Item 1-20		2%	5%	23%		68%	1%			1%	+	5.29	1.12	0.57
Item 1-21	3%				96%				1%		+	4.90	0.82	0.23
Item 1-22	1%	3%	4%	18%		73%	0%				+	5.32	1.21	0.56
Item 1-23		4%	11%		84%		1%			0%	+	4.68	0.84	0.27
Item 1-24		1%	6%	28%		64%	1%			1%	+	5.23	1.09	0.35
Item 1-25	1%	4%		27%		68%	0%				+	5.25	1.20	0.32
Item 1-26	2%		6%	19%		71%	1%				+	5.31	1.22	0.25
Item 1-27		2%	7%	9%	40%	43%					+	5.14	0.96	0.52
Item 1-28	2%		6%	26%		66%	1%			0%	+	5.25	1.17	0.41
Item 1-29		2%	6%	29%		62%	0%			0%	+	5.15	1.16	0.52
Item 1-30	2%		3%	24%		70%	1%			0%	+	5.32	1.17	0.58

Professional Community

Res =	1	2	3	4	5	6	7	8	9	other	pol.	mean	s.d.	subscale cor.
Item 2-1		2%	6%	23%	32%	28%	0%			8%	+	4.87	0.98	0.52
Item 2-2		2%	6%	18%	31%	33%	0%			10%	+	4.98	0.97	0.54
Item 2-3		1%	10%	18%	28%	37%	0%			6%	+	4.96	1.03	0.50
Item 2-4			12%	14%	17%	16%	10%			30%	+	4.98	1.09	0.47
Item 2-5			4%	34%	27%	25%	0%			9%	+	4.84	0.86	0.53
Item 2-6			11%	6%	15%	34%	0%			34%	+	5.07	0.92	0.35
Item 2-7	0%	3%		12%	35%	46%	0%			2%	+	5.23	0.94	0.46
Item 2-8			10%	8%	14%	38%	1%			29%	+	5.12	0.94	0.36
Item 3-1		2%	4%	21%	32%	41%					+	5.04	0.99	0.59
Item 3-2		4%	5%	28%	32%	31%	1%				+	4.84	1.06	0.60
Item 3-3			6%	36%	29%	29%	0%				+	4.82	0.93	0.60
Item 3-4			6%	18%	30%	44%	1%				+	5.16	0.95	0.60
Item 3-5			8%	12%	53%	27%	0%				+	5.00	0.85	0.64
Item 3-6		3%	5%	25%	35%	31%	1%				+	4.89	1.03	0.61
Item 3-7			12%	15%	26%	47%	0%				+	5.09	1.05	0.54
Item 3-8			9%	11%	49%	29%	1%				+	5.02	0.91	0.50
Item 4-1			18%	5%	38%	39%	0%				+	4.98	1.08	0.48
Item 4-2		2%	9%	10%	37%	41%	0%				+	5.05	1.05	0.55
Item 4-3			9%	16%	45%	30%	0%				+	4.97	0.92	0.49
Item 4-4		4%	10%	12%	37%	37%					+	4.93	1.11	0.57
Item 4-5			5%	28%	37%	29%	0%				+	4.91	0.89	0.64
Item 4-6		1%	6%	11%	40%	41%	1%				+	5.18	0.92	0.55
Item 4-7	0%	2%	7%	31%		58%	1%				+	5.06	1.23	0.52
Item 4-8		1%	6%	8%	38%	46%	1%				+	5.23	0.93	0.53

Leadership

Res =	1	2	3	4	5	6	7	8	9	other	pol.	mean	s.d.	subscale cor.
Item 7-1		2%	8%	10%	47%	33%					+	4.99	0.98	0.61
Item 7-2		1%	7%	6%	37%	48%					+	5.23	0.95	0.77
Item 7-3	0%	4%	9%		37%	50%	0%				+	5.20	1.11	0.69
Item 7-4	0%	6%		8%	30%	54%	1%				+	5.28	1.09	0.65
Item 7-5		1%	7%	15%	37%	40%	1%				+	5.08	0.98	0.73
Item 7-6	1%	6%		8%	32%	53%	0%				+	5.24	1.11	0.71
Item 7-7		1%	6%	11%	36%	46%	1%				+	5.22	0.92	0.73
Item 7-8		1%	6%	17%	31%	45%					+	5.12	0.97	0.50
Item 7-9		3%	6%	12%	36%	41%	1%				+	5.09	1.06	0.74
Item 7-9		2%	12%	9%	40%	37%	0%				+	4.99	1.06	0.60
Item 7-11			16%	15%	34%	35%	0%				+	4.89	1.06	0.69
Item 7-12		3%	9%	13%	37%	37%	0%				+	4.97	1.08	0.78
Item 7-13		3%	10%	13%	36%	37%	0%				+	4.96	1.09	0.73
Item 7-14		2%	8%	15%	36%	38%	1%				+	5.01	1.05	0.70
Item 7-15		3%	6%	17%	38%	35%	1%				+	4.98	1.04	0.59
Item 7-16			15%	16%	33%	36%	0%				+	4.91	1.06	**0.04**
Item 7-17	0%	2%	8%	37%		52%	1%				+	4.93	1.22	0.60
Item 7-18	2%	3%	9%		30%	57%	0%				+	5.25	1.17	0.65
Item 7-19		1%	8%	37%		54%	0%			0%	+	5.01	1.14	0.68
Item 7-20		1%	8%	17%	42%	31%	0%				+	4.95	0.96	0.71
Item 7-21		3%	8%	22%	33%	34%	1%				+	4.90	1.07	0.63
Item 7-22	1%	2%	12%		40%	44%	1%				+	5.11	1.12	0.64
Item 7-23		1%	7%	15%	35%	41%	0%				+	5.08	0.99	0.76
Item 7-24		2%	6%	14%	33%	45%	1%				+	5.17	1.00	0.57

Instruction

Res =	1	2	3	4	5	6	7	8	9	other	pol.	mean	s.d.	subscale cor.
Item 8-1	1%	1%		31%		65%	0%				+	5.26	1.12	0.36
Item 8-2		2%		23%		75%	1%			0%	+	5.49	0.95	0.42
Item 8-3	2%		3%	33%		61%	1%				+	5.16	1.18	0.49
Item 8-4	1%	3%	6%	28%		61%	0%				+	5.07	1.26	0.45
Item 8-5	2%		18%		80%			0%			+	4.60	0.91	0.43
Item 8-6	2%		4%	28%		66%	0%			0%	+	5.24	1.16	0.39
Item 8-7		1%	21%		76%		2%			0%	+	4.57	0.91	0.40
Item 8-8		2%	5%	15%	40%	37%	0%				+	5.06	0.97	0.46
Item 8-9		4%	8%	15%	35%	37%	1%				+	4.97	1.11	0.43
Item 9-1		0%	6%	21%	37%	35%	1%				+	5.01	0.94	0.41
Item 9-2	0%	1%		19%	43%	35%	1%				+	5.13	0.86	0.60
Item 9-3		1%	7%	37%		54%	1%			0%	+	5.02	1.15	0.50
Item 9-4	0%	1%	17%		43%	37%	1%				+	5.01	1.11	0.59
Item 9-5		1%	4%	24%	44%	26%	1%				+	4.91	0.88	0.56
Item 9-6		1%	5%	23%	42%	28%	1%				+	4.92	0.92	0.65
Item 9-7		2%	6%	26%	41%	25%	1%				+	4.84	0.96	0.57
Item 9-8	0%	3%		15%	45%	35%	2%				+	5.14	0.95	0.51
Item 10-1			8%	24%	37%	22%	8%	1%			+	5.00	1.08	0.53
Item 10-2			5%	39%	38%	17%	2%				+	4.72	0.85	0.60
Item 10-3			12%	16%	31%	28%	12%				+	5.12	1.19	0.58
Item 10-4			10%	12%	31%	47%	1%				+	5.17	0.99	0.54
Item 10-5			13%	22%	31%	26%	7%	1%			+	4.95	1.16	0.61
Item 10-6			11%	15%	26%	47%	0%				+	5.10	1.04	0.52
Item 10-7			4%	36%	35%	24%	1%				+	4.81	0.88	0.57
Item 10-8			14%	26%	36%	23%	1%				+	4.73	1.01	0.56
Item 10-9			7%	11%	57%	22%	2%				+	5.01	0.84	0.49

Table A-4. Item Performance Statistics for Principal Survey (Wave 1, n=19)

School Environment

Res =	1	2	3	4	5	6	7	8	9	other	pol.	mean	s.d.	subscale cor.
Item 1-1			16%	11%	26%	47%					+	5.05	1.10	0.58
Item 1-2		5%		42%		53%					+	4.95	1.19	0.43
Item 1-3				16%	79%		5%				+	4.95	0.60	**0.04**
Item 1-4		5%		32%		63%					+	5.16	1.18	**0.14**
Item 1-5			11%	42%		47%					+	4.84	1.14	0.69
Item 1-6			21%			79%					+	5.37	1.22	**- 0.12**
Item 1-7			21%			79%					+	5.37	1.22	**0.12**
Item 1-8		5%		11%	42%	42%					+	5.16	0.99	0.43
Item 1-9		11%			89%						+	4.68	0.92	**- 0.27**
Item 1-10		11%			89%						+	4.68	0.92	0.29
Item 1-11			16%		84%						+	4.68	0.73	0.59
Item 1-12				32%		68%					+	5.37	0.93	0.32
Item 1-13	5%				95%						+	4.79	0.89	**0.00**
Item 1-14			21%			79%					+	5.37	1.22	0.46
Item 1-15			16%		84%						+	4.68	0.73	0.29
Item 1-16		11%		11%	79%						+	4.58	0.94	0.39
Item 1-17				32%		68%					+	5.37	0.93	0.32
Item 1-18				16%		74%	11%				+	5.79	0.83	0.33
Item 1-19			5%	37%		53%	5%				+	5.16	1.14	0.42
Item 1-20			26%			74%					+	5.21	1.32	0.64
Item 1-21				32%		68%					+	5.37	0.93	0.32
Item 1-22					100%						+	5.00	0.00	**0.00**
Item 1-23	5%				95%						+	4.79	0.89	0.57
Item 1-24		5%		32%		63%					+	5.16	1.18	0.64
Item 1-25					100%						+	5.00	0.00	**0.00**
Item 1-26			16%		84%						+	4.68	0.73	0.54
Item 1-27	5%				95%						+	4.79	0.89	0.63
Item 1-28			5%		89%		5%				+	5.00	0.65	**- 0.04**
Item 1-29		11%			32%	58%					+	5.26	1.21	0.72
Item 1-30			11%		42%	47%					+	5.26	0.91	0.39

Leadership

Res =	1	2	3	4	5	6	7	8	9	other	pol.	mean	s.d.	subscale cor.
Item 2-1		5%		32%		63%					+	5.16	1.18	0.82
Item 2-2		5%		26%		68%					+	5.26	1.16	0.49
Item 2-3			16%		84%						+	4.68	0.73	**0.14**
Item 2-4			11%	21%		68%					+	5.26	1.12	0.85
Item 2-5			11%	37%		53%					+	4.95	1.15	0.60
Item 2-6			16%		84%						+	4.68	0.73	0.58
Item 2-7		5%	5%		37%	53%					+	5.26	1.07	0.60
Item 2-8			5%	16%	32%	47%					+	5.21	0.89	0.62
Item 2-9				47%		53%					+	5.05	1.00	0.37
Item 2-10				32%		68%					+	5.37	0.93	0.62
Item 2-11				32%		68%					+	5.37	0.93	0.33
Item 2-12		5%		16%	47%	32%					+	5.00	0.97	0.46
Item 2-13		11%			32%	58%					+	5.26	1.21	0.54
Item 2-14		5%		37%		58%					+	5.05	1.19	0.75
Item 2-15			16%		84%						+	4.68	0.73	0.45
Item 2-16			26%			74%					+	5.21	1.32	**0.17**
Item 2-17		5%	5%		21%	63%	5%				+	5.47	1.14	**- 0.06**
Item 2-18			21%			79%					+	5.37	1.22	0.31
Item 2-19	5%			16%	79%						+	4.63	0.93	0.55
Item 2-20			16%		84%						+	4.68	0.73	0.46
Item 2-21		5%		37%		58%					+	5.05	1.19	0.38
Item 2-22			21%			79%					+	5.37	1.22	**- 0.19**
Item 2-23			26%			74%					+	5.21	1.32	0.57
Item 2-24		5%		21%		74%					+	5.37	1.13	0.51
Item 2-25		5%			37%	53%	5%				+	5.47	0.99	0.72