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Examining Relationships Among Student Interim Proficiency, School Environment, and Student End-of-Year Proficiency

Kathy Janzen  
Utah State University

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EXAMINING RELATIONSHIPS AMONG STUDENT INTERIM PROFICIENCY, SCHOOL ENVIRONMENT, AND STUDENT END-OF-YEAR PROFICIENCY

by

Kathy S. Janzen

A dissertation submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

Education

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UTAH STATE UNIVERSITY
Logan, Utah

2013
ABSTRACT

Examining Relationships among Student Interim Proficiency, School Environment, and Student End-of-Year Proficiency

by

Kathy S. Janzen, Doctor of Philosophy
Utah State University, 2013

Major Professor: Richard West, Ph.D.
Department: Education

Interest in the determinants of student academic proficiency has intensified due to the increased emphasis on high achievement for all students. The purpose of this correlational study was to explore the relative strength of the relationship between the school’s learning environment and student achievement, and a literacy benchmark assessment and student achievement. Schools in the state of Utah that administered the Indicators of School Quality (ISQ) survey during the 2010-2011 school year and the Dynamic Indicators of Early Literacy Skills (DIBELS) assessments during the same school year were included in the study.

The study examined a combination of measures to determine the extent to which an assessment of literacy skills and stakeholder reports regarding the school’s learning environment predicted student learning. Results from this study indicated ISQ scores were significantly correlated with the DIBELS. The DIBELS and ISQ scores predicted
the Utah Criterion-Referenced Test (CRT), the end-of-level summative assessment used to determine progress toward adequate yearly progress (AYP) in Utah. Results from the ISQ descriptive study showed that students’ perceptions of the school climate were more favorable in all domains (parent support, teacher excellence, student commitment, school leadership, instructional quality, resource management domain, and school safety) than the perceptions of parents and teachers. ISQ scores were correlated with the DIBELS results to determine the predictive power of the ISQ and the DIBELS for the Utah CRT, the end-of-level, summative assessment used to determine progress toward Adequate Yearly Progress (AYP).

The relationship between literacy skills and academic achievement was statistically significant at the $p > .05$ level. However, the strongest relationship was between the conditions for learning, a component of the school’s learning environment, and academic achievement. This relationship was statistically significant and robust, remaining strong even when the influences of social and economic risk and literacy skills were statistically controlled. These findings suggest the importance of considering the school’s learning environment, and possibly other factors, in the design and evaluation of the educational process instruction and school improvement process.
PUBLIC ABSTRACT

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Kathy S. Janzen, Doctor of Philosophy

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Research on variables that are related to student academic proficiency has intensified due to the increased emphasis on high achievement for all students. The purpose of this correlational study was to explore the relative strength of the relationship between the school’s learning environment and student achievement, and a literacy benchmark assessment and student achievement. Schools in the state of Utah that administered the Indicators of School Quality (ISQ) survey during the 2010-2011 school year and the Dynamic Indicators of Early Literacy Skills (DIBELS) assessments during the same school year were included in the study.

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Kathy J. Janzen
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CHAPTER I
INTRODUCTION

With the passage of the No Child Left Behind Act (NCLB) in 2001, Congress initiated an era of educational accountability, transparency, and focus. Although the merits of many of the individual provisions of the bill are controversial (Brigham, Gustashaw, & Wiley, 2004), the NCLB has been a catalyst for change in education (O’Neal & White, 2003), which has focused many educators on achieving high academic proficiency for all students. Specifically, NCLB mandates that 100% of public school students reach high levels of learning by the 2013-2014 school year (NCLB, 2002). The U.S. Department of Education emphasized the link between NCLB and high achievement standards for all students with this statement: “Under [NCLB], states are working to close the achievement gap and make sure all students, including those who are disadvantaged, achieve academic proficiency” (http://www2.ed.gov/nclb/overview/intro/4pillars.html).

The original purpose of NCLB was in effect for my study. Since my study was conducted, the U.S. Department of Education revamped parts of NCLB (US Department of Education, 2012). Some of the changes to NCLB include the following.

- focusing on growth and school progress rather than proficiency in academic progress,
- focusing on the better use of assessments
- focusing on what a school needs to improve
- focusing on conditions for learning,
- focusing on additional subjects rather than an exclusive focus on tests that
have resulted in a narrowing in the curriculum, and


Individual student proficiency targets outlined by NCLB are an integral part of the overall accountability system for schools. Educators in publicly funded schools were expected to make adequate yearly progress (AYP) each year, as measured by performance on academic proficiency tests during the investigation for my study. This accountability requirement focused the work of many classroom teachers and administrators on developing systems to identify and provide supports for students who need them (McGrew, 2012).

Figure 1 illustrates a simplified version of the logical progression for this study. The top rectangle, rectangle 1, represents pressures, such as pressures from NCLB that educators feel to increase student learning. Although teachers may also be motivated intrinsically to increase student learning, pressure to achieve at high levels has increased over the past few years and that is why rectangle 1 refers to the increased pressure. Rectangle 2 represents interim tests, such as DIBELS, that educators administer to students as a means of predicting end-of-year assessment. The arrow between rectangle 1 and 2 is solid because of the proliferation of interim assessments given to students currently. Interim assessments are generalized assessments that are given periodically throughout the school year (Perie, Marion, & Gong, 2009). Interim assessments can be used in a formative way (Clark, 2011). For example, when teachers use data from interim assessments to inform instruction, those assessments are used as formative assessments.
Research relating to the use of interim assessments is delineated in this chapter and in Chapter II. Rectangle 3 represents some of the school environmental factors associated with student academic learning. Rectangle 4 represents outside of school student risk factors that have been associated with student academic failure. There is much research (Edmonds, 1982, 1986; Purkey & Smith, 1983; M. J. Taylor, West, & Smith, 2006), which I discuss later in this chapter and in Chapter II, associated with the school’s learning environment and student academic learning and there is much research (Hawkins, Catalano, & Arthur, 2002; Land & Legters, 2002; Lee, Guterman, & Lee, 2008; Masten & Coatsworth, 1998; Pallas, Natriello, & McDill, 1989) associated with risk factors and student academic failure. Research on each of these relationships is discussed in this chapter and in Chapter II. However, no research was located that took
into account the use if interim assessment, the school’s learning environment and student risk factors and how each of these related individually as well as together in predicting end-of-year assessment scores. School environmental factors and student risk factors are measured with surveys such as the Indicators of School Quality (ISQ). My study used scores from the DIBELS, an interim assessment of literacy skills, and results from the ISQ to determine relationships between these measures and end-of-year academic learning. The dashed lines between rectangles 2 and 5, between rectangles 3 and 5, and between rectangles 4 and 5 represent these relationships.

**Perspective on Curriculum Assessment**

The current accountability system encourages educators to focus solely on curriculum-related instruction in the classroom, while neglecting other critical components of student learning, which may include school safety, parent involvement, and clear communication of academic and behavioral expectations (M. J. Taylor et al., 2006). A narrow focus on curriculum-related instruction is often accompanied by over reliance on one form of data to inform instruction: formative assessment of curriculum knowledge and skills (Ledoux, Marshall, & McHenry, 2010).

Quality of instruction is connected to the use of periodic assessment data to plan instructional improvement and make adjustments as necessary (Stiggins, 2005). Research has shown that using periodic assessment data to plan instructional improvement may improve instructional quality (Stiggins, 2005). The use of interim and frequent assessment is one factor associated with increased student learning; there are other factors
as well. Research has identified many school and community variables that positively or negatively relate to students’ curricular learning and general academic proficiency, including community and family economics, support systems, conflicts, and language dominance (M. J. Taylor et al., 2006). Figure 1 presented the logical model for this study. Figure 2 highlights frequent or interim testing as one component associated with my study.

M. J. Taylor and colleagues (2006) reported that curricular knowledge and skills, which encompass interim and frequent assessment, should be delivered in a supportive school learning environment capable of producing high levels of parent support, quality instruction, student commitment, school leadership, resource management, and school

\[\text{Figure 2. Logical progression of study, focus on frequent (interim) testing.}\]
safety—all critical variables related to academic proficiency. Findings from research
(Edmonds, 1982, 1986; Purkey & Smith, 1983; M. J. Taylor et al., 2006) have established
a connection between such aspects of the learning environment and student achievement.

Other factors that are outside of the school environment are associated with
increased student learning. There are also outside-of-school factors that are associated
with student academic failure (Hawkins et al., 2002; Land & Legters, 2002; Lee et al.,
2008; Masten & Coatsworth, 1998; Pallas et al., 1989). The following section provides
information on some of those factors.

Influence of Families and Communities

Family and community factors that are related to increased academic proficiency
include affluence, strong and positive community relations, minimal family conflict,
positive peer associations, high levels of parent education, and low mobility rate
(Hawkins, Catalano, & Miller, 1992). Variables related to academic failure, often referred
to as risk factors, include such opposites as high poverty, low English proficiency, low
levels of community affiliation, high levels of family conflict, poor peer associations,
high mobility, and low levels of parent education (Hawkins et al., 2002; Land & Legters,
2002; Lee et al., 2008; Masten & Coatsworth, 1998; Pallas et al., 1989). Relevant risk
factors related to participation in school include early antisocial behaviors, mobility, lack
of commitment to school, truancy, and lack of parental involvement. When schools house
a large percentage of students with several risk factors, there is a greater likelihood of
school failure such as receiving below average grades or dropping out of school, in fact,
the higher the number of risk factors in any given school, the greater the chance of school academic failure (Masten & Coatsworth, 1998).

Although several community factors (M. J. Taylor et al., 2006) have been shown to relate to academic failure, some researchers have focused on a single factor: the economic status of the students’ families (Coleman et al., 1966; Sirin, 2005; Towers, 1992). Figure 3 highlights risk factors as the focus in this section of the paper. Many landmark studies have demonstrated that students who come from more affluent backgrounds score higher on tests than do students from less affluent homes and neighborhoods (Coleman et al., 1966; Sirin, 2005; Towers, 1992). The Coleman report, formally titled “Equality in Educational Opportunity” focused Americans on the role of community risk factors and education outcomes. This study was published in the 1960s in

![Figure 3. Logical progression of study, focus on risk factors.](image)
response to an inquiry from then-President Johnson regarding the availability of education across the ethnic groups in the US. President Johnson intended to prove that school quality was the most important variable in students’ academic success; however, the report concluded:

Taking all of these results together, one implication stands above all: that schools bring little to bear on a child’s achievement that is independent of his background and general social context; and that this very lack of an independent effect means that the inequalities imposed on children by their home, neighborhood, and peer environment are carried along to become the inequalities with which they confront life at the end of school. (Coleman et al., 1966, p. 325)

Coleman and colleagues (1966) presented information that damaged the potential for compensatory education and shattered widespread compensatory education that inspires, uplifts, and equalizes all students.

**Influence of School Function and Relationships**

The unsatisfying and unpopular conclusions of the Coleman report did not remain unchallenged for long (McDill, Meyers, & Rigsby, 1967; Weber, 1971). As early as the mid 1970s, a large number of researchers began publishing critiques of the report and its conclusions (Cruickshank, 1990; Edmonds, 1979c; Ehrenberg & Brewer, 1995).

**Effective School Characteristics**

Edmonds (1986) provided response to the Coleman Report. Edmonds focused on school variables he identified as “effective school characteristics” as he investigated effective schools serving poor inner-city students in New York, New Haven, Chicago, St. Louis, and Milwaukee. Edmonds wrote that the significant performance differences
between effective and ineffective schools could not be attributed to social or family background but to what happens within the school. Schools were identified as effective if they met guidelines for two criteria. The first criterion required that students met mastery levels as identified by the local school district. The second criterion was that the mastery level allowed the researchers to predict that the students who had met mastery levels would be academically successful the following year anywhere in the U.S. (Edmonds, 1986). Lezotte (1991) helped refine the characteristics of the effective schools. Effective school characteristics are identified as school environmental factors in this study. These characteristics were instructional leadership, clear and focused mission, safe and orderly environment, climate of high expectations, frequent monitoring of student progress, positive home-school relations, opportunity to learn, and student time on task. Figure 4 highlights school environmental factors, a component of the logical progression of this study.

**School Effectiveness Movement**

Smith and Hoy (2007) considered the identification of characteristics of effective schools to be the foundation for a school effectiveness movement. The effective school movement empowered educators by reaffirming the connection between school practices and student achievement, irrespective of community risk. Since this pioneering work, other researchers, including Edmonds and Frederiksen (1978), Lezotte and Jacoby (1992), and Purkey and Smith (1983), have all reported that schools and teachers can and do have a positive impact on student achievement even in America’s most impoverished neighborhoods and communities. Over the last 35 years, the volume of research
Figure 4. Logical progression of study, focus on school environmental factors.

supporting the findings of the effective schools research has increased dramatically. A more recent example by Marzano (2003) synthesized the results of studies during the course of the effective schools movement.

Those involved (Edmonds, 1986; Edmonds & Frederiksen, 1978; Lezotte & Jacoby, 1992; Marzano, 2003; Purkey & Smith, 1983; Smith & Hoy, 2007) with effective schools research continued to stress the importance of achieving healthy, positive relationships and embedding effective instruction within the classroom. The research identified in this paragraph asserts the importance of school and classroom roles in producing high levels of achievement for all students. My research investigated the relationships between achieving healthy positive relations and embedding effective instruction in the classroom with student academic learning. Explicitly, the purpose of my study was to explore the relative strength of the relationship between the school’s
learning environment and student achievement, and a literacy benchmark assessment and student achievement

**Influence of Learning Environment**

Because of the critical importance of ensuring academic proficiency for all students and the social and political importance of meeting AYP benchmarks, researchers recommend the need to study all of the variables that are related to student achievement (Levine & Lezotte, 1990). Many practitioners and researchers recognize the need to define student support and instructional improvement more holistically than in the past. These individuals recognize the critical relationship between a supportive learning environment and the delivery of high-quality, tailored instruction in the classroom (American School Counselor Association [ASCA], 2003; Cohen, McCabe, Michelli, & Pickerall, 2009; Mayer, Mullens, & Moore, 2000).

West and Taylor (2010) studied the combination of community, school, and instructional variables account for approximately three fourths of the variance in student achievement. Their findings suggest a stronger relationship among classroom instructional practices, the school’s learning environment, and student achievement than reported previously by researchers such as Fraser (1991), Hirsch and Church (2009), and Hoy, Sweetland, and Smith (2002).

Although individual classroom teachers have little control over many of the community and school variables related to student achievement, they do have control over the variables identified by West and Taylor (2010), which independently account for
a larger proportion of the variance of achievement than that accounted for by community and general school variables combined. West and Taylor (2010) identified the following variables as factors that are related to positive gains in student academic achievement: parent support, teacher excellence, student commitment, school leadership, instructional quality, resource management, school safety, and behavior support. In fact, research asserts that what educators can control is more important than the sum of all the influences beyond their control; Edmonds and Frederiksen (1978) stated, “…effective schools can be shown to all but eliminate the relationship between family background and pupil performance, at least in the acquisition of the tested schools skills to the critical level of competency” (p. 29).

**Research Questions**

The questions for my research study are listed below.

1. Do interim assessments of literacy skills predict end-of-year academic achievement?

2. Does the school’s learning environment predict literacy skills while accounting for the influence of social and economic risk?

3. Does the school’s learning environment provide additional explanation of variance in academic achievement beyond literacy skills assessments?

4. Do interim assessments predict academic achievement after the influence of the school’s learning environment and elements of social and economic risk have been statistically removed?
Contribution of My Study

The purpose of this correlational study was to explore the relative strength of the relationship between the school’s learning environment and student achievement, and a literacy benchmark assessment and student achievement. These relationships have been explored independently and in concert to determine whether literacy skills or learning environment is more closely related to student achievement. Considering the moderating effect of SES, I controlled for the influence of community social and economic risk in examining the relationship between literacy skills and the school’s learning environment. Figure 5 highlights the relationships that were studied for my research. I examined data from the ISQ system, the DIBELS, and indicators of community risk gathered from parent and student reports collected in conjunction with the ISQ. I collected all data during the 2010-2011 school year from a sample of 93 elementary

1. PRESSURE TO INCREASE STUDENT LEARNING

2. FREQUENT (INTERIM) TESTING

3. SCHOOL ENVIRONMENTAL FACTORS

4. RISK FACTORS

5. RELATIONSHIPS among FREQUENT TESTING SCORES, MEASURES OF THE SCHOOL’S LEARNING ENVIRONMENT, and RISK FACTOR SCORES IN PREDICTING STUDENT ACADEMIC LEARNING

Figure 5. Logical progression of study, focus on relationships among variables.
schools in Utah. I conducted this in several phases, which are described in Chapter III.

1. I determined the extent to which interim assessments of literacy knowledge and skills predicted academic achievement.

2. I reexamined the extent to which the school’s learning environment predicts academic achievement, independent of social and economic risk.

3. I evaluated the extent to which the school’s learning environment provides additional explanation of variance in end-of-year academic achievement beyond that explained by periodic, interim, or benchmark assessments of literacy skills.

4. I examined the relative contributions of interim assessments of literacy skills and the school’s learning environment in predicting academic achievement relative to social and economic risk.

This document is presented as follows: (a) Chapter II reviews prior research related to this study, (b) Chapter III provides methodological information on the quantitative research conducted, (c) Chapter IV includes tables and narrative information concerning the statistical results, and (d) Chapter V presents conclusions based on the results and gives suggestions for future research.
CHAPTER II
LITERATURE REVIEW

Introduction

The purpose of this chapter is to further explain the logic for my study and to review relevant prior research. Figure 6 provides a more detailed outline of my study than did Figures 1-5 of the relationships between components associated with my study. In Figure 6, ovals represent broad categories associated with student learning and/or student failure. Rectangles represent measurements of the school’s learning environment (ISQ) and measurements of student learning. The structural model for this study is represented by the solid and dashed thick lines. The relationships between the categories that have already been investigated and established in previous research are connected by solid thick lines and the relationships between the categories connected by dashed lines in the model indicate those relationships I investigated for my study.

Figure 6. Theoretical model illustrating some constructs associated with student academic achievement.
Figure 6 illustrates the structure for my investigation. This chapter outlines research associated with each of the components represented in the model. First, I provide background information about the current educational environment in which there is increased pressure to ensure high levels of student learning for all students. This section provides an historical summary of some of the legislation and research related to this increased pressure.

Next, this chapter provides information about assessment of classroom content and skills, reviewing traditional assessment approaches, then focusing on interim assessment as it helps educators predict student learning on end-of-year assessments—with the DIBELS interim literacy assessment as an extended example. This relationship is illustrated in Figure 7. Following the material on skills/content assessment is a section on community and family variables, which interact with classroom instruction to affect academic success or failure. This relationship is illustrated in Figure 8.

Figure 7. Theoretical: Emphasis on interim testing of literacy skills using the DIBELS assessment.
Finally, research specifically focused on the factors of the school environment that influence student learning is reviewed, along with applications and findings related to the ISQ instrument, which will be used in the study reported in this dissertation. These relationships are illustrated in Figure 9.

**Pressure for Accountability**

Since the early 1980s, public concern over school quality and interest in school reform in the United States has been rising. Perhaps the most tangible evidence of this sentiment was the landmark report, *A Nation at Risk: The Imperative for Educational Reform*. This report, authored by the National Commission on Excellence in Education (1983), was intended to identify opportunities to reshape the current educational system.
to more fully “develop the talents of all” (p. 7). The commission further stated that schools should embrace “genuinely high standards rather than minimum ones” for all students (p. 7). Finally, the commission reasoned that to ensure that all students meet high standards, it would be necessary to begin annual standardized testing for all students.

The emphasis on universal assessment became the keystone of the modern notion of school and teacher accountability. In 1989 President George H. W. Bush and the nation’s governors began a serious attempt to craft policy to make the recommendations from *A Nation at Risk* a reality. Their efforts were formally presented in a strategy entitled *America 2000: An Education Strategy* (U.S. Department of Education, 1991). The philosophy put forth in America 2000 emphasized the importance of accountability and transparency as incentives for school improvement and excellence (Reyes & Rotter, 2001). President Clinton’s decision in 1994 to formally adopt the *Goals 2000: Educate America Act* marked true bi-partisan support for educational reform in the United States.
and further stressed that academic standards and assessment would be the critical drivers of school reform (Reyes & Rotter, 2001).

**Expectations**

While conducting my study, NCLB legislation required Title I schools to meet state determined levels of academic achievement for elementary schools. Below is a summary of NCLB expectations as well as sanctions for Title I schools that did not meet expectations. The summary provides background information about expectations for increased levels of academic achievement for students. The summary is included to help set the stage for the remainder of the literature review.

The culmination of nearly two decades of interest in school reform occurred when No Child Left Behind (2001) was enacted. NCLB stressed accountability, statewide common standards, and annual assessment, emphasizing an ambitious goal for all students to meet academic proficiency standards by 2014. The linchpin of NCLB (2001) was the annual determination of adequate yearly progress (AYP). AYP was determined by each state’s office of education based on the percentage of students participating in annual testing throughout the school and within racial subgroups as well as the percent of students proficient on the annual measurable objectives (AMOs) in language arts, math, and science. Each state was responsible to define its AMOs and was required to include an annual standardized testing system to collect data on the achievement of each AMO.

In Utah, state officials established a baseline AMO in 2002 for English language arts (ELA) and mathematics in grades three through eight and in high school. These baseline rates were intended to progressively increase every two years until the final goal
of 100% proficient would be reached in 2014 (Utah State Office of Education, 2011). The baseline rate for elementary school ELA was 65% proficient, and the baseline rate for elementary school mathematics was 57%. ELA proficiency expectations were to increase by 6% every 2 years until 2013 and to increase by 5% to 100% in 2014. Mathematics proficiency expectations increased by 7% in 2005 and by another 7% in 2007. A new math test was administered in 2009, so proficiency expectations were lowered to 45% in 2009, 2010, and 2011, and then expectations increased by 8% for 2012 and another 8% for 2013. Expectations for 2014 are for 100% of students to be proficient in mathematics.

Sanctions

All school leaders had sufficient incentive to achieve AYP because the NCLB mandated that these scores be communicated to the public, and for many schools there were financial, programmatic, and human resource consequences for not meeting AYP (U.S. Department of Education, 2012). Title I schools, however, suffered sanctions when they did not meet AYP expectations. Title I schools are those schools that qualify for Title I funding based on the economic status of the community they serve. Schools that have 75% or more students in poverty must be considered a Title I school. District officials may also choose to allocate Title I funds to schools with a poverty rate as low as 35%. District officials must, however, first make certain that all schools with a poverty rate over 75% have received Title I funds and then rank order the remaining district schools from highest percent poverty to lowest percent poverty. District officials then determine the cut off point for which schools qualify for Title I funds. District officials may not, for example, choose to fund schools at 40% poverty unless all schools with
more than 40% poverty are also funded (U.S. Department of Education, 2012).

If a Title I school failed to meet AYP, this result was immediately published in local newspapers. When a Title I school failed to meet AYP for two consecutive years, it was identified as needs improvement. Schools identified as needs improvement were required to provide students a choice of attending another school that was not identified as needing improvement and the schools were required to provide transportation to the other school (U.S. Department of Education, 2012).

Another sanction for schools that did not make AYP for two consecutive years was that they were identified as in need of corrective action. Schools in corrective action were required to make comprehensive changes to staffing, implement a new curriculum including professional development, and reorganize the school internally. For example, to reorganize the school internally educators could have chosen to reorganize the school day, or they could have chosen to reorganize the school by making changes to work assignments that may make a positive difference for student learning. Finally, if a Title I school did not make AYP after one year in corrective action, it was required to begin planning for restructuring. Restructuring required school leaders to replace a majority of school staff, reopen the school as a charter school, or yield the management and control of the school to a private entity (U.S. Department of Education, 2012).

In addition to the aforementioned sanctions, when Title I schools did not meet AYP expectations for three consecutive years they were required to provide supplemental education services for their students. During the duration of my study, supplemental education services could have been selected from the public or the private sector and
would have been paid for with Title I funds. At any time throughout the needs improvement process, Title I schools that met AYP status for two consecutive years were no longer considered to be in needs improvement (US Department of Education, 2012). Currently, state education agencies (SEAs) that received flexibility, received a waiver of the following; the requirement to identify schools that are in need of improvement, the need for corrective action including supplemental services, and the need to restructure the school (NCLB, 2012).

**Mitigating Factors**

The design of the AYP system and its accompanying sanctions were intended to help low performing schools progressively raise student achievement in anticipation of the 2014 goal for all students to be proficient on end-of-level tests. Unfortunately, the narrow focus of the AYP formula failed to account for several critical factors within and outside of the school that contribute to student performance (Croninger & Lee, 2001; Hawkins et al., 2002; Land & Legters, 2002; Lee et al., 2008; Masten & Coatsworth, 1998; Pallas et al., 1989; M. J. Taylor et al., 2006; Whipple, Evans, Barry, & Maxwell, 2010). For example, schools in poverty are more likely to fail AYP because community and home factors are important determinants of performance (M. J. Taylor et al., 2006). Additionally, schools with a toxic school learning environment (unclear rules, lack of trust, unsafe practices, discord between parents and teachers, etc.) are more likely to fail AYP (M. J. Taylor et al., 2006).

Because AYP status does not depend on community satisfaction, teacher working conditions, and the quality of the school’s learning environment, it is not actually
identifying effective schools, but schools that are successful given the lack of other risk factors. Despite these limitations, educators were still beholden to AYP determinations, which equate quality schooling with high performance on annual, standardized tests. As a result, educators needed tools to help them effectively prepare for end-of-level tests. Tools could include instructional strategies, school safety plans (M. J. Taylor et al., 2006), ongoing assessments (Christman et al., 2009; Marshall, 2008; Perie et al., 2007; Popham, 2008; Stiggins, Arter, Chappuis, & Chappuis, 2006), and professional development programs (Haycock, 2001).

The next portion of this literature review will begin with a description of standardized assessments that are used to provide baselines (formative), evaluations (summative) and benchmarks (interim) to guide teachers in predicting and improving student academic outcomes. The review will then focus on the DIBELS literacy assessment, which is well known, commonly used, and proven successful in predicting and guiding teachers’ instruction to improve students’ literacy achievement.

An additional set of factors will then be considered, which are more difficult to identify and assess: situational factors including community and family circumstances and finally the environment of the school itself. Although school administrators and teachers have little, if any, control over community and family situations, studies of successful schools in neighborhoods of extreme poverty have demonstrated that factors in the school environment can to an extent compensate for these factors in promoting children’s academic achievement. An instrument, the ISQ, has been developed that is being used in numerous states to assess these factors so that administrators and teachers
are aware of strong and weak areas, as they are with students’ development of skills as measured by academic testing (M. J. Taylor et al., 2006). In the context of research in these areas, the strengths and benefits of assessing both instructional and situational factors can be examined.

**Subject Matter Assessments**

In theory, teachers should use assessment data to glean information on students’ strengths and weaknesses and adjust instructional strategies to improve learning. However, in practice, teachers are often confused about which assessments to use, how to interpret data, or what instructional strategies should be used as a result. As an overview of assessment, Figure 10 provides a summary of information about various forms of assessment.

**Formative and Summative Assessments**

The ongoing assessment used by teachers to determine students’ strengths and weaknesses is often termed *formative assessment*. Michael Scriven first referenced formative assessment in 1967, identifying it as the assessment that happens while educational programs are under development with the goal of improving them in process. Scriven distinguished formative from summative educational evaluations, stating that formative processes evaluate while improvements can still be made based on feedback; thus they “may have a role in the ongoing improvement of the curriculum” (Scriven, 1967, p. 41). Summative evaluations, according to Scriven, are used not necessarily to
<table>
<thead>
<tr>
<th>Assessment</th>
<th>Brief overview</th>
<th>When/how often administered</th>
<th>Uses</th>
<th>Examples of</th>
<th>Figure 10. Matrix of assessment.</th>
</tr>
</thead>
</table>
| Interim    | Interim assessments are considered medium-scale, medium-cycle assessments, falling between summative and formative assessments and usually administered at the school or district level (Perie et al., 2009). | Generally, interim assessments are given several times a year, although a test that was administered once at some midpoint during the year could also be considered interim (Perie et al., 2009). | • Guide instruction  
• Evaluate educational programs  
• Predict student performance on summative (such as end-of-year) assessment (Perie et al., 2007, 2009) | • Teacher made tests  
• Commercially produced or textbook tests (Cizek, Rachor, & Fitzgerald, 1996)                                                                 |                                                                                                                                          |
| End-of-year | An end-of-year assessment is typically a summative assessment used to determine what students know and do not know.                                                                                             | End-of-year assessments are given once a year.                                                                                                                                                                               | Data are used to help in evaluating the learning process (Garrison & Ehringhaus, n.d.).                                                                                                                                                                                                                                                                 | Commonly used end-of-year assessments at the elementary school level in Utah include:  
• The Utah Core assessment, also known as the CRT  
• The National Assessment of Educational Progress (NAEP), which is typically given between January and March. |                                                                                                                                          |
| Formative  | Formative assessments are considered to be a part of the learning process. Teachers often use data from formative assessments to adjust instruction to meet the learners’ needs. Formative assessment is often viewed as practice and scores from formative assessment are generally not figured into final grades (Garrison & Ehringhaus, n.d.) | To be most effective, formative assessment should occur throughout each day of instruction (Garrison & Ehringhaus, n.d.).                                                                                                                                                           | • Guide instruction  
• Predict student performance on summative assessment (Clark, 2011).                                                                                                                                                                                                 | • Teacher observations  
• Daily practice work, including worksheets and writing samples  
• Questioning strategies  
• Self and peer assessment (Garrison & Ehringhaus, n.d.) |                                                                                                                                          |
| Summative  | Summative assessments that are given at a point in time to determine what students do and do not know. Summative assessments happen too far down the learning road to make instructional adjustments. (Garrison & Ehringhaus, n.d.) | These assessments are generally given every few weeks, months, or once during the school year (Garrison & Ehringhaus, n.d.).                                                                                                                                                         | Data is used to help in evaluating the learning process (Garrison & Ehringhaus, n.d.).                                                                                                                                                                                                 | • State assessments  
• District interim or benchmark assessments  
• End of unit or chapter tests  
• End of term or semester exams  
• Scores that are used for accountability of schools (AYP) and students (grades) (Garrison & Ehringhaus, n.d.) |                                                                                                                                          |
improve programs, but to determine their value and ongoing necessity.

The evaluation process may serve to enable administrators to decide whether the entire finished curriculum, refined by the use of the evaluation process in its first role, represents a sufficiently significant advance on the available alternatives to justify the expense of adoption by a school system. (pp. 41-42)

Summative and formative assessments serve different purposes. One is not necessarily of greater import than the other (Scriven, 1967). Summative evaluations (assessments), such as state high-stakes tests, are intended to be used by decision makers to determine how well a student has learned something or to hold teachers, schools, and districts accountable for state and federal curriculum standards. Formative evaluations (assessments) support the process of improvement for learning by someone who can help make improvements, such as a classroom teacher. Scriven (1991) stated, “Perhaps the best way to put the formative/summative distinction is, when the cook tastes the soup, that’s formative; when the guests taste the soup, that’s summative evaluation” (p. 19).

**Interim Assessments**

Conceptually, the most obvious way to predict student performance on any test would be to have all students take the end-of-level test a few weeks/months before “officially” taking it. Assuming the test was reliable and valid, a high correlation between students’ first and second scores could be assumed. The students scoring low on the first administration could be given instruction based on the specific areas of deficit in hopes of improving performance on a second administration. When data from interim assessments are used to guide and improve instruction, those interim assessments are being used in a formative way. With increased emphasis on performance on end-of-year tests, additional
interim assessments (Perie et al., 2007), occurring periodically throughout the year, have proliferated in K-12 education. The increase in the use of interim assessments is in part due to teachers seeking information on student academic skills so that teachers are able to predict how well students will perform on end-of-year assessments.

Benefits of Interim Assessment

Perie and colleagues (2007, 2009) categorized the many purposes of interim assessments into three categories: instructional, evaluative, and predictive. Instructional purposes entail using the test results to inform classroom teachers about current students’ learning so that teachers can alter their instruction to better meet students’ needs. When used in this manner, interim assessments are used in a formative way. For evaluative purposes, teachers would use interim test information to analyze aspects of the educational program for the benefit of future students. Teachers would use interim test results for predictive purposes by estimating students’ performance on a future assessment, such as an end-of-year assessment. Given these functions, the interim assessment has instructional as well as evaluative or predictive utility (Christman et al., 2009; Marshall, 2008; Perie et al., 2007; Popham, 2008; Stiggins et al., 2006).

Teachers value interim assessments more than they have in the past because typically data from the assessment is directly relevant to the curriculum taught in the classroom, and interim assessments often predict student achievement on end-of-level tests (Zemelman, Daniels, & Hyde, 1998). Research focused on using interim assessment to predict end-of-year learning shows close relationships between interim results and end-of-year assessment data (Bergan, Sladeczek, Scharz, & Smith, 1991; Blanc et al., 2010;
Martinez & Martinez, 1992; Meisels et al., 2003; Roehrig, Duggar, Moats, Gloer, & Mincey, 2008).

**Effectiveness of Interim Assessments**

Williams (2008) reported findings from a correlational study in which a curriculum-based measure was used to predict end-of-year learning outcomes. The sample for this study included 4,891 students in Northside Independent School District in San Antonio, Texas. Educators from this district developed a curriculum-based measure they titled Curriculum Driven Benchmark (CDB). Development of CDB took place in this district’s elementary math department, with the math instructional supervisor aligning the test to the curriculum by identifying the Texas Essential Knowledge and Skills (TEKS) taught. The Northside Independent School District in San Antonio had developed the TEKS, which are standards for student learning in math, science, social studies, and reading. The TEKS were identified in earlier released tests of the Texas Assessment of Knowledge and Skills (TAKS) questions, which served as a model for creating similar test items. Care was taken to align the CDB objectives with the objectives on the end-of-year test.

Three iterations of the CDB were administered during the school year, and scores from these assessments were correlated with the end-of-year TAKS test. Correlations between each of the three interim (CDB 1, CDB 2, and CDB 3) assessments and the end-of-year assessment were all statistically significant ($r = .58, p < .01$; $r = .58, p < .01$; and $r = .55, p < .01$, respectively). Because the CDB measured skills similar to those on the end-of-year assessment, teachers were able to anticipate their students’ performance
Williams’ study provides evidence that interim assessments can be helpful in predicting end-of-year academic achievement.

Although the research literature is replete with studies examining a variety of interim measures and their relationship with end-of-year tests (Blanc et al., 2010; Miesels et al., 2003; Williams, 2008), one of the most widely used interim tests is the DIBELS. *Education Week* reported, “DIBELS has become the most widely used assessment for Reading First schools, and has grown in popularity among other schools as well” (Product Popularity, 2005). Teachers and school administrators select the DIBELS assessment because it is simple to administer and it provides information about students’ literacy skills. Given the current emphasis on summative year-end testing, perhaps the most important information the DIBELS provides educators is a prediction of performance on end-of-level tests (Why Use DIBELS, 2012). The following section describes the DIBELS in greater detail and explores the relationship between these assessments, classroom instruction, and student achievement on end-of-year tests.

**DIBELS as an Example of Interim Assessment**

DIBELS is a set of short (1 minute) individually administered assessments used for determining students’ performance in early literacy skills, viable from kindergarten through sixth grade (Good, Kaminski, Simmons, & Kame’enui, 2001).

**Nature and use of DIBELS subtests.** Table 1 gives information about each of the DIBELS subtests.

**DIBELS prediction accuracy.** The DIBELS assessments have been found in
Table 1

DIBELS Assessments

<table>
<thead>
<tr>
<th>Name of assessment</th>
<th>When administered</th>
<th>Summary of assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIBELS Initial Sounds or Onset Fluency (ISF)</td>
<td>Last year of preschool through the middle of kindergarten</td>
<td>This is a standardized, individually administered test of phonological awareness that assesses a child’s ability to recognize and produce the initial sound in an orally presented word (Kaminski &amp; Good, 1998; Laimon, 1994)</td>
</tr>
<tr>
<td>DIBELS Letter Naming Fluency (LNF)</td>
<td>Fall of kindergarten through the fall of first grade</td>
<td>The LNF is a standardized, individually administered test. Students are allowed one minute to name as many randomly ordered letters from a list as they are able (Good &amp; Kaminski, 2002).</td>
</tr>
<tr>
<td>DIBELS Phoneme Segmentation Fluency (PSF)</td>
<td>Winter of kindergarten through the spring of first grade</td>
<td>The PSF is a standardized, individually administered test of phonological awareness that measures students’ ability to segment three- and four-phoneme words into their individual phonemes fluently (Good et al., 2001).</td>
</tr>
<tr>
<td>DIBELS Nonsense Word Fluency (NWF)</td>
<td>Mid to end of kindergarten through the end of first grade</td>
<td>The NSF is a standardized, individually administered test of the alphabetic principle. It includes letter-sound correspondences and the ability to blend letters into words when the letters represent their most common sounds (Kaminski &amp; Good, 1996).</td>
</tr>
<tr>
<td>DIBELS Oral Reading Fluency (ORF)</td>
<td>Mid first grade through third grade</td>
<td>ORF is a standardized, individually administered test of accuracy and fluency with connected text. Student performance is measured by having students read a passage aloud for one minute. The number of correct words read per minute from the passage is the oral reading fluency rate (Good et al., 2001).</td>
</tr>
</tbody>
</table>

numerous studies to be accurate predictors of students’ performance on end-of-level and end-of-year achievement tests (Buck & Torgesen, 2002; National Research Council, 1998; Reidel & Samuels, 2007; Scanlon & Velutino, 1996; Wang & Algozinne, 2008).

For example, Wang and Algozinne conducted an investigation in the southeastern United States in which first graders were given two of the four DIBELS subtests, the PSF and the NWF. The sample in this study consisted of 101 first-grade students, with 28 of these students assigned to a treatment group. These “treatment” students received from ten to
15 minutes a day of explicit curriculum-specific instruction in literacy skills. The treatment and control groups differed significantly on gains in literacy proficiency at the end of the school year. The investigators reported that when students’ literacy skills were measured on a DIBELS subtest and compared with control group students, the treatment group students scored lower in the fall but higher in the spring. The difference between the control group and the treatment group was not statistically significant in the fall, indicating that both groups had similar test scores with the treatment group scoring slightly lower than the control group. However, in the spring differences in test scores between the two groups were significant. The treatment group students not only caught up with the control group students but also surpassed them. For example, the grade-based standardized mean scores for students in the treatment group on the phoneme segmentation fluency (PSF) subtest on the DIBELS assessment were 18.77 in the fall and 37.35 in the spring. PSF mean scores for the control group were 19.50 in the fall and 30.83 in the spring. Scores from another subtest, nonsense word fluency, showed similar results: treatment group students made greater gains from fall to spring on each of these subtests than did the control group. As evidenced in the research outlined above, DIBELS assessments provide information about students’ literacy skills. Additionally, students in the treatment group who received focused literacy instruction made larger literacy skills gains during the school year. The DIBELS assessments are reported to be valid, reliable, and simple to administer. More information regarding the psychometric properties of the DIBELS is presented in Chapter III. The DIBELS interim assessment was used in a formative way for this study.
DIBELS has also been used to predict student learning on end-of-year assessments. In 2006, Rouse and Fantuzzo conducted research focused on using the DIBELS scores to predict end-of-first-grade literacy skills that would be measured on the developmental reading assessment (DRA) and on the vocabulary TerraNova subtests of first grade. The TerraNova (2001) assessment, a norm-referenced, standardized achievement test, was designed to measure learning in the basic skills that are taught in elementary and secondary schools. It uses multiple measures including multiple choice, constructed response, and performance assessment.

Rouse and Fantuzzo (2006) found significant predictive relationships between early literacy skills measured by the DIBELS in kindergarten and literacy constructs, alphabet knowledge, print conventions, and comprehension as measured on the TerraNova at the end of first grade. Analyses revealed a significant relationship between DIBELS subtests and first-grade instructional reading. Of the three DIBELS subtests used, Letter Naming Fluency had the strongest association with reading at the end of the school year (standard regression coefficient = .45, \( p < .0001 \)). End-of-year DIBELS subtests explained 51.9% of the variance in first-grade instructional reading as measured on the DRA. Of the three DIBELS subtests used, the letter naming fluency subtest had the strongest correlation to reading at the end of the year as measured on the Developmental Reading Assessment (DRA; standard regression coefficient = .45, \( p < .0001 \)). The DRA is a literature-based instructional reading assessment program used to help teachers assess and document student reading performance over time. The DRA manual (Beaver & Carter, 2003) states that the DRA was designed to inform and shape
instruction, which is a formative use of the assessment, and can be used to assess the level at which students can read text independently, and to specify students’ strengths and weaknesses in relation to engagement, oral reading fluency, and comprehension (Beaver & Carter, 2003). Significant bivariate relationships were found between DIBELS and each TerraNova subtest in first grade (Rouse & Fantuzzo, 2006).

Regression analyses of the DIBELS in kindergarten on the Vocabulary dimension of the TerraNova at the end of the year resulted in a significant overall relationship. DIBELS dimensions accounted for 45.1% of the variance in Vocabulary. Letter Naming Fluency (standard regression coefficient = .46, \( p < .0001 \)) emerged as the strongest predictor of vocabulary, followed by phoneme segmentation fluency. DIBELS subtests Letter Naming, Nonsense Words, and Phoneme Segmentation Fluency were found to have the strongest positive relationships with indicators of overall reading ability (i.e., DRA Instructional Reading and TERA Reading Quotient).

Rouse and Fantuzzo (2006) included in their study 296 kindergarten students enrolled in a large urban school district, selected using a stratified, random sample. These researchers found that the DIBELS assessment was an accurate predictor of end-of-year testing. A regression analysis showed that 41% of the variance in language arts achievement was explained by DIBELS.

Other researchers (Buck & Torgesen, 2003; Reidel & Samuels, 2007) have also conducted research focused on the predictability of DIBELS on end-of-year student learning. Buck and Torgesen focused their research on the extent to which the DIBELS assessment predicted student learning on the Florida Comprehensive Assessment Test
Buck and Torgesen found significant positive relationships between the DIBELS and reading as well as between the DIBELS and math scores. Reidel and Samuels (2007) also found close relationships between DIBELS scores and an end-of-year assessment, the TerraNova reading subtest. The TerraNova is commonly used and has timed subtests.

The DIBELS assessments are good predictors of end-of-year academic learning, but concern has been found over the fact that teachers may rely too heavily on interim assessments to ensure high levels of learning for all students. When teachers focus narrowly on interim assessment as a means to ensure student learning for all, they miss other important factors that are also related to student academic learning. In other words, educators may be tempted to conclude that instruction is the only determinant of student achievement. Educators may then focus all of their energies on improving instruction.

But it is known that instruction is not the only determinant of student achievement. Much research, as noted in the section below, indicates that family, community, and other factors have strong influences on academic learning or academic failure of students in the classroom. The next section provides research results from studies that show other non-curricular variables that are related to student academic failure or to student academic learning.

**Circumstantial Risks and Variables**

Typically, interim assessments in schools measure the subject matter knowledge and skills related to learning, but there are many other factors associated with student
academic learning. Teachers have little or no control over many of these other factors, such as family conditions, and community and neighborhood economic risk. However, there are several additional, but critical, variables that schools and teachers can influence that predict learning and achievement as well, and are often not included in discussions about improving student learning. In a causal model, they tend to appear a little further “upstream” than do day-to-day instructional events. These variables combine to create a context for teaching and learning within the school. They can be thought of collectively as the school’s learning environment. Teachers and administrators do have control over many of these factors, which have been found to mitigate or even overcome negative situational variables, including poverty (Edmonds, 1979c).

Nevertheless, researchers have suggested that poverty, community disorganization, and other factors render almost impossible to overcome conditions for public schools (Coleman et al., 1966; Sirin, 2005; Towers, 1992). Schools in “bad” neighborhoods afflicted with high crime rates, fractured families, poverty and unemployment, are often considered a “lost cause” in producing high achieving students (Edmonds, 1979c; Lezotte, 1991, 2001; Lezotte & Jacoby, 1992; M. J. Taylor et al., 2006). These highly impacted schools are those schools that have some or all of the following conditions: a high percentage of students in poverty, high numbers of English language learners, high numbers of ethnic minority students, high numbers of students living in a single parent home, and/or a high mobility rate (Utah State System of Public Education, 2006). In the next section, I will describe the variables over which teachers and schools are thought to have little control and then present a review of research about
highly impacted schools that appear to have overcome these variables in providing a high-quality education.

**Community and Family Variables**

**Risk factors.** Stringfield and Land (2002) defined at-risk students as those who are at risk of failing academically and dropping out before graduating from high school. Research on community variables that increase these risks include community economics, home language, community affiliation, family conflict, peer associations, mobility, and parent education. Researchers have examined the relationships of these variables to student academic proficiency or failure. Students with various combinations of the following have increased risk for academic failure: a low-income family, a family language other than English, little or no community affiliation or negative community affiliations, high family conflict, poor peer associations, high mobility, and low levels of parent education (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002; Hawkins et al., 2002; Swanson, Valiente, & Lemery-Chalfant, 2012; M. J. Taylor et al., 2006). For example, Swanson and colleagues conducted a quantitative study in which 266 students in third, fourth, or fifth grade and their parents were surveyed to determine the extent of risk factors associated with the students. Risk factor data was then compared to academic achievement data. Swanson and colleagues found that when students have an accumulation of home risk factors, such as parents’ low education, high levels of family chaos, and family income, the students were more likely to experience academic failure.

High school dropout rates provide additional information about the affect of risk factors on student academic failure. Hafner, Ingels, Schneider, and Stevenson (1990)
conducted a national longitudinal study beginning with middle school eighth-grade students. The study included 2-year follow-ups during the sophomore and senior years of high school. At-risk factors such as high poverty level, parents who were high school dropouts, single parent families, and families with little to no knowledge of the English language were considered. The sample for this study included 16,489 students. The participants took cognitive tests and filled out student-dropout questionnaires. Results showed that after the first follow-up toward the end of tenth grade, students with two or more risk factors were nearly eight times more likely to drop out of school than students with no risk factors. The second follow-up that was conducted during the students’ senior high school year showed that students with two or more risk factors were six times as likely to drop out of high school compared to those with no risk factors. This national longitudinal study shows that students who exhibit several at-risk factors have a higher incidence of dropping out of high school.

**Protective factors.** In contrast to the detrimental effects of community risk factors, researchers have also identified several community variables related to enhanced student achievement and reduced risk of academic failure. The following community variables have been related to academic achievement: (a) positive affiliation in a supportive community, (b) low levels of family conflict, (c) high levels of parent education, (d) socioeconomic level above the poverty line, (e) positive relationships, including social support, (f) a caring, supportive relationship with a responsible adult, (g) positive parent or caregiver involvement, (h) a feeling of safety and security from growing up in a stable two-parent home, and (i) additional positive supportive role
models (Annunziata, Hogue, Faw, & Liddle, 2006; Garmzey, 1993; M. J. Taylor et al., 2006; R. D. Taylor & Lopez, 2005). These variables, often referred to as protective factors, are associated with resilience. Resilience has been defined as positive adaptation maintained despite the occurrence of stressful experiences, resulting in outcomes better than expected given the risk factors (Masten, 2001).

One of the most studied community variables associated with student academic achievement is parents’ educational expectations for their child (Eccles, 1993). Studies have repeatedly shown that parents’ educational expectations can impact their children’s educational expectations and attitudes toward school (Hossler & Stage, 1992; Zhang, Haddad, Torres, & Chen, 2011) and ultimately their academic achievement (Astone & McLanahan, 1991). Parents who have high educational expectations for their children are often involved in their children’s schooling, and this involvement has been found to increase student academic achievement (Gutman & McLoyd, 2000; Hill & Taylor, 2004). For example, parents who discuss school activities with their children and also provide help with homework influence their children’s academic success. Studies have demonstrated higher levels of academic achievement in children with involved parents than students who have experienced less parent involvement (Steinberg, Lamborn, Dornbusch, & Darling, 1992).

Xu, Benson, Mudrey-Camino, and Steiner (2009) reported that students who had parents who were involved in their students’ education were more likely to have higher academic achievement than students with less involved parents. These researchers utilized data of the fifth-grade class from the Early Childhood Longitudinal Study,
Kindergarten Class of 1998-1999. The Early Childhood Longitudinal Study included a large sample size. The study investigated relationships between parental involvement, self-regulated learning (SRL), and reading achievement. The study looked at several aspects of parental involvement including school involvement, TV rules, homework help, homework frequency, parental education expectations, and extracurricular activities. The researchers found that parental education expectations had strongest beneficial effects on SRL. In a statistical regression analysis between various parental involvement aspects and student reading achievement, the researchers found parental educational expectations had a regression coefficient of 0.22 ($p < 0.0001$) with reading achievement. Reading ability was determined by comprehension achievement in reading scale scores.

Unfortunately, educators have limited control of the risk and protective factors described in this section. Many educators feel disheartened by recognizing the importance of community and home factors in the learning process (Good, 1987). However, there is evidence that these nonmalleable factors are not the only situational factors that influence academic achievement.

Cumulative School and Neighborhood Factors

To study the relationship between risk factors and student academic achievement, Whipple and colleagues (2010) used archival data to create a file of 549 New York public elementary schools. The researchers selected the 549 schools because all of them had available data on standardized test scores in math and English as well as many indicators of risk for each school. The school was the unit of analysis for this study: Data reported
were compiled using each school’s average standardized test scores for math and English. Averages for risk factors were also computed for each school. Math and English scores were averaged because the percentages of students meeting standards on both of these tests were highly correlated \( (r = .95) \).

These researchers found that cumulative school risks and neighborhood risks were negatively associated with school-level achievement. They showed that the percentage of students meeting academic standards decreases significantly as neighborhood and school risk factors increase. They reported that school cumulative risk explained 15% of the variance in academic achievement when they controlled for neighborhood risk. The following variables were associated with school cumulative risk: (a) the proportion of teachers with less than 5 years of teaching experience, (b) the average number of days of teacher absence, (c) the proportion of teachers who had been working at the school for less than 2 years, and (d) the quality of the school building as measured on an index of school building quality. The researchers looked simultaneously at neighborhood risk, including (a) neighborhood poverty, (b) proportion of female single heads of household with children, and (c) proportion of mothers who had not completed high school. Whipple and colleagues found that neighborhood risk explained 30% of the variance in school-wide academic achievement when they controlled for school risk.

Overall, the study by Whipple and colleagues (2010) was well designed; it used a large sample size, well-designed measurement instruments, and results can be generalized to the general population. However, the study did have limitations. The researchers noted that the most important limitation was the restriction of data to school-level aggregation.
They reported that the school-level variance in test scores could have been due to school and neighborhood cumulative risk effects independent of individual cumulative risk exposure. School-level data provides overall risk factor data for the school, but does not provide specific data about how each student’s risk factors are associated with his or her academic proficiency. It was not possible for the researchers to separate the school-level effects from the individual level effects because individual data were not available. The Whipple and colleagues study, however, had a large sample size and thus provided information pertaining to the cumulative effect of neighborhood and school risk factors and the relationship of those risk factors to student academic achievement. Even with the contributions of this study, questions remain as to what educators can do, if anything, to overcome community risk factors and achieve high levels of learning for all students. The next section provides evidence that schools and teachers can and do make a positive difference for students, even those with a number of risk factors.

Other studies similar to the Whipple and colleagues’ (2010) study have been conducted over the past several years (Coleman et al., 1966; Sirin, 2005; Towers, 1992). These studies also show that risk factors are associated with academic failure. The impact of these studies may be that some educators give up hope of making a positive difference for at-risk students. Fortunately, there is ample research detailing characteristics of schools that house at-risk students who do well academically.

**High-Achieving High-Poverty Schools**

Educators can and have overcome risk factors to assure high level achievement for students. For example, research exploring the characteristics of high achieving high
poverty schools has been ongoing for over 30 years.

**Effective schools movement.** Perhaps the most significant contribution to this literature was provided by the *Effective Schools Movement* (Pallas, 1988), which explored school practices and procedures common in schools that experience success in educating all students despite serving a high poverty community. These common correlates are safe and orderly environments, high expectations for success, effective instructional leadership, consistent monitoring of student progress, clear and focused missions, learning opportunities, appropriate time on task, and good home-school relations (Edmonds, 1979c; Lezotte, 1991, 2001; Lezotte & Jacoby, 1992). These correlates are additive, and the more that are present in a school, the greater the likelihood of high academic achievement (Bliss, Firestone, & Richards, 1991; Cruickshank, 1990).

A comparable example is provided by a study titled “Dispelling the Myth: High Poverty Schools Exceeding Expectations.” In this study Barth and colleagues (1999) used information from 366 schools in 21 states to examine the academic achievement of high poverty schools. The authors worked with state school officers from 21 participating states to identify the top performing and/or most improving schools in states with over 50% of the student population living in poverty. The result of this research was a list of 1,200 high performing high poverty schools representing much of the country. Later Haycock (2001) reported follow-up results from the report of dispelling the myth. She explained that student success in high poverty schools is not rare, that strong leadership at all levels, along with the instructional quality resulting from research-based best practices and high quality teachers, has proven to help students overcome obstacles and challenges.
The central finding from the 2001 study was that despite demographic variables that may present risk to student academic achievement, teaching quality rather than poverty is the most important factor in determining student success (Haycock, 2001).

**Meta-analytic view.** Marzano’s (2003) meta-analytic review of effective practices in schools echoes Haycock’s (2001) conclusion. Marzano synthesized the results of studies that had been conducted over the course of the effective schools movement to affirm the value of a guaranteed and viable curriculum, challenging goals, effective feedback, parental involvement, safe environment, collegiality, and professional development as essential components of the effective school process. In his synthesis, Marzano (2003) investigated his previous work (Marzano, 2000) and the work of four other researchers in the field of effectiveness research. Utilizing research by Edmonds (1979a, 1979b, 1979c, 1981), who Marzano names as the figurehead of the school effectiveness movement, Levine and Lezotte (1990), Sammons (1999; Sammons, Hillman, & Mortimore, 1995), and the review of research by Scheerens and Bosker (1997), Marzano noted that, although different terms are used by these researchers, the researchers describe the same factors for effective schools. Marzano organized the common school effectiveness factors and categorized them into five groupings in rank order of importance. Marzano asserted that all five effective school components are essential. A summary of the results is displayed in Figure 11. When educators interacted cooperatively in accord with the processes described in the section above and their unified purpose was increasing student academic proficiency, all students made academic gains regardless of community risk.
### School Level Factors Associated with Improved Academic Achievement

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<td>Guaranteed and Viable Curriculum</td>
<td>1</td>
<td>Opportunity to Learn Time</td>
<td>Content Coverage Time</td>
<td>Concentration of Teaching and Learning</td>
<td>Focus on Central Learning Skills</td>
<td>Emphasis on Basic Skill Acquisition</td>
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<td>Challenging Goals and Effective Feedback</td>
<td>2</td>
<td>Monitoring</td>
<td>Monitoring</td>
<td>High Expectations</td>
<td>High Expectations and Requirements</td>
<td>High Expectations for Student Success</td>
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<td>Pressure to Achieve</td>
<td>Pressure to Achieve</td>
<td>Monitoring Progress</td>
<td>Appropriate Monitoring</td>
<td>Frequent Monitoring of Student Progress</td>
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<tr>
<td>Parental and Community Involvement</td>
<td>3</td>
<td>Parental Involvement</td>
<td>Parental Involvement</td>
<td>Home School Partnerships</td>
<td>Salient Parental Involvement</td>
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<tr>
<td>Safe and Orderly Environment</td>
<td>4</td>
<td>School Climate</td>
<td>School Climate</td>
<td>A Learning Environment</td>
<td>Productive Climate and Culture</td>
<td>Safe and Orderly Atmosphere Conducive to Learning</td>
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<td>Positive Reinforcement</td>
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<td>Pupil Rights and Expectations</td>
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<td>Collegiality and Professionalism</td>
<td>5</td>
<td>Leadership</td>
<td>Leadership</td>
<td>Professional Leadership</td>
<td>Strong Leadership</td>
<td>Strong Administrative Leadership</td>
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<td></td>
<td>Shared Vision and Goals</td>
<td>Practice-Oriented Staff Development</td>
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**Figure 11.** Effective school-level factors associated with improved academic achievement.

### Assessment of the School’s Learning Environment

In addition to interim assessments and community risk and resiliency factors, researchers have identified school factors such as teacher excellence, school safety, teacher satisfaction, parental involvement, school leadership, and institutional collaboration that are also related to academic achievement (Bliss et al., 1991; Comer & Haynes, 1991; Cruickshank, 1990; Fisher & Fraser, 1983; Fraser & O’Brien, 1985; Hoy & Hannum, 1997; Peterson & Deal, 1998; M. J. Taylor et al., 2006). Knowing about the relationship between these variables and end-of-year academic achievement is critical if
educators are to improve their students’ year-end achievement.

**Research on the Relationship of Learning Environment to Student Achievement**

Hoy and Hannum (1997) conducted a middle school study in which an environmental survey was used to examine relationships between the school’s learning environment and student achievement in reading, writing, and mathematics. The unit of analysis for the Hoy and Hannum study was the school, with 86 New Jersey middle schools in the sample. The authors took care to ensure that the sample was representative of New Jersey by using urban, suburban, and rural schools from diverse geographic areas.

The Hoy and Hannum (1997) study used the Organizational Health Inventory (OHI) created for middle schools to measure key constructs associated with the school environment. The OHI assesses teacher’s perceptions of the following.

1. Academic emphasis, which includes information that the learning environment is considered orderly and serious and that students complete homework

2. Teacher affiliation, which indicates that teachers show commitment to their students and are warm and friendly with their colleagues

3. Collegial leadership, which indicates that the principal treats all faculty members as his/her equal, and the principal lets faculty members know what is expected of them

4. Resource support, which indicates that extra materials are available if requested, and that teachers are provided with adequate materials for their classroom

5. Principal influence, which indicates that the principal gets what he or she asks
for from superiors, and the principal is not rebuffed by the superintendent

6. Institutional integrity, which indicates that teachers are protected from unreasonable parent and community demands and that a few vocal parents cannot change school policy

Teachers expressed their perceptions of these constructs by responding to prompts along a 4-point Likert scale. The researchers found that general school health as measured by the OHI was positively associated with student mathematics achievement \( (r = .61, p < .01) \), with reading achievement \( (r = .58, p < .01) \), and with writing achievement \( (r = .55, p > .01) \). However, these relationships were not statistically significant after controlling for the influence of SES and other community risk variables (Hoy, 2012). I believe that additional research focused on variables associated with community risk factors, school environmental factors, and assessment scores is needed as educators strive to improve students’ learning, particularly that of students who are struggling with one or more risk factors.

The reviewed literature has demonstrated a variety of variables related to academic achievement. The Hoy (2012) research provided an example of research on school environmental variables as related to student academic learning. However, when a partial correlation was conducted comparing the school environment to student learning after controlling for the influence of SES, the correlations were no longer significant. In this study, it was unclear how the variety of variables that are related to academic achievement are related to one another and to what degree variables inside and outside of school affect achievement. Hoy reported that he completed analyses over several years
and then when SES, a community risk factor, was entered into the equation no significant relationships remained between the school environment and academic achievement. In other words, when Hoy and his colleagues removed risk variables from the investigation, they found that the school environment made little to no impact on student academic achievement. Hoy and his colleagues wanted to find school environmental variables that were associated with student academic achievement at least as strongly as was SES. Hoy stated that it was a formidable task to locate these variables.

Many school environmental surveys measure perceptions of school stakeholders, including teachers, students, and parents. Fraser and O’Brien (1985) used an environmental survey to determine students’ perceptions of their school environment and then correlated perceptions with word knowledge and with comprehension. Students rated personal perceptions of school satisfaction, friction, competitiveness, difficulty, and cohesiveness. These perceptions were then correlated with achievement on word knowledge and comprehension assessments. Nearly all correlations were statistically significant ($p < .01$). Correlations with outcome measures for word knowledge were as high as .88 and for comprehension as high as .85. Thus student perceptions of their classroom environment accounted for 77% of the variance in the word knowledge measure and 72% of the variance in the comprehension measure. Ultimately, Fraser and O’Brien asserted that scores on both the word knowledge assessment and the comprehension assessment were greater in the classes that students perceived as having more satisfaction, less friction, and less difficulty. The sample for the Fraser and O’Brien study included 758 third-grade students from 32 elementary schools.
Although Hoy and his colleagues noted the difficulty of finding school environmental factors that were at least as strongly associated with academic achievement as was SES, other researchers have reported that there are school environmental factors that are more closely related to academic achievement than SES (Edmonds, 1979c; Lezotte, 1991, 2001; Lezotte & Jacoby, 1992; M. J. Taylor et al., 2006) is related to academic achievement. The following section outlines information about a school environmental survey that collects data on school environmental factors as well as student risk factors.

**A Measure of School’s Learning Environment (ISQ)**

Just as numerous attributes of the community predict a school’s overall academic achievement, characteristics of the conditions within a school seem to predict academic achievement. The ISQ is a valid and reliable survey that was developed in 2000 by researchers at the Center for the School of the Future (CSF) at Utah State University (USU). Since 2000 it has been used in approximately 2,500 schools nationwide, including several hundred schools in Utah during both the 2010-2011 and the 2011-2012 school years. According to M. J. Taylor and colleagues (2006):

ISQ, developed by CSF at USU, is a comprehensive survey system for school administrators to evaluate and monitor school improvement efforts. It summarizes the perceptions of parents, teachers, students, and other school staff regarding more than 30 crucial characteristics of the school. ISQ was designed so that data can be shared with many stakeholder groups and allows for the entire school community to take responsibility for school improvement. It is a low-cost and easy-to-administer survey system that provides pertinent information in a report format that can be quickly read and understood by just about anyone (p. 6).

Research (M. J. Taylor et al., 2006) has shown that the ISQ, even when risk is
removed, is predictive of student achievement. Parents of third-graders’ perceptions of teacher excellence, instructional quality, and school safety were significantly correlated with student academic achievement. Fifth-grade students’ parents’ perceptions of teacher excellence, school leadership, and school safety were significantly correlated with student academic achievement. Third- and fifth-grade teacher perceptions of parent support, student commitment, instructional quality, and school safety were significantly correlated with student academic achievement. Third-grade students’ perceptions of teacher excellence, student commitment, instructional quality, and school safety and fifth-grade student perceptions of student commitment, instructional quality, and school safety were significantly correlated with student academic achievement. All correlations are figured at $p < .05$. All of the correlations discussed in this paragraph were figured after risk factors were removed. Additional information on the ISQ and on its predictive validity is found in Chapter III and in Appendix A of this document.

Moore (2007) conducted an investigation in which he used the ISQ and a variant of the ISQ, the District Indicators of School Quality (DISQ) to study the relationship between the school environment and end-of-year student academic achievement. He sought to determine whether district administrators’ perceptions of school environment concurred with perceptions of other stakeholders. In his comparison Moore developed, tested, and then administered to district leaders a variant of the ISQ, known as the DISQ. The DISQ is a survey instrument that was developed to obtain central office respondents (COR). The DISQ survey was developed with school quality constructs parallel to those on the ISQ—the DISQ targets the seven domains that are also targeted on the ISQ. In
consideration of central office respondent time, the DISQ was pared down from the 30 survey questions on the ISQ to 13 questions. All domains of school quality and leadership that are found on the ISQ are also found on the DISQ.

Three sources of data were examined for Moore’s study: the ISQ, the DISQ, and standardized test scores. The DISQ survey, which was developed to facilitate comparison by measuring school quality constructs that were closely related to the ISQ survey, were sent to the districts that were also using the ISQ surveys. The Iowa Test of Basic Skills (ITBS) was the standardized achievement test used to determine student academic proficiency. Scores from 3rd-, 5th-, 8th-, and 11th-grade students were collected for Moore’s study. The ITBS score was the dependent variable, and the DISQ and ISQ were used as the independent variables. The sample for this study included 102 schools from 16 districts during the 2004-2005 school year. The district size ranged from 430 to 68,670 students, and school size ranged from 70 to 1,653 (Moore, 2007).

Validity of the ITBS and ISQ had already been established (Moore, 2007; M. J. Taylor et al., 2006). Research providing information on validity and reliability is summarized in Appendix A. To establish validity of the DISQ, Moore conducted a field test of district-level administrators, including assistant superintendents, executive directors, personnel directors, professional development directors, building principal supervisors, and program directors. He also obtained input from seven experts from the field of education who reviewed the DISQ document and gave feedback. Results indicated that all comparisons of the DISQ leadership items as well as the other six DISQ survey questions were statistically significant. Moore found that perceptions of school
quality by central office personnel added to the predictability of the ISQ on student academic proficiency.

The domains measured to determine school quality represent a core of critical attributes for school effectiveness. Moore’s study focused determining whether a survey for central office personnel, the DISQ, added to the predictability of the ISQ on student academic achievement. Moore found that the DISQ data did add to the ISQ’s predictive ability for academic proficiency by explaining a greater percentage of variance in two of eleven areas: student motivation and overall school achievement. He concluded that teacher, parent, and student reports of the conditions at the school are better predictors of academic achievement than district administrators’ appraisals as measured by the DISQ, but that the use of both measures, the ISQ and the DISQ, provided additional predictive ability for student academic achievement.

A number of school and classroom environmental variables are associated with student academic proficiency and/or student academic failure (Barth et al., 1999). Positive school variables include high levels of student safety, quality teachers, quality administrators, quality instruction, clear expectations, and positive relationships. Negative variables include low levels of student safety, ineffective teachers, ineffective administrators, poor instruction, unclear expectations, and negative relationships.

Research shows a close relationship of the school’s learning environment, interim assessment, and community and school risk factors. Research, however, has not been conducted on the extent to which the school’s learning environment and interim assessment without the influence of community risk factors predicts end-of-year student
learning. Research focusing on these variables will provide educators additional information on the factors most closely related to student academic learning.

Summary

Given government sanctions and high expectations, educators are under pressure to improve academic learning for all students. The literature demonstrates that interim assessment can help guide teachers in improving instruction to strengthen students’ learning achievement and accurately predicting end-of-year learning levels. Additionally, the literature demonstrates that factors in families and communities as well as school conditions are related to student academic learning. Evidence also indicates that the school’s learning environment can compensate for student risk factors such as poverty and parent education level. Research on effective schools has demonstrated that even students who have at-risk environments and characteristics are able to achieve at high levels.

Despite the breadth of information on several school environmental variables that are related to student academic proficiency, some educators narrowly focus on the use of interim assessments to achieve improvement. Although research shows that the use of interim assessments can contribute to this improvement (Blanc et al., 2010; Meisels et al., 2003; Williams, 2008), avoiding contributions of other environmental variables limits possible student academic proficiency growth. These school environmental variables, also known as contextual variables (Mayer, Davis, & Schoorman, 1995), include all that happens within a school. When educators choose to ignore some or most of these
variables, achieving NCLB expectations may not be possible. More research focused on relationships between school environmental variables and student learning will provide valuable data on variables that are closely associated with increased student learning.

Research has shown that periodic measures of literacy skills predict schools’ end-of-year academic achievement (Buck & Torgesen, 2002; Good et al., 2001; National Research Council, 1998; Reidel & Samuels, 2007; Scanlon & Velutino, 1996; Wang & Algozinne, 2008). Research has also shown that annual measures of learning environments predict schools’ end-of-year academic achievement (Edmonds, 1979b; Lezotte, 1991, 2001; Lezotte & Jacoby, 1992; M. J. Taylor et al., 2006). Other research (Coleman et al., 1966; Sirin, 2005; Towers, 1992) provides information about the relationship between social and economic risk and how that risk predicts end-of-year academic achievement. Only recently has the school’s learning environment been considered as a contributor to overall academic achievement (Edmonds, 1979c; Lezotte, 1991, 2001; Lezotte & Jacoby, 1992; M. J. Taylor et al., 2006). My research explores the degree to which the school’s learning environment as measured by ISQ contributes to an explanation of academic achievement, and adds to the explanations already provided by (a) measures of literacy skills and (b) measures of social and economic risk.

My research provides data on relationships between school environmental factors and student learning. Eighty-two schools in Utah were administered a test of basic literacy skills, the Utah state core assessment, and an environmental survey during the 2010-2011 school year. By examining the relationships apparent among these assessments, I was able to understand how interim literacy skills assessment and the
environmental survey can contribute to predicting academic proficiency on the Utah state core assessment.
CHAPTER III

METHODS AND PROCEDURES

The purpose of this correlational study was to explore the relative strength of the relationship between the school’s learning environment and student achievement, and a literacy benchmark assessment and student achievement. My study investigated the hypothesized relationships among measures of social and economic risk, the school’s learning environment, literacy skills, and academic achievement. A relationship was determined to exist if measures of one variable could be used to predict measures of another variable. The research questions required a progressive investigation. First, the relationship between DIBELS assessments and the Utah CRT, a measure of academic achievement was determined. Previous research suggested that this relationship is a close relationship between these two variables (Buck & Torgesen, 2002; Shaw & Shaw, 2002; Vander Meer, Lentz, & Stollar, 2005; Wilson, 2005).

The next relationship explored was the school’s learning environment and academic achievement. Researchers have confirmed that measures of a school’s learning environment predict average school-level academic achievement (Fraser, 1991; Hirsch & Church, 2009; Hoy et al., 2002; Levine & Lezotte, 1990; West & Taylor, 2010), but research has yet to confirm that these same measures can predict specific literacy skills measured periodically throughout the year using DIBELS. Researchers have also confirmed that measures of social and economic risk predict end-of-year academic achievement (Arthur et al., 2002; Hawkins et al., 2002; Stringfield & Land, 2002; M. J. Taylor et al., 2006).
Researchers have suggested that either social/economic variables (Coleman et al., 1966; Sirin, 2005; Towers, 1992) or instruction (Buck & Torgesen, 2002; National Research Council, 1998; Reidel & Samuels, 2007; Scanlon & Velutino, 1996; Wang & Algozinne, 2008), which is measured by tests such as DIBELS, contributes the most to academic achievement, as determined by the portion of unique variance accounted for by the measures. Only recently has the school’s learning environment been considered as a contributor to overall academic achievement (Bliss et al., 1991; Cruickshank, 1990; Edmonds, 1979c; Lezotte, 1991, 2001; Lezotte & Jacoby, 1992).

The purpose of this correlational study was to explore the relative strength of the relationship between the school’s learning environment and student achievement, and a literacy benchmark assessment and student achievement. The best method to accomplish the task for this research was a correlational model. The intent was to examine relationships among these variables. Figure 6 presented the theoretical model used in the design of this study. This model demonstrates the hypothesized relationships among measures of social and economic risk, the school’s learning environment, literacy skills, and academic achievement.

**Purpose and Relationships**

In the following model (Figure 12), ovals represent variables and rectangles represent measurements for those variables.

Measurements of variables are represented by thinner lines (e.g., school’s learning environment to ISQ) connecting the measure to the variable. These thin lines suggest that
variables are quantified by the measurement identified in the rectangular box. Thus, literacy skills were measured with the DIBELS assessment, academic achievement was measured with the Utah CRT assessment, and social and economic risk factors as well as the school’s learning environment were measured with the ISQ.

The relationships between latent variables, which have already been investigated and established in previous research, are connected by solid thick lines. Chapter II summarized studies that reported a close relationship between social and economic risk factors and student academic achievement. Relationships between latent variables connected by dashed lines in the model indicate those relationships with limited or no empirical support in the research literature. I was unable to locate studies correlating the school’s learning environment with interim literacy skills.

I conducted the first statistical investigation to determine the extent to which interim skills-based literacy assessments predicted academic achievement. This is similar
to research summarized in Chapter II, but it was a necessary first step for my study. Data from a correlation of the DIBELS assessment and end-of-year language arts learning was needed to determine the extent to which each of the variables, DIBELS, risk, and the school learning environment, contributed to end-of-year learning. The section in Figure 12 that depicts the first statistical test shows the arrow between oval B (literacy skills) and the oval D (academic achievement). The model depicted in Figure 2 also shows that literacy skills are measured with the DIBELS assessment, and academic achievement is measured with the Utah CRT.

Second, I examined the extent to which the school’s learning environment predicted academic achievement independent of social and economic risk. Figure 12 represents this second statistical test with oval C (school’s learning environment) and the oval (academic achievement). The school’s learning environment was measured with the ISQ.

Third, the extent to which the school’s learning environment provided additional explanation of variance in end-of-year academic achievement beyond literacy skills was evaluated. Fourth, the relative contribution of literacy skills and the school’s learning environment in the prediction of academic achievement was examined relative to social and economic risk.

Care was taken to limit Type I and Type II errors in this study. Type I errors in statistical tests are errors in which there is an incorrect rejection of a true null hypothesis. For example, in this study if results indicated that there was a relationship between the school’s learning environment and literacy skills when there really was no relationship
between these two variables, there would be a Type I error. To ensure that Type I errors did not occur, the acceptable Type I error rate was set at 5% for all analyses—an error rate commonly used in statistical analysis that provides a conservative but not restrictive criterion for hypothesis testing. All test statistics with $p$ values below .05 were determined to be statistically significant. In addition, a large sample size was obtained to further reduce the likelihood of Type 1 error.

Type II errors are errors in which there is a failure to reject the null hypothesis. In this study a possible Type II error would occur if I failed to find a relationship between the school’s learning environment and student academic achievement. In other words, I would fail to detect a relationship between two variables when, in fact, a relationship does exist. The large sample size and $p$ value (.05) used in this study helped ensure that Type I and Type II errors did not occur.

Sample Selection and Population

The sample of schools for this study included those schools in Utah that administered the ISQ survey during the 2010-2011 school year and also administered the DIBELS and the Utah State Core assessment during the same school year. Of these schools, 35 are from rural settings, 65 are considered urban, 41 are Title I schools, and 30 have a population of at least 20% English language learners. Utah’s population has become more diverse during the past decade, with the fastest growing ethnic group being Latino, now approximately 9% of the overall population (http://extension.usu.edu/diversity/files/uploads/FactsaboutDiversityinUtah.pdf). Elementary schools were a
logical place for a study of these forms of standardized testing because the curriculum is similar for all students; they do not take different courses as they do in middle and high school. The greatest emphasis for the use of benchmark testing, and the only schools that use DIBELS consistently, are elementary schools.

**Instrumentation**

Participating schools oversaw the completion of the ISQ survey. The DIBELS, and the state of Utah CRT were administered in elementary schools in Utah and the data from these assessments was available to the public. These measures are discussed in the following sections.

**Indicators of School Quality**

The ISQ survey was developed in 2000 by CSF at USU. The following section gives a brief outline about various aspects related to the ISQ. For more detailed information, see Appendix A. The authors of the ISQ manual published the following explanation.

Given the most recent emphasis on school accountability, schools must collect extensive amounts of data on students’ basic skills, and show that the school is making adequate yearly progress. Although basic skills test results provide a metric for school success, they may not provide any indication of what is and is not working in the school to promote or retard academic progress. The *ISQ* survey system was created to provide data to help schools create a climate necessary for students to reach their full potential.

ISQ, developed by [CSF], is a comprehensive survey system for school administrators to evaluate and monitor school improvement efforts. It summarizes the perceptions of parents, teachers, students, and other school staff regarding more than 30 crucial characteristics of the school. (M. J. Taylor et al., 2006, p. 2)
School-level data. School-level ISQ data rather than individual student data were used in this study. In this study, I considered items from all eight of the ISQ domains related to the school’s learning environment: parent support, teacher excellence, student commitment, school leadership, instructional quality, resource management, school safety, and behavior support.

Risk and protective factors. The ISQ is also a measurement of risk and protective factors. Data collected on ISQ regarding risk and protective factors were used to determine the social and economic risk of the community. The section of the ISQ dealing with risk and protective factors included questions on the following factors. Parents from schools that administer the ISQ answered the following questions.

- Economic status: Do you have Internet access at home?
- Community affiliation: Do you regularly attend community, social, or religious meetings?
- Family bonding: Do your neighbors generally monitor their children’s activities?
- Neighborhood stability: Have you moved more than once in the last three years?
- Academic status: Do you have a high school diploma/GED?
- Home language: Is English the primary language spoken at home?
- Peer associations: Do you generally approve of your child(ren)’s closest friends?

Responses to the above questions were analyzed to determine the overall risk for
each school.

For additional information regarding ISQ, please refer to Appendix A.

**Dynamic Indicators of Basic Early Literacy Skills**

In the 1990s researchers at the University of Oregon created a set of five standardized, individually administered subtests of early literacy development titled DIBELS (Dynamic Indicators of Basic Literacy Skills), which is used by elementary teachers and administrators to frequently monitor primary grade students’ growth in early literacy skills. Each assessment can be administered in approximately 1 minute. Appendix B contains additional information on DIBELS.

**Utah State Criterion Reference Test**

The Utah English Language Arts Core Criterion-Referenced Test (ELA-CRTs) is given to Utah public school students in grades three through eleven each spring. In 1999 Utah enacted legislation (Utah Stat.53A-1-603 Subd. 2) requiring “statewide criterion-referenced tests in all grade levels and content areas in basic skill areas of the core curriculum.” As a result, all students receiving instruction in the general curriculum must participate in the ELA-CRTs, including most English language learners (ELLs) and students with disabilities, and receive testing in basic skills using the DIBELS. Collecting data from the general population, as was completed for the DIBELS and CRT, ensures more reliable statistical results. Again school-level data rather than individual data were used in this study to ensure the anonymity of individual students and teachers. Additional information on CRTs is given in Appendix C.
Data Collection and Analysis

The steps for data collection procedures are outlined below.

1. Finalize participation list. The sample consisted of Utah elementary schools that used the ISQ during the 2010-2011 school year and also administered the DIBELS assessment to second and third-grade students.

2. Institutional review board approval. Application to conduct this study was approved by the Utah State University Institutional Review Board in February of 2012.

3. Collection and security. All summarized school-level ISQ survey data were secured following CSF protocol. Following CSF protocol ensured that the data were collected and housed securely. All data were stored at CSF on a secured computer encrypted with a password within a locked office. School and student names have been kept confidential.

In November of 2010, I met with Dr. Reed Spencer, the language arts coordinator at the Utah State Office of Education, to discuss the details of this study and secure his support. Dr. Spencer reported that Utah elementary schools would administer the DIBELS assessment to first- through third-grade students during January of 2011. During that meeting, I was assured that access to DIBELS data would be public information sometime during the months of January or February of 2011 and available in a format that would allow me to report these results without directly identifying individual students. All school names have been kept confidential.

CRT data at the school level and at grade level are available to the public. Data for spring of 2011 were collected during the summer of 2011. School and student names
were not identified in this research.

**Statistical Analysis**

The following steps were employed in the statistical analysis for this study.

1. *Description of sample:* The sample demographics were studied to determine if the participants were representative of typical public schools. These data were reported in percentages including ethnicity of students, students identified as having limited English proficiency, and students with disabilities. The average daily attendance and the total school enrollment were also collected in conjunction with indicators of the social and economic risk of the school community.

2. *Summary of ISQ data:* The 2010-2011 ISQ data were acquired from CSF. ISQ survey responses were reported in a Likert-type format. The data collected were reported by the percentage of total responses that indicated each Likert category (i.e., *strongly disagree*, *disagree*, *not sure*, *agree*, or *strongly agree*). These data revealed stakeholder perceptions of school quality. The data reflected the average of all of the responses for each of the ISQ categories.

3. *Summary of the DIBELS data:* School level data reflected the number and percentage of students at the first through third-grade levels who passed the DIBELS assessment.

4. *Summary of Utah State Core Assessment Criterion Reference Test (CRT) data:* School level data reflected the number and percentage of elementary students who scored at the proficient level on the Utah State Core Language Arts Assessment
5. Correlations and partial correlations of ISQ, DIBELS, and CRT data:

Correlations of ISQ, DIBELS, and CRT results were computed using the Pearson product-moment correlation coefficient. The significance of these correlations was determined at $p < .05$. This information showed how well perceptions of school quality as reported on the ISQ were associated with student achievement as reported on the interim literacy assessment known as DIBELS and how the ISQ and DIBELS assessment data correlated with the CRT data. Positive correlations indicated that ISQ perceptions were reliable predictions of student achievement on the DIBELS assessment.

Additionally, partial correlations were computed to determine the strength of these relationships while controlling for the influence of social and community risk factors.
CHAPTER IV
ANALYSIS AND RESULTS

The purpose of this correlational study was to explore the relative strength of the relationship between the school’s learning environment and student achievement, and a literacy benchmark assessment and student achievement. In this chapter, I describe the characteristics of the participants and the results from the previously described statistical analysis. The data analyzed in this study were gathered from the Utah State Office of Education and the Center for the School of the Future. The research questions for my study are listed below.

1. Do interim assessments of literacy skills predict end-of-year academic achievement?

2. Does the school’s learning environment predict literacy skills while accounting for the influence of social and economic risk?

3. Does the school’s learning environment provide additional explanation of variance in academic achievement beyond literacy skills assessments?

4. Do interim assessments predict academic achievement after the influence of the school’s learning environment and elements of social and economic risk have been statistically removed?

Demographic Information

Table 2 presents the demographic and community risk data from participating schools and it provides some national data. These data included statistics describing
Table 2

School Demographics and Community Risk

<table>
<thead>
<tr>
<th>School characteristics</th>
<th>Mean</th>
<th>National Comparison</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrollment Counts</td>
<td>637.7</td>
<td>470</td>
<td>269.3</td>
<td>43</td>
<td>1,292</td>
</tr>
<tr>
<td>Average daily attendance</td>
<td>94.6</td>
<td>94.0</td>
<td>0.7</td>
<td>92.0</td>
<td>95.0</td>
</tr>
<tr>
<td>Student ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American (%)</td>
<td>1.4</td>
<td>12.2</td>
<td>1.5</td>
<td>0.0</td>
<td>8.6</td>
</tr>
<tr>
<td>American Indian (%)</td>
<td>3.5</td>
<td>1.0</td>
<td>14.2</td>
<td>0.0</td>
<td>94.7</td>
</tr>
<tr>
<td>Asian Pacific Islanders (%)</td>
<td>3.2</td>
<td>4.5</td>
<td>2.0</td>
<td>0.0</td>
<td>17.1</td>
</tr>
<tr>
<td>Hispanic (%)</td>
<td>21.0</td>
<td>15.4</td>
<td>20.3</td>
<td>1.2</td>
<td>77.7</td>
</tr>
<tr>
<td>White (%)</td>
<td>69.1</td>
<td>66.0</td>
<td>23.9</td>
<td>2.6</td>
<td>98.4</td>
</tr>
<tr>
<td>English language learners (%)</td>
<td>15.8</td>
<td>10.0</td>
<td>17.2</td>
<td>1.0</td>
<td>68.5</td>
</tr>
<tr>
<td>Students w/disabilities (%)</td>
<td>13.4</td>
<td>8.96</td>
<td>3.5</td>
<td>6.4</td>
<td>23.7</td>
</tr>
<tr>
<td>Social and economic resiliency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic status (%)</td>
<td>84.9</td>
<td>No</td>
<td>15.4</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>Community affiliation (%)</td>
<td>67.1</td>
<td>(NDA)</td>
<td>11.8</td>
<td>42</td>
<td>95</td>
</tr>
<tr>
<td>Family bonding (%)</td>
<td>79.3</td>
<td>(NDA)</td>
<td>13.3</td>
<td>43</td>
<td>96</td>
</tr>
<tr>
<td>Neighborhood stability (%)</td>
<td>84.7</td>
<td>(NDA)</td>
<td>6.2</td>
<td>68</td>
<td>100</td>
</tr>
<tr>
<td>Academic status (%)</td>
<td>90.1</td>
<td>(NDA)</td>
<td>12.5</td>
<td>48</td>
<td>100</td>
</tr>
<tr>
<td>Home language (%)</td>
<td>87.9</td>
<td>(NDA)</td>
<td>13.9</td>
<td>44</td>
<td>100</td>
</tr>
<tr>
<td>Peer associations (%)</td>
<td>94.4</td>
<td>(NDA)</td>
<td>6.1</td>
<td>71</td>
<td>100</td>
</tr>
<tr>
<td>overall risk (# categories)</td>
<td>2.5</td>
<td>(NDA)</td>
<td>1.7</td>
<td>0</td>
<td>7</td>
</tr>
</tbody>
</table>

student enrollment, percentage of minority students, percentage of limited English proficient students, academic learning, and each school’s poverty rate. Based on these data, I can conclude with some confidence that the schools participating in this study are somewhat similar to schools throughout the country. Thus, the results from this study will
generalize to similar school settings throughout the United States. For example, national estimates of average daily attendance (ADA) report attendance rates of approximately 94% (Snyder & Dillow, 2012). The average ADA for schools in my study was 94.6%. Aud, Fox, and Kewalramani (2010) reported national estimates of the racial composition of the student population at comparable levels with those reported by schools participating in this study with only two notable exceptions: African American students and students classified as English language learners (ELL). National data (Aud, Fox, & Kewalramani, 2010) suggest that African American students compose roughly 12% of the student population and ELL students at 10%. Schools in this study reported a lower percentage of African American students (1%) and a higher percentage of ELL students (16%). Nationally, the average student population per elementary school is 469 (National Center for Education Statistics, 2010). My sample’s average school size was 637.7. Given these findings, I am confident that schools in this study are representative of similar schools nationally. Much of the data for Table 2 were collected from the Utah State Office of Education. The numbers and percentages were determined on October 1, 2010. Ninety-three elementary schools were used for this study sample. Although the data are all from one state, they showed a breadth of culture and academic success; therefore, this data generalizes reasonably well.

The social and economic resiliency section in Table 2 summarizes parent reports on the ISQ pertaining to seven risk categories. Higher sample means in this section represent the presence of reduced social and economic risk in the school community. For example, the mean percentage for economic status is 84.9%. This number means that on
average, roughly 85% of respondents said “yes” to the question “Do you have Internet access at home?” indicating the majority of participating schools did not serve low SES, impoverished communities. Researchers (M. J. Taylor et al., 2006) showed that the question about having internet access at home is closely related to economic status. The school with the lowest percentage of parents reporting that they had Internet access at home reported 25% of respondents whereas the school with the highest percentage reported 100%. When all schools for this sample were averaged, not weighted by enrollment, 84.9% reported that they had Internet access in the home. The final item in the social and economic resiliency section reports the number of resiliency categories that met a threshold and were deemed at-risk. This was determined by fewer than 80% of parents reporting the presence of these conditions. On average, the number of risk categories marked as at-risk was 2.5.

These data suggest that most of the schools served relatively low risk communities generally characterized as well educated, connected with peers, and culturally homogenous. Despite these strengths, 33% of the parents reported low community affiliation and 21% reported having poor family bonding. These areas of concern coupled with lower than average economic conditions and neighborhood stability suggest that the sample of schools participating in this study are similar to communities throughout the US with limited cultural diversity and poor economic conditions (Aud et al., 2010). Poor economic conditions may exacerbate conflict within the family and among neighbors thus resulting in higher mobility.

Table 3 presents comparison data associated with the number of students living in
low-, moderate-, and high-risk neighborhoods. All data in the middle column was derived from ISQ risk reports for my study. Moore and Jordan (2008) reported national data identified in the third column. Table 3 provides additional support for the ability of my study to generalize to studies of similar schools.

**Descriptive Statistics**

Table 4 summarizes parent, teacher, and student reports of the quality of the school’s learning environment. These data were disaggregated by reporter (i.e., parent, student, or teacher), domains of the school’s learning environment, and the signal analysis rating (described previously in Chapter III). Specifically, each row in the table is associated with a domain of the school’s learning environment and presents the percent of schools receiving each signal analysis rating by reporter. The following paragraph will describe the domains of school quality and discuss the analysis used to produce ratings based on signal analysis. However, a more thorough explanation of the psychometric properties of and the reporting algorithms used in the analysis are described in M. J. Taylor and colleagues (2006).
Table 4

Description of Parent, Teacher, and Student Reports of the School’s Learning Environment

<table>
<thead>
<tr>
<th>School’s learning environment</th>
<th>Parent responses</th>
<th>Teacher responses</th>
<th>Student responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunity to improve - Red (%)</td>
<td>0.0</td>
<td>8.7</td>
<td>1.1</td>
</tr>
<tr>
<td>Typical - Amber (%)</td>
<td>91.4</td>
<td>40.2</td>
<td>1.1</td>
</tr>
<tr>
<td>Superior - Green (%)</td>
<td>8.6</td>
<td>51.1</td>
<td>96.8</td>
</tr>
<tr>
<td>Exemplary - Purple (%)</td>
<td>0.0</td>
<td>0.0</td>
<td>1.1</td>
</tr>
<tr>
<td>Teacher excellence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunity to improve - Red (%)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Typical - Amber (%)</td>
<td>9.7</td>
<td>1.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Superior - Green (%)</td>
<td>90.3</td>
<td>95.7</td>
<td>92.5</td>
</tr>
<tr>
<td>Exemplary - Purple (%)</td>
<td>0.0</td>
<td>3.3</td>
<td>7.5</td>
</tr>
<tr>
<td>Student commitment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunity to improve - Red (%)</td>
<td>1.1</td>
<td>3.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Typical - Amber (%)</td>
<td>80.6</td>
<td>53.3</td>
<td>92.5</td>
</tr>
<tr>
<td>Superior - Green (%)</td>
<td>18.3</td>
<td>43.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Exemplary - Purple (%)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>School leadership</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunity to improve - Red (%)</td>
<td>0.0</td>
<td>4.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Typical - Amber (%)</td>
<td>12.9</td>
<td>12.0</td>
<td>1.1</td>
</tr>
<tr>
<td>Superior - Green (%)</td>
<td>87.1</td>
<td>67.4</td>
<td>91.4</td>
</tr>
<tr>
<td>Exemplary - Purple (%)</td>
<td>0.0</td>
<td>16.3</td>
<td>7.5</td>
</tr>
<tr>
<td>Instructional quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunity to improve - Red (%)</td>
<td>1.1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Typical - Amber (%)</td>
<td>83.9</td>
<td>21.7</td>
<td>1.1</td>
</tr>
<tr>
<td>Superior - Green (%)</td>
<td>15.1</td>
<td>78.3</td>
<td>29.0</td>
</tr>
<tr>
<td>Exemplary - Purple (%)</td>
<td>0.0</td>
<td>0.0</td>
<td>69.9</td>
</tr>
<tr>
<td>Resource management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunity to improve - Red (%)</td>
<td>1.1</td>
<td>23.9</td>
<td>1.1</td>
</tr>
<tr>
<td>Typical - Amber (%)</td>
<td>94.6</td>
<td>58.7</td>
<td>32.3</td>
</tr>
<tr>
<td>Superior - Green (%)</td>
<td>4.3</td>
<td>17.4</td>
<td>65.6</td>
</tr>
<tr>
<td>Exemplary - Purple (%)</td>
<td>0.0</td>
<td>0.0</td>
<td>1.1</td>
</tr>
<tr>
<td>School safety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunity to improve - Red (%)</td>
<td>0.0</td>
<td>3.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Typical - Amber (%)</td>
<td>40.9</td>
<td>28.3</td>
<td>1.1</td>
</tr>
<tr>
<td>Superior - Green (%)</td>
<td>59.1</td>
<td>68.5</td>
<td>66.7</td>
</tr>
<tr>
<td>Exemplary - Purple (%)</td>
<td>0.0</td>
<td>0.0</td>
<td>32.3</td>
</tr>
</tbody>
</table>

The ISQ survey is organized around seven domains of the school’s learning environment including parent support, teacher excellence, student commitment, school leadership, instructional quality, resource management, and school safety. The quality of
the school’s learning environment is measured relative to indicators associated with each domain. Each indicator is designed specifically for the reporter who will be responding to that item, thus providing a unique, yet systematic and comprehensive evaluation of the school’s learning environment.

One method for reporting ISQ data is with signal analysis. Signal analysis employs a coding system to convert responses from complicated statistical copy into a colored symbol. Responses coded with a purple signal represent *exemplary* conditions in the environment indicating that 80% or more of the respondents strongly agree with the item statement. Green signals represent *superior* conditions indicating that 80% or more of the respondents agree or strongly agree with the item statement or 50% or more of respondents strongly agree with the item statement. Red signals are given when 20% or more of the respondents disagree or strongly disagree with an item statement. Red signals represent an *opportunity to improve*. Amber signals represent *typical* conditions for a given domain and are the default representation in signal analysis. Thus for any item that does not meet the criteria to be coded as exemplary, superior, or needs improvement, it is coded *typical*.

For presentation in Table 4, the original signal colors have been converted to numbers. Specifically, the colors purple, green, amber, and red have been converted to four, three, two, and one, respectively. Ratings of *typical* (amber) and *opportunity to improve* (red) are considered negative grades only for the sake of discussion. Although a *typical* grade is not necessarily negative, schools that receive typical grades have a reduced likelihood of making Adequate Yearly Progress (AYP) as outlined in the No

Table 4 shows the percentages of schools from this sample receiving each signal analysis grade. For example, for the row associated with Parent Support in the column entitled Parents, 91.4% of the participating elementary schools received a typical rating and the remaining 8.6% were rated superior. These numbers reflect the reports of the parents in the participating schools regarding the quality of support present in these schools. In general, these data suggest that students reported more favorable conditions in the school’s learning environment than did parents or the teachers. Similarly, parents reported more favorable conditions associated with school leadership than teachers. Finally, teachers reported higher instructional quality than parents.

Table 5 summarizes additional data from ISQ regarding the Conditions for Learning at participating schools. These conditions are (a) a clear understanding of expectations for behavioral and academic performance, (b) the presence of fundamental skills that give hope that expectations can be achieved if sufficient opportunities are provided, (c) a reasonable likelihood that efforts to meet expectations will be recognized and rewarded, and (d) presence of an adult who can be trusted to provide help if needed.

Data regarding these conditions were measured on the ISQ student survey during the 2010-2011 school year. The presence of these conditions, as reported by students, is strongly correlated with academic achievement and other critical school outcomes (M. J. Taylor et al., 2008). Generally, when students experience the Conditions for Learning, they learn. This supports the notion that what teachers can control is more important and meaningful than other uncontrollable conditions, including the student’s socioeconomic
### Table 5

#### Student Reports of the Conditions for Learning

<table>
<thead>
<tr>
<th>Conditions for learning</th>
<th>Needs improvement (%)</th>
<th>Typical (%)</th>
<th>Superior (%)</th>
<th>Exemplary (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear expectations</td>
<td>7.5</td>
<td>15.1</td>
<td>65.6</td>
<td>11.8</td>
</tr>
<tr>
<td>Positive relationships</td>
<td>2.2</td>
<td>26.9</td>
<td>64.5</td>
<td>6.5</td>
</tr>
<tr>
<td>Building social skills</td>
<td>0.0</td>
<td>14.0</td>
<td>81.7</td>
<td>4.3</td>
</tr>
<tr>
<td>Building academic skills</td>
<td>8.6</td>
<td>52.7</td>
<td>36.6</td>
<td>2.2</td>
</tr>
<tr>
<td>Rewards and recognition</td>
<td>0.0</td>
<td>11.8</td>
<td>79.6</td>
<td>8.6</td>
</tr>
<tr>
<td>All conditions</td>
<td>18.3</td>
<td>34.4</td>
<td>38.7</td>
<td>8.6</td>
</tr>
</tbody>
</table>

status, family conflict, and other indicators of community risk.

The individual conditions (i.e., positive relationships, clear expectations, etc.) correlate variously with critical school outcomes. However, when combined, they accounted for an overwhelming amount of variance in test scores. To account for this interdependency, researchers at CSF created a dichotomous variable called “all conditions.” When a student reports on ISQ that expectations are clear AND skills are present AND rewards are experienced AND they have a positive relationship with their teacher, they are counted as having all elements for “conditions for learning.” For a school, the “all elements” number represents the percent of students counted as having all of the “conditions for learning.” When elementary schools report percentages above 50, they are considered *superior or exemplary* and student achievement is generally high, when those percentages drop below 40, they are rated as *needs improvement* and student achievement is likely to be low.

Students in the participating schools reported greater variance in their experiences relative to positive relationships and building academic skills. This is puzzling because
schools received consistently higher ratings on the availability of rewards and recognition in the schools. Although offering rewards and recognition is an important component of sustaining positive student-teacher relationships there appear to be other behaviors equally important to positive relationships that were not exhibited by the student’s teacher or other adults in the school. Relative to low scores on building academic skills, the conditions necessary to promote correct academic responses were more difficult to produce than any other condition. However, this may be true because teachers and students are more sensitive to their own academic weaknesses and activities such as reading are often onerous instead of intrinsically motivating. There are a host of alternative explanations to describe the data describing the prevalence of the individual conditions, but despite the availability of the individual conditions the majority of schools were rated below superior in regard to their ability to provide all the conditions for students at their school.

Table 6 presents descriptive statistics for the percent of students passing the DIBELS and the Utah State Criterion Referenced Test (CRT). These data are publicly available and were obtained by request from the USOE. The percent passing the DIBELS reflected the number of students whose literacy skills were at or above benchmark levels for their respective grade. I calculated the percent proficient on the CRT using the percent of students meeting predetermined accuracy levels on their grade-level assessment.

The school with the lowest scores on the DIBELS for this study had a passing rate of only 32.8% of their students (for more information on the DIBELS assessment, see Appendix B). Alternatively, the school with the highest rate of students passing scored
Table 6

*Descriptive Statistics for the Percent Passing/Proficient the DIBELS and CRT Assessments*

<table>
<thead>
<tr>
<th>Academic assessment</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIBELS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taking the test (%)</td>
<td>86.5</td>
<td>8.5</td>
<td>29.9</td>
<td>100</td>
</tr>
<tr>
<td>Percent passing (%)</td>
<td>64.8</td>
<td>11.6</td>
<td>32.8</td>
<td>97.0</td>
</tr>
<tr>
<td>Criterion referenced tests (CRT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subgroup (% proficient)</td>
<td>65.9</td>
<td>10.3</td>
<td>39</td>
<td>84</td>
</tr>
<tr>
<td>Language arts (% proficient)</td>
<td>74.6</td>
<td>12.1</td>
<td>41</td>
<td>94</td>
</tr>
</tbody>
</table>

97.0%. These numbers are difficult to interpret because the average percent taking the test for participating schools was 86.5%. The low participation rate is a concern because it is likely that the students who are difficult to test are also those most likely to score poorly on the assessment because lower attending students are generally those who score worse on assessments. With nearly 15% of the student population unaccounted for on the DIBELS, I concluded that this is a slightly inflated assessment of literacy skills. However, this restriction of range would only reduce the likelihood of finding a correlation between literacy skills and other variables of interest. As illustrated with analyses presented later, this was not the case.

CRT results indicated that the language arts test was generally normally distributed. The slight variation in the scores was remarkable considering the size of the study sample. Despite these similarities, the performance of students included in the subgroup disaggregation, including racial subgroups and special education, consistently underperformed the achievement levels of the whole student language arts assessment.
population. This is important because it confirms the presence of an achievement gap between minority and majority racial groups in participating schools.

**Correlations and Partial Correlations**

Figure 13 highlights the first relationship of interest in this study; correlations among student risk, literacy skills, and academic achievement. These correlations provided evidence concerning the influence of student risk factors on measures of student achievement. Risk factors as measured by ISQ served as the independent variable, and student learning scores from the DIBELS and CRT served as the dependent variables. Dashed lines, such as the one in Figure 13 connecting social and economic risk and literacy skills, indicate relationships with limited support in the research literature, whereas solid lines, such as the line connecting social and economic risk and academic achievement, indicate a relationship with prior empirical support. Table 7 presents the correlations between these measures.

![Figure 13. Model highlighting relationship between risk and academics.](image-url)
Table 7 presents the correlations between social and economic risk and measures of academic performance. Social and economic risk was estimated using the total number of ISQ resiliency indicators rated as at-risk using the aforementioned criteria (i.e., 20% of respondents report that the resiliency indicator is not present in their community) for determining the overall community risk associated with each indicator on the assessment. These correlations indicated that risk is inversely related to academic performance. Thus, when risk is elevated, the likelihood of having high passing rates on the DIBELS and proficiency levels on the CRT was reduced.

Table 7 shows statistically significant correlations between risk factors and interim literacy learning as measured on DIBELS and end-of-year student learning in language arts as measured on the Utah CRT. These results are consistent with the research reviewed in Chapter II. Whipple and colleagues (2010) reported that Neighborhood risk factors (i.e., the proportion of the residents living in poverty, parental educational attainment, proportion of single parents, housing quality, residential crowding, and neighborhood deterioration) are associated with student academic failure.

Other researchers have made similar assertions; race, language, family income, minority status, gender, parents’ education, and family structure have all been used as
factors to determine students’ risk of having school-related problems (Arthur et al., 2002; Hawkins et al., 2002; Swanson et al., 2012; M. J. Taylor et al., 2006). The greater the accumulation of risk factors, the greater the presumed risk of school failure (Croninger & Lee, 2001). The correlations reported in Table 7 support the previously reported relationship between risk and student achievement and suggest an equally strong relationship between risk and literacy skills.

Figure 14 highlights the relationship between literacy skills and student achievement. This relationship is highlighted with a dashed line because it has not been previously examined and supported in the research literature. This relationship was examined by calculating the correlation between the DIBELS scores and scores on the Utah CRT.

To analyze that relationship, the median score from the DIBELS assessment served as the independent variable and the median CRT score for language arts served as the dependent variable. The correlations are presented in Table 8.

The correlation reported in Table 8 was statistically significant. Unlike the relationship between risk and academic performance, the relationship between literacy skills...
Table 8

Correlations Between Literacy Skills and Academic Achievement

<table>
<thead>
<tr>
<th>Variable</th>
<th>CRT/Language arts</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIBELS</td>
<td>.77*</td>
</tr>
</tbody>
</table>

* $p < .05$

skills and end-of-year skills in language arts achievement is positive and strong. Also, this correlation indicates that between 50-60% of the variance in academic achievement in language arts is explained by scores on the DIBELS. The data on Table 8 provides an answer to my first question, “Do interim assessments of literacy skills predict end-of-year academic achievement?” My data shows that the DIBELS assessment did predict end-of-year academic achievement with a statistically significant correlation.

Table 9 presents the results of a partial correlation between the DIBELS scores and CRT scores while controlling for the influence of social and economic risk. For this test, the percent of students passing the DIBELS served as the independent variable and the percent of students rated as proficient in language arts on the Utah CRT served as the dependent variable.

All partial correlations between literacy skills and academic achievement were statistically significant. Although the magnitude of the partial correlation in Table 9 is less than those presented in Table 8, the partial correlation is statistically significant.

This partial correlation suggests that the relationship between literacy skills and academic achievement is robust because it persists even when controlling for social and economic risk. The data in Table 9 indicated that the partial correlation between DIBELS
Table 9

Partial Correlations Between Literacy Skills and Academic Achievement Covarying Risk

<table>
<thead>
<tr>
<th>Variable</th>
<th>CRT/Language arts</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIBELS</td>
<td>.53*</td>
</tr>
</tbody>
</table>

and the language arts portion of the CRT controlling for risk was strong. These data suggest that the relationship between literacy skills and academic achievement is confounded by social and economic risk, however this relationship is robust and explains a unique portion of the variance observed in academic achievement scores.

Figure 15 shows the theoretical model for this study with the relationship between school learning environment and literacy skills highlighted. This relationship has not been previously demonstrated in the research literature, as indicated by the dashed line connecting these latent variables. This relationship was examined and the results of this analysis are presented in Table 10. Table 10 presents the correlations between stakeholder reports of the quality of the school’s learning environment and literacy skills, as measured by the ISQ and the DIBELS, respectively. It also presents an array of correlations some statistically significant and some not. However, six of seven of the domains significantly correlate with literacy skills from the perspective of at least one stakeholder group. The exception to this finding is resource management, which weakly correlated with literacy skills across all stakeholder reports. The various strengths of these correlations suggest they are all related to literacy skills, but they all measure different conditions that may have more or less influence on literacy skills across the
Table 10

*Correlations Between the School’s Learning Environment and Literacy Skills By Domain*

<table>
<thead>
<tr>
<th>ISQ domain</th>
<th>Parent</th>
<th>Teacher</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent support</td>
<td>.29*</td>
<td>.57*</td>
<td>.20</td>
</tr>
<tr>
<td>Teacher excellence</td>
<td>.44*</td>
<td>.06</td>
<td>.06</td>
</tr>
<tr>
<td>Student commitment</td>
<td>.42*</td>
<td>.54*</td>
<td>.34*</td>
</tr>
<tr>
<td>School leadership</td>
<td>.20</td>
<td>.12</td>
<td>.25*</td>
</tr>
<tr>
<td>Instructional quality</td>
<td>.23*</td>
<td>.11</td>
<td>.33*</td>
</tr>
<tr>
<td>Resource management</td>
<td>.03</td>
<td>-.01</td>
<td>.10</td>
</tr>
<tr>
<td>School safety</td>
<td>.43*</td>
<td>.34*</td>
<td>.42*</td>
</tr>
</tbody>
</table>

* p < .05.

stakeholder groups. The correlation between student reports of student commitment, school leadership, instructional quality, and school safety and literacy skills were statistically significant. These domains are directly related to producing the conditions students experience in the classroom directly related to practicing and embedding literacy skills in a student’s repertoire.

The pattern of correlations presented in Table 10 is nearly identical to the pattern reported by M. J. Taylor and colleagues (2006) when reporting the relationship between
the school’s learning environment and academic achievement. The replication of results from M. J. Taylor and colleagues in this study using an alternate measure of academic achievement provides further evidence of the strong relationship between the school’s learning environment and academic performance as well as the stability of both constructs. For instance, nearly all correlations reported in Table 10 were positive. The only exception is teacher reports of resource management. However, the magnitude of this correlation, or lack thereof, suggests its direction may be immaterial. Similarly, both studies found strong, positive correlations between student reports of student commitment, instructional quality, and school safety and academic performance.

To further examine the relationship between environment and literacy skills, I calculated a correlation between the conditions for learning and literacy skills. Literacy skills served as the dependent variable measured by the scores from the DIBELS. The conditions for learning served as the independent variable. Table 11 presents the correlations between the conditions for learning and literacy skills.

Table 11 presents the correlations between the conditions for learning, as

Table 11

*Correlations Between the Conditions for Learning and Literacy Skills*

<table>
<thead>
<tr>
<th>ISQ conditions for learning</th>
<th>DIBELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear expectations</td>
<td>.54*</td>
</tr>
<tr>
<td>Positive relationships</td>
<td>.33*</td>
</tr>
<tr>
<td>Building social skills</td>
<td>.35*</td>
</tr>
<tr>
<td>Building academic skills</td>
<td>.38*</td>
</tr>
<tr>
<td>Rewards and recognition</td>
<td>.13</td>
</tr>
<tr>
<td>All conditions</td>
<td>.65*</td>
</tr>
</tbody>
</table>

* p < .05.
measured by ISQ, and literacy skills assessed by the DIBELS. All but one correlation was statistically significant. As expected, the individual conditions correlated variously and the strongest relationship was between the students who report the presence of all of the conditions in their experience at school and literacy skills. This finding expands understanding of the relationship between the conditions for learning and student achievement by demonstrating that the conditions are related to literacy skills. Furthermore, the conditions appear to enhance student learning of very specific skills, such as those measured by DIBELS, and not just global measures of achievement across curricular areas.

Table 12 presents partial correlations between the conditions for learning and DIBELS covarying for risk. The conditions for learning, as measured by ISQ, served as the independent variable and literacy skills, as measured by the DIBELS, served as the dependent variable. Social and economic risk was measured using data from ISQ. Specifically, total risk categories indicates the number of resiliency categories rated as

Table 12

*Partial Correlations Between the Conditions for Learning and Literacy Skills Covarying Risk*

<table>
<thead>
<tr>
<th>Control variables</th>
<th>Conditions for learning</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total risk categories</td>
<td>Clear expectations</td>
<td>.29*</td>
</tr>
<tr>
<td></td>
<td>Positive relationships</td>
<td>.19</td>
</tr>
<tr>
<td></td>
<td>Building social skills</td>
<td>.20</td>
</tr>
<tr>
<td></td>
<td>Building academic skills</td>
<td>.32*</td>
</tr>
<tr>
<td></td>
<td>Rewards and recognition</td>
<td>.13</td>
</tr>
<tr>
<td></td>
<td>All conditions</td>
<td>.42*</td>
</tr>
</tbody>
</table>

* p < .05.
at-risk from the ISQ. These categories include economic status, community affiliation, family bonding, neighborhood stability, academic status, peer associations, and home language. After removing the influence of social and economic risk, statistically significant correlations were associated with clear expectations, building academic skills, and the all conditions variable. As expected, the highest correlation remained between students who reported that they experienced all of the conditions for learning and the DIBELS scores.

The strength of the relationship between the conditions for learning and literacy skills is important because it represents a new source of explanation for the variance in academic achievement. Coupled with interim assessments, the school’s learning environment could be used to accurately predict performance on end-of-the-year assessments. This statistical test provided an answer to my second question for this study, “Does the school’s learning environment predict literacy skills while accounting for the influence of social and economic risk?” The school’s learning environment did predict achievement on interim literacy skills. The strongest correlation was for students who reported having All Conditions.

Table 13 shows the standardized coefficients for social and economic risk, literacy skills, and the conditions for learning in regression models predicting language arts proficiency on the Utah CRT. The independent variables for this analysis were social and economic risk factors, the percent of students with all of the conditions for learning, and the percent of students passing the DIBELS. The dependent variable for this analysis was the CRT language arts data.
Table 13

*Standardized Coefficients for Risk, Literacy Skills, and the Conditions for Learning in a Multiple Regression Analysis with One Dependent Variable*

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Language arts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total risk categories</td>
<td>-.247*</td>
</tr>
<tr>
<td>DIBELS (% passing)</td>
<td>.347*</td>
</tr>
<tr>
<td>All conditions (% students w/all conditions)</td>
<td>.370*</td>
</tr>
<tr>
<td>Adjusted ( R^2 )</td>
<td>.713</td>
</tr>
</tbody>
</table>

* \( p < .05 \).

The data presented in Table 13 indicate the relative strength of each of the predictor variables included in the model. In every case, the magnitude of the coefficient associated with the all conditions variable exceeded those associated with literacy skills. The coefficient suggests that the school’s learning environment is a better predictor of academic achievement, regardless of content area, than a literacy skills assessment.

Finally, the multiple regression analysis displayed in Table 13 explained a large amount (.713) of language arts academic achievement as measured on the CRTs. The adjusted \( R^2 \) values indicated that between 65-71% of the variance in academic achievement was explained by these predictor variables on the language arts portion of the CRT, the remaining 29-35% of the variance was unexplained. These models effectively predicted academic achievement and provided a good indication of the relative strength of each predictor variable in this prediction. The information shown on Table 13 provides evidence for my third research question, “Does the school’s learning
environment provide additional explanation of variance in academic achievement beyond literacy skills assessments?” The school’s learning environment does provide additional explanation of variance of end-of-year academic achievement beyond interim assessments of literacy skills.

Table 14 presents two partial correlations, which isolated the influence of two predictor variables: The conditions for learning and literacy skills. The first partial correlation was calculated to examine the relationship between literacy skills and academic achievement while controlling for the influences of social and economic risk and the conditions for learning. By contrast, the second partial correlation was calculated to determine the relationship between the conditions for learning and academic achievement while controlling for the influences of social and economic risk and literacy skills. In this analysis, academic achievement was defined strictly as the percent of students proficient on the language arts portion of the CRT. The language arts portion was selected instead of the math or science portions because it is the most directly relevant to literacy skills. If the relationship between the conditions for learning and

<table>
<thead>
<tr>
<th>Control variables</th>
<th>Independent variable</th>
<th>Dependent variable</th>
<th>Partial correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total risk categories &amp; Percent of students with all Conditions</td>
<td>DIBELS (% passing)</td>
<td>Language Arts Proficiency</td>
<td>.383*</td>
</tr>
<tr>
<td>Total risk categories &amp; DIBELS (% passing)</td>
<td>All Conditions (% of students w/all conditions)</td>
<td>Language Arts Proficiency</td>
<td>.452*</td>
</tr>
</tbody>
</table>

* * p < .05
language arts achievement is stronger than the relationship between literacy skills and language arts achievement then it is reasonable to conclude that the Conditions for Learning are distinct from literacy skills and a useful addition to the data based decision-making process guiding instructional improvement in schools.

The partial correlation isolating the relationship between literacy skills and language arts achievement was .383. The partial correlation isolating the relationship between the conditions for learning and achievement was .452. Both correlations were statistically significant. This confirms that the relationship between the Conditions for Learning and academic achievement was robust and distinct from literacy skills. My fourth and final research question was, “Do interim assessments predict academic achievement after the influence of the school’s learning environment and elements of social and economic risk have been statistically removed?” Table 14 provides data that shows that interim assessments, particularly the DIBELS assessment, was significantly correlated to end-of-year academic achievement even after elements of social and economic risk had been statistically removed.

Summary

This chapter presented the analyses proposed in the model (see Figure 12) introduced in Chapter III. Data summarizing the school demographics, social and economic risk, and the school’s learning environment were presented in the first set of tables. These data describe a variety of conditions in participating schools including low risk, high achievement schools to struggling schools serving high-risk communities.
These conditions are generalizable to similar schools in the United States.

Finally, the multiple regression analysis displayed in Table 13 explained a large amount (.713) of language arts academic achievement as measured on the CRTs. The adjusted $R^2$ values indicated that between 65-71% of the variance in academic achievement was explained by these predictor variables on the language arts portion of the CRT, the remaining 29-35% of the variance was unexplained. These models effectively predicted academic achievement and provided a good indication of the relative strength of each predictor variable in this prediction.
CHAPTER V

CONCLUSION, IMPLICATIONS, AND RECOMMENDATIONS

Three key premises supported conducting this study. First, educators are under intense pressure to ensure high levels of student learning for all students. Second, students are more likely to learn at high levels within a supportive, positive school’s learning environment. Third, teachers are more likely to meet students’ academic and social needs when valid, reliable assessment data are available during the school year. Each premise was outlined in Chapters I and II. The purpose of this correlational study was to explore the relative strength of the relationship between the school’s learning environment and student achievement, and a literacy benchmark assessment and student achievement. The research questions addressed in this study included the following.

1. Do interim assessments of literacy skills predict end-of-year academic achievement?
2. Does the school’s learning environment predict literacy skills while accounting for the influence of social and economic risk?
3. Does the school’s learning environment provide additional explanation of variance in academic achievement beyond literacy skills assessments?
4. Do interim assessments predict academic achievement after the influence of the school’s learning environment and elements of social and economic risk have been statistically removed?

Research has shown that both the quality of the learning environments (Edmonds, 1979c; Lezotte, 1991, 2001; Lezotte & Jacoby, 1992; M. J. Taylor et al., 2006) and
interim assessments (Buck & Torgesen, 2002; Rouse & Fantuzzo, 2006; Shaw & Shaw, 2002; Vander Meer et al., 2005; Wilson, 2005) of academic skills are highly predictive of academic achievement. This study used a combination of measures to determine the extent to which scores from an interim, skills-based assessment and an assessment of the school’s learning environment predicted student learning. I assessed the quality of the school’s learning environment using the ISQ survey system. This system collects parent, teacher, and student reports of conditions at the school and then aggregates and reports these conditions to school leaders. The interim assessments of academic literacy skills used in this study were the DIBELs. The annual, summative assessment of academic proficiency included only the language arts portion of the state of Utah CRT.

Relationships between these variables were analyzed using simple correlations, partial correlations, and a multiple regression. The results from these analyses indicated that the school’s learning environment and literacy skills were related to academic achievement, which answers research question one for my study. Partial correlations were calculated to examine the strength of these relationships when controlling for the influence of community risk and other related variables. This answers question two. The relative strength of these relationships was tested using a regression analysis and the isolation of literacy skills using a partial correlation covarying for social and economic risk and the Conditions for Learning. Interim assessments did predict academic achievement after the influence of the school’s learning environment and elements of social and economic risk had been statistically removed, which answers question number 4.
Similarly, the influence of the Conditions for Learning was isolated in a partial correlation covarying for risk and literacy skills. Figure 16, presents a model containing all the variables and the relationships examined in this study. Bold lines indicate relationships that were examined in the previous chapter and found to be supported in this empirical analysis.

These findings are presented in the order in which they were examined in the previous chapter. Despite these variable conditions, correlational analyses presented in Chapter IV demonstrated that the school’s learning environment and literacy skills predicted academic achievement. These relationships held even when controlling for the influence of social and economic risk. Finally, analyses were conducted to isolate the strength of the relationships between literacy skills and language arts academic achievement and the Conditions for Learning and achievement. These analyses confirmed the independence of these two predictor variables, literacy skills and the school’s learning environment, and academic achievement. Results showed that literacy skills as measured on the DIBELS assessment did provide additional explanation of variance for end-of-year language arts learning as measured on the CRT. This answers

![Diagram of relationships](image)

*Figure 16. Theoretical model highlighting relationships confirmed by this study.*
research question number three. The analyses presented in Chapter IV provide strong
evidence supporting the robust relationship between all the variables in the model and
academic achievement across content areas and independent of other confounding
factors.

A brief explanation of the purpose for each step is given along with the findings
and the conclusion.

The first tables in Chapter IV presented a description of the sample used in this
study. The purpose of these analyses was to summarize the participating schools and to
determine the generalizability of these findings beyond Utah schools. The sample
represented schools that served a variety of students from various cultures, economic
backgrounds, and academic and social needs. In general, these data are similar to national
trends and provide support for the generalization of these findings to similar schools
throughout the country.

The three measurements used for this study were the ISQ, DIBELS, and CRT.
Descriptive data were presented for each of these measures. This study used the ISQ to
collect and summarize parent, teacher, and student reports of the school’s learning
environment. Participating schools collected the ISQ surveys and returned them to the
CFS. Administrators at CFS provided me with all necessary ISQ data. These data
discriminated between schools suggesting that there is a diversity of high- and low-
quality learning environments represented in the study. These data are similar to national
trends (Aud et al., 2010) and lend further strength to the conclusion that my findings can
be generalized to other settings and populations similar to this sample.
The selection of the language arts portion of the Utah CRT as the measure for end-of-year academic achievement in this study was supported by the analyses presented in Chapter IV. Student performance on the language arts portion of the CRT demonstrated achievement gaps among racial and cultural groups that varied in conjunction with community risk, literacy skills, and the conditions for learning similar to those reported in national assessments of education quality. Also, the relationship among the CRT, the DIBELS, and ISQ lend further credibility to the validity of CRT measure as an acceptable measure of academic achievement.

Research has shown that certain risk factors are highly correlated with student academic failure and that certain protective factors are highly correlated with academic success (Hawkins et al., 2002; Land & Legters, 2002; Lee et al., 2008; Masten & Coatsworth, 1998; Pallas et al., 1989). The influence of risk factors on critical school outcomes was demonstrated in this study. One of the variables most often identified by teachers and researchers is social and economic risk in the community. The data reported in this study suggest that the social and economic risk in the community is still a critical variable in predicting academic achievement. However, other malleable factors including literacy skills and the school’s learning environment are of comparable strength. In some content areas, these factors are more predictive than student risk factors of academic outcomes.

The results from my study suggest that literacy assessment and assessing the school’s learning environment added to the predictive power when predicting academic achievement. This result indicates that teachers and other school stakeholders influence
student learning even for students who hold one or more risk factors. This finding is contrary to the major finding of the Coleman report (Coleman et al., 1966) and should give teachers hope as they seek to improve student learning with students from difficult home environments.

The DIBELS assessment was used for this study to provide an interim assessment of literacy skills. The DIBELS were administered to all first- through third-grade students in participating schools in January of 2011. The relationship between the DIBELS assessment and the prediction of academic achievement in language arts was supported by this study.

Finally, the school’s learning environment, in particular the Conditions for Learning, was critically examined in this study relative to literacy skills and community risk. The strong, positive correlation between academic achievement and the school’s learning environment was upheld in this study. When I added literacy skills data to the correlation, I found more variance in end-of-year academic learning as measured on the CRT was accounted for. The All Conditions variable was a strong predictor of both literacy skills and academic achievement. This variable explained more unique variance than literacy skills when both community risk and literacy skills were statistically controlled, which suggests that there is great value in assessing the school’s learning environment beyond the understanding of content specifics skills, such as literacy skills. Results give further credence to the entreaty for educators to attend to environmental factors in addition to instructional approaches.

This study showed that the school environment was highly correlated with interim
assessments of literacy skills and a measure of academic achievement in language arts. Although correlations do not denote cause, these findings suggest that students who are housed in schools with positive school environmental factors are more likely to score well on interim assessments and end-of-the-year assessments of academic achievement. If this is true, there is a pressing need for teachers and other school stakeholders to attend to environmental factors that are related to improved student learning.

The wide variety of achievement levels, economic status, and cultural backgrounds of the participants in this study support the generalization of these findings beyond participating schools. The domains employed to measure school quality for this study do not represent all possible variables that affect student learning, but they do represent many important, malleable factors. Correlations found in this study are likely similar to trends found among comparable populations and settings. Similar studies with these populations and within these settings are also likely to produce similar results. The conclusions found in this study are compelling and warrant additional study and research.

**Delimitations**

This study has two notable delimitations. First, the study used a convenience sample. Only Utah elementary school administrators who elected to administer the ISQ survey were included in the sample of participating schools. A convenience sample is one of the main types of nonprobability sampling methods. Nonprobability sampling is a potential limitation because participants who volunteer to administer a survey instrument may be unique from the general population of school administrators and faculty. Whether
this is a strong desire to participate in new research or an interest in getting feedback for improvement, the possibility that these schools are unique in some important ways should be noted.

Second, the sample of schools participating in this study was drawn from only Utah schools. Although the demographics of these schools indicate a strong correspondence between national trends and schools profiles, researchers generalizing the results of this study to schools outside of Utah should carefully consider the similarities between the schools in this study and their contexts. Given my selection criteria and care to sample broadly across relevant school characteristics ensured that the purpose of the study could be accomplished while minimizing the cost of the study through this sampling procedure. Despite the fact that these issues may limit generalizability, there is no evidence to suggest these delimitations negatively impacted the results of this study.

**Limitations**

The DIBELS assessment has limitations worth noting. The first limitation for DIBELS is that it does not use grade equivalents. It is an indicator of risk, rather than a concrete level of performance. By using the number of students passing the DIBELS assessment I may unintentionally mask the performance of some students in this aggregate measure. However, this limitation should make it more difficult to determine a relationship between literacy skills and achievement, but this was not the case.

A second limitation for DIBELS is that it does not assess reading comprehension or vocabulary. Reading comprehension and vocabulary are often reported on other,
assessments. Using a measure that addresses these skills may have enhanced my analysis and produced a model more predictive of academic achievement on language arts.

Finally, the measure of social and economic risk used in this study is based on items on the ISQ survey. These items are a proxy for some more established measures of SES, including maternal education level and household income, but they are not identical. Although addressing this discrepancy and using these metrics of SES may slightly alter my results, there is no evidence in previous research using this indicator of SES or in the current study that these items are not appropriate measures of SES. For example, M. J. Taylor and colleagues (2006) established a strong relationship between this measure of SES and academic achievement as well as the school’s learning environment. If this measure were addressing a different construct, it is difficult to accept that these relationships would be consistently identified in this and prior research.

Conclusions

In conclusion, I found factors closely associated with student academic learning, which I feel should not be ignored. Below I have outlined recommendations for educators that I feel will bring about improved student learning.

1. Educators should not use student background as an excuse for a lack of student learning. On the contrary: teachers and other school stakeholders must redouble their efforts and attend to the many factors that are related to student academic learning to provide an effective learning environment for all students.

2. I believe that currently some teachers choose to focus most of their energy on
only one variable: assessing students throughout the school year. Although research does show that using interim assessment can be effective, it is not the only variable related to increased student academic learning. School environmental factors are also closely related to student academic learning.

3. The ISQ survey including the All Conditions variable was a strong predictor of both literacy skills and academic achievement in language arts. In fact, the All Conditions variable explained more unique variance than literacy skills when both community risk and literacy skills were statistically controlled. This suggests that there is great value in assessing the school’s learning environment beyond the understanding of content specifics skills, such as literacy skills. Results give further credence to the entreaty for educators to attend to environmental factors in addition to instructional approaches.

**Recommendations for Further Study**

The results from this study are clear and compelling despite the aforementioned limitation. Future research evaluating the practical value of these findings could investigate these relationships at the individual level, as opposed to the school level as was done in this study. This would be an excellent study to determine how relevant data on the school’s learning environment and individual literacy skills are to the prediction of individual performance on standardized tests.

In addition, an experimental study could be conducted to ascertain whether there is a causal relationship between changes in the school’s learning environment and
academic achievement. Although an experimental group study is a natural choice for this study, it may be difficult and expensive to address the myriad needs of a group of schools relative to improving their school’s learning environments. As a result, it might be worthwhile to consider the use of single subject designs in planning this study. For example, the multiple-baseline design across schools may be particularly useful and limit the number of schools necessary to conduct the study. Studies demonstrating a causal relationship between instructional practices and literacy skills have already demonstrated the malleability of this factor, but how responsive the school’s learning environment is to change needs further investigation.
REFERENCES


Why Use DIBELS? (2012). Retrieved from https://dibels.uoregon.edu/training/measures/dibelsinfo.php#why


APPENDICES
Appendix A

Additional ISQ Information
Additional ISQ Information

The following information is from the ISQ manual (M. J. Taylor et al., 2006).

The ISQ was designed so that data can be shared with many stakeholder groups and allows for the entire school community to take responsibility for school improvement. It is a low-cost and easy-to-administer survey system that provides pertinent information in a report format that can be quickly read and understood by just about anyone. (p. 2)

Perceptions are summarized and categorized into four levels on the ISQ. The authors of the ISQ manual explain each of the four levels in the following way.

- **Exemplary**—This is determined by having 80% or more of the respondents strongly agreeing with the item statement.

- **Superior**—This is determined by having 80% or more of the respondents agreeing or strongly agreeing with the item, or 50% or more of the respondents strongly agreeing with the item statement.

- **Typical**—Default for any item that is not exemplary, superior, or needs improvement.

- **Opportunity to Improve**—This is determined by having 20% or more of the respondents disagreeing or strongly disagreeing with the item statement. (M. J. Taylor et al., 2006, p. 4)

To establish validity of the ISQ, M. J. Taylor and colleagues (2006) studied correlations between the ISQ and two achievement tests, the ITBS and the SAT-9. These authors reported the following.

For most of the 176 schools in this sample, the state provided standardized achievement test data. To keep things simple, the median composite percentile was used as a … measure for the entire school. This statistic is grossly smoothed being a median of many individual composite battery scores, and thus relationships to more specific academic outcomes were potentially masked in these analyses, but if relationships between these data and ISQ were present, then certainly, more profound relationships existed in certain content areas or for specific subpopulations.
[The following table] shows the correlations… for parent, teacher, and student perceptions and the academic achievement scores at the 3rd, 5th, 8th, and 11th grades with bold numbers indicating statistical significance ($p < .05$). These correlations varied in strength and significance, which was important. If the correlations were all very small, the school environment as measured by ISQ was not related to academic achievement, and if the correlations were all very high, the ISQ was just another measure of academic achievement. Thus, the numerical display below demonstrates that ISQ was related to academic achievement without being redundant. All statistically significant correlations were positive, which indicates that perceptions of more positive school environment were related to higher achievement scores. Sample sizes for the four columns were 95, 88, 33, and 21 schools, respectively.

Table A1

*Correlations Between Academic Achievement Scores and ISQ Domains*

<table>
<thead>
<tr>
<th>Variable</th>
<th>3rd Grade</th>
<th>5th Grade</th>
<th>8th Grade</th>
<th>11th Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Perceptions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Support</td>
<td>.21</td>
<td>.18</td>
<td>.00</td>
<td>.47</td>
</tr>
<tr>
<td>Teacher Excellence</td>
<td>.30</td>
<td>.23</td>
<td>.29</td>
<td>.36</td>
</tr>
<tr>
<td>Student Commitment</td>
<td>.30</td>
<td>.27</td>
<td>.11</td>
<td>.39</td>
</tr>
<tr>
<td>School Leadership</td>
<td>.15</td>
<td>.18</td>
<td>.17</td>
<td>.17</td>
</tr>
<tr>
<td>Instructional Quality</td>
<td>.24</td>
<td>.12</td>
<td>.17</td>
<td>.76</td>
</tr>
<tr>
<td>Resource Management</td>
<td>.00</td>
<td>.00</td>
<td>.15</td>
<td>.10</td>
</tr>
<tr>
<td>School Safety</td>
<td>.53</td>
<td>.55</td>
<td>.40</td>
<td>.74</td>
</tr>
<tr>
<td>Teacher Perceptions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Support</td>
<td>.74</td>
<td>.75</td>
<td>.66</td>
<td>.52</td>
</tr>
<tr>
<td>Teacher Excellence</td>
<td>.13</td>
<td>.12</td>
<td>.23</td>
<td>.18</td>
</tr>
<tr>
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<td>.63</td>
<td>.60</td>
<td>.48</td>
</tr>
<tr>
<td>School Leadership</td>
<td>.22</td>
<td>.21</td>
<td>.19</td>
<td>.39</td>
</tr>
<tr>
<td>Instructional Quality</td>
<td>.30</td>
<td>.37</td>
<td>.61</td>
<td>.55</td>
</tr>
<tr>
<td>Resource Management</td>
<td>.38</td>
<td>.42</td>
<td>.43</td>
<td>.52</td>
</tr>
<tr>
<td>School Safety</td>
<td>.46</td>
<td>.44</td>
<td>.40</td>
<td>.54</td>
</tr>
<tr>
<td>Student Perceptions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Support</td>
<td>.04</td>
<td>.02</td>
<td>.35</td>
<td>.42</td>
</tr>
<tr>
<td>Teacher Excellence</td>
<td>.13</td>
<td>.08</td>
<td>.04</td>
<td>.28</td>
</tr>
<tr>
<td>Student Commitment</td>
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<td>.09</td>
<td>.11</td>
<td>.03</td>
</tr>
<tr>
<td>School Leadership</td>
<td>-.03</td>
<td>-.06</td>
<td>.32</td>
<td>.16</td>
</tr>
<tr>
<td>Instructional Quality</td>
<td>.25</td>
<td>.25</td>
<td>.27</td>
<td>.53</td>
</tr>
<tr>
<td>Resource Management</td>
<td>-.08</td>
<td>-.07</td>
<td>.44</td>
<td>.24</td>
</tr>
<tr>
<td>School Safety</td>
<td>.33</td>
<td>.34</td>
<td>.54</td>
<td>.06</td>
</tr>
</tbody>
</table>
These researchers studied risk factors that were present in the 176 schools and reported the following.

Correlations [of risk factors] varied in strength and significance, which indicated that risk was correlated with perceptions of the school environment without the school’s learning environment items from ISQ being just another measure of social and economic risk. All statistically significant correlations were negative, which indicated that overall risk was related to perceptions of more negative school environment…

…The information [gleaned from the correlational study of risk factors] verified that social and economic risks were potential confounds for the relationship between academic achievement and the school environment as measured by ISQ. The last step was to recalculate the correlations between the school environment and academic achievement, but this time with the influence of overall risk statistically removed. Sample sizes [for 3rd, 5th, 8th, and 11th grades] were still 95, 88, 33, and 21 schools, respectively.

…The overall pattern of relationships remained very similar to those produced with simple bivariate correlations. This suggests that the variance in academic achievement explained by risk factors was different than the variance in academic achievement explained by the school’s learning environment. Again, all statistically significant partial correlations were positive, indicating that perceptions of better school environment were related to higher academic achievement regardless of social and economic risk. Although correlation does not guarantee causation, in this case, removing the effects of social and economic risk and isolating the relationship between environment and achievement is powerful evidence of cause. It is also strong evidence for the validity and utility of using ISQ to measure school quality and to help monitor school improvement in ways that will increase school effectiveness (M. J. Taylor et al., 2006).
Appendix B

DIBELS Information
DIBELS Information

Table B1 summarizes the five measures or subtests in DIBELS.

Table B1

**DIBELS Assessments**

<table>
<thead>
<tr>
<th>Name of assessment</th>
<th>When administered</th>
<th>Summary of assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIBELS Initial Sounds or Onset Fluency (ISF)</td>
<td>Last year of preschool through the middle of kindergarten</td>
<td>This is a standardized, individually administered test of phonological awareness that assesses a child’s ability to recognize and produce the initial sound in an orally presented word (Kaminski &amp; Good, 1998; Laimon, 1994)</td>
</tr>
<tr>
<td>DIBELS Letter Naming Fluency (LNF)</td>
<td>Fall of kindergarten through the fall of first grade</td>
<td>The LNF is a standardized, individually administered. Students are allowed one minute to name as many randomly-ordered letters from a list as they are able (Good &amp; Kaminski, 2002).</td>
</tr>
<tr>
<td>DIBELS Phoneme Segmentation Fluency (PSF)</td>
<td>Winter of kindergarten through the spring of first grade</td>
<td>The PSF is a standardized, individually administered test of phonological awareness that measures students’ ability to segment three- and four-phoneme words into their individual phonemes fluently (Good et al., 2001).</td>
</tr>
<tr>
<td>DIBELS Nonsense Word Fluency (NSF)</td>
<td>Mid to end of kindergarten through the end of first grade</td>
<td>The NSF is a standardized, individually administered test of the alphabetic principle. It includes letter-sound correspondence and the ability to blend letters into words when the letters represent their most common sounds (Kaminski &amp; Good, 1996).</td>
</tr>
<tr>
<td>DIBELS Oral Reading Fluency (ORF)</td>
<td>Mid first grade through third grade</td>
<td>ORF is a standardized, individually administered test of accuracy and fluency with connected text. Student performance is measured by having students read a passage aloud for one minute. The number of correct words read per minute from the passage is the oral reading fluency rate (Good &amp; Kaminski, 2001).</td>
</tr>
</tbody>
</table>

Several researchers have asserted that the DIBELS assessment is both valid and reliable. Buck and Torgesen (2002) concluded that for a large group of third-grade students, performance on brief oral reading fluency measures accurately predicts whether or not a student achieved adequate performance on the Florida Comprehensive
Assessment Test. Other researchers (Shaw & Shaw, 2002; Vander Meer et al., 2005; Wilson, 2005) found similar results. Research has also shown that these measurements are predictive of later reading ability to help in the early identification of students who are not progressing (Good & Kaminski, 2002).

In Florida, Buck and Torgesen (2002) attempted to determine whether measures of ORF are valid and reliable predictors of important reading outcomes and performance on a high-stakes test, the Florida Comprehensive Assessment Test. The researchers wanted to investigate whether or not performance on brief, 1-minute measures of the DIBELS ORF subtest is predictive of achievement in reading as measured on the Florida Comprehensive Assessment Test-Sunshine State Standards (FCAT-SSS). If the ORF subtest was predictive, these 1-minute assessments could provide early data on whether or not students would succeed on the FCAT-SSS. The researchers concluded that for a large heterogeneous group of third graders, performance on the ORF measure quite accurately predicts whether or not a given students will attain a score at level 3 or above on the FCAT reading test.

Vander Meer and colleagues (2005) examined the end of third grade and beginning and end of fourth grade ORF goals established by Good and Kaminski (2002) and compared them to Ohio expectations for fourth grade reading proficiency. They studied the correlations between ORF and the reading portion of the Ohio Proficiency Test (OPT). Vander Meer and colleagues sought to correlate academic proficiency on the ORF subtest of DIBELS with whether or not students passed Ohio’s Fourth Grade Reading Proficiency Test. The relationships between the ORF subtest and the Ohio
Fourth Grade Reading Proficiency Test (OPT) were examined. The researchers examined the utility of the ORF criteria as year-end goals or indicators of need for reading intervention. The researchers reported that ORF is related with performance on standardized tests of reading, and achieving benchmark goals. “At-risk” criteria on the ORF would appear valid for setting goals and deciding which students need interventions (p. 12).

Shaw and Shaw (2002) studied the use of the DIBELS ORF subtest in predicting the performance level on the third-grade (English) reading Colorado Student Assessment Program (CSAP), the standards-based summative reading comprehension assessment that is administered each school year. These researchers concluded that 39 of 43 (91%) third-grade students who scored 90 or above on the DIBELS ORF in the spring scored proficient or advanced on the CSAP, and 11 of 15 (73%) of the students who scored below 90 on the DIBELS ORF scored unsatisfactory or partially proficient.

Schilling, Carlisle, Scott, and Zeng (2007) looked at the predictive validity of DIBELS. Their study gathered data from first through third graders who made up the first Reading First cohort in Michigan. The authors of the study found that DIBELS subtests given in the fall and winter significantly predicted year-end reading achievement on the ITBS, Reading Total subtest. The researchers also stated that DIBELS at-risk benchmarks for oral reading fluency (ORF) were reasonably accurate at identifying second and third graders who were reading below the twenty-fifth percentile at the end of the year (80% and 76% for second and third graders, respectively). (p. 429)

In 2005, Wilson conducted a study for the Tempe School District in Arizona. The
goal was to decide whether third-grade students who reach a benchmark level of ORF would also meet the standard on the Arizona Instrument to Measure Standards (AIMS) Reading test. They also wanted to determine if students who scored poorly on the ORF subtest were unlikely to meet the standard. The overall correlation for this study was moderately large \( r = .741 \). Wilson reported that 81.9% of students who scored at the “low risk” category on the ORF subtest met the proficiency standard on AIMS. Additionally, the ORF subtest does identify those who are quite unlikely to reach proficiency. Ninety-three percent of students who scored in the “at risk” category were unable to meet proficiency on the AIMS assessment. Only 51% of students considered to be in the “some risk” group were proficient on the AIMS test.

Given the findings of the research outlined above, DIBELS ORF appears to be a useful tool that helps educators identify students who need additional support to reach expected benchmark levels. Clearly, the relationship between the DIBELS ORF and statewide high-stakes assessments is evident across the United States. The research has been replicated several times. The DIBELS assessment was administered to first, second, and third-grade students in nearly every public elementary school in Utah during January of 2011. Student scores on DIBELS assessments are categorized into one of three levels. When a student scores in the Benchmark level, it is assumed that the student will probably continue to progress and achieve subsequent literacy goals. The Benchmark level indicates that the student is performing at or above grade level. If the student’s performance indicates little chance of achieving future literacy goals, the instructional recommendation is Intensive, which means the student will probably need substantial
intervention. If the student’s performance does not give a clear prediction of future literacy achievement, the instructional recommendation is *Strategic*, which means the student needs additional intervention.
Appendix C

Utah CRT Information
Utah CRT Information

*English language arts CRT*

CRT Reliability research conducted on the Utah English Language Arts Core criterion-referenced test (ELA-CRT) shows that the third-grade language arts assessment had a split-half estimate of reliability of .92. The split-half estimate is described in the ELA-CRT technical report (2009). The authors of this manual report that the split-half estimate is one way to determine the reliability of a test. The process is to split a test in half and then to correlate the students’ scores on the two half-tests. This in effect treats each half-test as a complete test. This is known as a split-half estimate of reliability. If the two half-test scores correlate highly, items on the two half-tests are assumed to measure very similar knowledge or skills. This is evidence that the items complement one another and function well as a group. This also suggests that measurement error will be minimal (2008-09 Utah English Language Arts Core Criterion-Referenced Test Technical Report).

The 2008-09 Utah English Language Arts Core Criterion-Referenced Test (ELA-CRT) Technical Report stated that assessment results must show evidence of reliability for the purpose for which they were intended before they can show evidence of validity. The authors go on to state, “Validity, according to this report, is the process of collecting evidence to support the inferences made with assessment results. In the case of the ELA-CRTs, score use is applied to knowledge and understanding of the ELA-CRT Core Curriculum Standards. As a result, validity evidence is focused mainly on verifying the link between assessment tasks and the assessed components of the Core” (Utah State Office of Education, Assessment Office, 2009).
CURRICULUM VITAE

KATHY S. JANZEN

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PROFESSIONAL PROFILE

• Accomplished career demonstrating consistent success as an Administrator and Educator at the elementary and higher education levels.
• Outstanding track record in assuring student success.
• Seasoned in problem solving and decision making at the classroom, school, and district level.
• Experienced in administering Title I programs at the school and district levels.

EDUCATION

• PhD, Curriculum and Instruction, Utah State University, Logan, UT, 2012
• M.Ed., Elementary Education, Utah State University, Logan, UT, 2001
• B.S., Elementary Education, Utah State University, Logan, UT, 1978

ACADEMIC HONORS AND AWARDS

• Recipient, Golden Apple PTA Award as a Principal, 2002
• Recipient, Accent on Excellence Alpine District Award as a Principal, 2004

ACADEMIC /TEACHING EXPERIENCE

Elementary School Teacher, Utah, 1979 to 1999
• Teach Fourth Grade Students, Brookwood Elementary, Sandy, UT, 1979-1979
• Teach First Grade Students, Barratt Elementary, American Fork, UT, 1979-1982
• Teach First through Third Grade Students, Scera Park Elementary, Orem, UT, 1982-1999
• Conduct Literacy Training to Alpine District Teachers, Throughout Alpine District, 1984-1990
• Conduct Training as School Literacy Specialist, Scera Park Elementary, Orem, UT, 1994-1999

Clinical Faculty Associate, Brigham Young University, Provo, UT, 1999 to 2001
• Teach Assessment, Instruction, Lesson Planning, Classroom Management, and Social Studies Methods to classes averaging 25 students. Supervise Student Teachers and Interns in Alpine District and Wasatch District Elementary Schools. Serve on Alpine District Curriculum Committee.
Elementary Principal, Alpine School District, 2001 to 2004
• Administer Academic programs, Lead Instruction, Supervise Teachers and Staff Members, Evaluate Teachers and Staff Members, Communicate with Teachers, Patrons, Students, and Community Members, Westmore Elementary, Orem, UT, 2001-2004. Co-wrote and Implemented a One Million Dollar 21st Century Grant. Hired Exceptional Teachers and Staff Members. Helped Ineffective Teachers and Staff Members Improve or Move On to More Fitting Positions.

K. S. Janzen

K-6 Administrative Supervisor, Alpine School District, 2004 - 2010
• Supervise Principals, Lead other K-6 Administrators, Conduct Principal Meetings, Work on Boundary Committees, Present Information to School Board Members, Present Information to PTA, Present Information to School Community Councils, Present Information to Community Members, Act as a Problem Solver when Concerns are Brought to the District Level, Hire Effective Principals, Support Principals and Guide them to be Better Leaders, Actively Work to Remove Ineffective Employees

University Instructor and Supervisor, Brigham Young University, 2010 - Present
• Instruct and supervise interns, student teachers, and other pre-service teachers.
• Teach planning, management, instruction, and assessment.

Courses Taught
• Curriculum and Instruction for Elementary Teachers
• Planning and Management for Elementary Teachers
• Social Studies Methods

Professional Affiliations
• Member of National Association of Elementary School Principals
• Member of Alpine School District Cabinet, 2004 to 2010
• Member of Association for Supervision and Curriculum Development
• Member of Phi Delta Kappa, 1990 to 2002
• Board Member of Phi Delta Kappa, BYU Chapter, 1991 to 2002
• Member of Phi Kappa Phi, USU Chapter, 1999 to Present

Professional Development
• Completed all Requirements for Gifted and Talented Endorsement
• Completed Approximately Half of the Course Work for an ESL Endorsement
• Completed Extensive Literacy Instruction Course Work

Community Service
• Board Member, Boys and Girls Clubs of Utah County, 2006 to Spring, 2011
• Board Member, Head Start, Provo, UT 2006 to 2009