

A HANDBOOK FOR
**High
Reliability
Schools**

••• The Next Step in School Reform

**ROBERT J. MARZANO
PHIL WARRICK
JULIA A. SIMMS**

With
David Livingston
Pam Livingston
Fred Pleis
Tammy Heflebower
Jan K. Hoegh
Sonny Magaña



Introduction

Ushering in the New Era of School Reform

In industries where mistakes and errors lead to significant and far-reaching consequences—such as nuclear power plants, air traffic control towers, and electrical power grid operators—organizations must adjust their operations to proactively prevent failure. G. Thomas Bellamy, Lindy Crawford, Laura Marshall, and Gail Coulter (2005) reviewed the literature on these high reliability organizations (HROs) and explained that “what distinguishes HROs is not the absence of errors but the ability to contain their effects so they do not escalate into significant failures” (p. 385). Bellamy and his colleagues further commented,

The literature on HROs describes how organizations operate when accidents or failures are simply too significant to be tolerated, where failures make headlines. . . . The study of HROs has evolved through empirical investigation of catastrophic accidents, near misses, and organizations that succeed despite very trying and dangerous circumstances. Launched by Perrow’s (1984) analysis of the nuclear accident at Three Mile Island, the literature evolved through discussions of whether such accidents are inevitable, as Perrow suggested, or might be avoided through strategies used by organizations that operate successfully in high-risk conditions (Bierly & Spender, 1995; Roberts, 1990). (p. 385)

Karl Weick, Kathleen Sutcliffe, and David Obstfeld (1999) described HROs as organizations that “take a variety of extraordinary steps in pursuit of error-free performance” (p. 84). More recently, Weick and Sutcliffe (2007) observed that “HROs work hard to anticipate and specify significant mistakes that they don’t want to make. Ongoing attention to these potentially significant failures is built into their practices” (p. 53). These organizations have instituted systems, procedures, and processes that allow them to minimize failures and quickly address or remedy them if they do occur. In other words, the public can rely on these organizations not to make mistakes and to resolve them quickly when they do occur.

Schools are not typically thought of as high reliability organizations. However, nothing prevents a school from becoming an organization that takes proactive steps to prevent failure and ensure success.

Creating High Reliability Schools

A high reliability school, by definition, monitors the effectiveness of critical factors within the system and immediately takes action to contain the negative effects of any errors that occur. As early as 1995,

Sam Stringfield called for the development of high reliability schools. He and his colleagues later identified schools that already operate as high reliability organizations (Stringfield, Reynolds, & Schaffer, 2008, 2012).

To implement this type of accountability in schools, two elements are necessary: (1) a hierarchy of school factors and (2) leading and lagging indicators.

A Hierarchy of School Factors

From the 1950s to the 1980s, public education in the United States experienced a wave of pessimism regarding its potential to positively impact student achievement (Coleman et al., 1966; Jencks et al., 1972; National Commission on Excellence in Education, 1983; Rickover, 1959). Many condemned schools, saying they “bring little influence to bear on a child’s achievement that is independent of his background and general social context” (Coleman et al., 1966, p. 325). Although these criticisms shed light on areas of weakness in the U.S. public education system, the conclusion that schools have no effect on student achievement is not valid for at least three reasons.

First, much of the research used to support the perspective that schools fail to impact students positively can be interpreted in alternative ways, some of which indicate that schools *can* cultivate high levels of student achievement. Second, there are many examples of highly effective schools that have successfully overcome the effects of students’ backgrounds. Third, and perhaps most importantly, school effectiveness research paints an optimistic picture of schools’ ability to impact student achievement. In fact, the aggregated research (including those studies listed in table I.1) indicates that there are clear, specific, and concrete actions that schools can take to dramatically increase their effectiveness.

Table I.1: School Effectiveness Research Supporting the Positive Impact of Schools

Brookover et al., 1978	Mortimore, Sammons, Stoll, Lewis, & Ecob, 1988	Rowe, Hill, & Holmes-Smith, 1995
Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1979	Raudenbush & Bryk, 1988	Sammons, Hillman, & Mortimore, 1995
Edmonds, 1979a, 1979b, 1979c, 1981a, 1981b	Stringfield & Teddlie, 1989	Goldstein, 1997
Madaus, Kellaghan, Rakow, & King, 1979	Levine & Lezotte, 1990	Scheerens & Bosker, 1997
Rutter, Maughan, Mortimore, Ouston, & Smith, 1979	Bosker, 1992	van der Werf, 1997
Purkey & Smith, 1982	Bryk & Raudenbush, 1992	Wright, Horn, & Sanders, 1997
Walberg, 1984	Scheerens, 1992	Sammons, 1999
Good & Brophy, 1986	Wang, Haertel, & Walberg, 1993	Reynolds & Teddlie, 2000a, 2000b
Eberts & Stone, 1988	Creemers, 1994	Townsend, 2007a, 2007b
	Luyten, 1994	Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010
	Rowe & Hill, 1994	
	Bosker & Witziers, 1995, 1996	
	Raudenbush & Willms, 1995	

To identify and describe specific factors that affect students’ achievement in school, researcher John Hattie (2009, 2012) synthesized close to sixty thousand studies and found that 150 factors correlated significantly with student achievement. Although a few of these factors are outside of a school’s control, the vast majority

represent activities and initiatives that schools can implement and cultivate to increase their effectiveness. Hattie's top fifty factors are listed in table I.2. Those that a school *can* control are shaded.

Table I.2: Top 50 Factors Influencing Student Achievement

1	Self-reported grades and student expectations	26	Comprehension programs
2	Piagetian programs	27	Concept mapping
3	Response to intervention	28	Cooperative versus individualistic learning
4	Teacher credibility	29	Direct instruction
5	Formative evaluation systems	30	Tactile stimulation programs
6	Microteaching	31	Mastery learning
7	Classroom discussion	32	Worked examples
8	Comprehensive interventions for learning disabled students	33	Visual-perception programs
9	Teacher clarity	34	Peer tutoring
10	Feedback	35	Cooperative versus competitive learning
11	Reciprocal teaching	36	Phonics instruction
12	Teacher-student relationships	37	Student-centered teaching
13	Spaced versus mass practice	38	Classroom cohesion
14	Meta-cognitive strategies	39	Pre-term birth weight
15	Acceleration	40	Keller's Mastery Learning (PSI)
16	Classroom behavior	41	Peer influences
17	Vocabulary programs	42	Classroom management
18	Repeated reading programs	43	Outdoor and adventure programs
19	Creativity programs on achievement	44	Home environment
20	Prior achievement	45	Socio-economic status
21	Self-verbalization and self-questioning	46	Interactive video methods
22	Study skills	47	Professional development
23	Teaching strategies	48	Goals
24	Problem-solving strategies	49	Play programs
25	Not labeling students	50	Second- and third-chance programs

Source: Data from Hattie, 2009.

As indicated in table I.2, forty-six of the top fifty factors (92 percent) are within a school's control.

For decades, schools have used educational research like Hattie's to select individual factors to implement in their schools. For example, many schools have implemented response to intervention (RTI), the third factor in Hattie's list. Other schools have implemented formative evaluation systems, the fifth factor on Hattie's list. In some cases, schools have worked to improve their effectiveness relative to one, two, or several factors. While those efforts are laudable, they represent too narrow a focus. All of Hattie's factors need to be arranged in a hierarchy that will allow schools to focus on sets of related factors, progressively addressing and achieving increasingly more sophisticated levels of effectiveness.

From a high reliability perspective, the factors identified in the research to date are best organized into the five hierarchical levels shown in table I.3.

Table I.3: Levels of Operation for a High Reliability School

Level 5	Competency-Based Education
Level 4	Standards-Referenced Reporting
Level 3	Guaranteed and Viable Curriculum
Level 2	Effective Teaching in Every Classroom
Level 1	Safe and Collaborative Culture

The hierarchical relationship of the levels depicted in table I.3 has some intuitive appeal. Level 1 can be considered foundational to all other levels. If students and faculty do not have a safe and collaborative environment in which to work, little if any substantive work can be accomplished. In essence, Level 1 addresses the day-to-day operation of a school: What are the rules? How do we follow them? What will happen when the rules are not followed? How do we work together to make the school run optimally?

Level 2 addresses the most commonly cited characteristic of effective schools: high-quality instruction in every classroom. Stated differently, school leaders must make sure classroom teachers are using instructional strategies in a way that reaches all students and are taking appropriate steps to improve teacher competence when this goal is not being met.

High-quality instruction is a prerequisite for level 3, a guaranteed and viable curriculum. *Guaranteed* means that the same curriculum is taught by all teachers, so that all students have an equal opportunity to learn it. *Viable* means that the amount of content in the curriculum is appropriate to the amount of time teachers have available to teach it. Levels 1 through 3 are common fare among current efforts to make schools more effective.

Level 4 moves into a more rarefied level of school reform, because it involves reporting individual students' progress on specific standards. At any point in time, the leaders of a level 4 school can identify individual students' strengths and weaknesses relative to specific topics in each subject area.

Level 5 schools exist in the most rarefied group of all—one in which students move to the next level of content as soon as they demonstrate competence at the previous level. Matriculation, then, is not based on the amount of time a student spends in a given course, but rather on his or her demonstrated mastery of content.

Leading and Lagging Indicators

In order to know what to work on and to measure their success at each level, school leaders need ways to assess their school's current status, gauge their progress through each level, and confirm successful achievement of each level. Leading and lagging indicators are useful to these ends. The distinction between leading and lagging indicators is this: leading indicators show what a school should work on to achieve a high reliability level (they provide direction), and lagging indicators are the evidence a school gives to validate its achievement of a high reliability level (they provide proof), particularly in areas where there is general agreement that the school is not doing well.

Leading indicators are "important conditions that are known to be associated with improvement" (Foley et al., n.d., p. 2). That is, they help school leaders decide what to work on to achieve high reliability status at a specific level. For example, at level 1, one leading indicator is "Faculty and staff perceive the school environment as safe and orderly." School leaders might use a survey to measure the extent to which faculty

and staff perceive the school environment as safe and orderly. If perceptions of safety and orderliness are very high, school leaders may not need to focus on that leading indicator. If perceptions of safety and orderliness are low, school leaders might decide to implement initiatives or programs designed to improve the safety and orderliness of the school environment. In other words, leading indicators help school leaders know which areas to look into.

If there is no overwhelming perceptual evidence of high performance at a specific level, the school leaders should design lagging indicators. Lagging indicators provide concrete evidence that a school has achieved a specific high level of performance in an area initially flagged for low performance. Positive outcomes on leading indicators for a level usually mean that the school already has systems in place that address the leading indicator, or that the leading indicator is not an issue for the school.

For example, at level 1, a school where the faculty and staff do not perceive the school environment as safe and orderly (a leading indicator) might formulate the following lagging indicator to measure their progress toward a safe and orderly environment: “Few, if any, incidents occur in which rules and procedures are not followed.” To meet this lagging indicator, school leaders would have to determine how many incidents constitute a “few.” This number is called a *criterion score*; it is the score a school is aiming to achieve for the lagging indicator. School leaders then track the actual number of incidents occurring in the school and compare the number of incidents to the criterion score. If the results meet the criterion score, the school considers itself to have met that lagging indicator and the evidence can be used to validate the school’s achievement of a specific high reliability level. If the results do not meet the criterion score, the school continues or adjusts its efforts until it does meet the score.

To design lagging indicators and criterion scores, school leaders can use several different approaches. The first is a percentage approach wherein school leaders create a lagging indicator that states a certain percentage of responses or data collected will meet a specific criterion. For example, a percentage lagging indicator for level 1 might be “Ninety percent of survey responses will indicate agreement that the school is safe and orderly.” School leaders can use a sentence stem such as “_____ percent of responses or data will _____” to formulate percentage lagging indicators.

A second approach involves setting a cut-off score, below which no responses or data will fall. The following is a possible cut-off lagging indicator for level 2: “No teachers will improve less than two levels of the scale for each of their growth goals each year.” School leaders might use a sentence stem such as “No responses or data will fall below _____” to compose cut-off lagging indicators.

In cases where a school has received fairly high initial survey responses but still wants to improve, school leaders might choose to set lagging indicators for specific amounts of growth. A growth lagging indicator for level 3 might say, “Survey responses regarding all students having adequate opportunity to learn will improve 10 percent.” An appropriate sentence stem for growth lagging indicators would be “Responses or data will be _____ percent higher than original responses or data.”

Finally, lagging indicators might be designed around the creation of a concrete product as evidence of high levels of performance. A concrete product lagging indicator for level 4 might say, “Written goals are available for each student in terms of their performance on common assessments.” School leaders could use a sentence stem, such as “A document or report stating _____ exists,” to design concrete product lagging indicators.

The following chapters list leading indicators for each level. Lagging indicators, however, must be formulated for each specific school by its leaders. Schools should identify lagging indicators and set criterion scores that are appropriate to their unique situation and needs. In each chapter, we provide a template leaders can use to formulate lagging indicators and set criterion scores for each level.

Implementing Critical Commitments

After creating lagging indicators for a level, school leaders implement specific activities or initiatives that help them meet the goals inherent in the lagging indicators. For example, if a school's lagging indicator states that they will average no more than one incident per month in which rules or procedures are not followed, and they currently average five such incidents per month, they must implement activities or initiatives that change the current state of the school.

We refer to the activities or initiatives that school leaders implement to meet their lagging indicators as *critical commitments*. It is important to note that these commitments are based on the cumulative experience of practitioners and researchers at Marzano Research and the research and development work of Robert J. Marzano. Therefore, the critical commitments identified in this book should be considered as strong suggestions. Certainly a school can reach high reliability status for a given level without implementing these suggestions. However, years of experience have established these activities as highly useful to achieving high reliability status for a given level. Critical commitments for each level identified in this book are shown in table I.4.

Table I.4: HRS Critical Commitments

Level 5	Get rid of time requirements to move through levels of knowledge and adjust the reporting systems accordingly
Level 4	Develop proficiency scales for the essential content Report status and growth on the report card using proficiency scales
Level 3	Continually monitor the viability of the curriculum Create a comprehensive vocabulary program Use direct instruction for knowledge application and metacognitive skills
Level 2	Create an evaluation system whose primary purpose is teacher development
Level 1	Implement the professional learning communities (PLC) process

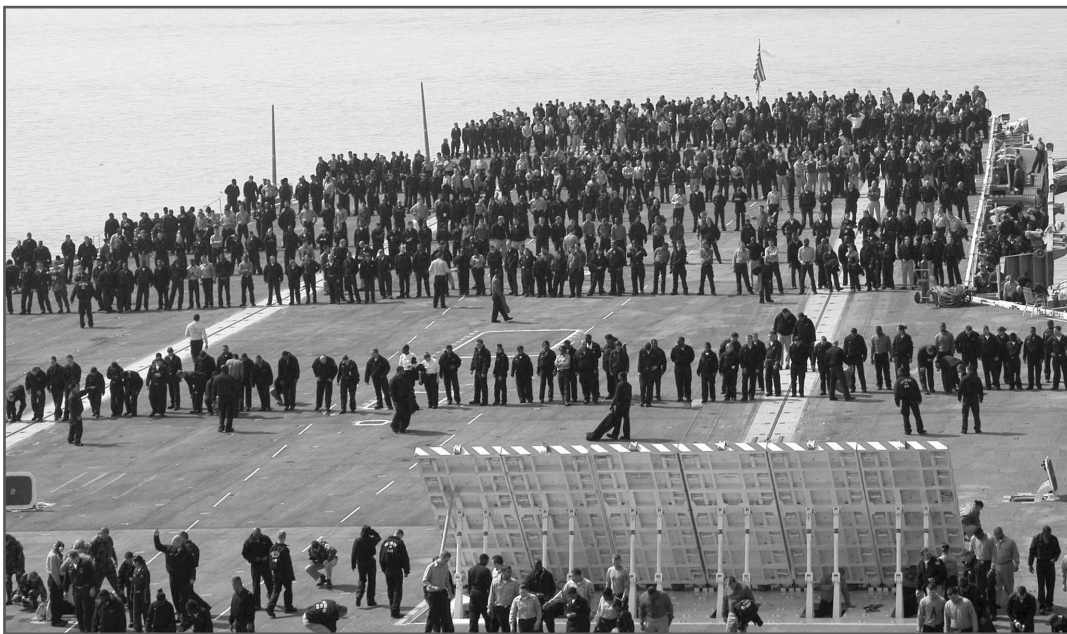
The critical commitments for each level are described in depth in the following chapters. We believe they are essential to achieving high reliability status.

Monitoring Performance and Addressing Errors

Once a school has met the criterion score for a level's lagging indicators, it is considered to have achieved high reliability status for that level. However, being a high reliability school at a given level involves more than meeting criterion scores for lagging indicators. Recall from the previous discussion of high reliability organizations that implementing processes and procedures to prevent problems is only part of what they do. High reliability organizations also constantly monitor critical factors, looking for changes in data that indicate the presence of problems.

Similarly, high reliability schools monitor critical factors and immediately take action to contain and resolve the negative effects of errors as quickly as possible. This means that even after a school has achieved high reliability status for a specific level, its leaders continue to collect and analyze data related to leading and lagging indicators to ensure that the expectations of that level are continuing to be met over time. In the event that data for a specific indicator ceases to meet expectations, school leaders intervene to identify the error causing the anomalous data, minimize any negative effects of the error, and either strengthen existing processes and procedures or implement new ones to fix the current problem and prevent future ones.

Constantly monitoring critical factors for errors requires continual data collection and observation. Consider an organization with very little tolerance for errors: the United States Navy. Particularly, consider an aircraft carrier, that is, a ship from which fighter jets, helicopters, and other aircraft take off and land. The number of potential errors in such an environment is mind-boggling. For example, even small debris, like a pebble or scrap of cloth, on the flight deck can cause catastrophic problems for the finely-tuned engines and other sensitive systems of naval aircraft. Therefore, the U.S. Navy implements systematic *FOD walks*. FOD stands for “foreign objects and debris,” and during a FOD walk, personnel on the aircraft carrier walk along the deck shoulder to shoulder, picking up anything that they find. Such procedures occur multiple times each day. Figure I.1 shows a FOD walk being conducted on board an aircraft carrier.



Source: U.S. Navy, 2005. In public domain.

Figure I.1: FOD walk being conducted on board an aircraft carrier.

As seen here, FOD walks require all members of a ship’s crew to work together to identify and resolve potential problems.

Consider another example of the power of continual data collection and monitoring. When trying to lose weight, studies show that daily weigh-ins help people lose weight and keep it off (for example, see Linde, Jeffery, French, Pronk, & Boyle, 2005 and Wing, Tate, Gorin, Raynor, & Fava, 2006). Each time a person steps on the scale, they collect a data point that tells them whether they are moving toward or away from

their target. If data show that they are not moving toward or maintaining their goal, they can take steps to minimize the impact of errors (such as eating less at meals or snacking less frequently).

In the same way that aircraft carrier crews walk along the flight deck or a dieter steps on the scale every day, so too must teachers and administrators monitor the reliability of their school even after they have achieved high reliability status at a specific level. Such work can be accomplished through quick data, problem prevention and celebration of success, and level-appropriate data collection.

Quick Data

Monitoring can be done quite efficiently through the use of *quick data*—information that can be collected quickly and easily within a short span of time. In the following chapters, we describe how schools might collect quick data about indicators for each level. Once a school has achieved high reliability status for a given level, its leaders can generate quick data on any topic, even if that topic is an area of strength for the school (as indicated by initial survey results). Quick data are meant to be used to monitor the pulse of a school regarding a particular level of performance. Therefore, a school should focus its quick data collection on indicators that will best help them monitor fluctuations regarding their performance at a particular level of high reliability status. There are three types of quick data: (1) quick conversations, (2) quick observations, and (3) easy-to-collect quantitative data.

Quick Conversations

As the name implies, quick conversations are brief discussions that occur between teachers charged with collecting quick data and various members of a school community. For example, questions might be designed around indicators 1.1 and 1.2, which deal with safety (see chapter on level 1), by asking, “How safe has our school been lately?” Similarly, questions might be designed for indicator 1.3, which deals with teachers having a voice in school decisions (see chapter on level 1), by asking, “Recently, to what extent have teachers had roles in making important decisions regarding the school?” One or more of these questions would be asked of teachers, students, and parents over a short interval of time (for example, during a specific week).

Members of collaborative teams within a PLC are perfect candidates for quick conversations. For example, consider a school that designs or selects (from the lists of questions in the chapters describing levels 1 through 5) questions every month for each high reliability level they have already achieved. One or more members selected from a collaborative team are then invited to ask these questions of teachers, students, or community members (whichever groups are appropriate) and engage in five to ten quick conversations with appropriate members of the school community. These conversations last only a few minutes and occur with those school community members who are readily available. Immediately after each interaction, the teacher asking the questions codes each answer using a scale like the following:

Excellent—The answer indicates that the respondent believes the school is performing above what would normally be expected for this issue.

Adequate—The answer indicates that the respondent believes there are no major problems relative to this issue.

Unsatisfactory—The answer indicates that the respondent believes there are major problems that should be addressed relative to this issue.

The teacher asking the questions records the responses on a form such as that in figure I.2.

Person Responding	Question	Response Code	Notes
Teacher	Question 1: How safe has our school been lately?	Adequate	Feels safe. Hasn't encountered any major rule infractions in the past three weeks. Recalled one minor infraction in same period.
Student			
Administrator			
Parent	Question 2: To what extent have teachers had roles in making important decisions regarding the school?	Unsatisfactory	Feels unheard. Indicated that it has been months since a school leader asked for her opinion.
Other: _____			

Figure I.2: Sample quick conversations response form.

Notice that the collaborative team member who initiated the quick conversation has recorded the respondent's role (teacher), the questions asked, the code assigned to each response (adequate for question 1, unsatisfactory for question 2), and any pertinent notes from the conversation.

At the end of a month, the team aggregates the responses, as depicted in figure I.3.

Question 1						
Excellent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adequate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unsatisfactory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question 2						
Excellent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adequate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unsatisfactory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure I.3: Aggregated quick conversation responses.

Visual representations of data, such as those in figure I.3, allow school leaders to quickly identify problems, take steps to mitigate their effects, and resolve unsatisfactory situations. Here, school leaders might decide to reexamine the processes in place to collect information about teachers' opinions. Additionally, graphs like these give members of the school community a quick look at areas where the school is excelling and allow for celebrations of success.

Quick Observations

Like quick conversations, quick observations are made by teachers from collaborative teams. As the name implies, quick observations are specific events teachers look for. For example, for the first two leading indicators at level 1, teachers might be asked to make observations of the following types of incidents:

- Recent incidents that indicate the school is a safe place
- Recent incidents that indicate the school is an unsafe place
- Recent incidents that indicate the school is an orderly place
- Recent incidents that indicate the school is not an orderly place

School leaders could also design observation prompts from their school's lagging indicators. Quick observation data would be collected anecdotally. Table I.5 shows one collaborative team member's anecdotal notes about incidents observed over the course of a week.

Table I.5: Anecdotal Notes for Quick Observations

	Recent incidents that indicate the school is a safe place	Recent incidents that indicate the school is an unsafe place	Recent incidents that indicate the school is an orderly place	Recent incidents that indicate the school is not an orderly place
Monday	Student turned in \$20 found in hallway		Students reacted according to safety plan when fire alarm went off	Fumes from science lab set off fire alarm
Tuesday	Student club members created posters for school hallways encouraging kindness and compassion			Shreds of paper and glitter left in hallway after students worked on a project there
Wednesday	Administrators present in all main hallways during passing periods	Two students shouting at each other after school while waiting for busses; teachers helped resolve	Checked out a cart of tablets; tablets were cleaned after last use and neatly arranged; no accessories missing	
Thursday	Students made comments on social media sites about how much they enjoy specific classes		Cafeteria very clean after lunch period; all trash thrown away and tables cleared	
Friday		Slippery floors this morning because of rain; almost fell	Students picked up trash blown onto athletic field by storm	

On a regular basis, notes (such as those in table I.5) collected by collaborative team members could be compiled into a narrative summary and shared with members of the school community.

Easy-to-Collect Quantitative Data

In many schools, easy-to-collect quantitative data are available and can be used to monitor progress on a regular basis. Such data are typically collected by school leaders. For example, if a school leader already has in place a system that keeps track of student absences and tardies, she might aggregate these data once a month as a way of monitoring level 1 performance.

Problem Prevention and Celebration of Success

As schools achieve higher levels of reliability, they should continue to monitor each level already achieved. Thus, a school that has achieved level 3 high reliability status will constantly monitor data for levels 1, 2, and 3 as it works on level 4. If quick data show that performance is unsatisfactory at any level, schools take steps to remedy the situation. In this way, problems are resolved before they cause significant errors in the system.

Problem prevention is an excellent reason to constantly monitor critical factors and address errors immediately. However, it is not the only reason to monitor performance. Tracking performance using quick data

allows school leaders to celebrate successes with staff members, parents, and students. Research by Edwin Locke and Gary Latham (2002) has shown that feedback, especially positive feedback, is important in keeping people motivated to achieve or maintain goals:

For goals to be effective, people need summary feedback that reveals progress in relation to their goals. If they do not know how they are doing, it is difficult or impossible for them to adjust the level or direction of their effort or to adjust their performance strategies to match what the goal requires. . . . When people find they are below target, they normally increase their effort . . . or try a new strategy. . . . After people attain the goal they have been pursuing, they generally set a higher goal for themselves. (p. 708)

School leaders can use quick data to regularly celebrate the school's successes and congratulate students, teachers, and parents on their hard work.

Level-Appropriate Data Collection

As mentioned previously, schools should not only collect quick data for the level they are currently working to achieve but also for all of the lower levels they have already attained. However, we do not advise that schools try to collect data for levels higher than the one they are currently working on, because data for higher levels often *cannot* be collected by schools at lower levels. This is particularly the case with levels 4 and 5. For example, a visitor to a school working on level 5 (that is, a school that has already achieved high reliability status at levels 1, 2, 3, and 4) might ask a student, "What level are you at in mathematics? Science? Social studies? English language arts? What measurement topics are you working on? What is your current score on those measurement topics? What are you doing to raise your score?" The student should be able to answer most, if not all, of these questions. However, a visitor might ask a student in a school working on level 2 the same questions and get a blank look. Because the school is not working at level 5, it is impossible to collect level 5 data there.

This characteristic of our model reveals one of its most powerful aspects. Each level guarantees that a school is performing at lower levels. So, if a school is working on level 4 and has achieved levels 1, 2, and 3, it is guaranteed that the school has a safe and collaborative environment, effective teaching in every classroom, and a guaranteed and viable curriculum. By definition, working on level 4 means that lagging indicators for the first three levels have been met and the status of each is continually monitored. Each level supports the one above it and guarantees specific outcomes for those below it.

How to Use This Book

This handbook has one chapter for each high reliability level. Each of these chapters begins with the recommended leading indicators for that level. We then present a series of surveys (for teachers and staff, administrators, students, and parents) based on those leading indicators. School leaders can use these surveys to get a preliminary idea of what leading indicators they may need to work on. Once members of the school community have completed the surveys and the results have been compiled, school leaders can identify which, if any, leading indicators need to be addressed in the school.

Each chapter also describes the critical commitments for its respective level and resources that might be used for each of those commitments. These resources provide school leaders with concrete solutions for issues disclosed by survey results. Visit marzanoresearch.com/highreliabilityschools to access the online resources that correspond with each level.

If survey results indicate that no leading indicators need to be addressed, school leaders can move on to identifying lagging indicators and criterion scores that will be used to measure whether or not the school has achieved high reliability status for the level. To facilitate this process, each chapter provides a template that leaders can use to identify these indicators and scores, as well as example lagging indicators that school leaders could use. Once the lagging indicators have been created and the criterion scores set, school leaders gather data and other information to track their progress toward and achievement of high reliability status for that level.

Finally, each chapter lists specific questions (for quick conversations) and incidents (for quick observations) that school leaders can use to gather quick data for that level. Each chapter also provides examples of easy-to-collect quantitative data. This allows school leaders to continually monitor their school's performance on previously achieved high reliability levels. The conclusion of the handbook provides a decision-making diagram (figure C.1) regarding how to obtain high reliability status at any given level, along with recommendations regarding specific situations a school might face.