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# ***The Indicators of School Quality (ISQ)*** **Survey Manual**

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# The *Indicators of School Quality* Survey Manual

## Introduction

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 *Indicators of School Quality (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 the Center for the School of the Future (CSF) at Utah State University (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.

The purpose of this manual is to introduce the reader to ISQ and its development, and to present data gathered over the last 3 years to demonstrate ISQ's validity and utility.

## History of ISQ

In the year 2000, the CSF contracted with the Utah State Office of Education to evaluate school district procedures for monitoring minority student graduation and dropping out (Taylor, Rodgers, & West, 2001). As part of this research, CSF proposed to collect contextual information regarding school climate in Utah secondary schools with the highest concentrations of minority students. Although school climate surveys were available, and CSF had experience conducting these surveys, the need to add items specific to staying in school to an existing survey seemed just as difficult as starting from scratch. Thus, the ISQ survey system was developed.

This first version of ISQ was well accepted by the participating schools, so much so that ISQ was conducted in many more schools than initially proposed for the research. While the survey was useful, it still contained items specific to dropping out, and those items did not need to be there for schools not participating in the research. However, given the expense of creating yet another survey with items deleted, every school received the same survey. Fortunately, this ended up enlarging the evaluation sample, providing more data for the State of Utah.

To accommodate a diverse audience, CSF created a Spanish language version of ISQ for students and parents. The process employed a translation/back-translation method with several Spanish speakers from different parts of North and South America. The final version was decided on by CSF staff under the advice of a native speaker who is a medical doctor. Although items have shifted since that first year, the rigor with which our Spanish language forms are kept up-to-date has not diminished.

Not long after the first draft of ISQ was complete and ready for use, an elementary school requested that CSF conduct ISQ at their school. Thus, an elementary school version of ISQ followed very quickly on the heels of the secondary school version. After this elementary school completed the ISQ, their survey forms were sent to CSF where the data were keypunched and a tabular report was created and sent back to the school. A few days later CSF received a phone call from the school's administrative assistant. She thanked us for the report but admitted that no one at the school understood what the data meant or what to do about them. Experience demonstrated to us that school administrators were not necessarily well versed in understanding numerical summaries and then divining which interventions to employ. The numerical summary of ISQ data was also very lengthy, so CSF set out to create a user-friendly summary of their data.

## Signal Analysis

In a state evaluation of early intervention services conducted by USU's Early Intervention Research Institute (EIRI), a business model to interpreting Likert data had been explored. EIRI's data came from a survey that employed items that were positive statements about early intervention services, to which the respondents could, using a traditional 5-point Likert scale, strongly disagree to strongly agree with. Results from these data would represent the respondents' satisfaction with early intervention services.

Literature from customer satisfaction research stated that any response that was not "strongly agree," suggested that there was, no matter how minimal, some lack of satisfaction regarding that positive attribute of the product or services being evaluated (Okes & Westcott, 2001) and that the benchmark for customer satisfaction was best set at 80%. That is, a characteristic of a product or services was said to be "exemplary" if at least 80% of the respondents strongly agreed with a positive description of that characteristic.

That same literature suggested that the interpretation of Likert data was more than just a dichotomy between exemplary practice. From here it was just a short step to realizing that this notion lent itself to creating grades for customer satisfaction—something schools would be very familiar with. However, there were no strict guidelines as to how levels of satisfaction should be delineated beyond what is mentioned above. Thus, more benchmarks needed to be created but they also needed to echo the 80% mark already established over 100 years ago by Vilfredo Pareto and later applied to quality management by Joseph Juran.

Given that 80% "strongly agree" was a high-watermark, and seemingly hard to achieve, CSF decided that there needed to be another way to suggest that schools were doing well. So, the

next benchmark was set where at least 80% either “agreed” or “strongly agreed” with a positive attribute. For the converse, there needed to be a benchmark for school functions that needed more immediate attention. That benchmark was set where 20% or more of the respondents “disagreed” or “strongly disagreed” with that positive attribute. At this point there were now four grades: (a) exemplary, (b) doing well, (c) attention needed, and (d) everything else; they were later named “Exemplary,” “Superior,” “Opportunity to Improve,” and “Typical,” respectively. Below are the algorithms for the different grades.

- *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.

It was determined that the grades could be best displayed using a traffic-signal metaphor. Red, amber, and green would represent the three lower grades with the addition of purple for exemplary practice. This process was then named *Signal Analysis*. Subsequent analyses reported in this manual regarding the stability, sensitivity, and validity of Signal Analysis confirmed that the benchmarks were very accurate. Examples of reports using Signal Analysis can be found on our website at [www.csf.usu.edu](http://www.csf.usu.edu).

## ISQ in a Matrix

In the second year of conducting ISQ, the survey was still in a state where some items needed to be added and others needed to be deleted. It seemed best at this point to start all over again. This time; however, CSF started by organizing school functioning into domains. Based on the literature, experience, and what was being asked on other school climate surveys, the domain list was finalized as: Parent Support, Teacher Excellence (i.e., qualities of teachers, or instructional input), Student Commitment, School Leadership (i.e., qualities of the school administration, or institutional leadership), Instructional Quality (i.e., qualities of instruction, or instructional output), Resource Management, and School Safety. The second step was to determine the most salient aspects of each domain, knowing that these aspects were more than indicators, as they were also defining those domains. These aspects ultimately became the individual Likert-response items. Thus, ISQ was now designed around seven core domains with four or five dimensions to each domain. What follows is a brief discussion of some supporting literature for employing that structure.

*Parent Support*—Parent support is not only empirically linked to academic achievement, it is an axiom that parent support is a critical component to student success. In a large review of parent involvement studies, Henderson and Mapp (2002) concluded that there was strong evidence that families could improve their children’s academic performance as well as improve school attendance and promote behaviors affecting achievement. Wherry (2003) also concluded that “students with involved parents, no matter what the parents’ education or background, are more likely to have better attendance records, earn higher grades and test scores, and have better social skills than those whose parents are not involved” (p. 1).

*Teacher Excellence*—For the purposes of ISQ, teacher excellence was defined as attributes of the teachers (e.g., knowledgeable, caring, and organized), which was separate from curriculum and pedagogy measured in the Instructional Quality domain. Research on the effects of teacher quality on student learning is clear; it is the most potent contributor to academic achievement (Kaplan & Owings, 2002). In addition to teacher characteristics, ISQ measures teacher enjoyment; given that teacher turnover is so costly, variables that indicate teacher morale are critical (Kaplan & Owings; Taylor, 2003).

*Student Commitment*—This domain in ISQ deals with student behavior, participation, and mood. Student behavior can be thought of as an outcome variable, but it is also clearly tied to learning (Barton, Coley, & Wenglinsky, 1998). Research also indicates that extracurricular participation provides an academic safety net and the elimination of such programs could remove the last link at-risk students have to the school (Holloway, 2000). Finally, student emotional states have been shown to contribute to student GPA (Gumora & Arsenio, 2002). Taken together, it is clear that student commitment, as would be expected, is a critical component to student achievement.

*School Leadership*—This domain in ISQ was designed to examine leadership in the same way as the Teacher Excellence domain. Attributes that we expect in one should also be present in the other (e.g., knowledgeable, caring, and organized). So these two domains, although evaluating different professionals, are nearly identical. It is understood that school administrators have a minimal direct influence on student achievement; however, research has demonstrated small measurable effects (Witziers, Bosker, & Kruger, 2003), and that strong principal leadership does contribute to academic achievement (Lytton & Pyryt, 1998).

*Instructional Quality*—This domain in ISQ was intended to measure the overall quality of the school, how successfully the school prepares students in other areas of life, and how challenging and innovative school instruction is. As with outcome measures, overall school quality and life preparation are necessary and well measured by ISQ. No empirical evidence can be found, however, connecting words like “challenging” and “innovative” as descriptors of instruction and their relationship to academic achievement. Despite this, there are calls for instruction to be just that (Riggins-Newby, 2003).

*Resource Management*—This domain in ISQ is a catchall for several types of resources. It includes services like professional development and counseling, as well as hard resources like computers and instructional materials. Research makes definite connections between these types of resources and academic achievement. Professional development can be thought of as part of Teacher Excellence and Instructional Quality, but research shows that continued training can

impact student learning (Holloway, 2003; Marchant, 2002). Counseling programs are critical for higher-risk students (Dahir & Stone, 2003), as well as elementary school students (Sink & Stroh, 2003). Hard resources also show a contribution to student learning (Lowther, Ross, & Morrison, 2003), and overall resource support is recognized as direct influence on student performance (Brown, Roney, & Anfara, 2003).

*School Safety*—This domain in ISQ not only deals with safety at school, but also safety traveling to and from school, physical building conditions, and the supervision of school common areas. Research is clear that students who feel unsafe will avoid school and perhaps dropout altogether (Taylor et al., 2001). Research has also shown that building conditions are related to student behavior and achievement (Brown et al., 2003). However, even if safety were not related to student learning, it would be a critical component of school success.

Now that the data were organized into a matrix, with items nested in domains and items mostly crossed with audiences (i.e., parents, teachers, students, and school staff), the item wording was finalized, items were translated, and instructions for the step-by-step procedures used by schools to best conduct ISQ were written. At that same time, all of the software to scan the surveys was written; however, reports were still done by hand. It was not until the next year that full automation was completed. Seventy-three schools participated that year, some of which had participated the year before.

Table 1 lists item content within domains and shows which audiences (“P” for parents, “T&S” for teachers and other school staff, “ES” for elementary school students, and “SS” for secondary school students) see which items (marked with an “X”). Not all audiences see all items as not all audiences are well enough informed about all attributes of a school. Also, student surveys were kept short to minimize the intrusion a survey makes into instruction time. Finally, the wording below is generic. The actual wording on the survey varies by audience. For example, parents will see, “Teachers at this school care about students as individuals” while their elementary school children will see, “I like my teacher.” For a look at all the survey forms, visit our website at [www.csf.usu.edu](http://www.csf.usu.edu).

Now that items were nested within domains, a system to aggregate signal colors was needed to provide signal color grades for the seven domains. To determine the signal colors for domains, item signal colors were given a numerical equivalent (red = 1, amber = 2, green = 3, and purple = 4). The domain signal color was then an average of the item colors with all midpoints rounded toward amber. This was done to truly isolate those attributes that were exceptional. So now signal analysis could be used to grade both items and domains.

## ISQ Process

Although there is nothing unique to the ISQ survey process itself, the fact that there is a standardized system in place makes the data collection easy and the resulting data more generalizable. Described next are the basic steps a school and CSF go through to complete an ISQ survey: selecting a start date, registration, data collection, analysis, and reporting.

Table 1: *ISQ School Learning Environment Items by Respondent Audience*

	P	T&S	ES	SS
<b>Parent Support</b>				
Parents support their child's education	X	X	X	X
Parents know what happens at school	X	X	X	X
Enough parents participate at parent/teacher conferences	X	X		
Parents support extracurricular activities	X	X		X
<b>Teacher Excellence</b>				
Teachers are knowledgeable about the subjects they teach	X	X		
Teachers care about students as individuals	X	X	X	X
Teachers promote good behavior in their classrooms	X	X		X
Teachers are well organized	X	X		
Teachers enjoy teaching	X	X	X	X
<b>Student Commitment</b>				
Students are well behaved	X	X	X	X
Enough students participate in extracurricular activities	X	X		X
Students enjoy learning	X	X	X	X
Students have pride in their school	X	X		X
<b>School Leadership</b>				
Administration is accessible to parents, students, and staff	X	X	X	X
Administration promotes quality instruction	X	X		
Administration is well organized	X	X		
Administration promotes good behavior at the school	X	X	X	X
Administration has high expectations for all students	X	X		X
<b>Instructional Quality</b>				
This school prepares students for adult life	X	X		X
This school provides a quality education	X	X	X	X
Instruction at this school is innovative	X	X		
Instruction at this school challenges students	X	X	X	X
<b>Resource Management</b>				
Staff has access to enough ongoing training		X		
Counselors are accessible to students	X	X		X
Students have adequate computer access	X	X	X	X
The school has quality textbooks and instructional materials	X	X	X	X
Students have enough extracurricular opportunities	X	X		X
<b>School Safety</b>				
Students and staff feel safe at school	X	X	X	X
Students feel safe traveling to and from school	X		X	X
The school is clean and in good repair	X	X		X
The school grounds and hallways are well supervised	X	X		X



Given the nature of perception surveys, conducting ISQ very early in the school year does not allow new students, parents, and staff the chance to form perceptions about the school. So, the earliest ISQ should be started is at least one month after the first day of classes. The rest of the year is wide open, but it is important to take into account the impact season has on school time. As the calendar year winds down, the holidays make it very difficult to collect parent data, and it is suggested that late November and late December be avoided. In this same vein, spring breaks and any other longer holiday a state may have should be avoided as well. Finally, end-of-year testing makes it difficult to obtain student and faculty data, so the last two weeks of the school year should also be avoided. Given that ISQ only takes a few minutes of school time, and a few days of waiting for parent data to return, that leaves a large number of dates available to schedule ISQ at any school.

To date, there is no evidence that stakeholders' perceptions will be more or less positive at some point in the school year, so choosing fall, winter, or spring is a matter of preference. It is suggested, however, that once a school or district begins using ISQ as an annual evaluation tool, administrations should be repeated at the same time of year. This helps make results more comparable from year to year, but more importantly, helps make the process habitual and most likely facilitates higher return rates.

Registration is the first step in conducting ISQ and it is where a school representative provides school enrollment data, staff size, and a desired start date. Registration needs to be complete two weeks prior to the start date and can be done as early as July 1 for the current school year. With the registration complete, CSF will compute the cost of ISQ for that school, but an invoice will not be sent until the final report is complete, unless an alternative is requested and approved.

Without question, the more a school is prepared for ISQ, the better the response rate, and ultimately, the more valid the information contained in the report. Each audience (i.e., parents, faculty, students, and staff) should be notified that ISQ surveys will be conducted and that their response is important to the school. Notification should be done no less than a week prior to starting ISQ, but not so long before that people will forget it is on the horizon.

Once a school has registered and a start date is selected, CSF staff assembles an ISQ survey kit, containing a contents checklist, instructions for conducting ISQ, student surveys, parent and staff envelopes (with parent and staff surveys already folded and stuffed inside), large classroom envelopes, and a return address label. All surveys employ scan technology, and all envelopes are printed with easy-to-interpret instructions. The kit arrives just before the start date. At that point, school staff stuffs the large classroom envelopes with enough student and parent surveys for that class, along with a staff survey for the teacher. At a time selected by the principal and/or faculty, the students and the teacher complete their surveys. As each student finishes, they are given a parent survey to take home and return within 3 days. Some schools employ school events to conduct the parent survey, and each school selects the best method of getting responses from the rest of the school staff. After waiting 3 to 5 days for parent surveys to return, all completed surveys are sealed back in the kit and returned to CSF.

When the kit arrives at CSF, the Center staff sorts the surveys into parent, staff, and student piles. The forms are then scanned and the data are uploaded to our server where a complete set



of reports is created. Because each survey also contains qualitative items, the surveys are placed back into the kit with the completed color reports and mailed back to the school. The final mailing also includes documentation on how to interpret the report as well as a survey for the principal to evaluate the ISQ survey process.

Many principals requested follow-up materials to ISQ assessment. They wanted a menu of strategies to address problems exposed by ISQ data. In response to that, CSF created the *School Leadership Guides*. These guides are based on sound principles of school leadership and organizational management. There is a guide for each of the seven ISQ domains and they are now provided with the ISQ reports and are also available on our website at [www.csf.usu.edu](http://www.csf.usu.edu).

## Progress Reports

For the schools repeating ISQ, CSF created a graphic summary that portrayed progress. This was done by using the same matrix report for a single administration, but by overlapping the color signals change could be shown from one year to the next. So, repeating schools received both a status report for the current data, and a separate progress report showing data from both administrations of ISQ. At first glance the progress report seems confusing seeing so many colors, but once viewers get used to it, they enjoyed its utility.

The missing piece, however, was helping schools better interpret the concept of school change. CSF decided to vary the color of the text labeling the item content; red if half or more of the audiences went down a signal color, green if half or more of the audiences went up a signal color, and purple if all audiences went up a signal color. Thus, with a quick glance down the item labels, the viewer could see areas of improvement or regression. In later versions, the text remained black, and the box containing the text changed to light red for “regress,” light green for “progress,” light purple for “improvement,” or it stayed white for “no change.” This form of signal analysis applied to items, domains, and audiences as well as to let the reader know if most of the school improvement or regression was being perceived by individual audiences.

## Risk and Resiliency

In the third year of conducting ISQ, the variables used for disaggregations, though typical, were not perceived as useful. In most cases, homes with English as first language (EFL) were more critical of school functioning than their English as a second language (ESL) peers. Although this may have reflected true perceptions, it did nothing to better inform school stakeholders how to plan school change. This was also true of teacher experience, child gender, and child ethnicity; all of which showed little or no relationship to perceptions of school quality. That is, people along these dimensions were more alike than they were different. Items that measured constructs related to both educational climate and academic achievement was needed; then, their disaggregations would have meaning.

A thorough examination of the risk and resiliency literature led us to complete a list of constructs, or dimensions, summarizing social and economic status relating to academic achievement: mobility, community affiliation, family bonding, peer associations, education, and economic status (Hawkins, Catalano, & Miller, 1992). The tricky part was assessing these dimensions without violating the Family Educational Rights and Privacy Act (FERPA). It would take a whole article to describe how the Center arrived at the content for each of these items, but suffice it to say that they were validated empirically after the third year employing ISQ. Early versions of ISQ collected risk data from all audiences; it was found that parents provided the most complete and accurate assessment of community risk. As a result, it is those data that ISQ continues to collect and analyze.

Apart from their individual utility, the risk and resiliency items also served to measure cumulative risk for a school population. Items were set in a yes/no format where a negative response showed some level of social or economic risk. When more than 20% of parent responders gave a negative response, the school population was considered at-risk in that dimension. The more dimensions a school population was at-risk, the more likely the school would be perceived negatively and show lower standardized academic scores.

Table 2 shows a matrix of items used to measure neighborhood risk. Some of the items may seem atypical but they all have purpose. For example, although Internet access is not a good measure of economic status for individual families, it is currently an outstanding indicator for populations while being fairly benign in nature. In addition, given that the construct is easily understood by even young children, ISQ can ask the same question of the students so that this item works to assess the sampling adequacy of the parent audience. That is, nearly all schools obtain a statistically adequate sample of students so the general demographic profile of the families served by that school is known. Thus, responding parents with similar demographic characteristics will be representative of their population as well. The item could have measured the qualification for free and reduced lunch as an item, but because it was necessary to present the item to students as well as parents, asking students about qualification for free and reduced lunch would require parent permission, which would destroy any chance of adequate samples. The same level of thought and scrutiny went into all the other risk items as well.

Table 2. *ISQ Social and Economic Risk Items by Risk Category*

Risk category	Item wording
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? (reverse coded for analyses)
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?

## Normative Reports

From the first day that ISQ reports were presented to schools, principals have wanted to know how their schools compared to other schools in their district. Despite the fact that ISQ was designed to be criterion based, CSF staff could not dissuade principals from their curiosity. Since it was inappropriate to provide principals with the reports for other schools, it was decided that the best course of action would be to provide a comparison to an aggregation of similar schools. So, just like the progress report, where signals were overlapped to allow a comparison of current data with past data, a new report would do the same for the school data and the aggregated data.

Experience demonstrated that elementary schools were very different places from secondary schools. In fact, middle and junior high schools were very different from high schools. Thus, student age would contribute to the ISQ normative presentation. Also, since social and economic risk played such a large role, it too would be considered. After many correlation and regression analyses, nine profiles were created. These nine profiles were of elementary, middle/junior high, and high schools for each of low, moderate, or high social and economic risk. Each school that participated belonged to one of the nine mutually exclusive cells and their data were overlapped with the appropriate profile. The same type of signal analyses displayed in the progress report indicated where schools were above and below norm. By the fourth year of ISQ, CSF was creating and disseminating these normative reports for every participating school.

## ISQ Sample

The third year of collecting school environment data marked the beginning of the most current form of ISQ. Thus, to validate ISQ, analyses included data from that point to the present. During 2002-03 (the third year), 133 schools from across the United States used ISQ. During the next two school years, an additional 50 schools conducted ISQ for the first time and were included in the normative sample. In this sample were a total of 113 elementary schools, 39 middle and junior high schools, 24 high schools, and 7 alternative schools (i.e., schools that served students with special needs). It is from the first administrations of ISQ during these years that the validity of ISQ has been analyzed. The final sample of schools totaled 176, as the alternative schools were so out of the mainstream in terms of environment and school management strategies (e.g., one school was a penitentiary), that they have been excluded from any analyses.

For this sample of schools, approximately 200,000 parents, teachers, and students were surveyed and results were summarized for use by parents, school faculty, principals, superintendents, and school boards. Although many of the schools came from Utah, this group of schools had a wide range of demographic characteristics and levels of school success. As seen in Table 3, school sizes were typical and varied from small rural schools to very large urban schools. The ethnic composition of most schools was White, but the sample included schools that were 95% Native American, 91% African American, and 77% Hispanic. Home language was predominantly

English in most schools, but this sample had many schools with more than half the families speaking Spanish as the primary language.

Table 3. *Description of Schools Used to Norm and Validate the ISQ Survey*

School Characteristics and ISQ Sampling		Elementary Schools	Middle/ Jr. High Schools	High Schools
Enrollment	Average Enrollment	450	706	770
	Range of Enrollments	68 - 840	102 – 1,559	88 – 1,700
Ethnicity	Average % Caucasian	75%	78%	86%
	Range of % Caucasian	0% - 99%	20% - 96%	61% - 98%
Home Language	Average % English	93%	94%	97%
	Range of % English	27% - 100%	47% - 100%	77% - 100%
Risk Index	% Low Risk	64%	80%	71%
	% Moderate Risk	31%	15%	25%
	% High Risk	5%	5%	4%
Academic Achievement	Avg. of Median %iles	50 <sup>th</sup>	51 <sup>st</sup>	55 <sup>th</sup>
	Range of Median %iles	11 <sup>th</sup> – 78 <sup>th</sup>	14 <sup>th</sup> – 76 <sup>th</sup>	37 <sup>th</sup> – 69 <sup>th</sup>
Response Rates	Average Parent %	58%	45%	31%
	Average Teacher %	82%	81%	70%
	Average Student %	83%	79%	67%
Sample Adequacy	Parent (% adequate)	97%	97%	100%
	Teacher (% adequate)	99%	100%	100%
	Students (% adequate)	99%	95%	75%

Because ISQ measures general risk factors, schools could be categorized into low, moderate, and high risk based on the results of their ISQ data. It will be shown later how valuable these data were. As can be seen in the table, most schools in the sample were low risk. The final school population characteristic listed in the table came from standardized academic achievement tests that were given at 3<sup>rd</sup>, 5<sup>th</sup>, 8<sup>th</sup>, and 11<sup>th</sup> grades in Utah, and similar grades in other states. The numbers represent the median student percentile for the composite test battery. The typical school in this sample was at or near the 50<sup>th</sup> percentile, but ranged greatly considering that these values came from median values of individual students.

The school characteristic data spoke to whether or not the schools in this sample generalized to a larger population, but it is just as critical that school samples do a good job of generalizing to their school population. As can be seen in the table, response rates were very high for both

teachers and students. This is especially true for elementary schools. And although the response rates were smaller for parents, sample adequacy analyses suggested that parent responders generalized well to the school population nearly all of the time. The adequacy of sample was determined by the response rate, how well the respondent audiences represented each grade at the school, and how closely the parents matched the students' economic risk level. Samples were considered adequate for that attribute if the sampling error rate was less than 4%.

## ISQ Validity

To summarize all of the signal analyses for 176 schools would take pages of tables; however, it can be said in general that reports went from very red (schools needing much improvement) to very green and purple (schools perceived to have superior to exemplary practice), with high schools and schools in high-risk neighborhoods showing the most red signals. It should also be noted that some items were the same signal color at most every school while others could be any color. All of this begs many research questions, of which CSF plans to address in the future; however, the purpose of this manual is to demonstrate the value of ISQ.

Because the school environment is generally not accepted as an educational outcome, a strong reason for schools to have interest in gathering data like that provided by ISQ would be if the school environment as measured by ISQ is related to outcomes of interest. In times past, this may have included safety and parent participation, but given the current climate, the primary outcome of interest now is academic achievement.

Analysis strategies to determine validity were very straightforward. We wished to examine the relationship between ISQ data and academic achievement with schools as the unit of analysis. To accomplish this, potential confounding data were examined and employed as covariates in computing partial correlations. We chose this method over more traditional analyses like regression or factor analysis due to the design of the ISQ and the questions we were trying to answer. Although ISQ responses are bound to be correlated, and even highly correlated within domains, each item was designed to stand alone. Whether or not a factor analysis confirmed how our items nested in domains was not important. We only cared if the limited number of items we used were related to academic achievement and provided schools with ideas about where to focus school-improvement efforts.

For most of the 176 schools in this sample, the state provided standardized achievement test data (as described above). 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.

Table 4 shows the correlations between ISQ domain signal colors (red = 1, amber = 2, green = 3, and purple = 4) for parent, teacher, and student perceptions and the academic achievement scores

at the 3<sup>rd</sup>, 5<sup>th</sup>, 8<sup>th</sup>, and 11<sup>th</sup> 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 4. *Correlations Between Academic Achievement Scores and ISQ Domains*

Variable	3 <sup>rd</sup> Grade	5 <sup>th</sup> Grade	8 <sup>th</sup> Grade	11 <sup>th</sup> Grade
Parent Perceptions				
Parent Support	<b>.21</b>	.18	.00	<b>.47</b>
Teacher Excellence	<b>.30</b>	<b>.23</b>	.29	.36
Student Commitment	<b>.30</b>	<b>.27</b>	.11	.39
School Leadership	.15	.18	.17	.17
Instructional Quality	<b>.24</b>	.12	.17	<b>.76</b>
Resource Management	.00	.00	.15	-.10
School Safety	<b>.53</b>	<b>.55</b>	<b>.40</b>	<b>.74</b>
Teacher Perceptions				
Parent Support	<b>.74</b>	<b>.75</b>	<b>.66</b>	<b>.52</b>
Teacher Excellence	.13	.12	.23	.18
Student Commitment	<b>.57</b>	<b>.63</b>	<b>.60</b>	<b>.48</b>
School Leadership	<b>.22</b>	<b>.21</b>	.19	.39
Instructional Quality	<b>.30</b>	<b>.37</b>	<b>.61</b>	<b>.55</b>
Resource Management	<b>.38</b>	<b>.42</b>	<b>.43</b>	<b>.52</b>
School Safety	<b>.46</b>	<b>.44</b>	<b>.40</b>	<b>.54</b>
Student Perceptions				
Parent Support	.04	.02	<b>.35</b>	.42
Teacher Excellence	.13	.08	.04	.28
Student Commitment	<b>.22</b>	.09	.11	.03
School Leadership	-.03	-.06	.32	.16
Instructional Quality	<b>.25</b>	<b>.25</b>	.27	<b>.53</b>
Resource Management	-.08	-.07	<b>.44</b>	.24
School Safety	<b>.33</b>	<b>.34</b>	<b>.54</b>	.06

The next step was to consider confounds. If confounds existed, there may be problems with the conclusion that school environment is causally related to academic achievement. That is, if there was a variable or a set of variables that related to both the school environment and academic achievement, they could confound the relationships described in the table. This would be very

important if these variables were theoretically upstream of academic achievement and the school environment. Potential confounds included school size, geographic setting, and socioeconomic status (SES). These data were all available, but the only one of the three that met the above criteria (i.e., correlating with both ISQ and achievement scores) was SES, and since ISQ included measures of social and economic risk, the ISQ risk data were examined. Later analyses demonstrated that traditional measures of SES like percent of students qualified for free and reduced lunch, which were provided by the Utah State Office of Education, produced similar results to those presented below.

Each school had a percentage of parents responding “yes” to each of the risk items and that number was correlated with academic achievement. As an overall measure of the school neighborhood risk, we counted the number of risk categories where schools fell below 80%. Scores for overall risk then ranged from 0 categories to all 7. Table 5 presents these correlations, all of which were statistically significant ( $p < .05$ ). Like so much of the literature to date, these data have demonstrated that social and economic risk is related to school success. But more importantly, these data have provided empirical evidence for the validity of the risk items employed in ISQ. Sample sizes for the four columns were 95, 88, 33, and 21 schools respectively. The positive correlations indicated that more resilience was related to higher achievement, and the negative correlations indicated that more overall risk was related to lower achievement.

Table 5. *Correlations Between Academic Achievement Scores and Risk Factors*

Risk Categories	3 <sup>rd</sup> Grade Achievement	5 <sup>th</sup> Grade Achievement	8 <sup>th</sup> Grade Achievement	11 <sup>th</sup> Grade Achievement
Economic Status	.78	.82	.70	.55
Community Affiliation	.78	.77	.66	.72
Family Bonding	.81	.84	.75	.72
Neighborhood Stability	.56	.58	.78	.65
Academic Status	.77	.79	.67	.71
Home Language	.69	.69	.55	.52
Peer Associations	.74	.75	.81	.59
Overall Risk	-.79	-.81	-.69	-.75

Table 6 shows the correlations between overall risk and the domain signal colors (red = 1, amber = 2, green = 3, and purple = 4) for parent, teacher, and student perceptions, with bold numbers again indicating statistical significance ( $p < .05$ ). These correlations varied in strength and significance, which indicated that risk was correlated with perceptions of the school environment without the school 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 sample size for this analysis was 176 schools.



Table 6. *Correlations Between ISQ Domains and Overall Neighborhood Risk*

ISQ Domains		Overall Risk
Parent Perceptions	Parent Support	<b>-.16</b>
	Teacher Excellence	-.03
	Student Commitment	<b>-.28</b>
	School Leadership	-.03
	Instructional Quality	-.11
	Resource Management	-.02
	School Safety	<b>-.25</b>
Teacher Perceptions	Parent Support	<b>-.53</b>
	Teacher Excellence	-.11
	Student Commitment	<b>-.34</b>
	School Leadership	<b>-.27</b>
	Instructional Quality	<b>-.20</b>
	Resource Management	<b>-.39</b>
	School Safety	<b>-.37</b>
Student Perceptions	Parent Support	.01
	Teacher Excellence	.03
	Student Commitment	.06
	School Leadership	.09
	Instructional Quality	-.01
	Resource Management	.08
	School Safety	-.07

The information in Tables 5 and 6 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. Table 7 shows partial correlations between ISQ domain signal colors (red = 1, amber = 2, green = 3, purple = 4) for parent, teacher, and student perceptions and the academic achievement scores at the 3<sup>rd</sup>, 5<sup>th</sup>, 8<sup>th</sup>, and 11<sup>th</sup> grades controlling for overall risk. Bold numbers indicate statistical significance ( $p < .05$ ). Sample sizes for the four columns were still 95, 88, 33, and 21 schools, respectively.

You will notice in Table 7 that one partial correlation reached 1.00. This was due to the fact that all schools in the normative database provided the relationships between the ISQ domains and risk. The sample sizes for the correlations with academic achievement were dependent on the grades present at the school. This created partial correlations computed from bivariate correlations with different degrees of freedom. Partial correlations from this type of analysis

may actually exceed 1. Although this anomalous result jumps from the page, it is computed from data that demonstrate a perfect step function. Given academic achievement, the signal color of that domain can be perfectly predicted. Although the causal direction is backward, the strength of the relationship is not misrepresented in the table.

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 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.

Table 7. *Partial Correlations Between ISQ Domains and Academic Achievement Covarying on Overall Neighborhood Risk*

Variables	3 <sup>rd</sup> Grade	5 <sup>th</sup> Grade	8 <sup>th</sup> Grade	11 <sup>th</sup> Grade
Parent Perceptions				
Parent Support	.14	.09	.00	<b>.54</b>
Teacher Excellence	<b>.43</b>	<b>.33</b>	<b>.35</b>	<b>.50</b>
Student Commitment	.11	.05	-.14	.26
School Leadership	.19	<b>.25</b>	.19	.21
Instructional Quality	<b>.24</b>	.03	.11	<b>1.00</b>
Resource Management	.00	.00	.18	-.17
School Safety	<b>.54</b>	<b>.59</b>	.32	<b>.85</b>
Teacher Perceptions				
Parent Support	<b>.61</b>	<b>.64</b>	<b>.48</b>	.22
Teacher Excellence	.09	.07	.22	.16
Student Commitment	<b>.51</b>	<b>.63</b>	<b>.53</b>	.36
School Leadership	.00	-.02	-.01	.28
Instructional Quality	<b>.23</b>	<b>.35</b>	<b>.66</b>	<b>.62</b>
Resource Management	.11	.18	.23	.36
School Safety	<b>.28</b>	<b>.25</b>	.21	<b>.42</b>
Student Perceptions				
Parent Support	.05	.02	<b>.47</b>	<b>.63</b>
Teacher Excellence	<b>.26</b>	.19	.09	<b>.47</b>
Student Commitment	<b>.42</b>	<b>.22</b>	.20	.11
School Leadership	.05	.00	<b>.52</b>	.33
Instructional Quality	<b>.38</b>	<b>.39</b>	<b>.35</b>	<b>.78</b>
Resource Management	-.02	-.01	<b>.68</b>	<b>.46</b>
School Safety	<b>.43</b>	<b>.46</b>	<b>.67</b>	-.01

## ISQ Reliability

Test reliability for a survey system that measures a complex and evolving construct like school environment is potentially very difficult to quantify. In addition, since ISQ never reports results for individual respondents and because reliability is defined by its consistency at assessing a system; the unit of measurement for these analyses was the school. Table 8 shows the internal consistency reliability coefficients (Cronbach's alpha) for ISQ. They range from .97 for all items for all audiences to .78 for just the 14 elementary student items. Coefficients for individual domains were smaller, as expected by the smaller number of items, but were typically of sufficient magnitude.

Table 8. *Chronbach's Alpha Coefficients for ISQ by Respondent Audience*

Variables	All Audiences	Parents	Teachers	Secondary Students	Elementary Students
Cronbach's alpha	.97	.95	.93	.93	.78
Number of schools	175	176	176	61	114
Number of items	73	29	30	24	14

In addition to internal consistency, two special cases existed where one lent itself to measuring test-retest reliability and the other to measuring interrater reliability. The first was a middle school that conducted ISQ twice during the same school year, and only 4 months apart. To quantify reliability the number of signal colors that agreed from one report to the next was calculated. Percent agreement was 87, 67, and 83 for parents, teachers, and students, respectively. The second case was in a year-round elementary school where data were disaggregated by the five tracks. Reliability was calculated as percent agreement between the track signal color and the aggregated signal color for parents and students. Percent agreement was 86 and 87, respectively.

To confirm these results, the ISQ data from a district with six schools that met three criteria were examined. First, these schools had conducted ISQ in consecutive years; second, these schools only served two grades; and third, these schools served a fairly stable population. Thus, these schools were best suited to provide an analysis of assessment reliability across both time and respondents with little interference from confounding variables. The results showed percent agreement from the first assessment to the second as 91, 84, and 89 for parents, teachers, and students, respectively. Although ISQ was designed to be sensitive to change, and ongoing assessments demonstrate this clearly, ISQ is also reliable.

## Customer Satisfaction

Over the last 4 years, a survey for principals to report their satisfaction with ISQ has been sent out along with the ISQ reports. During that time, 108 schools responded to the survey. Unfortunately, because this process was anonymous, there was no way to relate satisfaction with school demographics nor ISQ results. In fact, it may be possible that some of the respondents were the school secretaries who perceived this survey as one more task where they did not recognize a value for themselves or their school. It is also likely that some schools were included more than once in these data. However, the information continues to be valuable to our staff, and we report it to demonstrate that ISQ content and process were perceived positively.

The Table 9 lists the survey items and summarizes the results. These data did indicate that ISQ was an easy to administer survey system that had appropriate content and was likely to be used again. The data below is an aggregate of all four years, but the pattern of responses was very similar from year to year. As a final note, the only item listed below that was not above our benchmark of 80% was the overall satisfaction item. This is curious as negative responses were fewer than the other items and only neutral responses dropped the percent agreement below 80.

Table 9. *Customer Satisfaction Survey Results*

ISQ Satisfaction Survey Item	Percent “Agree” or “Strongly Agree”
The ISQ kit arrived on time	91
The CSF staff was helpful	89
The ISQ instructions were easy to follow	95
ISQ was easy to administer	93
The ISQ surveys covered appropriate topics	88
The ISQ surveys were clear and understandable	92
The ISQ report was easy to understand	88
The ISQ report will be useful to our school improvement efforts	86
The ISQ report arrived in a timely manner	91
Our school is very satisfied with the ISQ survey system	77
	Percent “Yes”
Would you use ISQ again?	97
Would you recommend ISQ to another school?	96

## ISQ Progress

The number of progress reports has increased each year as schools have been inclined to continue ISQ assessment once they begin. The Center provided 25 progress reports in the second year and then 51, 64, and 94 in the following three years. The Center has also gathered

additional information about how schools employ ISQ data so that interventions can be tied to ISQ progress. Unfortunately, that research has not yielded fruit. Schools are inclined to say they are addressing an issue, but there is no way of determining the method or intensity with which they intervene. The only thing that can be determined is if perceptions change, which they have in most all schools, for better and worse, and to varying degrees.

## ISQ Norms

Starting in our fourth year, normative reports have been created as part of the ISQ process. For these reports to be useful there needed to be enough variability in ISQ signal colors so that schools could be distinguished from their peers. It was quite clear from the beginning that some schools looked just like the norm, some schools were doing much better than the norm, and others were doing worse. This was true for every aspect of the school learning environment.

To confirm results provided in the validation section of this article, a visual study of normative reports was conducted to support the quantitative analyses. Schools were placed in three academic categories. For each of the nine norm groups (i.e., elementary, middle/junior, and high schools by low, moderate, and high risk), means and standard deviations for the achievement data were calculated. Those schools that fell within one standard deviation of the mean were normal achievers, those schools more than one standard deviation above the mean were overachievers, and those schools that were more than one standard deviation below the mean were underachievers. It was quite clear that the normal achievers had ISQ profiles much like the aggregation of their peers. The overachievers had many areas of the school environment that were above norm, and the underachievers had many areas of the school environment that were below norm. This was certainly a visual confirmation that school environment had an impact on academic achievement for all ages in all circumstances.

## Summary

ISQ has provided a great deal of data about how satisfied parents, teachers, and students are regarding their schools; more importantly, ISQ has clearly explained the relationship between school environment, as measured by constituent perceptions and student learning. In addition, improvement in the school environment can now be tracked using these types of data. Thus, it is clearer now more than ever that perceptions of school environment are critically important to every facet of school improvement. By persistently measuring the perceptions of school environment, it is likely that long-term changes guided by these data will ultimately have dramatic effects on student learning as well as the overall quality of a child, family, and community's k-12 experience.

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