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Connections between teacher perceptions of school effectiveness and student outcomes in Idaho's low-achieving schools

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Key findings

This study examined the survey responses of teachers from 75 Idaho schools working on school improvement. The schools with higher teacher reports of the presence of the goals, processes, and supports essential for student success did not have higher rates of reading proficiency, math proficiency, or attendance.

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Summary

Policymakers and practitioners frequently use teacher surveys to inform decisions on school improvement efforts in low-achieving schools. But there is little empirical evidence on how the results of these surveys relate to student outcomes. This study provides information on how perception data from a teacher survey in Idaho is correlated with three student outcomes: reading proficiency, math proficiency, and attendance.

The Idaho State Department of Education uses the Educational Effectiveness Survey (EES), an annual teacher survey developed and administered by the Center on Educational Effectiveness, to gather information on school qualities believed to be the goals, processes, and supports essential for school success. Used widely in the Northwest Region, the survey is similar to teacher perception surveys used nationally. This study covers the 75 low-achieving Idaho schools that used the state's school improvement services and took the EES in 2012.

The analyses of the survey data revealed that teachers' perceptions of the presence of essential goals, processes, and supports were generally not related to reading proficiency, math proficiency, or attendance. A few significant relationships were found in subsamples of schools. For example, the essential support defined in the survey as "effective school leadership" was significantly related to reading proficiency in 2011 in the 33 schools with data for 2010, 2011, and 2012. A significant positive relationship was also found between school attendance in elementary schools in 2012 and teacher ratings of five of nine other essential goals, supports, and processes.

The weak relationship between teacher perceptions on the EES and student outcomes does not support the use of the EES as an indicator of academic progress in Idaho's low-achieving schools, particularly not as the sole indicator. Other uses of perception data from the EES—such as measuring teacher satisfaction with school environments—may be useful for practitioners but were not examined in this study.

The findings suggest that Idaho educators and others using teacher perception surveys should proceed cautiously in making decisions based on perception surveys. For example, researchers and policymakers should consider how well survey measures relate to desired student outcomes and provide useful information on the effectiveness of school improvement efforts. They might also consider using data from other sources to assess the school goals, processes, and supports they seek to investigate through teacher surveys.

Contents

Why this study?

Many education practitioners and policymakers use teacher surveys to track progress and evaluate the success of school improvement efforts. Such surveys range from district-administered surveys in large districts such as Chicago (Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010) and New York (McCormick & Nathanson, 2013) to commercial surveys intended to inform state decisions on school assistance (Center for Educational Effectiveness, 2008) to surveys used primarily for school accreditation (Weaver & Barile, 2011). But little research has explored how well the results of teacher surveys correlate with the student outcomes that school improvement efforts seek to affect. (Appendix A provides detailed information on research related to this study.)

This study examines whether teacher ratings of school goals, processes, and supports on the Educational Effectiveness Survey (EES; box 1) correlate with three key outcomes in Idaho's low-achieving schools: reading proficiency, math proficiency, and attendance. (Box 2 looks at how the Idaho State Department of Education uses the EES; box 3 and appendix B detail the data sources and methods used in the study.)

This study examines whether teacher ratings of school goals, processes, and supports on the Educational Effectiveness Survey correlate with three key outcomes in Idaho's low-achieving schools

Box 1. About the Educational Effectiveness Survey

The Center for Educational Effectiveness developed the Educational Effectiveness Survey based on a research synthesis conducted by school improvement specialists at the Washington Office of Superintendent of Public Instruction in 2003 and revised in 2007 (Shannon & Bylsma, 2003, 2007). That synthesis identified nine dimensions as the essential goals, processes, and supports needed for school success:

- *Clear and shared focus.* All teachers and staff know where they are going and why, based on a focus on a shared vision and an understanding of their role in realizing it. The focus and vision are derived from common beliefs and values, creating a consistent direction for all involved. (Sample item: The school has a clear sense of purpose.)
- *High standards and expectations for all students.* Teachers and staff believe that all students can learn and meet high standards. While some students must overcome substantial barriers, the barriers are not seen as insurmountable. Students are offered an ambitious and rigorous course of study. (Sample item: All students are expected to achieve high standards.)
- *Effective school leadership.* Effective instructional and administrative leadership is required to implement change. Effective leaders seek needed help and nurture an instruction program and school culture conducive to learning and professional growth. Effective leaders have different styles and roles; teachers and other staff members, including those in the district office, often have a leadership role. (Sample item: People in leadership roles act with integrity.)
- *High levels of collaboration and communication.* There is strong teamwork among teachers across all grades and with other staff. Everyone is involved and connected—including parents and other members of the community—in identifying problems and working on solutions. (Sample item: Teachers discuss teaching issues on a regular basis.)
- *Curriculum, instruction, and assessment aligned with standards.* The planned and actual curricula align with the essential academic learning requirements. Research-based teaching

(continued)

Box 1. About the Educational Effectiveness Survey *(continued)*

strategies and materials are used. Staff members understand the role of classroom and state assessments, what the assessments measure, and how student work is evaluated. (Sample item: The school's curriculum aligns with state standards.)

- *Frequent monitoring of learning and teaching.* A steady cycle of different assessments identify students who need help. These students receive more support and instruction time, either during the school day or at other times. Teaching is adjusted based on frequent monitoring of student progress and needs. Assessment results are used to focus and improve instruction programs. (Sample item: Students receive regular feedback about what they need to do to improve.)
- *Focused professional development.* A strong emphasis is placed on training staff in areas with the most need. Feedback from learning and teaching focuses on extensive and ongoing professional development. The support aligns with the school or district vision and objectives. (Sample item: Assessment results are used to determine professional learning activities.)
- *Supportive learning environment.* The school has a safe, civil, healthy, and intellectually stimulating learning environment. Students feel respected and connected with the staff and are engaged in learning. Instruction is personalized, and small learning environments increase student contact with teachers. (Sample item: Students feel safe on school property during school hours.)
- *High levels of family and community involvement.* There is a sense that all involved—families, businesses, social service agencies, and community colleges and universities—have a responsibility to educate students, not just teachers and school staff. (Sample item: The staff believes that students learn more through effective family support.)

Shannon and Bylsma's literature review (2007) suggests that all nine dimensions are equally important and must be addressed simultaneously to promote school improvement. (The full survey can be found at http://extranet.educationnorthwest.org/sites/default/files/nine-characteristics-survey.pdf.)

Box 2. About the Idaho State Department of Education's use of the Educational Effectiveness Survey

In 2008 the Idaho State Department of Education based a major overhaul of its support system on the goals, processes, and supports essential for student success discussed in box 1. The No Child Left Behind Act of 2001 requires states to identify schools in need of improvement based on a failure to make adequate yearly progress toward targets set by the state for two or more consecutive years, to create a statewide support system for schools with longer histories of failing to meet these targets, and to identify distinguished educators who can help deliver these supports (No Child Left Behind Act of 2001, 2002). Several studies have reported on the limited capacity of states to provide this technical assistance (Edwards, 2006; Le Floch, Boyle, & Therriault, 2008; Minnici & Hill, 2007), and Idaho is one of many states continuing to refine its system.

When a school enters improvement status, the Idaho State Department of Education offers up to three years of capacity-building services (on-site and remote technical assistance

(continued)

Box 2. About the use of the Educational Effectiveness Survey by the Idaho State Department of Education *(continued)*

and professional development from retired educators recognized as leaders and experts in school improvement). Providers of capacity-building services work with principals and school leadership teams on school improvement plans to increase the staff-reported presence of targeted school goals, processes, and supports (S. Underwood, director of the Idaho statewide system of support, personal communication, April 12, 2012).

To evaluate these capacity-building efforts and to pinpoint which services to provide in each school, the state hired the Center for Educational Effectiveness to administer its multi-item Educational Effectiveness Survey (EES) annually, beginning in 2008, to all schools that receive such services (Lane, 2010; Underwood, 2013). The school-based reports show the mean score for each item as rated by teachers. For example, a survey that shows low teacher ratings for "collaboration and communication among staff members" might suggest that the school improvement plan call for more team planning time and professional development in effective communication strategies.

These components—capacity-building services and the administration of the EES—remain the basis of Idaho's school support system. A 2010 external case study confirmed that research on essential school goals, processes, and supports did indeed inform the capacity-building services and that the service providers reported using this framework in their work with schools and districts (Lane, 2010). Several Idaho school and district officials have testified to the usefulness of capacity-building services (Scott, McMurrer, McIntosh, & Dibner, 2012).

Although the goals, processes, and supports identified in Shannon and Bylsma (2003, 2007) and measured through the EES are frequently found in higher achieving schools, the evidence of the relationship between use of EES measures and long-term student outcomes such as test scores and attendance remains limited.

Box 3. Data sources and methods

This study used two main data sources: the Educational Effectiveness Survey (EES) and publicly available data from the Idaho State Department of Education. The survey data included teacher responses on the 2012 EES for 75 schools designated by the Center for Educational Effectiveness as receiving capacity-building services. The study also examined data for a subset of 33 schools that had received services and participated in the EES for three years (2010, 2011, and 2012). Of the 107 items on the EES (version 9), 86 measured school staff members' perceptions of the presence of nine dimensions related to school goals, processes, and supports. All teachers in the 75 schools were invited to participate: 1,745 teachers responded in 2012 (91 percent of teachers). For the subset of 33 schools 820 teachers responded in 2010 (87 percent), 830 responded in 2011 (86 percent), and 863 responded in 2012 (89 percent; see table B2 in appendix B). No school with a below-average return rate had fewer than four teachers who responded.

The publicly available school-level information from the Idaho State Department of Education included data on reading proficiency, math proficiency, attendance, and percentage of students eligible for free or reduced-price lunch for 2010, 2011, and 2012. Reading and math

(continued)

Box 3. Data sources and methods *(continued)*

proficiency and attendance were used as student outcome measures; the percentage of students eligible for free or reduced-price lunch was used as a proxy for poverty at each school.[1] More than 90 percent of schools had data for all variables (see table B3). Attendance data were available for only 2010 and 2012; the 2011 data were lost during a database conversion. In general, average proficiency rates rose slightly from 2010 to 2012, as did teachers' average self-reports on most of the nine dimensions (see table C5 in appendix C). Attendance remained stable. Although other research on the EES does not use attendance as a variable (Bylsma, 2008; Thacker & Becker, 2012), this study did, because other research suggests that attendance frequently influences performance (Conard, 2006; Durán-Narucki, 2008).

The data were analyzed in three steps: descriptive analyses, including examination of scatterplots and histograms; correlations between EES data and reading and math proficiency and student attendance; and regression analyses using reading and math proficiency and student attendance as outcome variables, the percentage of students eligible for free or reduced-price lunch as a covariate, and each EES dimension as the independent variable. Both correlations and regressions used the Benjamini-Hochberg correction to adjust for multiple comparisons. Separate analyses were also conducted for elementary schools (n = 35) and secondary schools (n = 39). One school did not fall into either category. Appendix B provides more detail on data sources and methods.

1. The National School Lunch Program provides free lunch for students from households at or below 130 percent of the poverty line and reduced-price lunch for students from households at 131–185 percent of the poverty line. Poverty lines are established and updated by the U.S. Department of Health and Human Services.

For the 75 schools receiving capacity-building services in 2012, 28 of the 30 correlations were positive; however, none of the correlations was statistically significant

Study findings

This section discusses the study's three key findings on the relationship between student outcomes (reading and math proficiency and attendance) and teacher ratings on the EES of school goals, processes, and supports.

No relationship between student outcomes and teacher ratings of school goals, processes, and supports for the full sample of schools in 2012

For the 75 schools receiving capacity-building services in 2012, 28 of the 30 correlations were positive (table 1). (Schools with higher mean scores on the EES also had higher mean proficiency and attendance rates.) However, none of the correlations was statistically significant.[1]

The relationship between teacher survey data from the EES and the publicly available outcome data for the 75 schools in 2012 was further examined through a series of 30 linear regression analyses at the school level. In each linear regression the dependent variable was one of the three school-level outcomes (reading proficiency rates, math proficiency rates, or attendance rates), and the variable of interest was 1 of the 10 survey dimensions (nine dimensions and the mean of all dimensions). The percentage of students eligible for free or reduced-price lunch was a covariate that served as a proxy controlling for the level of need of the student body, because several studies have confirmed the link between school-level percentages of students eligible for free or reduced-price lunch and student outcomes (Kahlenberg, 2001). No EES dimension was found to be significantly related to an outcome of interest (table 2).

Table 1. No statistically significant correlations between school-level Educational Effectiveness Survey data and student outcomes for all schools, 2012

Dimension	Pearson product-moment correlation coefficients		
	Percentage of students proficient in reading (n = 73)	Percentage of students proficient in math (n = 73)	Student attendance rate (n = 70)
Frequent monitoring of learning and teaching	.11	.24	.20
Supportive learning environment	.08	.13	.21
Effective school leadership	.07	.07	.16
High levels of collaboration and communication	.05	.10	.23
High levels of family and community involvement	.05	.05	.19
Focused professional development	.04	.14	.22
Curriculum, instruction, and assessment aligned with standards	.02	.20	.23
Clear and shared focus	.00	.10	.17
High standards and expectations for all students	–.17	–.03	.16
Total items	.04	.13	.22

Note: Of the 75 schools in the sample, 2 were missing data on reading proficiency, 2 were missing data on math proficiency, and 5 were missing data on attendance. Each cell represents the estimated correlations between the EES dimension for that cell's row (row header) and the student outcome for that cell's column (column header). Rows are ordered by the largest correlation for reading.

Source: Authors' analysis of data from the Educational Effectiveness Survey (2012).

None of the 30 correlations for secondary schools was statistically significant.

No statistically significant relationships in elementary or secondary schools between teacher ratings and reading or math proficiency, but some between teacher ratings and attendance for elementary schools

Correlations were stronger for elementary schools than for secondary schools (table 3). However, as with the complete sample, no statistically significant relationships were found between teacher ratings and reading or math proficiency rates. Of the 10 relationships tested (nine dimensions and the mean of all dimensions), only 6 showed statistically significant correlations between teacher ratings and student attendance rates for elementary schools:

- Effective leadership (r^2 = .47).
- Frequent monitoring of learning and teaching (r^2 = .46).
- Focused professional development (r^2 = .46).
- High levels of collaboration and communication (r^2 = .41).
- Supportive learning environment (r^2 = .40).
- Mean for all dimensions (r^2 = .43).

None of the 30 correlations for secondary schools was statistically significant. And 26 of the 30 were negative, meaning that schools with lower average EES ratings had higher proficiency and attendance rates, though these correlations could have occurred by chance.

One statistically significant relationship between teacher ratings and student outcomes for the subsample of 33 schools that conducted the survey in 2010, 2011, and 2012

The only statistically significant relationship found for the subsample of 33 schools with data for three years was between effective school leadership and reading proficiency in

Table 2. Results of linear regressions showed no significant relationships

Dimension	Linear regression correlation coefficients (standard errors)		
	Reading (n = 73)[a]	Math (n = 73)[a]	Attendance (n = 70)[b]
Frequent monitoring of learning and teaching	0.020 (0.02)	0.066 (0.03)	0.028 (0.02)
Supportive learning environment	0.013 (0.03)	0.040 (0.04)	0.037 (0.02)
High levels of collaboration and communication	0.011 (0.02)	0.029 (0.04)	0.037 (0.02)
Effective school leadership	0.011 (0.02)	0.017 (0.03)	0.023 (0.02)
Focused professional development	0.008 (0.02)	0.038 (0.03)	0.032 (0.02)
High levels of family and community involvement	0.004 (0.02)	0.007 (0.03)	0.028 (0.02)
Curriculum, instruction, and assessment aligned with standards	0.002 (0.02)	0.058 (0.04)	0.039 (0.02)
Clear and shared focus	0.002 (0.03)	0.039 (0.05)	0.034 (0.03)
High standards and expectations for all students	–0.028 (0.02)	–0.005 (0.03)	0.024 (0.02)
Mean of all dimensions	0.008 (0.03)	0.041 (0.04)	0.040 (0.02)

a. 70 degrees of freedom.

b. 67 degrees of freedom.

Note: Of the 75 schools in the sample, 2 were missing data on reading proficiency, 2 were missing data on math proficiency, and 5 were missing data on attendance. Each cell presents the coefficient (and the coefficient's standard error) from a separate linear regression in which the outcome was the school's reading proficiency rate, math proficiency rate, or attendance rate (column headers); the predictor was one of the nine dimensions (row headers); and the covariate was the percentage of students eligible for free or reduced-price lunch (not shown in table). Rows are ordered by the largest correlation for reading.

Source: Authors' analysis of data from the Educational Effectiveness Survey (2010, 2011, and 2012) and data from Idaho State Department of Education (n.d. a, b, c, d).

2011 (r^2 = .49; table 4). Correlations with reading proficiency rates were all positive in 2010 and 2011 but negative for eight dimensions in 2012, though none was statistically significant. As with reading, math proficiency rates had more negative correlations in 2012 than in 2010 and 2011, though none was statistically significant.

Implications of the findings

This study found no relationship between Idaho teacher ratings of school processes, goals, and supports as measured by the EES and reading proficiency, math proficiency, or attendance in the full sample of 75 schools. Therefore, there is no evidence to support the use of the average teacher ratings on the nine EES dimensions to track progress in student achievement in Idaho schools that receive capacity-building services. The lack of relationships also casts doubt on the utility of EES data for assessing the overall impact of the Idaho statewide system of support. Idaho policymakers are strongly advised to consider an alternative method of measuring school processes, goals, and supports—one that is more strongly associated with long-term student outcomes. This suggestion is consistent

Table 3. Few statistically significant correlations between dimensions of the Educational Effectiveness Survey and student outcomes, by grade-level groupings, 2012

Dimension	Pearson product-moment correlations					
	Percentage of students proficient in reading		Percentage of students proficient in math		Student attendance rate	
	Elementary schools (*n* = 35)	Secondary schools (*n* = 37)	Elementary schools (*n* = 35)	Secondary schools (*n* = 37)	Elementary schools (*n* = 34)	Secondary schools (*n* = 35)
Frequent monitoring of learning and teaching	.31	–.01	.29	.02	.46**	–.10
High levels of collaboration and communication	.27	–.15	.24	–.11	.41**	.04
Supportive learning environment	.26	–.10	.20	–.02	.40**	–.01
High levels of family and community involvement	.24	–.20	.15	–.19	.32	.02
Clear and shared focus	.22	–.21	.17	–.22	.27	–.04
Effective school leadership	.20	–.05	.07	–.04	.47**	–.10
Curriculum, instruction, and assessment aligned with standards	.19	–.09	.13	–.02	.24	.11
Focused professional development	.19	–.03	.15	–.08	.46**	–.06
High standards and expectations for all students	–.05	–.29	–.05	–.28	.29	–.12
Total items	.23	–.12	.17	–.10	.43**	–.03

** Statistically significant at the < .05 level, using the Benjamini-Hochberg correction.

Note: Each cell represents the estimated correlations between the Educational Effectiveness Survey dimension for that cell's row (row header) and the student outcome by secondary or elementary school for that cell's column (column header). Rows are ordered by the largest correlation in elementary schools in reading.

Source: Authors' analysis of data from the Educational Effectiveness Survey (2012).

This study suggests that the predictive validity of such measures as the EES needs to be established along with content validity

with recommendations for practice from other measurement experts (Schmeiser & Welch, 2006). Without evidence of efficacy for tracking progress and evaluating school improvement efforts, teacher surveys have uncertain value in decisionmaking for school improvement efforts.[2]

This study also has implications for researchers and policymakers developing and using perception surveys on school factors that influence student outcomes. Several recent studies, for example, point to the use of perception surveys in high-stakes decisions, including on principal evaluation (Clifford, Menon, Gangi, Condon, & Hornung, 2012; Hallinger, Wang, & Chen, 2013), school accreditation (Weaver & Barile, 2011), and school accountability (McCormick & Nathanson, 2013).

Whatever survey researchers and policymakers use, it is recommended that they exercise caution when using the results to make decisions. Survey developers typically establish the content validity of perception surveys with literature reviews and expert consultations, but few surveys show evidence of predictive validity by testing how well their dimensions relate to other outcomes (Clifford et al., 2012). This study suggests that the predictive validity of

Table 4. Few statistically significant correlations between dimensions of the Educational Effectiveness Survey and student outcomes in the 33 schools with data for 2010, 2011, and 2012

	Pearson product-moment correlations								
	Percentages of students proficient in reading (n = 32)			Percentages of students proficient in math (n = 32)			Attendance rates (n = 31 in 2010, n = 29 in 2012)		
Dimension	2010	2011	2012	2010	2011	2012	2010	2011	2012
High levels of collaboration and communication	.41	.34	–.02	.15	.08	–.11	.33	—	.16
Frequent monitoring of learning and teaching	.41	.40	.04	.29	.15	–.04	.22	—	.20
Supportive learning environment	.40	.40	–.06	.28	.20	–.10	.26	—	.12
Focused professional development	.37	.31	.02	.28	.41	–.07	.31	—	.30
Clear and shared focus	.34	.20	–.15	.22	.06	–.12	–.04	—	.11
Curriculum, instruction, and assessment aligned with standards	.33	.38	–.15	.22	.09	–.09	–.18	—	.10
High standards and expectations for all students	.29	.18	–.26	.26	.04	–.19	.28	—	.08
High levels of family and community involvement	.27	.38	–.10	.20	.24	–.08	.01	—	.25
Effective school leadership	.21	.49**	–.08	.18	.14	–.26	.23	—	.21
Total items	.42	.41	–.08	.28	.18	–.13	.21	—	.18

— is not available because data were lost in a data storage system conversion.

** Statistically significant at the < .05 level, using the Benjamini-Hochberg correction.

Note: Of the 33 schools in the sample, 1 was missing data on reading proficiency, 1 was missing data on math proficiency, 4 were missing data on attendance in 2010, and 2 were missing data on attendance in 2012. Each cell represents the estimated correlations between the Educational Effectiveness Survey dimension for that cell's row (row header) and the student outcome by year for that cell's column (column header). Rows are ordered by 2010 reading proficiency rates.

Source: Authors' analysis of data from the Educational Effectiveness Survey (2010, 2011, and 2012) and data from Idaho State Department of Education (n.d. a, b, c, d).

such measures as the EES needs to be established along with content validity. Researchers and policymakers relying on teacher perception surveys for decisionmaking should consider predictive validity to ensure that surveys provide useful information on school effectiveness that is related to student outcomes.

Given these limitations of perception surveys, researchers and policymakers in Idaho and across the country might consider multiple other measures of the school goals, processes, and supports they seek to investigate through teacher surveys. Some existing tools might be adapted, or new tools might be developed. For example, the No Child Left Behind Act of 2001—and its flexibility guidance—requires school improvement plans from schools identified as low achieving (U.S. Department of Education, 2012). A tool measuring the presence and implementation of the school goals, processes, and supports as described in these plans could prove useful, especially in the many states, such as Idaho, that have adopted online school improvement planning and tracking systems. Additional tools, such as observation protocols used by states as part of monitoring low-achieving schools, might also provide useful information on school goals, processes, and supports that could be linked to student outcomes. The number of states that report these monitoring data has

increased due to new federal requirements for school improvement grants (McMurrer & McIntosh, 2012). Ultimately, an analysis that combines multiple measures of school goals, processes, and supports and then investigates their relationship with formative and summative assessments could help educators and policymakers strengthen school improvement efforts.

Limitations of the study

This study has several limitations. First, this is a correlational study; the results do not support causal claims about the impact of state services or about whether changes in school goals, processes, and supports result in changes in student outcomes. Examining causality is beyond the scope of this study. This study is instead a first step toward understanding the utility of a teacher perception survey as a predictor of student achievement.

This study is a first step toward understanding the utility of a teacher perception survey as a predictor of student achievement

Second, the study did not examine other uses of the EES, such as measuring teacher satisfaction.

Third, the correlations and regression models had restricted ranges for the variables. This restriction was due in part to aggregation to the school level as a result of the Idaho State Department of Education's interest in school-level capacity building. Some outliers were included in the analyses, either because no pattern could be identified for them or because it was assumed that Idaho leaders wanted to build capacity in these types of schools (alternative schools) specifically. For the regression analyses, the models did not consider that student outcomes could affect teacher ratings. The models also do not account for all measurement error in the EES. Therefore, these results must be interpreted with caution.

Fourth, the study examined only one measure of school goals, processes, and supports: teacher ratings on the EES. Examining other indicators, such as differences in the quality of school improvement plans or direct observation, might reveal differences across schools that did not emerge from the EES ratings. Comparing multiple measures of school goals, processes, and supports would also help determine the validity of the EES.

Fifth, the study did not gather detailed information on how educators in Idaho use the EES or the extent to which its use depends on positive correlations between the EES and student outcomes. For example, educators may find the EES useful in planning school improvement due to factors other than the correlations this study examines.

Sixth, the study cannot directly explain why correlations between the EES dimensions and attendance differ from elementary to secondary schools. Results may differ for several reasons. Parents might have more direct control over student attendance in elementary school than in secondary school. Elementary school teachers might be more (or less) accurate in their EES responses. The EES may be more (or less) accurate in measuring the nine dimensions in elementary schools. Or some other variable that the study was unable to account for might affect the relationship.

Finally, the study cannot comment on the theoretical validity of the nine dimensions measured in the EES as levers for improving student outcomes. Other dimensions representing school goals, processes, and supports might also have merit. This study chose to focus on the EES because it is the measure used most frequently in Idaho.

Appendix A. Connections to previous research

Educators have long known that the quality of schools and teachers makes a difference for students. Beginning in the 1990s, researchers began developing models to account for the value that teachers add to student achievement (Sanders & Horn, 1994).

The impact of schools on student achievement has also been of interest to educators. In a meta-analysis of 10 rigorous studies that attempted to isolate the impact of schools on student achievement, Marzano (2000) found that schools accounted for about 20 percent of the variance in the models. Given that the state test passage rate was expected to be 50 percent, Marzano determined that the average rate for an effective school (that is, a school that performs better than would be predicted based on its demographic dimensions) is 72 percent, compared with 28 percent for an ineffective school. A recent international study confirmed the importance of school-level impacts on student achievement in a wide range of countries (Willms, 2010).

Several researchers have attempted to codify the factors that influence a school's impact on student outcomes (for example, Cotton, 1999; Edmonds, 1979; Lezotte, 1991). The research synthesis conducted by school improvement specialists at the Washington Office of Superintendent of Public Instruction is a continuation of this line of inquiry (Shannon & Bylsma 2003, 2007). In the 2003 synthesis the research team reviewed 25 articles to identify common school dimensions associated with effective schools.

The studies reviewed by Shannon and Bylsma varied considerably in the methods used to identify effective schools, and none was experimental. For example, Barth et al. (1999) asked states to submit a list of their top-scoring, high-poverty schools, while the authors of a study from the Education Commission of the States (1999) reflected on their own experiences and lessons learned working with governors and state and local policymakers to raise awareness of comprehensive school reform.

In 2006 the Washington Office of Superintendent of Public Instruction convened a panel to validate the Shannon and Bylsma synthesis and to help the state further define the goals, processes, and supports essential for effective schools. As a result of the panel's input, the literature review added 120 references (Shannon & Bylsma, 2007). The new compilation included earlier comprehensive reviews of the literature (Cotton, 1999; Edmonds, 1979; Lezotte, 1991) and added other more sophisticated studies, such as Bryk and Schneider (2002), which used multilevel regression models to identify schools that performed better than a comparison group.

But what measures of the school dimensions accurately predict higher student achievement? To answer this question, scholars have created and tested perception survey instruments that measure some of the subjective school factors that might impact student achievement. Because school staff control these subjective factors, this research is particularly relevant to school improvement work.

Developers typically design perception surveys with the goal of ensuring that the surveys are valid (that they measure the ideas they intend to measure) and reliable (that they measure these ideas the same way over time). Next, they test perception surveys for validity and reliability using a variety of methods. These methods sometimes include tests of

predictive validity, which evaluate how the survey results correspond to other measures of the ideas or factors the survey measures (Fowler, 2009).

A recent review of teacher perception surveys used for principal evaluation found 13 surveys that met the authors' criteria for validity and reliability (Clifford et al., 2012). However, just three of the instruments examined the predictive validity of their perception surveys (the survey measure's correlation with desirable outcomes, such as improved student test scores and attendance).

Only one study, a dissertation using Washington state data, has examined and found significant relationships between average teacher EES ratings and student achievement (Bylsma, 2008). Appendix B examines the Washington study and the validity and reliability of the EES. The current study adds to information on teacher perception surveys in general and to knowledge about the predictive validity of the EES in Idaho in particular.

Appendix B. Data sources and methods

This appendix provides further details on the Educational Effectiveness Survey, publicly available data from the Idaho State Department of Education, participating schools, data collection, and study methods.

The Educational Effectiveness Survey

Description and scoring. The Center for Educational Effectiveness (CEE) created the Educational Effectiveness Survey (EES) based on the work of Shannon and Bylsma (2003). Of the 107 items on the EES (version 9), 86 measure school staff members' reports on the presence of school goals, processes, and supports as represented by the nine EES dimensions (table B1). This study used teachers' responses, rather than all staff responses, for two reasons. First, because teachers have the strongest response rate, as compared with noncertified staff and administrators, and second, because teachers have the most contact with the students whose outcomes the study examined. CEE has administered the survey in Idaho schools by mail, annually from 2008 through 2012, and plans to continue to do so. Idaho schools participating in the survey include those receiving capacity-building services from the Idaho State Department of Education.

Respondents rated EES items on a scale of 1 to 5, where 1 was "almost never true," 2 was "seldom true," 3 was "sometimes true," 4 was "often true," and 5 was "almost always true." The original numeric coding of the scale was reversed for this study, so that positive correlations indicate that higher means on the EES are related to higher student proficiency and attendance rates. Respondents could also select "no opinion," but only one respondent did and only for one item; this single response was treated as missing. Each item included in this study relates to one of the nine EES dimensions. The full survey can be found at http://extranet.educationnorthwest.org/sites/default/files/nine-characteristics-survey.pdf.

Table B1. Sample items for each dimension of the Educational Effectiveness Survey

Dimension	Number of items	Sample item
Clear and shared focus	7	The school has a clear sense of purpose.
High standards and expectations for all students	7	All students are expected to achieve high standards.
Effective school leadership	10	People in leadership roles act with integrity.
High levels of collaboration and communication	12	Teachers discuss teaching issues on a regular basis.
Curriculum, instruction, and assessment aligned with standards	10	The school's curriculum is aligned with state standards.
Frequent monitoring of learning and teaching	8	Students receive regular feedback about what they need to do to improve.
Focused professional development	10	Assessment results are used to determine professional learning activities.
Supportive learning environment	16	Students feel safe on school property during school hours.
High levels of family and community involvement	6	The staff believes students learn more through effective family support.

Source: Center for Educational Effectiveness, 2008.

Validity and reliability. CEE administered version 9 of the EES in Idaho as part of the state's school improvement initiative, and Regional Educational Laboratory Northwest used the survey data for this study. (A version 10 is now available.) CEE has done several things to help ensure the validity and reliability of the EES. However, additional work (by CEE or others) might be needed. This section describes the work that has been done, the work that remains to be done, and how the current study contributes to efforts to examine the validity of the EES.

As mentioned, CEE originally developed the EES based on Shannon and Bylsma (2003), as well as on organizational effectiveness research and expert opinion. During 2003–09 CEE strengthened the content validity of the EES by revising the survey in response to recent developments in school effectiveness research. In addition, it factored client feedback into each revision. Through relationships with leading educators, professional associations, and state departments of education, the EES underwent five revisions between 2003 and 2009, each bringing the latest in research-based and professionally grounded understanding to the instrument. However, according to CEE's chief executive officer, the nine survey dimensions have remained essentially the same since the third version in 2004, making it possible to construct previous-year dimensions that would parallel the 2012 administration (version 9) used in this study (G. Lobdell, chief executive officer, personal communication, May 14, 2012).

With each version, CEE also did cognitive pretesting. For version 9, CEE conducted cognitive pretesting in a focus group with staff members from three Washington state school districts and in a peer review with education researchers who were former members of the CEE board of directors when CEE was a nonprofit organization. Based on this input, CEE refined version 9 and piloted the survey. The organization typically pilots each new version in at least 12 buildings, involving at least 600 staff members (G. Lobdell, chief executive officer, personal communication, January 31, 2013).

In addition, CEE assesses the internal consistency of each of the nine dimensions for each EES administration using Cronbach's alpha. This statistic ranges from 0 to 1 and represents the intercorrelation of items intended to measure the same dimension. Stronger correlations mean a greater likelihood that the items measure the same dimension. The alphas for past administrations of the EES ranged from .75 to .94 for version 9 (Center for Educational Effectiveness, n.d.). Alphas for all EES dimensions were greater than .70, which many researchers consider the minimum to justify using an instrument to measure particular dimensions (Hair, Black, Babin, Anderson, & Tatham, 2006).

However, some questions remain about the validity of the EES. For example, all items in version 9 are worded positively. When comparing positively worded to negatively worded items in 2001 and 2002, CEE found no differences in the Cronbach's alphas for the dimensions, but negatively worded items created another step in data analysis and reporting, as well as some confusion for clients reading the reports. Therefore, CEE decided to use only positively worded items (G. Lobdell, chief executive officer, personal communication, January 31, 2013). This decision could cause participants to focus more on positive responses, limiting the range of the scale and making its validity questionable (Malhotra, 2006).

Other questions about validity could be addressed by comparing the EES to other measures of school goals, processes, and supports—something CEE has not yet done. An evaluation

report in Washington state that used both the EES and classroom observations showed that the results varied widely across the eight participating districts. The study did not attempt to compare the two measures, but the authors noted that observations generally had higher ratings for the second set of schools that participated in the study, while the reverse was true of the EES ratings (Thacker & Becker, 2012).

Finally, the predictive validity of the EES needs further exploration. Predictive validity is how a measure such as the EES correlates with other related measures (such as other perception surveys) or with the ultimate outcomes of interest (such as student outcomes). The current study contributes to the need to explore the predictive validity of the EES.

The literature review conducted for this study identified just one study that examined the predictive validity of the EES (see appendix A). That one study found statistically significant correlations between survey dimensions and student achievement (Bylsma, 2008). The author conducted the study in Washington state and used Pearson's correlations between the school means for each of the nine EES dimensions and school-level percentages of proficient students on state math and reading tests for three grade levels: elementary, middle, and high school.

For elementary schools seven dimensions showed statistically significant correlations (.252–.462), meaning that variations in EES scores accounted for 6–21 percent of the variance in percentages of proficient students (calculated by squaring the Pearson's correlation, as Marzano [2000] did). These percentages represent the relationship between the variance in the two variables and should not be misinterpreted as indicating that either variable caused the other variable to vary in any way. In middle schools eight dimensions showed statistically significant correlations (.213–.559), accounting for 5–31 percent of the variance. In both elementary and middle schools the largest correlations were between the EES dimension for family and community engagement and the composite math and reading proficiency rates. Determining how actual changes in the EES related to changes in student test scores over time was beyond the scope of Bylsma (2008).

In high schools no statistically significant correlations were found (Bylsma, 2008). The author speculated that this may be due to the fact that EES scores for high school were lower and contained less variation than those for other grade levels and because the sample size was smaller for high schools (n = 70) compared with elementary schools (n = 207) and middle schools (n = 102; Bylsma, 2008). Another factor may be that the state high school test is given in Washington state only at the end of grade 10, when some students have already dropped out. This may result in a test that is not as representative as the one given to elementary and middle school students, whose attendance is still compulsory.

Idaho State Department of Education publicly available data

The second data source for this study was publicly available information from the Idaho State Department of Education, including school-level proficiency rates on state test scores (Idaho State Department of Education, n.d. b), attendance records (Idaho State Department of Education, n.d. c.), and percentage of students eligible for free or reduced-price lunch (Idaho State Department of Education, n.d. d). These data were used to represent student achievement and poverty levels in the analyses.

Idaho's state reading and math test, the Idaho Standard Achievement Test, is administered to all students in grades 3–8 and grade 10 and is not vertically aligned. The state sets cutscores for each grade level. For this study, which examined correlations between teacher survey responses and student achievement variables within a school, the percentage of students who scored proficient or above was used to represent student achievement in each school. According to the latest state report card (2009/10), nearly all (99.2 percent) of Idaho's students participated in state reading and math testing and received a score of "proficient" or "not proficient."

The Idaho State Department of Education tracks both average daily student attendance and total student enrollment at each school. To calculate an attendance rate, the school's average daily enrollment was divided by the total enrollment. The Idaho State Department of Education also tracks the number of students tested in each school and the number of tested students eligible for free or reduced-price lunch. The percentage of students eligible for free or reduced-price lunch in each school was calculated by dividing the number of tested students eligible for free and reduced-price lunch by the total number of students tested. This was done separately for the reading and math tests.

School-level proficiency rates are an important measure of performance, because they are major indicators in the state's accountability system. In addition, the state offers capacity-building services specifically to schools that do not meet state targets for proficiency rates. Providers of capacity-building services then work with schools in the hope of increasing proficiency rates (Lane, 2010).

School-level attendance rates are also an important measure of student outcomes in this study. Several studies have found that attendance mediates student performance (Conard, 2006; Durán-Narucki, 2008). In other words, better attendance contributed to better student performance, while poor attendance contributed to poor performance. While attendance is not an outcome that providers of capacity-building services seek to affect directly, high attendance in Idaho schools may be related to better student performance. Therefore, this study investigated how EES data in Idaho related to attendance rates.

School-level rates of eligibility for free or reduced-price lunch represented an important covariate in this study, serving as a proxy for the level of need of the student body. Indeed, several studies have confirmed the link between school-level percentages of students eligible for free or reduced-price lunch and student outcomes (Kahlenberg, 2001). Because of this well researched link, this variable was included in the data examination. In addition, when Bylsma (2008) examined a variety of school-level variables, he found that free or reduced-price lunch eligibility showed several statistically significant correlations with the nine dimensions. In elementary and middle schools eight of nine school-level means for the dimensions were significantly correlated with percentages of students eligible for free or reduced-price lunch, while in high schools one of the nine school-level means for the dimensions was significantly correlated with percentages of students eligible for free or reduced-price lunch.

Participating schools

The study sample included all schools in the 2012 EES database that were designated by CEE as receiving capacity-building services. This database contained 75 such schools,

which represented 97 percent of the 77 schools that could possibly have received capacity-building services for schools in need of improvement in 2012. Possible participation was determined by examining several Idaho State Department of Education lists of participating schools, such as those available on the department's website or from department staff. These lists did not always have the same total number of schools, which made determining the actual number of participating schools difficult. However, two schools that typically appeared on department lists were missing from the EES data. These two schools notwithstanding, the EES data include more schools than the department lists, but the additional schools varied somewhat by list.

It is assumed that the Idaho State Department of Education lists dropped schools that various department officials believe may not have fully participated in capacity-building services for schools in need of improvement. However, the criteria for inclusion on the lists varied and in some cases were not stated. By contrast, schools in the CEE data had their survey administration and scoring paid for by the Idaho State Department of Education, and CEE believed these schools had received at least some capacity-building services. Therefore, for the sake of clear definition, all 75 schools in the 2012 EES data are included in the analyses. A subset of 33 of these schools also had EES data for 2010 and 2011.

All teachers in each school were invited to participate in the EES. A total of 1,745 teachers from 75 schools responded in 2012; 830 teachers from 33 schools responded in 2011; and 820 teachers from the same 33 schools responded in 2010 (table B2). The total teacher response rate was 91 percent in 2012 for all schools. No school with a below-average return rate had fewer than four teachers who responded.

The data also included school-level information on reading and math proficiency, attendance, and percentage of students eligible for free or reduced-price lunch. Almost all schools (more than 90 percent) had data for all variables (table B3). When proficiency rates and free or reduced-price lunch rates were missing, they were missing because the school was too small for the data to be publicly reported or, in one instance, because the data were missing from the publicly available dataset.

Table B2. School and teacher response rates on the Educational Effectiveness Survey were similar in 2010, 2011, and 2012

	Full dataset (77 schools) in 2012		33 schools in 2010		33 schools in 2011		33 schools in 2012	
Variable	Number	Percent	Number	Percent	Number	Percent	Number	Percent
School response rate	75	97	33	100	33	100	33	100
Total teacher responses	1,745	91	820	87	830	86	863	89
Range of teacher responses across schools	4–73	58–100	4–64	31–100	5–72	60–100	5–73	63–100
Standard deviation of teacher response rate across schools	14	11	13	14	13	12	15	11

Note: Data on the number of teachers per school are from the Common Core of Data because neither the Center for Educational Effectiveness nor the Idaho State Department of Education tracks that information.

Source: Data from the Educational Effectiveness Survey (2010, 2011, and 2012); U.S. Department of Education, 2011, 2012.

Table B3. Almost all participating schools had publicly available data, 2010, 2011, and 2012

	75 schools in 2012		33 schools in 2010		33 schools in 2011		33 schools in 2012	
Variable	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Reading proficiency	73	97	32	97	32	97	32	97
Math proficiency	73	97	32	97	32	97	32	97
Eligibility for free or reduced-price lunch	74	99	32	97	32	97	32	97
Attendance	70	93	31	94	—	—	29	88

— is not available because data were lost in a data storage system conversion.

Source: Idaho State Department of Education, n.d. b, c, d.

All attendance data were missing for 2011 because the Idaho State Department of Education lost the data in a data storage system conversion.

In 2010 and 2012 more schools were missing data on attendance than were missing data on the other variables. This was due in part to the way the attendance rate was calculated: the average daily attendance divided by the official enrollment, which is established in October of each school year. Several of the schools with missing data were alternative schools with rolling admission, which resulted in attendance rates of greater than 100 percent. These schools were dropped from the analyses.

Data collection

Regional Educational Laboratory Northwest, CEE, and the Idaho State Department of Education complied with all applicable federal and state laws and regulations protecting the privacy of study participants, including the requirements of the Family Educational Rights and Privacy Act. All parties agreed that all personally identifiable information exchanged would be protected, stored, disposed of, and otherwise kept confidential.

Federal regulations require data suppression to protect privacy. For example, "states are required to define a minimum number of students in a reporting group or subgroup required to publish results consistent with the protection of personally identifiable information" (Seastrom, 2010). The presentation of data in this report was reviewed to ensure that privacy was protected, and the two organizations that provided data reviewed the report for compliance with the minimum number of participants required for reporting. Further, this report does not present any data at the individual or school level. Instead, study results (means, standard deviations, correlations) were reported for the entire dataset of 75 schools, for subsets of the secondary and elementary schools within this dataset, and for the subset of 33 schools with multiple years of data. A full copy of the Regional Educational Laboratory Northwest data security guidelines is available on request.

Regional Educational Laboratory Northwest created a data-sharing agreement with CEE and received the EES data in a secure data transfer on May 14, 2012. The school-level state test proficiency data (Idaho State Department of Education, n.d. b), the data for calculating percentages of students eligible for free or reduced-price lunch (Idaho State Department of Education, n.d. d), and total school enrollment figures (Idaho State Department

of Education, n.d. c) were all obtained from the Idaho State Department of Education website. Average daily attendance data (Idaho State Department of Education, n.d. a) on the department website were aggregated to the district level. School-level average daily attendance data were obtained from the Idaho State Department of Education by request on December 21, 2012. All datasets included school identification variables, which were used to merge the data.

Study methods

The data were analyzed using multiple steps. First, descriptive statistics were used to explore the EES data and the publicly available data. Next, to describe the EES data at the teacher level and the creation of teacher-level EES dimensions, frequencies, means, ranges, standard deviations, and Cronbach's alphas were used.

Means, standard deviations, and histograms were used to describe the EES data after the dimensions were aggregated to the school level. This was done for the following groups of schools:

- The 75 schools in the total sample in 2012.
- The 39 secondary and 35 elementary schools in 2012.[3]
- The 33 schools with data for 2010, 2011, and 2012.

Means, standard deviations, and histograms for percentages of students proficient in reading and math, percentages of students eligible for free or reduced-price lunch, and attendance rates were also calculated for these schools.

To address the research question about the connection between EES data and publicly available student outcome data, scatterplots on which the *x* axis was the school-level mean of each EES dimension and the *y* axis was the publicly available variables were examined, and corrections for nonlinear relationships and outliers were considered. The scatter graphs showed either no relationship between the variables or positive linear relationships. Then, a series of Pearson's correlations and linear regressions was conducted.

The scatterplots did identify some potential outliers in the variables representing reading proficiency, math proficiency, and attendance. Box plots were used to further examine the distributions for these variables. Potential outliers were cases with values lower than 1.5 times the interquartile range. (No cases were above 1.5 times the interquartile range.) In the overall dataset of 75 schools in 2012, 4 schools had attendance rates lower than this quantity. In both reading and math five schools had proficiency rates lower than this quantity, but only three of these schools had the same rate in reading and math. No schools identified by this means as outliers in attendance were also outliers in reading or math.

It was first determined that these outliers did not result from errors in data entry. Whether the outliers were particular types of schools that might reasonably be expected to have lower proficiency and attendance rates, such as alternative schools or special education schools, was checked. Attendance outliers contained no detectable patterns. In reading and math proficiency rates some outliers were alternative schools. These schools might be expected to have lower proficiency rates.

It was ultimately decided to leave all the schools in the analyses for two reasons. First, no pattern or reason that the schools were lower in achievement or attendance was detected. Second, the educators tasked with improving schools were interested in serving low-achieving schools, such as the ones identified as outliers by the statistical rule of thumb described above.

Pearson's correlations were calculated for the three sets of schools mentioned above and the three outcomes: reading proficiency rates, math proficiency rates, and attendance rates. To guard against error associated with multiple comparisons, the Benjamini-Hochberg correction was used for each set of schools separately by outcome (Benjamini & Hochberg, 1995). For example, for the 75 schools in the total sample in 2012, the Benjamini-Hochberg correction was used for the correlations between the dimensions and reading proficiency; a separate Benjamini-Hochberg correction was then used for the correlations between the dimensions and math proficiency, and finally a third Benjamini-Hochberg correction was used for attendance rates.

In the series of regressions the outcomes of interest were percentage meeting reading proficiency, percentage meeting math proficiency, and mean attendance rate. As with the correlations, the Benjamini-Hochberg correction was used to guard against error associated with multiple comparisons. The outcomes are represented by y_i in the equation below. Each model used a different predictor of interest centered on the grand mean, including the school-level mean EES score for each of the nine dimensions, as well as the mean for the total items. The regression model was:

$$y_i = b_0 + b_1[\text{Mean EES dimension score}]_i + b_2[\%\text{ free or reduced-price lunch}] + e_i$$

For ordinary least squares regression to yield a consistent estimate of the relationship between EES and student outcome (b_1), EES should not correlate with the error term (e_i). Students' need for teacher attention, direction, and support was a latent characteristic of the student body and was likely to affect both the teacher perception of the school (EES) and the student outcome (y_i). For this reason a variable was included that served as a proxy for this latent characteristic.

Among available variables, the percentage of students eligible for free or reduced-price lunch appeared to be the natural choice for the proxy. Students from low-income households could be expected to need more teacher attention, direction, and support than other students do, making their teachers' work more challenging. Past research has found that the percentage of students eligible for free or reduced-price lunch correlates with student outcomes (Kahlenberg, 2001). In addition, this variable correlated consistently with the EES dimensions in Bylsma's study (2008).

Appendix C. Descriptive statistics

This appendix discusses the descriptive statistics for the full sample of 75 schools with 2012 data and for the 33 schools for which Educational Effectiveness Survey (EES) data were available for 2010 and 2011 as well as 2012. It also discusses the descriptive analyses for the publicly available data.

Educational Effectiveness Survey

Nearly all teachers rated nearly all the items on a five-point Likert scale. For one item under the dimension "clear and shared focus," one respondent indicated "no opinion." This response was dropped from the analyses.

Teacher responses to items skewed toward the positive side of the scale (table C1). Averaged across all items:

- 34 percent were "5—almost always true."
- 37 percent were "4—often true."
- 21 percent were "3—sometimes true."
- 6 percent were "2—seldom true."
- 3 percent were "1—almost never true."

Table C1. Percentage distribution across response categories for items on the Educational Effectiveness Survey were clustered at the high end of the scale, 2012

Dimension	Item	Almost always true	Often true	Sometimes true	Seldom true	Almost never true
Clear and shared focus	Important decisions here are based on the mission/purpose of this school.[a]	36	44	17	2	1
	I understand the mission/purpose of our school.	57	33	7	2	1
	Staff I work with demonstrate commitment to our mission.	37	45	16	2	0
	My work contributes to the mission/purpose of this school.	66	31	3	0	0
	My performance goals are set based on the mission/purpose of this school.	40	42	14	3	1
	The mission/vision of this school and district are aligned with each other.	40	41	15	2	1
	This school has a data-driven school improvement plan.	52	36	10	1	1

(continued)

Table C1. Percentage distribution across response categories for items on the Educational Effectiveness Survey were clustered at the high end of the scale, 2012 *(continued)*

Dimension	Item	Almost always true	Often true	Sometimes true	Seldom true	Almost never true
High standards and expectations for all students	Staff I work with demonstrate commitment to quality education.	49	40	11	1	0
	I believe that all students can meet state reading standards.	24	38	22	8	8
	Our staff believes that all students can meet state reading standards.	19	43	25	7	6
	I believe that all students can meet state math standards.	19	42	24	8	7
	We hold one another accountable for student learning.	26	41	25	7	1
	Our staff believes that all students can meet state math standards.	16	42	29	7	6
	We hold one another accountable for behavior that is culturally sensitive.	19	35	32	11	3
Effective school leadership	I actively participate in the evaluation of my performance objectives.	46	38	12	3	1
	My principal is committed to quality education.	66	25	7	2	1
	Staff members at all levels are treated fairly here.	34	35	20	7	4
	I am comfortable presenting new ideas to my principal.	45	30	17	5	4
	My principal cares about me as a person.	55	26	12	4	3
	My principal has a student-learning focus.	54	33	9	3	1
	My principal is comfortable presenting new ideas to the staff.	56	30	10	3	1
	My principal facilitates systems/processes to support school improvement.	41	40	13	3	1
	My principal listens to my ideas and concerns.	53	28	12	4	3
	I talk with my principal/administrator about progress on performance goals.	28	36	23	8	4
Curriculum, instruction, and assessment aligned with standards	This school provides a curriculum that is relevant and meaningful.	37	45	15	3	1
	Instruction is personalized to meet the needs of each student.	19	46	30	4	1
	Common assessments are used to inform instruction.	33	41	22	3	1
	Regular assessment is used to monitor student progress.	49	41	9	1	0
	Our staff demonstrates a thorough understanding of state learning standards for reading.	31	42	22	4	2
	The reading program we teach is aligned with state learning standards.	46	36	13	3	2
	All teachers integrate literacy and numeracy concepts into their teaching.	27	40	26	6	2
	Our staff demonstrates a thorough understanding of state learning standards for math.	28	41	24	6	1
	The math program we teach is aligned with the state learning standards.	47	36	13	3	1
	This district uses assessments aligned to standards and instruction.	42	42	13	2	1

(continued)

Table C1. Percentage distribution across response categories for items on the Educational Effectiveness Survey were clustered at the high end of the scale, 2012 *(continued)*

Dimension	Item	Almost always true	Often true	Sometimes true	Seldom true	Almost never true
Frequent monitoring of learning and teaching	Data from peer observations leads to meaningful change in instructional practice.	18	31	28	13	10
	We are frequently informed about how well we are doing.	24	36	27	9	4
	Assessment data is used to identify student needs and appropriate instructional intervention.	47	39	11	2	1
	Struggling students receive early intervention and remediation to acquire skills.	34	39	22	4	1
	We monitor the effectiveness of instructional interventions.	34	44	18	4	1
	We reflect upon instructional practice to inform our conversations about improvement.	28	45	22	4	1
	We are encouraged to participate in classroom observation.	35	29	21	8	6
	Teachers collaboratively plan lessons.	18	35	31	11	5
Focused professional development	I participate in a professional learning community focused on improving student learning.	47	37	14	2	1
	The training I have been to in this district helps me do my job better.	26	38	26	7	2
	My principal (or administrator) talks to me about my professional development.	30	34	24	9	4
	Appropriate data are used to guide building-directed professional development.	26	41	23	8	2
	We are provided training to collaborate on improving student learning.	29	38	24	6	2
	We have opportunities to learn effective teaching strategies for the cultures represented in our school.	14	31	35	14	5
	Our teachers engage in classroom-based professional development activities (e.g. peer coaching) that focus on improving instruction.	23	33	29	10	5
	Our teachers engage in professional development activities to learn and apply reading skills and strategies.	27	36	26	8	3
	Our teachers engage in professional development activities to learn and apply math skills and strategies.	28	38	25	7	2
	We are provided training to support a culturally responsive learning environment.	15	29	34	16	7

(continued)

Table C1. Percentage distribution across response categories for items on the Educational Effectiveness Survey were clustered at the high end of the scale, 2012 *(continued)*

Dimension	Item	Almost always true	Often true	Sometimes true	Seldom true	Almost never true
High levels of collaboration and communication	There is a willingness to address conflict in this school.	26	37	26	8	3
	When there is a problem in my school, we talk about how to solve it.	23	38	28	7	4
	When staff members attend conferences/ seminars, they share what they learned.	19	37	30	9	5
	Staff at this school collaborate to improve student learning.	43	38	15	3	1
	Collaboration between the district and schools is based upon trust and respect.	18	39	30	8	4
	Students understand the expectations and standards of this school.	21	49	25	5	1
	Staff in our school are consistently truthful.	33	44	18	3	1
	Parents and community understand the expectations and standards of this school.	14	38	36	10	3
	There is effective 2-way communication between the district and our school.	18	38	29	9	5
	Our school meets regularly to monitor implementation of our school improvement plan.	42	36	15	5	2
	We collaboratively plan the integration of literacy and numeracy concepts across the curriculum.	20	37	28	11	4
	Staff in our school do not manipulate others to achieve their goals.	38	38	17	4	3
Supportive learning environment	I have a good or best friend at work.	53	26	13	5	4
	There is someone at work with whom I confide.	55	24	13	4	4
	Confidential information is carefully guarded in this school.	40	39	16	3	2
	Our staff can count on one another for help when needed.	48	37	13	2	1
	This school is orderly and supports learning.	38	46	14	2	1
	There are people here who care about me as a person.	50	33	14	2	1
	I am encouraged to learn and grow in my school.	47	35	13	3	1
	We honor agreements made with each other.	43	39	14	2	2
	Students in this school are engaged in learning.	24	50	23	2	1
	Staff members enforce consistent behavior expectations and consequences in their classrooms.	23	43	26	6	2
	I receive recognition or praise for a job well done.	26	31	26	10	7
	We have a system for celebrating student success.	38	34	21	5	2
	Our staff will “go the extra mile” for others.	45	38	14	2	1
	I understand and apply concepts of cultural responsiveness in my daily work.	28	42	24	5	1
	This school reviews and addresses issues of cultural responsiveness.	11	31	36	16	6
	Staff in this school can depend on one another.	47	35	14	2	1

(continued)

Table C1. Percentage distribution across response categories for items on the Educational Effectiveness Survey were clustered at the high end of the scale, 2012 *(continued)*

Dimension	Item	Almost always true	Often true	Sometimes true	Seldom true	Almost never true
High levels of family and community involvement	This school encourages parent involvement.	37	41	18	3	1
	Our teachers effectively communicate student progress to parents.	29	49	20	2	0
	This school has activities to celebrate the cultures of its community.	12	26	35	21	6
	For important decisions, we collaborate with parents and the community.	18	36	31	11	4
	This school communicates effectively with families of all cultures.	22	38	32	6	2
	The curriculum we teach reflects the cultures of the community we serve.	16	34	36	11	3
Average across all items		34	37	21	6	3

a. One respondent (.058 percent) indicated "no opinion—not applicable," but the other percentages were not affected.

Source: Authors' analysis of data from the Educational Effectiveness Survey (2012).

A teacher-level dimension score was calculated for each of the nine dimensions and for all the items together. This dimension score was the mean of the response values (1–5) for the items corresponding to each dimension. The internal consistency of each dimension was then described using Cronbach's alpha (table C2). These alphas ranged from .84 to .98, signaling levels of internal consistency justifying use of an instrument (Hair et al., 2006).

Table C2. All mean scale scores on the Educational Effectiveness Survey in schools receiving capacity-building services rounded to 4—often true, 2012

Dimension	Mean	Minimum	Maximum	Standard deviation	Cronbach's alpha	Number of items	Number of teachers
Clear and shared focus	4.28	1.00	5.00	.5689	.84	7	1,745
Effective school leadership	4.18	1.00	5.00	.7167	.91	10	1,744
Curriculum, instruction, and assessment aligned with standards	4.05	1.00	5.00	.5994	.88	10	1,744
Supportive learning environment	4.04	1.00	5.00	.5847	.89	16	1,745
Frequent monitoring of learning and teaching	3.83	1.43	5.00	.6809	.84	8	1,744
High levels of collaboration and communication	3.78	1.55	5.00	.6509	.88	12	1,745
High standards and expectations for all students	3.73	1.43	5.00	.7373	.85	7	1,743
Focused professional development	3.72	1.20	5.00	.7293	.89	10	1,744
High levels of family and community involvement	3.68	1.00	5.00	.7083	.85	6	1,743
Total items	3.94	2.00	5.00	.5589	.98	86	1,745

Note: Scale scores range from 1 to 5. Data cover 1,745 teachers in 75 schools.

Source: Authors' analysis of data from the Educational Effectiveness Survey (2012).

Finally, descriptive statistics aggregated across the 75 schools in 2012 were calculated in two steps. The items were averaged across teachers, and then the teacher average responses were aggregated across each school (table C3). Overall, these descriptive analyses showed that the survey dimensions had a restricted range (not all possible values of the variables were present). Further, responses were skewed to the positive end of the scale. When rounded to the nearest whole number, most responses clustered around "4—often true," and no school rated any dimension less than "3—sometimes true." This restriction was due in part to the aggregation to the school level. However, the school-level analysis was important to Idaho education leaders and to others interested in teacher perception surveys, because they typically work to improve the school overall, not just some groups of students.

Table C3. All mean Educational Effectiveness Survey dimension scores for all schools and for grade-level groupings rounded to "4—often true," 2012

	All schools (*n* = 75)			Secondary schools (*n* = 39)			Elementary schools (*n* = 35)		
Dimension	Mean	Standard deviation	Range	Mean	Standard deviation	Range	Mean	Standard deviation	Range
Clear and shared focus	4.31	.24	3.79–4.81	4.24	.23	3.79–4.81	4.39	.24	3.92–4.79
Effective school leadership	4.19	.36	3.22–4.78	4.14	.39	3.22–4.78	4.25	.31	3.47–4.78
Curriculum, instruction, and assessment aligned with standards	4.10	.29	3.44–4.76	4.01	.27	3.44–4.76	4.21	.28	3.72–4.62
Supportive learning environment	4.07	.28	3.33–4.76	4.02	.29	3.33–4.76	4.12	.27	3.50–4.53
Frequent monitoring of learning and teaching	3.83	.36	2.75–4.51	3.72	.38	2.75–4.41	3.96	.29	3.33–4.51
High levels of collaboration and communication	3.81	.31	3.22–4.60	3.77	.33	3.22–4.60	3.87	.28	3.38–4.40
High standards and expectations for all students	3.79	.33	3.16–4.63	3.72	.30	3.16–4.63	3.88	.33	3.21–4.53
Focused professional development	3.74	.35	2.71–4.45	3.65	.36	2.71–4.45	3.85	.29	3.24–4.35
High levels of family and community involvement	3.70	.35	3.00–4.62	3.64	.33	3.00–4.62	3.76	.36	3.09–4.39
Total items	3.96	.28	3.30–4.62	3.90	.29	3.30–4.62	4.04	.26	3.56–4.52

Note: The number of secondary and elementary schools does not sum to 75 because one school served grade spans that included both elementary and secondary and was thus dropped from this analysis. Rows are ordered from highest to lowest means for all schools.

Source: Authors' analysis of data from the Educational Effectiveness Survey (2012).

In addition, descriptive statistics were calculated for the 33 schools for which EES data were available for 2010 and 2011 as well as 2012 (table C4). As with the EES dimensions overall, these descriptive statistics showed some restriction of range that was unavoidable due to aggregation to the school level. Means were lower for earlier years of survey participation and lowest in 2010.

Table C4. All mean Educational Effectiveness Survey dimension scores for schools with three years of data rounded to "4—often true," 2010, 2011, and 2012

	2010			2011			2012		
Dimension	Mean	Standard deviation	Range	Mean	Standard deviation	Range	Mean	Standard deviation	Range
Clear and shared focus	4.19	0.23	3.73–4.62	4.31	0.22	3.87–4.81	4.35	0.25	3.79–4.79
Effective school leadership	4.11	0.31	3.52–4.76	4.17	0.33	3.29–4.83	4.18	0.40	3.27–4.78
Curriculum, instruction, and assessment aligned with standards	4.03	0.26	3.64–4.69	4.11	0.30	3.58–4.86	4.11	0.29	3.70–4.76
Supportive learning environment	3.97	0.26	3.34–4.58	4.02	0.28	3.46–4.88	4.05	0.29	3.40–4.53
Frequent monitoring of learning and teaching	3.67	0.36	2.75–4.35	3.78	0.37	2.93–4.68	3.88	0.38	2.75–4.51
High levels of collaboration and communication	3.68	0.29	2.87–4.24	3.78	0.29	3.23–4.39	3.83	0.32	3.22–4.40
High standards and expectations for all students	3.62	0.22	3.12–4.03	3.76	0.32	3.20–4.73	3.82	0.35	3.16–4.63
Focused professional development	3.61	0.32	3.03–4.22	3.73	0.30	3.16–4.28	3.81	0.34	3.03–4.35
High levels of family and community involvement	3.62	0.30	3.10–4.40	3.65	0.36	2.96–4.88	3.72	0.37	3.00–4.39
Total items	3.85	0.24	3.32–4.36	3.94	0.26	3.43–4.69	3.98	0.31	3.30–4.52

Source: Authors' analysis of data from the Educational Effectiveness Survey (2010, 2011, and 2012).

Publicly available data

The descriptive analysis of the publicly available data from 2012 showed that mean proficiency rates ranged from 81 percent to 91 percent (table C5). Attendance rates ranged from 92 percent to 94 percent, and the percentage of students eligible for free or reduced-price lunch ranged from 61 percent to 62 percent. The Idaho State Department of Education provided data on the percentage of students eligible for free and reduced-price lunch separately for reading and math because a slightly different set of students participated in these state tests at some schools. This was likely due to student absences and to some special education students taking alternative tests for one subject but not the other.

Table C5. Mean school-level student outcomes varied by grade level, but the percentage of students eligible for free or reduced-price lunch rates did not, 2012

	All schools (*n* = 75)				Secondary schools (*n* = 39)				Elementary schools (*n* = 35)			
Variable	Number of schools with data	Mean (percent)	Standard deviation (percent)	Range (percent)	Number of schools with data	Mean (percent)	Standard deviation (percent)	Range (percent)	Number of schools with data	Mean (percent)	Standard deviation (percent)	Range (percent)
Proficient in reading	73	91	5.6	62–98	37	91	5.0	75–96	35	90	6.4	62–98
Proficient in math	73	85	8.8	52–98	37	81	9.6	52–95	35	89	5.6	71–98
Attendance	70	93	4.8	70–99	35	92	4.8	76–99	34	94	4.8	70–98
Eligible for free or reduced-price lunch (reading test)	74	61	16.1	0–89	38	61	13.5	0–82	35	62	18.9	0–89
Eligible for free or reduced-price lunch (math test)	74	61	16.0	0–89	38	61	13.3	0–78	35	62	18.8	0–89

Note: The number of secondary and elementary schools does not sum to 75 because one school served grade spans that included both elementary and secondary and was thus dropped from this analysis. Rows are ordered from highest to lowest means for all schools.

Source: Authors' analysis of data from Idaho State Department of Education (n.d. a, b, c, d).

The publicly available variables for the subset of 33 schools with three years of EES data showed means and standard deviations similar to those for the sample of all 75 schools in 2012 (table C6). Means for proficiency rates were lower in 2010 than in 2012. Attendance remained stable, while free and reduced-price lunch rates fluctuated.

Histograms were created for the variables shown in tables C5 and C6. Like the histograms of the EES dimensions, these descriptive statistics showed that not all possible values of the variables were present. Again, this is due in part to aggregation to the school level. However, aggregation to the school level was essential in answering the question of this study.

Table C6. Mean school-level reading and math proficiency and eligibility for free or reduced-price lunch increased between 2010 and 2012, while attendance remained stable

	2010				2011				2012			
Variable	Number of schools with data	Mean (percent)	Standard deviation (percent)	Range (percent)	Number of schools with data	Mean (percent)	Standard deviation (percent)	Range (percent)	Number of schools with data	Mean (percent)	Standard deviation (percent)	Range (percent)
Proficient in reading	32	89	7.5	60–98	32	91	4.2	79–97	32	92	4.5	75–97
Proficient in math	32	84	12.6	34–96	32	86	8.8	49–96	32	86	9.2	52–96
Attendance	31	93	5.0	70–99	—	—	—	—	29	93	6.3	70–99
Eligible for free or reduced-price lunch (reading test)	32	60	19.6	0–89	32	66	10.1	47–87	32	65	10.5	45–85
Eligible for free or reduced-price lunch (math test)	32	60	19.5	0–89	32	66	10.1	47–87	32	65	10.2	45–85

— is not available because data were lost in a data storage system conversion.

Source: Authors' analysis of data from Idaho State Department of Education (n.d. a, b, c, d).

Notes

1. In conducting this analysis, the Benjamini-Hochberg correction was employed to guard against error associated with multiple comparisons (Benjamini & Hochberg, 1995), meaning that the relationships between variables could have occurred by chance. Because this study was not experimental, it cannot demonstrate that any variable caused achievement or attendance to increase.
2. Other uses of the EES perception data—such as measuring teacher satisfaction with the school environment—might be appropriate if these uses do not assume that the survey results relate directly to student achievement. However, these other uses were not examined in this study.
3. Elementary and secondary schools do not sum to 75 because one school's grade-level configuration did not fit into either category and was thus not included.

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