Linking Data Quality With Action: Evaluating and Improving Local Program Performance

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Chapter 1. Introduction

The National Reporting System (NRS) has served as an accountability system for the adult education program since 2000. Over these years, states have made significant changes in their delivery systems and data collection in response to NRS requirements. With the increased focus on accountability, there are now comprehensive data systems about adult education students, their participation, and their outcomes at both the state and federal levels. States and the Office of Career, Technical, and Adult Education (OCTAE) have used these data to demonstrate the importance and effectiveness of the program in improving students' literacy skills, their attainment of secondary credentials, entrance into postsecondary education, and obtaining employment. As a source of detailed information, NRS data also support program management and improvement efforts.

Because good data quality is essential to the successful use of NRS data, OCTAE has provided substantial support to states to promote the collection and reporting of quality data through the NRS support project. Beginning in 2002, the project has provided annual training and guides focused on data quality in several different ways, including clarifying NRS requirements, monitoring data, promoting the use of data for program improvement and program evaluation, and developing data tools to support data quality and use.

Accountability systems like the NRS, however, are not static. Changing data requirements, staff turnover, advances in technology, new instructional approaches, and new policy initiatives create the need for constant vigilance and effort to sustain data quality. As a living system designed to support the adult education program, the NRS needs ongoing attention to adapt to these changes to continue to support state adult education staff as they work toward ensuring data quality. For example, 2012 saw the implementation of significant changes to the NRS follow-up measures, introducing the cohort approach and requiring new student and teacher measures. This guide takes a fresh look at data quality, updating tried and true ways of thinking about quality in the context of the current NRS.

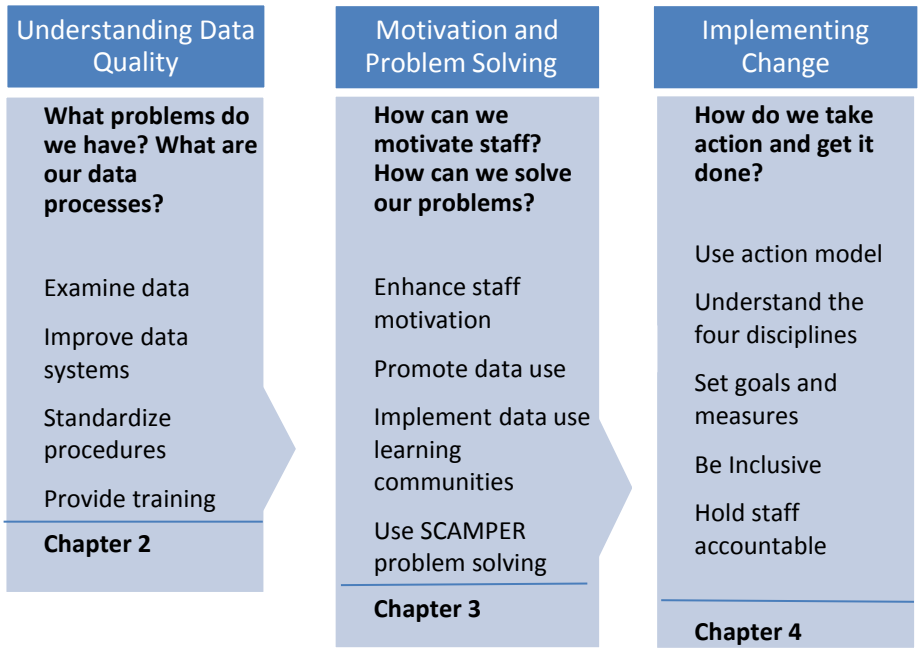
In revisiting data quality, this guide offers new approaches and tools to identify and prevent data quality problems. It introduces a local data quality checklist, modeled after OCTAE's state checklist, which states can use to understand and evaluate local data collection practices. This guide also brings together previously developed material on improving data quality into a single resource, a data quality toolkit that permits easy access to this content, to support ongoing state and local training around data quality practices.

In addition to reviewing the technical aspects of data quality, the guide moves in a new direction, presenting approaches to solving data quality problems by addressing the motivational and behavior aspects of data collection and programmatic change. While this is a critical first step toward identifying problems and their sources—data entry errors, inadequate data systems, need for more training—determining how to resolve the problem is a different challenge. It may not always be clear how to resolve a data problem, once identified, and even when a solution is found, making real change in the program is yet another challenge. The guide presents models for creative problem solving and an approach to implementing change, linking data quality with action.

Overview of Guide

The next three chapters of the guide present our approach to understanding and evaluating data quality, developing ways to resolve problems, and a method for making change. In consultation with OCTAE staff and state directors of adult education, we identified the most common data quality problems and use these as a starting point to illustrate how to identify them through data. The approach includes what to examine when reviewing data, the importance of data systems and staff procedures and training, and motivating staff to care about data. We then present a problem-solving model and method for implementing change. Exhibit 1-1 illustrates the three parts of the guide describing the approach to linking data quality with action.

Exhibit 1-1. Overview of Guide: Linking Data Quality With Action



Chapter 2 stresses the importance of understanding your data and data collection processes. One of the best ways to evaluate data quality is through a critical examination of data, which will identify inaccuracies and inconsistencies, and help pinpoint where they are. We use recent national level NRS data to illustrate the power of simple observation in finding data quality problems. The data quality "equation" presented in Chapter 2 helps identify the source of problems, which include data systems, procedures, and training. Data quality is enhanced with an understanding of state and local data procedures, along with a strong data system designed to prevent and identify errors.

Another element of the equation that contributes to data quality is the motivation of staff to care about data quality. Chapter 3 covers this sometimes neglected aspect of data quality, reviewing ways to motivate staff. Actually using data to improve instruction and learning is an effective way to make data meaningful, and formal methods of professional development around

data use, such as data use learning communities, can be especially effective. Chapter 3 also takes on the challenging issue of how to devise meaningful change once problems have been identified and become the focus of improvement efforts. Chapter 3 offers the SCAMPER problem-solving model and applies it to adult education programs as a way to develop creative solutions.

All too often, after identifying problems we want to resolve and coming up with creative solutions, nothing changes. NRS training and similar professional development events allow us to focus on where we need to improve, and we return to work excited and motivated to do better and implement our plans. Then reality sets in, and we face our daily work, and the plans and good intentions fade away, with little being accomplished. Chapter 4 meets this all-too-familiar scenario head on and offers a solution. Drawing from the business arena, we apply the Four Disciplines of Execution approach (McChesney & Covey, 2012) to adult education and demonstrate how to use it to implement plans and make them a reality.

Chapter 5 describes the *NRS Data Quality Toolkit*, an online resource linking previously developed NRS training and materials about data quality. The chapter also includes a description of the *Local Data Quality Checklist*, which is included in an appendix, with instructions on how to use it.

NRS Training Guides

This guide is the 14th in a series designed to assist states with implementing NRS requirements, improve data quality, and use NRS data to promote program improvement. This guide supports the national face-to-face training conducted in June and July 2014.

The NRS support project staff at American Institutes for Research (AIR) developed all the NRS guides through OCTAE-funded projects that support the NRS. Readers interested in further information about the NRS, including resources to support data quality and the use of NRS data for program management and improvement, should consult NRSWeb, the project website, at http://www.nrsweb.org/pubs/#trainingGuides. The website houses guides and materials for all previous training.

Chapter 2. Understanding Data Quality: Identifying and Preventing Problems

If you ask state or local adult education program staff to list their 10 favorite things about their jobs, it is unlikely that collecting and reporting data will appear on the list. Most staff view data collection as an unpleasant chore—necessary perhaps, but taking time away from the important tasks of providing instruction and services to students. Yet good data are essential to building quality adult education program services.

The aversion to collecting and reporting data is not surprising—it is hard work, and the benefits are not immediately apparent. Good data collection requires well-thought-out processes, a strong data system, training, and motivation. Staff must know what to do, why data are important, and how they will help their program. But there are relatively simple methods to make the data collection easier, reduce the burden, and ensure data quality. These methods, along with effective training that instills understanding of the importance of data, can ensure quality data that support program performance.

In this chapter, we will review ways to evaluate data quality, with an eye toward identifying and preventing problems. We begin with an approach to issues that entails examining data to assess quality and identify data reporting and collection problems. We then discuss ways to resolve and prevent problems, including data systems, training, and local monitoring and evaluation.

Understanding Data

The first step in improving data quality is to know and understand what your data actually tell you by closely reviewing them. This seemingly obvious activity is often overlooked. Staff enter data into the computer, run reports, and send them off with little or no review, and then move on to the next task. You can run a simple test of knowledge of your own data by asking question such as: How many students do you have? What was the average percentage gain on the educational functioning levels? How do these numbers compare to last year's—was there improvement? You might be surprised at the lack of accurate answers. Without knowing your data, you cannot evaluate the quality of information or identify potential problems.

To illustrate the insights that a thoughtful look at data can provide, we examine the national level NRS data for the last several years. Although we use national and state data in our examples, states can follow the same process that we model, using their state data to drill down to local programs to explore data quality issues. Our focus here is on outcome data from Table 5 (the follow-up measures) and Table 4 (educational gain). The follow-up measures are of particular interest because of the change from goal setting to the cohort approach to defining the outcome groups. The 2012–2013 Program Year (PY) is the first time these data have been available. As we will further discuss later in the chapter, a critical time to examine data is after a major procedural or policy change, as occurred with the implementation of the cohort requirements. Understanding of data is also enhanced with the review of multiple years' data—a topic we will revisit.

From Goal Setting to Cohorts: NRS Table 5

The change from goal setting to cohort definitions for the follow-up measures in PY 2012 (see Exhibit 2-1) is a compelling reason to examine the data for that year and compare them with those of previous years. Examining these data offers an opportunity to evaluate how well is the data are working as a performance measure. The data can also reveal clues to problems that local programs may be having with collecting and reporting the information. We focus first on the secondary credential attainment and entry into postsecondary education measure (in Exhibit 2-2).

Exhibit 2-1. Student Cohort Definitions for Follow-up Measures

Follow-up Measure	Student Population To Include (Cohort)
Entered employment	Learners unemployed at entry and in the labor force who exit
Retained employment	Learners unemployed at entry in the labor force who exit and are employed during first quarter after exit; and learners employed at entry who exit
Placement in postsecondary education or training	Learners who earned a secondary credential while enrolled, have a secondary credential at entry, or who are enrolled in a class specifically designed for transition to postsecondary education who exit.
Receipt of secondary diploma or GED	Learners who take all GED tests, are enrolled in adult high school at the high adult secondary level, or are enrolled in the assessment phase of the External Diploma Program who exit.

Both measures show a dramatic change with the change to the cohort definitions. During the years PY 2008–2011, there was little change in the number and percentage achieving the outcome of a secondary diploma. The percentage of students achieving this outcome ranged from 61% to 64%, except in 2009. In PY 2012, however, there was an increase to 70% achieving the outcome, a 9% increase from the rate in 2011 under goal setting. This increase is likely due to the fact that all students who take the GED tests, rather than only those who set this outcome as a goal, are included in the cohort.

Exhibit 2-2. Achievement of NRS Follow-up Measure Outcomes, 2011–2012

Follow-up Outcome Measures	Average Percentage Achieving Outcome					
	2008	2009	2010	2011	2012	**Change between 2011 and 2012**
Entered employment	55%	49%	48%	48%	46%	**-2%**
(*N*)	(75,163)	(72,139)	(78,486)	(80,770)	(128,572)	
Retained employment	65%	64%	62%	66%	56%	**-10%**
(*N*)	(87,476)	(82,522)	(77,634)	(87,310)	(179,630)	

Follow-up Outcome Measures	Average Percentage Achieving Outcome					
	2008	2009	2010	2011	2012	Change between 2011 and 2012
Obtained a GED or secondary school diploma	64%	52%	61%	61%	70%	**9%**
(*N*)	(165,694)	(163,529)	(161,549)	(143,816)	(140,591)	
Entered postsecondary education or training	59%	60%	56%	58%	29%	**-29.1%**
(*N*)	(48,889)	(48,311)	(48,825)	(47,731)	(67,447)	

Note: Data were retrieved May 23, 2014 and may not match the final data in the national NRS database.

The percentage of student entering postsecondary education or training, however, shows a dramatic decrease with the cohort definitions. From PY 2008–2011, performance on this measure ranged from 56% to 60% but in PY2012, performance fell to 29% of students achieving this outcome. The size of the cohort is also far larger than it was during the previous years under goal setting.

The entered and retained employment measures do not offer a clear picture in PY 2012 of the effect of the cohort changes because of the lag time for collecting this measure (i.e., one quarter and three quarters postexit, respectively). As a result, these data contain a mixture of students from the old goal-setting method and students identified through the cohort definitions. However, the data in Exhibit 2-2 also reveal decreases in the percentage of students achieving these outcomes in PY 2012, after relative stability of the measures in prior years. Retained employment shows a sharp decrease, with increase in the total number of students in each group. There is a far larger number of students within each group, probably as a result of the change in cohort definitions.

Evaluating Follow-up Measures

A thoughtful examination of the follow-up measures–and any set of data—that reveals such dramatic changes suggests that an evaluation of its quality is also necessary. Consider, for example, how data are collected and how they are calculated. Data matching or local surveys are the methods used to collect the follow-up measures. While data matching is usually a more valid method of data collection, evaluation of data quality requires careful consideration of the procedures used to collect the data under both approaches. Exhibit 2-2 combines, at the federal level, all data sources from the states, making the quality difficult to evaluate on that dimensions. States, however, can assess the quality of their own data collection procedures for these measures.

Examination of how the follow-up measures are calculated through NRS Table 5 also can provide some very helpful information on the data quality. Because not all students can be located or identified for follow-up measurement, states report not only the total number of students in the cohort but the number of students they are able to include (through data matching or survey) and also calculate the percentage they can reach. The actual performance measure is

the percentage of these students who achieved the outcome. By understanding how the data are calculated, NRS Table 5 (revised excerpt for entered employment shown in Exhibit 2-3) gives us three pieces of data by which to evaluate its quality.

- **The number of students in the cohort.** Comparing this number with the total number of students and with prior years' data allows a general assessment about its validity. For example, very low numbers of students in a cohort compared with the overall total number of students could indicate a problem with identifying or reporting the cohort. State 6 in the example in Exhibit 2-3 reported 929 students in the employment cohort. If this state has thousands of students, the reported number in the cohort deserves further investigation.
- **Response rate or percentage used for matching.** Table 5 show the response rate or the matching percentage, defined as the number of students reached over the total cohort. If this measure is too low, it means the program or state is not doing a good job of tracking students. If it is too high, for example, 100% or very close to it, (like states 3, 6 and 7 in Exhibit 2-3), it also deserves a second look. This rate is nearly impossible to achieve because it means that the survey matching procedure reached every students in a survey or the program had every student's Social Security number for data matching, without error or missing data. Something is almost certainly wrong.
- **The outcome measure.** By itself, the outcome measure cannot necessarily tell you anything about data quality. However, evaluating the reported percentage by assessing its general credibility and by comparing the performance to historical trends can often suggest a possible problem. Very high (near 100%, for example) or extremely low performance requires a second look at procedures, response rates, and the number of student included. A significant deviation from past performance also may be cause for concern.

Exhibit 2-3. NRS Table 5 Revised Excerpt for Entered Employment Measure

State	Number of Participants in Cohort	Number of Participants Responding to Survey or Available for Data Matching	Response Rate or Percentage Available for Match	Number of Participants Achieving Outcome (Unweighted)	Percentage Achieving Outcome (Weighted)
State 1	6,536	5,021	77	1,631	32
State 2	19,873	16,468	83	5,054	31
State 3	32,275	30,404	94	9,427	31
State 4	5,636	4,860	86	1,427	29
State 5	5,158	3,650	71	1,072	29
State 6	929	887	95	244	28
State 7	4,826	4,826	100	1,307	27

Educational Gain Performance: NRS Table 4

NRS Table 4 is the single most important table in the NRS because it provides a wealth of data on students—their beginning educational functioning level (EFL), contact hours, and number who separated, along with educational gain, the central measure of performance within the NRS. Consequently, this table deserves a great deal of scrutiny to understand program performance and data quality. We focus on educational gain, and Exhibit 2-4 shows national performance on this measure over the last 5 years for adult basic education (ABE), excluding high adult secondary education (ASE).

The percentage of educational gain has increased steadily for all ABE levels since 2008, with the ABE beginning literacy, the lowest level, increasing most sharply. Since 2010, however, performance has been relatively stable for the other levels, just above 45%, and for intermediate and beginning ABE, and around 40% for the remaining levels. Exhibit 2-5 shows educational gain for English as a second language students (ESL). Overall performance of ESL students on these measures has been higher than for ABE, and there has been a small but steady increase in all levels except for ESL advanced. Performance on the intermediate ESL levels has been lower that the three lower levels.

Exhibit 2-4. Percentage of ABE/ASE Students Completing One or More Levels, 2008–2012

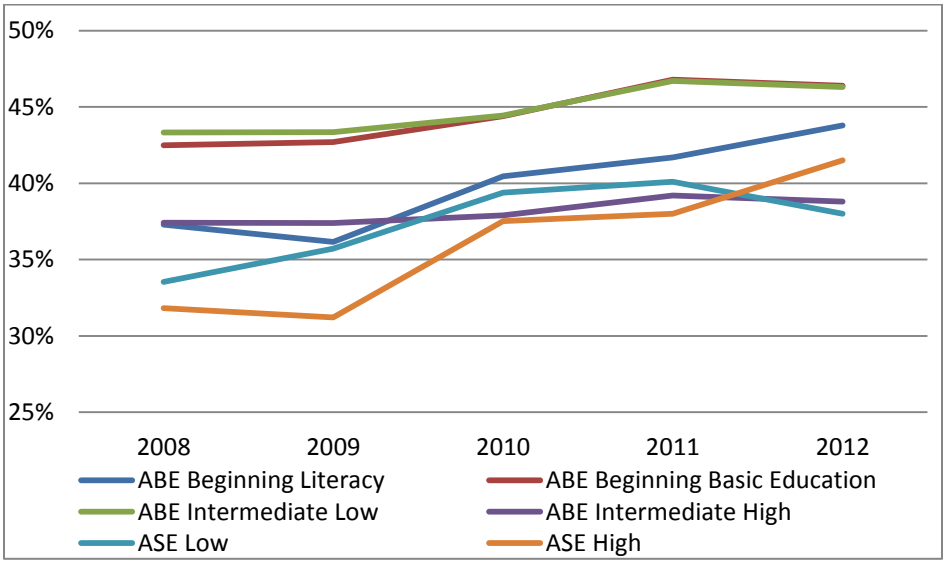
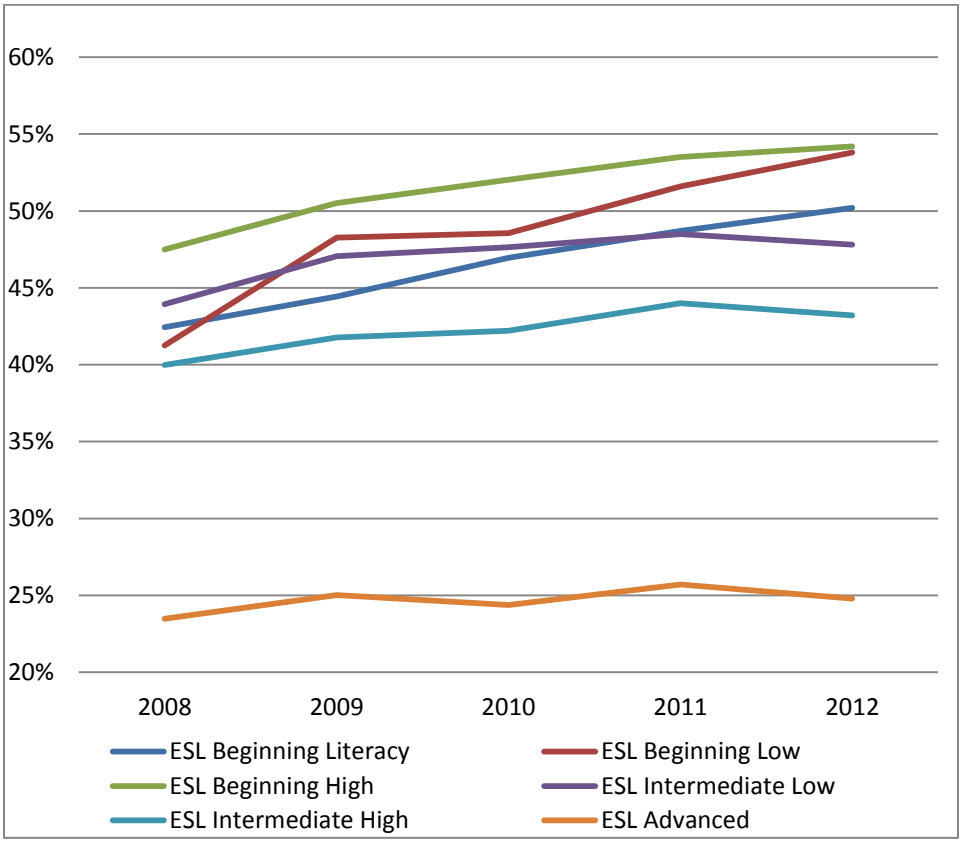
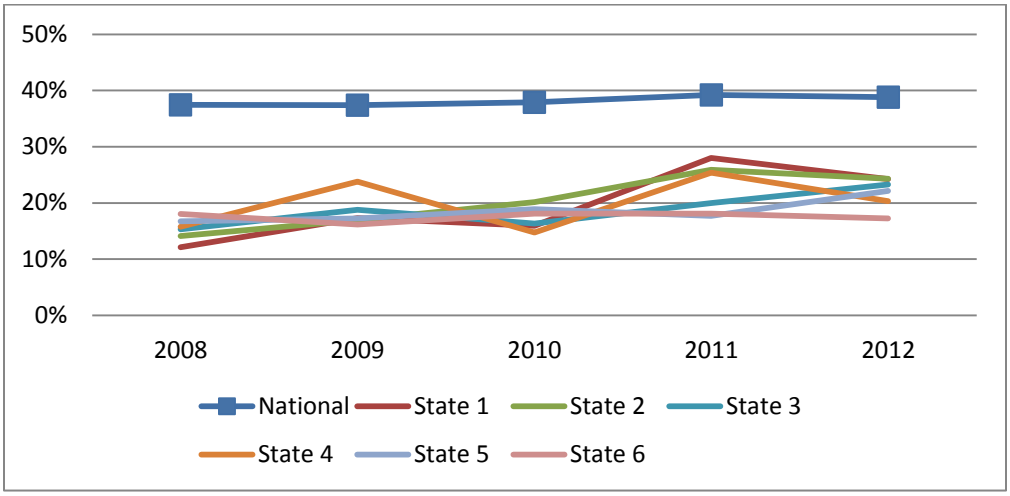


Exhibit 2-5. Percentage of ESL Students Completing One or More Levels, 2008–2012



Unlike Table 5, Table 4 alone offers few clues to data quality. The trends, as suggested by these charts, show stability in performance and little change (or only small increases) over time on performance on these levels. The overall level of gain by EFL, however, can be assessed by comparing the performance with the overall average and to historical trends. If larger deviations are identified, states can assess local programs' assessment procedures and student retention to further explore possible data quality problems. For example, Exhibit 2-6 shows the states with the lowest percentage of educational gain for high intermediate ABE, compared with the national average. A state or program director might want to improve performance on educational gain and explore how data quality affects its performance. Exhibit 2-6 shows that average performance on high intermediate ABE has stayed at about 37% to 39% over the last 5 years, for example, and a director may want to explore why there has been no change and try to improve performance there.

Exhibit 2-6. Percentage of Students Completing ABE Intermediate in States That perform Below the National Average, 2008–2012



Pre- and Posttesting

Posttesting rates are a key to understanding performance on educational gain. Students who are not posttested cannot be counted as achieving a gain, which lowers the overall percentage on these measures. States can collect posttesting rates directly from programs, or the rate can be computed from NRS Table 4B, which reports only students that are pre- and posttested.

Exhibit 2-7 shows EFL performance and pretest-posttest rates for the states that have experienced a decline in percentage of students posttested in 2012, compared with 2011. As can be seen, there is a direct relationship between a low rate of posttesting and average performance on EFL gain. Each state that experienced a decline in posttesting had a decline in EFL gain. State 1 had the steepest decline, for example, with posttesting rates dropping 26 percentage points and overall EFL gain dropping to 40 % in 2012.

Exhibit 2-7. Pretest-Posttest Rates and Average EFL Gains, 2011–2012

	Pre- & Posttest Rate		% Change 2011–2012	Average Total EFL Gain Rate		% Change 2011–2012
State	**2011**	**2012**		**2011**	**2012**	
1	77%	51%	**-26**	64%	40%	**-24**
2	67%	53%	**-14**	42%	39%	**-3**
3	62%	49%	**-13**	39%	32%	**-7**
4	48%	40%	**-8**	36%	29%	**-7**
5	63%	56%	**-7**	54%	49%	**-5**
6	72%	66%	**-6**	39%	38%	**-1**
7	75%	70%	**-5**	67%	62%	**-5**

Internal Consistency of Data

We have illustrated through data from the national level NRS tables how a critical review of data can help you understand performance and identify data quality problems. State and program directors can gain further insight by not only looking at tables and data in isolation but thinking about logical connections that should exist within the data. An evaluation of consistency will provide further evidence of data accuracy and quality.

The NRS tables again allow us to illustrate the importance of data consistency. We know, for example, that the student totals in NRS Tables 1-4 should all be the same. These tables are intended to describe the entire population of students served within the year. There are several other tables, however, in which we should observe similar consistencies. Exhibit 2-8 shows one example, using teacher data from NRS Table 7. The table shows three pieces of information about teachers: the total number of teachers, the years of experience in adult education for each teacher, and certifications each teacher has. Because the number of full- and part-time teachers is supposed to be an unduplicated count and the years of experience is required to be reported for each teacher, the totals should be the same. However, these totals do not match. The table shows totals of more than 31,000 part-time and more than 9,000 full-time teachers. Yet summing totals for years of experience, there are more than 35,000 part-time teachers and fewer than 8,000 full-time teachers reported. The teacher certification category permits duplicate counts (i.e., a teacher may have more than one certification) but without accurate teacher totals, we do not know if the number reported is correct. Clearly, there are data-reporting errors to be investigated.

A second, more subtle example, relates to our discussion of Table 5. That table reports on the number of students in the entered employment cohort, defined as unemployed students in the labor force. The meaning of “in the labor force” however, can be ambiguous. For example, the meaning may be misinterpreted or it could be unclear whether the student is actively looking for a job.

Although it is not a definitive indicator, an unusual change in the number of students *not* in the labor force may indicate inaccurate reporting, perhaps to lower the size of the cohort. We can examine whether this trend is affecting data by comparing student employment status reporting over time, using data from NRS Table 6. Exhibit 2-9 shows the student status categories from the table for PY 2011 and PY 2012. Reflecting the drop in total enrollment between the 2 years, there is a decrease in the number of students in all categories, except in the labor force. This lack of decrease suggests the need for further investigation: Why was there no decrease when the overall trend was in that direction? While some difference is expected because Table 5 only includes students who exit, a large discrepancy should be investigated.

Exhibit 2-8. Data Errors in Reported Teacher Totals on Certification and Experience (NRS Table 7)[1]

Function	Total Number of Part-time Personnel	Total Number of Full-time Personnel
	2012	2012
Local Counselors	8,057	1,421
Local Paraprofessionals	8,057	1,758
Local Teachers	31,916	9,586
Local-level Administrative/Supervisory/Ancillary Services	4,835	5,147
State-level Administrative/Supervisory/Ancillary Services	78	343
Teachers' Years of Experience in Adult Education		
Less than one year	4,526	441
One to three years	8,035	1,109
More than three years	22,886	6,333
subtotal	**35,447**	**7,883**
Teacher Certification		
No Certification	13,761	2,481
Adult Education Certification	6,557	2,542
K-–12 Certification	14,852	3,259
Special Education Certification	1,428	328
TESOL Certification	2,739	514
subtotal	**39,337**	**9,124**

Exhibit 2-9. Student Status, PY 2011–2012 Reported in NRS Table 6

Participant Status on Entry Into the Program	2011	2012	Change
Disabled	63,759	60,232	**-6%**
Employed	579,815	568,361	**-2%**
Unemployed	734,233	635,450	**-13%**
Not in the labor force	504,758	504,294	**0%**
On public assistance	309,554	300,958	**-3%**
Living in rural areas	256,450	213,064	**-17%**

Exhibit 2-10 provides the answer. Several states show a significant increase in the percentage of students not in the labor force in PY 2012 compared to previous years. The increases in 2012

[1] Data in Exhibits 2-8 and 2-9 are provided for illustrative purposes and were retrieved January 30, 2014. They may not necessarily match final data in the national NRS database.

range from 20% to 40% compared to 2011, higher than previous years for each of the 10 states in the table. The numbers of students in this category has also increased for each state in 2012, despite the fact that overall enrollment has actually dropped during this period. While we cannot tell from the data why this occurred, the observation suggests a possible data quality problem and calls for further investigation.

Exhibit 2-10. States With Increases in Reported Students Not in the Labor Force, 2010–2012

	2010 Not in Labor Force		2011 Not in Labor Force		2012 Not in Labor Force	
State	Number	Percent	Number	Percent	Number	Percent
1	344	11	301	10	802	27
2	2,792	11	2,969	13	4,792	20
3	10,327	16	10,326	17	13,884	25
4	8,034	21	13,196	33	15,153	40
5	5,838	18	4,394	14	8,908	29
6	14,039	31	14,089	32	16,284	37
7	4,632	15	5,262	19	7,731	27
8	7,385	18	7,274	18	9,563	26
9	5,110	17	3,916	16	5,455	22
10	3,108	14	2,898	15	4,028	21

The Elements of Data Quality

As just illustrated, critical and ongoing review of data provides insights into program performance and data quality. Reviewing data should be an integral part of program-monitoring assessment of data quality and can provide important clues about what may need improvement and where performance is below its maximum level. Once potential problems are identified, the next step is to find the source of the problems and correct it. Doing so requires an understanding of the data collection process in your state or program and the various points where errors can occur.

In several previous NRS guides, we have presented different models and ideas about improving data quality. We can synthesize these various approaches in the following data quality equation:

Data Quality = Procedures + Data System + Motivation

To have good quality, states and program must follow a standard set of procedures around each data element that meets NRS requirements and ensures minimal error. A good data system supports quality data by minimizing error and easing data collection through technology. Such a system facilitates easy data entry and provides information that supports data use and effective programs.

Procedures and data systems alone are not enough to ensure quality data. Data collection is, after all, a behavioral activity. Teachers, program staff, and students must provide the basic information that makes up data, and they all must be motivated to provide the information. Staff responsible for data collection must know and follow procedures, enter data, perform error checks, and review data—all activities that may not be inherently motivating or interesting. Building and maintaining motivation in collecting and reviewing data are also critical parts of the data quality equation—and probably the most challenging. The rest of this chapter discusses the first two elements of data quality, procedures and data systems, and we devote the next chapter to motivation and data collection behavior.

Defining Data Quality

"Quality" is an elusive concept, and in several NRS guide and workshops, we have discussed its many meanings. The simplest approach is to define quality data as data that accurately reflect what they are intended to represent. In statistical terminology, quality data have reliability and validity.

Reliability of data refers to the consistency of measurement—whether different people collect data the same way at different times. In other words, a reliable measure produces the same score no matter who collects it or when it is collected. Low reliability is the result of bad data collection procedures or a poor data collection instrument. If data collection procedures are not clearly defined or are not followed, or if staff are not trained in procedures, poor reliability is the result. Similarly, if the instrument used to collect the data, such as a form or test, is flawed, different people may complete it in different ways, again producing unreliable data.

Attendance data can have low reliability, for example, if one teacher records attendance when class starts and another records it at the end of class. With assessments, low reliability occurs when test administrators do not follow standardized instructions for administering the test. If one group of students gets standardized instructions and time to complete the test and other students get different instructions and administration times, the resulting test scores will reflect error because of low reliability.

Validity of data refers to whether the data measure what they purport to measure. The more valid the data, the more it approximates the concept underlying what is being measured. For example, a score on a reading comprehension test has high validity if it provides an accurate indication of a student's true comprehension ability; total attendance hours are a valid measure of a student's class time if attendance is measured well.

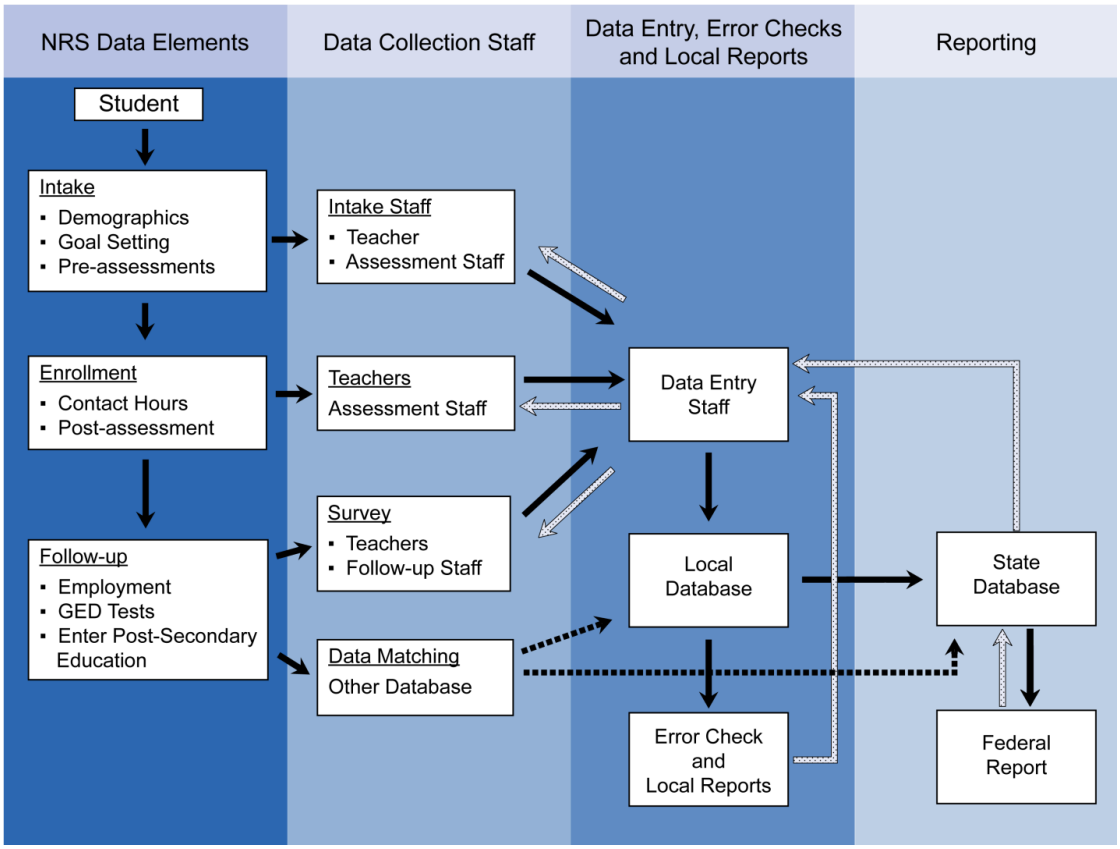
Producing reliable and valid data boils down to having well-planned data collection procedures; effective staff training on these procedures; and sound data collection forms, tests, and systems to record data. Producing quality data is difficult, and requires an ongoing and continuous effort and investment. This effort is essential to program quality, however, since data are meaningless and unusable unless they are valid and reliable.

Data Collection Flow and Procedures

An organized and efficient flow process creates the environment in which staff work and is critical to collection of quality data. Data move from the students, through teachers and support

staff, to clerical staff, into the program database, and up to the state and federal levels. Although the specifics vary depending on the characteristics of the state or program, the NRS data flow framework describes the basic processes. Exhibit 2–11 presents the framework, adapted from the *NRS Implementation Guidelines*. The exhibit illustrates how information about students moves into the program's database and up to the state and federal NRS reports.

Exhibit 2-11. NRS Data Flow Framework



In the flow chart, NRS data elements are organized according to when staff collects the information: intake, enrollment, and follow-up (after exit). As part of the intake process, staff collect demographics and descriptive information about students, orient students, help students set personal goals, and conduct pretests and other assessments to place students appropriately. During enrollment, staff record contact hours and assess students further. After enrollment, the NRS follow-up measures are collected from students according to cohort requirements, either by survey or data matching.

Many different program staff members—teachers, intake workers, and assessment staff—may collect data from students, using paper forms or the program's computer system. These same staff or other staff may collect the follow-up measures if students are surveyed, or these data may come from other databases through data matching. Data entry staff key data into the program's data system, conduct error checking, and return reports with missing or erroneous data to the data collectors for correction. The local program data ultimately end up in the state database, where state staff conduct additional reviews and error checking, and require correction

from the local program, when necessary. Federal staff further check state NRS reports and instruct states to correct errors that are uncovered.

Because many people touch the data in different ways—talking to students, completing forms, entering data into the computer—there are many opportunities for error. The potential for mistakes leads us to the second characteristic of a good data collection process: It must be iterative and have many checkpoints and feedback loops to correct errors and provide missing information. For error checking to be effective, certain staff members must have the responsibility and authority to review and correct the data regularly. In addition, several different levels of staff should review the data—clerical and data entry staff, teachers, program directors, and state and federal staff. This iteration and review by staff, both internal and external to the process, produce quality data.

Data Systems: Design for Data Quality

Effective error checking also requires frequent and timely data entry and error checking, and the ability of local staff to access the data directly. Without frequent data entry or the ability to produce error reports of the data, your program will be unaware of errors until it is too late to correct them. The state NRS data system plays a critical role in data quality. Not only does a good system provide an effective tool for storing and reporting data but it can automate error checking—indeed, it can prevent many errors from ever entering the data.

Data entry errors have the potential to occur as information is entered into the data system. Simple slips of a finger, time pressures, and user fatigue can accumulate into substantial amounts of data that are incorrect—with potentially significant implications. Imagine, for example, the following data quality-killing scenario. A program staff person enters attendance data for a student shortly after intake but makes a typographical error, incorrectly crediting a student with 2,000 contact hours rather than the 20 actually completed. A simple error like this, compounded by a few like it, might substantially skew reporting of a program's performance. For example, reporting based on inaccurate attendance entries might suggest that students are requiring many more hours of instruction than the norm to advance, which can affect programming and funding decisions.

Error Checks

Regardless of who enters data, there exists the potential for typos, omissions, and other issues. A quality data system can minimize and help detect such error through built-in data error checks. By programming in specific rules, the system can reject obviously erroneous entries, warn the system user, or even make necessary corrections. The comprehensiveness and accuracy of data entry checks affect the extent to which bad data enter the system. The following are a few data checks a data system might implement.

Intake

- **Missing data.** Data items, such as student age (date of birth) and ethnicity, must be entered into a data system to generate NRS tables. Data systems should check for missing entries and erroneous dates.

- **Student age.** Since students must be at least 16 years of age to enroll in an adult education program, systems should require an age check when a student's date of birth is entered.
- **Pretest requirement.** To ensure that students are pretested, systems should require placement in an educational functioning level (EFL) based on testing before being permitted entry into the system.
- **Duplicate student.** Systems should not allow entry of duplicate intake information for a currently registered student.
- **Minimum/maximum contact hours.** Students' contact hours cannot exceed the number of instructional hours available. Systems should not allow for this number to be exceeded or allow entry of negative contact hours.

Assessment

- **Dates.** Data systems should check that NRS test scores are not entered for students with too few contact hours.
- **Test scores.** Scores entered should fall within a valid range for assessment.
- **Placement and advancement in EFLs.** Student placement into an EFL and advancement to higher levels should be automatically designated on the basis of entered test scores. Only approved state tests should be allowed.

With an eye toward maximizing data quality and a little creativity, you should be able to identify other data checks that make sense in your state. Specifically, consider state and NRS policies and operating constraints, like available contact hours and student demographics, and how they may affect the kinds of information maintained in the data system. Reflect on past data quality or reporting issues to help inform your effort to develop a list of new ones. Also, look at system outputs, like the NRS tables, and imagine the kinds of bad data you might possibly see. For example, as described earlier in this chapter, it is rarely possible to see 100% response rates on student follow-up surveys; yet they sometimes appear in reports submitted to OCTAE.

Other Data Quality Checks: Alerts and Reports

In addition to data entry checks, systems can support efforts to maintain data quality by offering alerts, or status reports, that inform program staff of anomalies and missing data. This level of checking can also help to uncover operational/case management issues—enabling the data system to both ensure data quality and improve efficiency. The following list includes some checks that may be useful both to support program-level operations and data quality.

- Timely reports listing the number of students having enough contact hours to be posttested helps promote compliance with standards for posttesting students. It also helps ensure that timely and accurate posttest data are entered.
- A report of students' having few recent contact hours can help instructors or other program staff plan student follow-up to promote regular attendance. Such a report also

provides a reminder to apparently low-attendance programs to keep attendance records up to date, promoting better timeliness and accuracy of data.

- Reporting on identifying student cohorts for follow-up measures can help programs manage labor-intensive survey efforts and promote entry of data for analysis and reporting.
- Reports on changes in enrollment over time can help programs understand potential shifts in student needs for adult education and uncover potential missing data issues.
- Changes in attendance/contact hours can identify participation issues or potential missing data.

Automatically generated reports, including NRS tables, are a great benefit that statewide data systems provide. Of course, it is important to ensure that they are programmed with accuracy in mind. Developing NRS tables and other reports requires a deep knowledge of adult education reporting policies, attention to detail, significant testing, and lots of patience. Communicating requirements to developers (or vendors) for the reports and ensuring that these requirements are programmed correctly is vital. For example, NRS tables must take into account the challenge of rolling up data from programs across the state, determining how to address the records of students enrolled in multiple programs, and addressing the 12-hour rule and other complexities. A comprehensive testing plan will help guide quality assurance (QA) efforts.

Exhibit 2-12. Error Checks for NRS Tables

Table 1—Participants, by Entering EFL, Ethnicity, and Gender
Students should be counted only once, and reported either as a member of one of the listed ethnic groups or as *two or more races*.
The sum of all columns in the report (sum of male and female students of all ethnicities) should equal the sum of all the rows (sum of students across all EFLs).
Table 2—Participants, by Age, Ethnicity, and Gender
Students should be grouped according to their age on program entry.
Students should be counted only once and reported either as a member of one of the listed ethnic groups or as *two or more races*.
The sum of all columns in the report (sum of male and female students of all ethnicities) should equal the sum of all the rows (sum of students across all age categories).
The total number of students reported in the bottom row of column P should match the total number of students reported in Table 1.
Table 3—Participants, by Program Type and Age
Students should be grouped according to their age on program entry.
Students should be counted only once and reported either as a member of one of the listed ethnic groups or as *two or more races*.
The sum of all columns in the report (sum of male and female students of all ethnicities) should equal the sum of all the rows (sum of students across all age categories).
The total number of students reported in the bottom row of column G should match the total number of students reported in Table 1.
Table 4—Educational Gains and Attendance, by EFL **Table 4B—Educational Gains and Attendance, by EFL for Pre-Posttested Students** **Table 4C—Educational Gains and Attendance, by EFL for Distance Learning Students**
The total number of students reported in Table 4 should match the total number of students reported in Table 1. Table 4B and 4C are subsets of Table 4 and thus should contain smaller numbers. Exceptions to this rule would be programs in which all students were posttested (i.e. Table 4B = Table 4) and programs

that only have distance education students (i.e. Table 4C = Table 4). The total in Column D (number completed level) in Table 4B must equal the total in Column D in Table 4 for all educational functioning levels ***except*** ASE High. Some states may report completion data differently for ASE High..
Table 5—Core Follow-Up Outcome Achievement **Table 5A—Core Follow-Up Outcome Achievement for Distance Learning Students**
Number of participants responding to a survey or available for data matching (column D) should very rarely equal the number of participants in the cohort (Column B). Response rate or percentage available for match (Column E) should very rarely equal 100%. Number of participants achieving outcome (Column G) should not usually equal 100%. Table 5A (students in distance education) is a subset of Table 5 and thus should contain smaller numbers.
Table 6—Participant Status and Program Enrollment
Include only students who have received at least 12 hours of instruction as of the report date. Total number of employed students, plus the number unemployed, plus the number not in the labor force, should equal total number of students reported in Table 1. The sum of all students reported under “Highest Degree or Level of School Completed” should equal the total number of students reported in Table 1.
Table 7——Personnel, by Job Status
The sum of all teachers reported under “Teachers’ Years of Experience in Adult Education” should equal the sum of part-time and full-time teachers reported on the row labeled “Local Teachers.”
Table 10—Outcomes for Adults in Correctional Education Programs
Number of participants in the cohort (Column B) for “Completed an Educational Functioning Level” should be equal to or less than the sum of students reported in Table 6 on the rows labeled “In Correctional Facility” and “In Community Correctional Program.” Number of participants responding to a survey or available for data matching (column D) should very rarely equal the number of participants in the cohort (Column B). Response rate or percentage available for match (Column E) should very rarely equal 100%. Number of participants achieving outcome (Column G) should very rarely equal 100%.

Regular and timely review of NRS reporting tables also will identify data errors. To help state and program staff validate the accuracy of their NRS tables, Exhibit 2-12 presents critical error checks for NRS tables. OCTAE is implementing error checks into its web-based reporting system for the NRS tables. Appendix 1 presents these error checks, which states should also build into their state data systems for NRS reporting.

Data Quality Through Ease of Use

At first glance, it may seem that ease-of-use issues for a data system would relate more to user satisfaction or perhaps efficiency than to data quality. Nevertheless, ease of use is a major factor. Confusing or disorganized entry screens lead to confusion, guessing, experimentation on the part of users to get data in the right place, and user fatigue. Unfriendly systems slow you down and may promote erroneous entries or make it difficult to complete even simple data entry tasks.

By contrast, a well-designed system offers a clear path to accomplish each task. The best systems are intuitive and hide complex details of managing and checking data, while helping you get the job done easily. The clarity, efficiency, and simplicity of a well-designed, easy-to-use system can help even novice users find their way. In the process, more data are entered with fewer errors. Data system usability is indeed a factor in promoting data quality.

Preventing Data Problems

A well-designed data system can prevent errors from entering your data and is one of your primary tools for ensuring data quality. However, Exhibit 2-11, illustrating data flow, reveals many possible sources of error. The data system, no matter how well designed, cannot by itself ensure data quality. As our data quality equation states, procedures and staff motivation also play critical roles. Strategies for prevention and early detection of data problems must also be a part of an effort to ensure data quality. Such efforts include regular review of data, good data collection procedures, training, and ongoing monitoring.

Critical Review of Data

As this chapter has illustrated, a regular, critical review of data is essential for ensuring data quality. Regularly reviewing data for errors helps you identify issues as they arise and allows the opportunity to address them while they are still manageable, rather than discovering problems further down the line. While reviewing data should be a regular part of the data collection and analysis process, there are times when staff should pay special attention to data and conduct a more detailed review.

- When there is a change in policy or procedures
- When new staff begin working
- When a new data system is implemented

A new policy or procedural change is likely to also mean changes in data collection and data entry. There are likely to be new definitions of what to collect, which students to collect the data from, and perhaps when and how to collect the data. The PY 2012 change to NRS policy on the use of cohorts for the follow-up measures is a perfect example of the need to review data at this time, as we have just illustrated. We reviewed Tables 5 and 6, for example, and found several possible sources of errors and clues for where to look for problems.

New staff members are unfamiliar with procedures and require training in the purpose of collecting and reporting accurate data. In addition, when staff turnover occurs, the responsibility of data input can transfer to from one person to another without clear instruction or direction. Disjointed procedures from this type of job transfer, with differing understanding of data definitions or collection, leads to inaccurate data.

Similarly, a new data system will almost certainly cause some disruption, at least for a short time. Often there are a new look to the data system interface, new functionality, new data categories and often new data entry procedures, which may cause errors as staff adjust to the new system. New data systems also may require additional modifications to accommodate changes to

data collection policies and reporting, as users gain experience with them. Changes in staff, procedures, policies, and initiatives have one thing in common—the possibility of miscommunication or misinterpretation. Being aware of changes in these areas is another way to be alerted to data quality problems.

Tips for Data Review

A single-point-in-time snapshot of data can identify simple errors, but to truly understand data, you must examine trend data—data from multiple years—to assess data quality. In all the examples in this chapter, we have compared data over multiple years to identify errors and possible data quality problems. Trend data allow you to see changes, which if they cannot be explained, mean something may be wrong. Review trend data for these patterns that can indicate errors:

- Extreme outliers—values that are too high or too low compared with previous years
- Inconsistent values— data values or clearly dated time-dependent events that are out of sequence (e.g.,, a posttest data before a pretest date; attendance record before class starts)
- Unusually consistent values—data or values that you would expect to be fairly random, such as birthdates that instead are similar to one another (e.g., Feb. 1, Mar. 1, Apr. 1)
- Missing data—cells that are completely blank versus using a “No” or zero, which could indicate either a truly negative response or missing data

These indicators give good reason to examine data further for accurate and validity.

Data Collection Procedures and Training

The data collection process shown in Exhibit 2–11 captures the essential elements of good procedures that must be embodied within a local program to ensure quality data. This model data collection process suggests the following characteristics that are central to the success of a good data collection process.

- Clear description and understanding of staff roles and responsibilities for data collection
- Clear definitions established for each measure
- Standard forms in use by programs for collecting data, tied to the program database
- Ongoing training in data collection
- Clear and timely data entry procedures
- Timely or direct access to information from the database
- Regular review of data by staff

The data collection process requires many people to work together as a team. Each point of the process represents a staff person who has a definite role in data collection. Each person must know his or her job and do it right, and must receive ongoing training in this role and data collection procedures. Ideally, each staff member will also accept responsibility, as a member of the team, for fulfilling his or her role. The team makes the process work, which includes

collecting and recording accurate and timely information, submitting the information to the next staff person in the process, and reviewing and correcting information that is missing or erroneous.

The involvement of many people also requires standardization of definitions, forms, and coding categories that are tied to the database, so that all involved uniformly understand the meaning of what is collected and follow the same procedures. The use of multiple staff members also clearly indicates the need for ongoing training and professional development. In discussions with state directors of adult education about data quality problems, they identified the following sources of errors among their local programs:

- Lack of understanding of the cohort definitions for follow-up measures
- Failure to follow assessment procedures, especially posttesting and retesting
- Failure to follow data entry requirements or to enter data in a timely manner

Each of these problems points to the need for ongoing training.

Effective training establishes common understanding of the data collection needs, and provides a means for knowledge transfer and capacity building. To maintain consistency in the data collection practices, training should occur for staff at both the state and local levels and should include information on NRS policy and data collection procedures, in addition to training in state and local requirements and procedures. It is important that local and program staff understand why certain data need to be collected and how often. Creating a logical connection to the purpose of the task beyond their view will help motivate those working with the data at the local and program levels take responsibility for the data they collect and enter into the system.

To assist states in providing ongoing training on NRS issues, we have developed the *NRS Online Data Quality Toolkit.* This resource includes all training and materials developed through the NRS support project related to data collection and data quality. We further describe the toolkit in Chapter 5.

Data Monitoring

OCTAE periodically monitors states to verify compliance with federal requirements and to promote improvement efforts. Likewise, states monitor their local programs for the same reasons and to ensure that programs are following state requirements. Monitoring efforts also provide an opportunity for states to and assess the local programs' data collection. Onsite reviews allow the state to conduct a data audit by comparing data in the data system with written student records, assessments, and attendance data to assess their accuracy. The state can also assess data procedures and use of data through interviews and observations of staff and students.

While useful for gathering and verifying local program information, onsite reviews are intensive, time-consuming events and, because of limited resources, do not tend to occur often. For example, federal monitoring reviews are often only once every several years. For this reason, many states now implement desk monitoring, which provides a more cost-effective opportunity for the state to regularly review local program data. Using data reports, a desk-monitoring tool, and other documents submitted through the state data system at various regular intervals during

the year, state staff can review data and materials and have regular communications with local programs to provide technical assistance, as needed. Desk monitoring is a monitoring process that works best when used in conjunction with the state's onsite monitoring and technical assistance system for program improvement. Because this method uses quantitative data, states can see trends develop and can also compare program data with other programs and also overall state data. The *NRS Guide to Desk Monitoring* (available athttp://www.nrsweb.org provides a methodology and monitoring tool that includes a process for identifying relevant measures related to local data collection, training, and data use for desk monitoring.

To assist in local data monitoring efforts, the NRS team developed the *Local Data Quality Checklist.* Modeled after the state checklist, the local version includes four sections related to data collection procedures and professional development activities. Within each area, there are three levels of quality, acceptable, superior, and exemplary, defined by the type of practices followed within the program. By periodically requiring local staff to compete and submit the checklist, the state can review programs' data collection practices and procedures, and identify both good practices and areas where additional improvement and technical assistance are needed. Chapter 5 provides further explanation, and a copy of the checklist is in the appendix.

Dedicated Data "Guru"

Another approach toward ongoing monitoring of data and local program activities is through the use of a designated data expert—a "data guru." Several states and local programs have a staff member in this role, who reviews data and oversees all activities related to data collection and reporting. Having a dedicated person in this role makes improving and maintaining data quality a priority by keeping it a regular part of daily business without having to split responsibilities among other priorities. The data guru ideally has experience and understanding of how a local program functions, how local programs view data, and how the data management system works.

The data guru does more than review data and monitor local programs; he or she is also a resource for technical assistance and training, supporting local programs by helping them, building their capacity for data use and future problem solving. Through regular interaction with local program staff, reaching out to provide useful tips, providing training workshops and materials, and making time available when local program staff need more direct assistance, the data expert supports local efforts and helps ensure data quality. In addition, the data guru maintains contact with data system developers to discuss issues and concerns based on local program experiences, suggesting improvements that can enhance the user's ability to maintain accurate data.

Such interactions with local program staff reinforce the idea of data's being a statewide responsibility, with each element reliant on others for accuracy and quality. The data guru can also stress the importance of the local program's participation in quality data reporting and the implications, positive and negative, of data quality. Overall, the data guru focuses on the entire process affecting data quality from top down and bottom up in the state, to ensure that the connections are made and players are engaged, working together toward a common goal.

Summary

This chapter has identified ways to understand NRS data and improve local data quality. We have presented a data quality equation that defines the components of data quality to include procedures, data systems, and motivation, and emphasized that data quality in the state system is not the responsibility of one person or achievable through a one-time process. Data quality is the result of an ongoing, iterative process that is the responsibility of everyone from the students and teachers to the local program to the state to engage in actively. We suggested the following procedures to help find and prevent data quality issues.

- **Review data.** An essential component of ensuring data quality is a critical and regular review of data, which not only provides information about program performance but can provide invaluable clues about where there are problems and errors. Data review should include an analysis of trends, using longitudinal data for unusual changes; of missing data; and of inconsistencies within the data. Critical times to review data include when there is a change in policy or procedures, when there is staff turnover, and when a new data system is introduced.
- **Use a good data system.** A strong data system is your best ally to help prevent bad data. It prevents wrong information from entering the system through built-in error checks, provides timely reports to facilitate data reviews, and provides desk monitoring.
- **Understand data flow and procedures.** The process of collecting information from students, teachers, and staff, and converting it to data, is complex and requires several different staff members to coordinate their efforts. Standardized definitions, forms, and procedures facilitate the process and minimize the possibility for errors. Regular and ongoing training ensures that all staff know and understand procedures, their roles, and their importance of the process.
- **Monitor and provide local staff support.** Onsite and desk monitoring, including data audits, ensure data validity and that programs are following required procedures. Having a dedicate data staff expert or “data guru” supports ongoing monitoring and provides a technical assistance resource to local programs that promotes the concept that data collection is a shared responsibility with shared goals and rewards.

One element of the data quality equation that we did not discuss in this chapter is the critical role of motivation in data collection. The next chapter addresses this topic, along with ways to resolve data problems that data review and monitoring may reveal.

Chapter 3. Enhancing Motivation and Problem Solving

Chapter 2 presents a model of data collection as an ongoing, collaborative activity, performed by a team at the local program level. Producing quality data requires standardized procedures, training, and a good data system, and also depends on the motivation of individual staff members to care about data and do their jobs well. Whereas the previous chapter stresses the importance of the procedural and technical issues affecting data, in this chapter we take a look at the human variables that may affect your data quality and some ways to address them.

Although staff understand that having good data is better than having bad data, they may not always have the knowledge or motivation they need to complete the important tasks of collecting, analyzing, and using high-quality data. There are several potential barriers that can stand in the way. Staff may face structural barriers, such as a lack of support from other staff within the program, a lack of resources that would support them in using data, and a lack of access to the data. Staff may also face personal barriers, like a fear of data, a belief that data do not offer valuable information, experiences in which data were used in a negative way toward them or their schools for political reasons, or a lack of understanding of data and how to use it. Ways for promoting the behavioral changes needed to overcome these barriers is the focus of this chapter.

We first look at how to enhance motivation so that staff want to improve the quality of their data and then consider strategies for encouraging data use; specifically, we look at the potential benefits of data learning communities. We then provide some examples of how states have overcome challenges with data use and conclude by exploring the SCAMPER method as a way of doing creative problem solving at the local level.

Enhancing Motivation

Program staff have limited resources and often play multiple roles: teacher, counselor, intake worker—and data collector. Often staff give data collection a low priority because they do not see why they should dedicate their time and effort to improving data quality. One of the first questions that you might get from staff when you ask them to change their behavior around data collection and use is, “Why should we care?” It is easy for local staff to forget the bigger picture and they may fail see how what happens in their classroom relates to what is going on in the program, state, or across the country. Teachers, for example, are focused on their individual students; a program director’s main concern is that the program runs well; that there are a sufficient number of classes, students, and teachers; and that the program meets its grant requirements.

This environment often results in data being unseen and neglected. Making staff aware of the fact that their work translates into data and the attention to and uses of these data is a key to unlocking staff motivation to increase focus on data. Staff must realize that data are the public face of the program.

Data: A State and Program's Public Face

The general public knows very little about adult education. Except for students and staff, most people do not understand what adult education students or programs do. Yet this type of knowledge is needed to obtain support and recognition, increasingly important in these times of budget reductions and funding cuts. Without direct contact with programs, data become the face of the program that the public sees. A program's basic statistics, the number and type of students served, and its outcome data are how students, lawmakers, funders, and the general public evaluate the program. For example, data take on added importance if staff know that OCTAE submits its Report to Congress on the adult education program each year, and the data in the report are the only information most members of Congress have about the program.

While local data contribute to a national picture of adult education, data can have an even greater effect on local staff at the state and local level. For example, local staff are often unaware of their program's funding sources and the fact that performance data are almost always a factor in funding. Many states rely on performance-based funding, tying payment directly to outcomes. Some states—and OCTAE—have incentive awards based on meeting performance targets. For example, the Workforce Investment Act (WIA), under which adult education is funded, allows as much as $3 million in incentive awards for states that meet their WIA targets. Strong performance, as measured by data, means greater resources for instruction and serving students, a fact that can surely motive staff.

A program's data face can not only help funding but can attract students and partner agencies. By making public its data on successes, a program can show potential students that it can help them achieve their education and employment goals. Students can be motivated to attend and show persistence if they know, on the basis of the data, that they will succeed. The program can also demonstrate its effectiveness and be more attractive to partner agencies, making other agencies more likely to work with them to share clients and resources.

Psychological Motivators

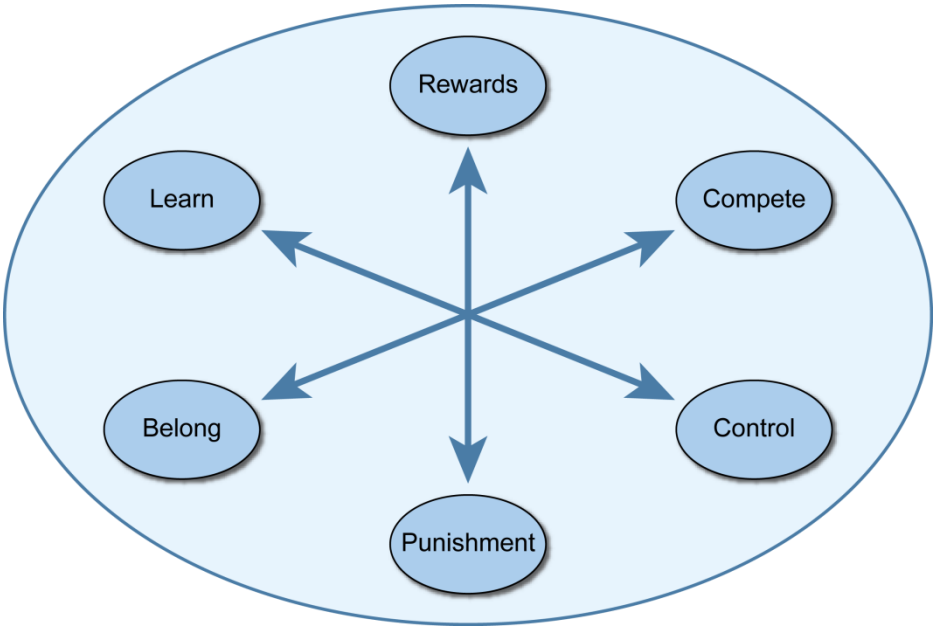
Making data meaningful and emphasizing their function as the public face of the program will surely enhance motivation and interest of most staff. Nonetheless, data collection is difficult, and keeping staff engaged is a significant and ongoing challenge; additional motivation is often needed. If we consider data collection activities as similar to other behavior, we can turn to psychology for ideas on how to motivate it. Motivating behavior toward data collection is really no different from motivating other types of activities.

Psychology suggests three different theories, each with two different ways, to motivate behavior.

- Behaviorists believe in using rewards and punishments to induce behavior. People will do things that reward them and avoid doing things that result in punishment.
- Cognitive psychologists claim that we are motivated by our need to learn about and gain control over our environment.
- A third view, inspired by Freudian theory, is that we are motivated by our need for belonging to a group and competing with others.

Exhibit 3–1 presents these six psychological motivators. We can use each of these motivators to build interest in data collection, thereby improving data quality.

Exhibit 3-1. Six Motivators for Engaging Staff With Data



Rewards and punishments. Implementing a system of rewards and punishments based on performance is perhaps the easiest and most common method of enhancing staff motivation to focus on data. A widespread example of this approach is the setting of performance standards that are tied to increased funding for success and/or reduced funding for shortcomings or failure, the strategy used by WIA incentive awards, noted above. Some states set standards for measures, such as the percentage of students pretested and posttested and survey response rates, in addition to performance on NRS measures. Other methods of rewards include public recognition of the program as "high performing" and specific rewards to programs and staff members. With this approach, local staff becomes motivated to pay attention to program data reports that compare performance to targets.

Learning and control. A powerful motivator for using data for many teachers and other program staff is the opportunity to learn more about their students and what happens to them. However, this does not happen naturally because most people have little or no training in using or understanding data. In addition, many educators may misunderstand or mistrust data. This perception often changes after staff receive training about data, data use, and basic statistics, and have the opportunity to review and reflect on data to see how it can help them.

Motivation to learn and know about students and the program is further enhanced when it is tied to program improvement efforts. This approach can empower staff to take more control over program activities that affect outcomes and processes, which will enhance their interest in data. For example, if review of data reveals that recruitment and contact hours are below expected levels in some sites, then staff may be motivated to change retention and recruitment polices and

will want to see the data again, after they have implemented the changes. Data reports that show trends over time will interest and motivate staff, as well.

Belonging and competing. The desire to be part of a group that does good things—and be the best at them—is a strong motivation for many people. Harnessing this motivation toward data can also help to improve data use and data quality. Teachers and other staff are involved in adult education because they want to help students. A program that has a vision and strong leadership toward excellence in instruction and outcomes will succeed in motivating staff and will enhance the need for the program to demonstrate through data that it does excel.

Along with the desire to belong to an organization that does well often comes the desire to be the best, and promoting competition is also part of this motivational strategy. Providing data to compare performance among programs will give programs an indication of where they stand on measures and may help staff tap into the desire to do better. For example, your state could publish performance rankings about programs and list them as "best" or "at risk" programs. Data reports that compare your program's performance with that of others can interest and motivate staff, particularly those with a competitive streak.

Data Use as Motivator

Building on the motivators of learning and control, focusing staff on using data can be a powerful way to both improve data quality and program services. Adult education teachers and staff usually want to learn new ways to help students and improve the effectiveness of their program as a whole. When program staff see what data can do to help them meet these goals, the data themselves will become valued, even among those who initially are resistant to collecting and reporting data. The challenge in taking advantage of this interest is to provide activities and situations in which using data becomes meaningful. Often, training in understanding and using data is first necessary, followed by an activity in which staff examine and discuss data.

Quite naturally, teachers focus primarily on what they do and see in the classroom—the everyday teaching and interacting with students—rather than the bigger picture. They might forget the broad implications of the work they do. For example, those 30 minutes that they spend after class with a small group of students, working a little more on fractions, might help the students feel that someone cares, which makes them want to come back to class the next day. This extra attention might have the effect of increasing the number of attendance hours for the program and improving education gain, leading to improved program performance and perhaps ensuring continued funding for the program.

Showing teachers the impact on the program's data of the small things they do can help motivate them to work harder to increase the numbers. For example, suppose that you share with teachers the attendance hours for their classroom over the program year so far, as seen in Exhibit 3-2. How do you think your teachers would react to this data?

Exhibit 3-2. Total Attendance Hours for Intermediate Low ABE Classes

	August	September	October	November	December	January
Teacher A	350	352	408	406	410	412
Teacher B	386	380	382	384	384	388
Teacher C	372	376	374	376	370	372

Teacher A will ask herself what had happened between September and October that led to a huge increase in attendance hours, especially compared with those of some of the other teachers. She may remember that she participated in a workshop that emphasized the importance of engaging with students outside the set hours of instruction, a practice she has since applied to the greatest extent possible with her students. Seeing the impact that this has had on the attendance hours will reinforce the beneficial instructional strategy she already has in place and make her more thoughtful and consistent in implementing it.

Teachers B and C will also be motivated by these data to try to improve their own numbers for instructional hours. Teacher B will see that he had the greatest number of instructional hours until October, when Teacher A took the lead. (Remember that competition is another strong motivator!) He may ask himself what changes he noticed in Teacher A's instruction that could have led to this huge increase. He may go talk to Teacher A to investigate and learn from her about how he can improve his own data. Teacher C may worry that she is being left behind, since she has the lowest number of attendance hours now and may also try to figure out how she can improve her own numbers. Teacher A's instructional strategy might soon be implemented across all 3 classes, leading to a noticeable gain in attendance hours for the whole program at that educational functioning level (EFL).

Seeing the impact of their work in one area can also make teachers more curious about what else they can affect and how they can increase that impact. Teachers A, B, and C have seen what they can do to affect attendance hours; they may soon start to wonder about their educational gain data. They will begin to look at it in a way that they never have before. Rather than seeing data as a bunch of numbers that they are handed, these teachers can use their newfound interest in data to explore questions like the following:

- What about my instruction is resulting in these numbers?
- Did the instructional strategy that I implemented to increase my attendance hours also increase the number of educational gains for my students?
- How can I change my instruction to help more of my students make educational gains?
- What are other teachers in my program doing that I may want to try out in my classroom?

In investigating the answers to these questions, your teachers may come up with more questions (and more data) that they want to explore individually or in groups. For example, teachers can explore data in a group in a professional learning community focused on data, as discussed in the next section.

An interest in how to improve themselves and their program will make the data themselves enough to motivate a lot of your staff to explore what the numbers mean and how they can be improved. For example, using data for program improvement has become a requirement in Washington State (see box). However, that may not work for everyone. Some staff still may not understand the big picture of how the numbers in the data reflect what is happening in the classroom. To help motivate those people using the data, you may need to go a step further than simply sharing the numbers by presenting data in innovative or evaluative ways.

State Example: Using Data for Local Program Improvement in Washington

In 2006, Washington put into place a Data for Program Improvement (DPI) process in which all programs are required to participate. It is one component of the assurances when programs apply for funding. Through this 2-year process, programs receive training on how to use data and how to create visuals from their data. The programs are then asked to use their data to identify a problem they have and to develop a process to research the problem. The process must include identifying the data they will use, regular check-ins with the state to look at their data, and a year-end report that describes their process and action steps. Early on, programs looked at all their data to identify a problem, but now they are asked to target data around a state initiative to make sure that they are improving their own data and statewide data.

The state credits the DPI process as the single most important thing that has made programs look at and think about their data. The state has observed a significant shift from programs' not being interested in data to not being able to get enough data. The data have become their own motivator!

Report cards. Report cards can be a powerful and effective tool for program improvement. Although the most common association with report cards is the K–12 school system, report cards are now used in many different arenas—from community colleges to health care providers to subway systems—to show how an entity is doing. This popularity stems from the attractiveness of report cards as easy-to-use and understandable resources that provide an efficient way to evaluate quality, identify levels of performance, and provide information to help people make informed choices. The NRS training *Demonstrating Results: Developing State and Local Report Cards for Adult Education (*available at http://www.NRSWeb.org) provides additional information on how to create and use report cards.

Infographics. Good infographics are compelling and attractive ways to tell a story. Although they are typically used to promote or explain what is happening at a program to those outside of the program, they can be equally informative and motivating for internal program staff. Infographics have become incredibly popular because of the unique combination of data and compelling, attractive visual displays. This unique combination may be just what you need to motivate some people to dig into the data (see *The Power of Data Visualization: Advanced Presentations of NRS Data*, available at http://www.NRSWeb.org*)*.

Reporting tools. You may also want to create reporting tools that help make the data more accessible to staff. If it easy to access and manipulate the data, they may more interesting. Staff might be less intimidated if data are something that they can use rather than something that they are handed on a quarterly, monthly, or even weekly basis. Tools can help staff gain a sense of ownership of the data, which can lead to more buy-in to its use. For example, Illinois has used a data tool to increase motivation around data use in the state (see Illinois box).

State Example: Improving Posttesting in Illinois

Illinois noticed that students were separating before reaching the minimum number of hours to be posttested, which was deflating their performance on educational gain. They wanted to help programs investigate and improve their data. Looking across the state, state staff observed that students fell into one of four groups:

1. Students that are posttested and make a level gain
2. Students that are posttested but don't make a level gain
3. Students with enough attendance hours but no posttest
4. Students without enough attendance hours for a posttest

Illinois wanted to make it very easy for programs to see the possible cause of lowered performance and created a tool that showed each program the number of students in each of these groups at each educational functioning level. It is possible to then drill down to see who the students are in each group, making it easier for program staff to follow up with the individuals. This allows programs to see where exactly the issue is for them and to develop specific strategies around these issues, which will in turn help them to identify the impact of their work.

Performance Measures	Level Gainers (LG)	PT, but no LG	Enough AH, but no PT	Lacked AH for PT	Number of students needed to meet state target for this level	Eligible for a post-test and no prior LG (Group 2 & 3)	Number who Entered at Level in Program	Number who Completed Level in Program	Percent who Completed Level in Program	FY 2014 State Targets	Percent Difference vs. FY2014 State Targets
ABE Beginning Literacy	Group 1	Group 2	Group 3	Group 4			2	1	50%	45%	5%
ABE Beginning Basic Education	Group 1	Group 2	Group 3	Group 4		10	52	27	51.92%	43%	8.92%
ABE Intermediate Low	Group 1	Group 2	Group 3	Group 4		35	163	66	40.49%	38%	2.49%
ABE Intermediate High	Group 1	Group 2	Group 3	Group 4		23	154	53	34.42%	33%	1.42%
ASE Low	Group 1	Group 2	Group 3	Group 4	6	11	75	22	29.33%	37%	-7.67%
ASE High	Group 1	Group 2	Group 3	Group 4		6	41	0	0%		
Subtotal: ABE/ASE	Group 1	Group 2	Group 3	Group 4		85	487	169	**34.7%**		
ESL Beginning Literacy	Group 1	Group 2	Group 3	Group 4	7	40	116	40	34.48%	40%	-5.52%
ESL Low Beginning	Group 1	Group 2	Group 3	Group 4	15	35	91	22	24.18%	40%	-15.82%
ESL High Beginning	Group 1	Group 2	Group 3	Group 4		22	85	43	50.59%	43%	7.59%
ESL Intermediate Low	Group 1	Group 2	Group 3	Group 4	11	46	109	33	30.28%	40%	-9.72%
ESL Intermediate High	Group 1	Group 2	Group 3	Group 4	14	55	143	34	23.78%	33%	-9.22%
ESL Advanced	Group 1	Group 2	Group 3	Group 4	7	43	71	7	9.86%	19%	-9.14%
Subtotal: ESL	Group 1	Group 2	Group 3	Group 4		241	615	179	**29.11%**		
Total	Group 1	Group 2	Group 3	Group 4		**326**	**1,102**	**348**	**31.58%**	**N/A**	**N/A**
ABE/ASE, excluding ASE High						79					
Total, excluding ASE High						320					

There have already been great strides made in terms of program improvement in using this data tool. The state has already begun to see a decrease in the number of students not posttested. Programs are aware that the state is revisiting its funding model, so they seem motivated to improve their outcomes. It is expected that, now that programs are able to identify the students not being retained, they can work on how get those students to stay longer. The state also expects that programs will begin to look closely at the College and Career Readiness Standards in conjunction with this tool, to help figure out how to beef up their curriculum to get level gains.

Data Use Learning Communities

One way to encourage teachers and local staff to use data is by helping to create professional learning communities within programs. Popular as a means of professional development, a learning community is "A purposeful gathering of individuals who share common interests and goals for learning, improvement, or professional development. Individuals within the learning community are committed to supporting one another's and their group's development" (National Staff Development Council, 2001, p. 25).

These purposeful gatherings can take many different forms. Powerful Learning Practice (2013) identified three different connected learning communities:

- **Professional Learning Communities (PLCs)**. Members of PLCs tend to be part of the same *local* community and participate in purposeful, face-to-face interactions.
- **Personal Learning Networks (PLNs)**. Members of PLNs are often part of an online g*lobal* network that diverse individuals join from around the world.
- **Communities of Practice (CoPs).** Members of CoPs can be colocated or in diverse locations, but they share a desire to have a deeper connection with others.

While there are many types of learning communities in which practitioners can be involved, they all include the idea that a learning community is a group that meets on a regular basis to learn and problem-solve with a focus on continuous improvement. Five characteristics have been identified as key for a successful learning community, namely:

- **Supportive and shared leadership**. When administrators willingly share decision making with staff, staff feel a greater sense of ownership and responsibility (Prestine, 1993);
- **Collective creativity or reflective dialogue**. When members of the learning community are asked to brainstorm and problem-solve, they are more likely to create positive change in their practice as they apply the new ideas and to feel less constrained by what has always been done.
- **Shared values and vision**. When administrators and staff work together to understand the values they share and develop a vision based on these, they have a common goal that guides their practice that is intrinsically, rather than extrinsically, imposed (Isaacson & Bamburg, 1992).
- **Supportive conditions**. When staff feel they are provided with the physical conditions and appropriate human capacities they need to succeed, there is a greater chance that they will succeed (Boyd, 1992; Louis & Kruse, 1995).
- **Shared personal practice**. When teachers engage in peer observation and collaborative problem solving, they have concrete, rather than abstract, opportunities to reflect and improve on their practices (Louis & Kruse, 1995).

Each of these characteristics activates at least one of the motivators discussed earlier in this chapter. For example, motivations to learn and belong to a group are met by participation in a learning community. In addition, a learning community with shared values and vision, in which

data is seen as important by its members and there is a common objective of increasing the frequency with which data are used to make instructional decisions, helps staff to have meaningful interactions with the data and makes them more receptive to the rewards and recognition you might offer for good data quality.

Building a Data Use Learning Community

Building a community of learners around data use requires effort, but it can be a powerful motivator that enhances data use and quality. To have the greatest success, the process should be led by the local staff, especially when it comes to making decisions regarding goals and activities, but supported by the state. The state role should remain a supportive one, to increase the motivation and buy-in among local staff. Exhibit 3-3 presents the four steps in building a learning community around data use and the activities of state and local staff for each step.

Exhibit 3-3. Steps for Building a Community of Data Use Learners

	Step #1 Review Data and Plan	Step #2 Begin Community Building Through Data	Step #3 Determine Activities, Measures, and Drivers	Step #4 Assess and Share Data on Progress
Local role	• Review data • Determine priority • Make initial plans	• Involve other stakeholders • Collect data (e.g., survey students, teachers)	• Plan activities • Determine measures • Agree on drivers	• Examine measures • Survey participants • Share successes and improvements
State role	• Convene locals • Provide tools, samples, support, and accountability	• Provide resources • Provide tools, samples, support, and accountability	• Provide technology or other resources • Provide tools, samples, and accountability	• Convene locals • Provide tools, samples, support, and accountability • Provide rewards

A prior NRS guide and training, The Local Connection: Building a Data Use Learning Community, (available at http://www.NRSWeb.org) describes in detail how to develop and support data use learning communities.

What's Next? Creative Problem Solving

In this guide, we have reviewed ways to identify and prevent data quality problems. We have demonstrated that data quality issues often stem from procedural, technical, or behavioral issues. Once problems are identified the solution probably resides in one of these areas. However, correcting what is perceived as the problem may not always result in the desired outcome. There may be times when problems still persist, even though staff has stayed on top of their data, procedural and technical issues have been addressed, and there is an atmosphere that supports motivation. The root cause of these problems may be new, previously invisible, or simply unknown. Or there may be no clear problem but performance is not where you want it to be. For example, average educational gain may hover for years at the same level, and you want to do better but cannot identify the data quality issues.

A situation like this often calls for an innovative and creative solution, but identifying a solution requires a systematic approach to analyze what needs changing and what can be done better. In this section, we will review a creative problem-solving model called SCAMPER. This problem-solving method can be used for a variety of situations and with a group or independently. As you will learn through the SCAMPER Method, problem solving is about shifting perspective; so including multiple people in the process who share the same organizational values and vision can increase your problem-solving options.

The SCAMPER Method

SCAMPER is a mnemonic using active verbs for each letter so that users will associate action with the problem at hand and focus on solutions that will support the generation of ideas. The action verbs for SCAMPER are Substitute, Combine, Adapt, Modify, Put to other uses, Eliminate, and Reverse or Rearrange. The SCAMPER Method uses a combination of seven questioning techniques to transform an object, service, or process into something new. The idea behind SCAMPER is that everything that exists is a modification of something that already exists, including products and processes. By using this technique, users are charged not with inventing something new but with looking at what exists and figuring out a way to transform it into something better, more useful, and more productive. These techniques were originally presented by a master of creativity, Alex Osborn, who is credited with inventing brainstorming. The techniques were later systematized by Bob Eberle into the current acronym (Michalko, 2006).

The SCAMPER Method is organized as a checklist of questions intended to spark creativity and to trigger ideas to help solve a problem. SCAMPER provides a structured path toward creatively approaching and solving problems. Each letter of the acronym represents a different lens through which to attack the problem by asking targeted questions to spark ideas for solutions. The goal of the SCAMPER Method is to remove all constraints in the problem-solving process to allow for optimal results. This tool has been used in educational settings and business and corporate environments as a tool to facilitate creative decision making. Teachers, program administrators, data managers, and/or state staff can collaborate using this method for approaching the variety of issues that arise in adult education from student persistence to individual program performance to data reporting for the whole state. There is no limit to the types of challenges SCAMPER can support. The descriptions below will help to deepen your understanding of the SCAMPER process (see also http://www.mindtools.com/pages/article/newCT_02.htm).

- **Substitute:** A team can substitute things, places, procedures, people, ideas, and even emotions. When trying to substitute, it's important to keep in mind that this is a trial-and-error process of replacing one thing with another until an optimal solution is achieved. Think about replacing part of the problem with something else. Remember that this is a creative problem-solving method, so try not to be restrained by previous negative experiences.
- **Combine:** A team can combine two or more pieces of the challenge or problem. When doing so, a different process or product will result. Teams should be encouraged to combine even unlikely combinations that may even seem unrelated. When they do this,

there are no possibilities left invisible and the results may be surprisingly positive. The key is to push the team closer to a solution.

- **Adapt:** Think about an existing idea and how it can be applied to solve the problem. Remember, the solution already exists; it's just a matter of finding it, modifying it, and applying it to the current situation. If a minor adjustment to a current process is made, how will the current situation change? Change some part of your problem so that it works where it did not before.
- **Modify:** Think about ways to exaggerate pieces of your problem; are there pieces that can be magnified to increase success? This is not to say, magnify the problem; this is suggesting that, by magnifying a piece of the current situation, the team may find valuable insights about what is really important. Or it may be the opposite, and a piece will need to be reduced to achieve the desired outcome. Consider many of the attributes of the thing you're working on and change them, arbitrarily, if necessary.
- **Put to other uses**: Now the team should think about how the current problem or pieces of the problem can be put to better use—what, if anything, can be reused or used in another way to solve the problem? Modify the intention of the subject. Think about why it exists, what it is used for, what it's supposed to do. Challenge all these assumptions and suggest new and unusual purposes.
- **Eliminate:** Consider what would happen if you eliminated parts of the problem or solution. If you simplified or reduced some of the components, how would the challenge change? As the team shrinks ideas down, a consensus can be made about what is truly critical for problem solving. Arbitrarily remove any or all elements of your problem and see what happens.
- **Reverse or Rearrange:** If the team is examining a current process, what would that process look like if it were worked in reverse or if the order were changed. By changing the order of steps in a process, the team is allowed to see the process from another angle, and this can help stimulate ideas for change. Don't be afraid to suggest something that seems crazy! Change the direction, make it go against the way it was originally intended, or modify the order of operations.

The SCAMPER Method: A Short Example

To illustrate how the SCAMPER Method works, we summarize one of many examples from *ThinkerToys* (Michalko, 2006), one about a paper clip manufacturer that wants to improve its product. The process would begin by starting to look for ideas by asking,

- What can be *substituted* in the clip?
- What can I *combine* the clip with to make something else?
- What can I *adapt* to the clip?
- How can I *modify* the clip?
- What *other uses* can I find for the clip?

- What can be *eliminated* from the clip?
- What *rearrangement* of the clip might be better?

The manufacturer substituted plastic for metal, added color, and produced plastic clips in various colors, so that clipped papers could be color coded, thereby creating another use for clips.

This very brief example is relevant but appears to simplify the process. Keep in mind that moving from the metal paper clip to the plastic color clip used for organizing papers was one that took time, collaboration, determination, and imagination. No solution should be excluded or silenced on the basis of its seeming as though it would not work. Instead, suggestions can be adapted, modified, or rearranged. Exhibit 3-4 provides a short scenario to illustrate this problem-solving method in an adult education context.

The SCAMPER Method and Local Adult Education Programs

Problems are often seen as negative and something to "deal with." While it is true that a problem is an unresolved issue that makes it difficult to accomplish a goal, problems are also hidden opportunities to come up with a new spin on an old situation, ideally, a more effective and result-driven approach. As you can see in the example in Exhibit 3-4, if the state decides to offer an online data CoP, there is potential to cut budget costs for travel and materials from the regular professional development. While this solution worked for the state's data issue, it was also a hidden opportunity to spend less of budgeted funds. Adult education programs are often populated with staff from a variety of backgrounds and perspectives. This diversity provides a ripe scenario for creativity and problem solving. Using the SCAMPER Method offers a systematic and practical way of eliciting atypical thinking and potentially powerful results by acknowledging and encouraging diverse perspectives and approaches. Basically, SCAMPER is a tool intended to facilitate creative decision making and problem solving. The questions used in this method are intended to force problem solvers to think about their problems differently, with the hope of discovering innovative solutions.

Local programs staff can use the SCAMPER Method when other more common methods of problem solving have been tried but have produced unsatisfactory results and/or undesired outcomes, or when the problem has surfaced multiple times and a new approach is required. For example, perhaps program staff have tried everything to improve pre- and posttest rates in their classroom, but they are still below the target. The team could try using SCAMPER, which will require them to be flexible, comfortable with not fully developed ideas, comfortable with "wild" ideas, willing to collaborate with all involved, and most important, willing to put every idea on the table if they want to find an effective solution to this recurring challenge. As in brainstorming, it is not acceptable to discredit or dismiss anyone's idea when using SCAMPER. All ideas need to be thought through and explored before they can be dismissed.

Exhibit 3-4. Adult Education SCAMPER Fictional Scenario

You are the adult education state director. Your office employs a full-time data manager. The data manager has just returned from a regional meeting and is frustrated because there is a clear lack of buy-in from local programs when considering data quality and data collection—so much so that local programs' attendance has significantly decreased for professional development that focuses on data. This is not the first time the data manager has shared this information, and it's time to creatively problem-solve. First, the team must decide who should be a part of the initial discussion. It's decided that the state director, state data manager, regional professional development leaders, 2 program administrators, and 2 local teachers will participate. While capturing the whole SCAMPER process is not possible, the following possibilities represent a slice of the ideas put on the table by this team.

Substitute	**Q: Can I change my feelings or attitude toward it?** Idea: Most important, emotions needed to be substituted for this problem to be solved. *State:* Substitute curiosity for frustration. *Local Programs:* Substitute curiosity for lack of interest.
Combine	**Q: Can I combine different talents to improve it?** Idea: The state will combine technological capability and need to involve local programs in quality data collection to create an online Community of Practice around data.
Adapt	**Q: What ideas outside my field can I incorporate?** Idea: Since not all local programs have staff that focus on data, regional areas will work together to share expertise (i.e., Program 1 pays for 50% of the time of data staff, and Program 2 pays the remaining 50%).
Modify	**Q: Can I increase its frequency?** Idea: In addition to the change in emotions about data, the state is will also modify its professional development delivery methods and offerings. Modifications will be determined by surveying teachers and program administrators. Previously, a single professional development session was the same for teachers and administrators, but now smaller and role-focused sessions with increased frequency will take place (e.g., a data learning community).
Put to other uses	**Q: Can it be used by people other than those it was originally intended for?** Idea: Instead of only using data for performance review, the state and local programs will begin using data to highlight program, state, class, and teacher/student achievements. This will happen through newsletters and community outreach.
Eliminate	**Q: What parts of the process can be removed without altering its function?** Idea: Materials will be modified so nondata experts will understand the language in required forms for data collection.
Reverse or Rearrange	**Q: Can I transpose cause and effect?** Idea: Local programs will rearrange the data review process so teachers are more involved in the process. This allows the teams to examine data more closely, ask for help, and fix a problem prior to performance reviews.

This team has done a great job of generating ideas that will support change in their state. Each option will take time and planning, so these changes are not expected to begin immediately. It is not expected that all these changes will happen. It is expected that one to three solutions will be implemented. As with any sustainable change, careful planning and commitment to the shared objective is needed. Once the team begins to implement some of these changes, modifications may need to be made, or perhaps the team may even discover that, at this point, the change is not feasible. That's okay. The process of using SCAMPER helped the team see that all aspects of the problem should be reviewed, even by those who discovered the problem!

Using the SCAMPER Method

The intention of the SCAMPER Method is to encourage a mentality of *doing.* The questions provided in this method are those that the team may not normally pose when facing a problem, but they will support the new ideas for resolution. Since the SCAMPER Method is about exploring creative solutions to solving problems, it seems counterintuitive to suggest a "correct" way of using the tool. However, the steps below are a suggested process for a team beginning to work through a problem-solving experience.

Step 1: Clearly identify the challenge/problem. Make sure everyone on the team is in agreement.

Step 2: Go through each letter of SCAMPER, using the helping questions (make sure a method for collecting ideas is in place during this step because there are sure to be a great number of them). Share as many solutions as possible. A large part of the success of this method is the targeted questions. Sometimes a team doesn't ask the right or best questions needed to solve the problem, and this can hinder the problem-solving process. Other times, a team may feel stifled by the order of questions, as designed. A team does not have to go sequentially through the letters; teams can use the Random SCAMPER Question Generator (found here: http://litemind.com/scamper-tool/). This tool will do exactly what its name suggests and generate a random question from one of the letters to help get the team going. Teams can also approach Step 2 by going through all the suggested questions very quickly or staying focused on a question until everyone believes that it has been thoroughly explored. Much like motivation, what works for one team will not always work for another. There is a variety of ways to find solutions using SCAMPER; so play around and be creative until a process that works best for your team is identified. Also, be flexible enough to recognize that not every question provided (or generated) will fit every scenario. By spending a few moments to determine what that question is actually asking, you can then develop your own question to appropriately address your scenario. It's the principle behind the question that matters most.

Step 3: Reflect on the process. What worked well? What was accomplished? How has the thinking about the original problem or challenge changed?

Step 4: Assess the results. Examine all the ideas that were generated through the SCAMPER process. Which ideas emerge as feasible solutions? Which ideas are not appropriate for the current challenge? Separate ideas to minimize your list, but don't throw out all the ideas that are not appropriate. Keep them aside for the time being and revisit them later to determine whether they can be applied to other issues in the program. Explore each of the viable solutions in more depth and, finally, decide on one idea (or a combination of two or more ideas) and begin a plan for application.

Another Adult Education Example

Now that the steps have been described, remember the example from Illinois earlier. Let's take another look at how SCAMPER may be applied to the adult education context expanding on Illinois' original problem from the first section of this chapter (see Exhibit 3-5). We'll use the SCAMPER method to see what other solutions the team might have come up with before choosing the data tool solution.

Exhibit 3-5. SCAMPER Using Fictional Illinois Scenario Based on a Real Example

Problem: *Students were separating before reaching the minimum number of hours to be posttested, and that was making the state's data look bad. The state wanted to help programs investigate and improve their data.*	
Substitute	**Q: What can be substituted in the current process?** Idea: Instead of notification's being sent or appearing in the data system when students are ready to be posttested, progress bars can be used so teachers will be aware of how many hours students have and how many hours until their next posttest. If the student's absences are high, effort to contact and support that student can begin before there is a crisis (i.e., no posttest).
Combine	**Q: What resources/knowledge can be combined to minimize students' exiting before posttests?** Idea: The state currently has a strong data collection system and data managers at the state level. If the state combines its current system with the knowledge of state staff and with teachers' desire to produce good outcomes, it could create a special data tool that would capture errors in reporting or allow for a more detailed look at students who are separating prior to testing.
Adapt	**Q: What could I copy, borrow, or steal?** Idea: The state supports quarterly study circles. This idea can be adapted and the state can add a regular data quality/understanding study circle that is open to both teachers and administrators.
Modify	**Q: What in our process can be exaggerated?** Idea: In collaboration with local programs, the state can support the development of a more informal, yet meaningful, orientation for students. Students can learn about why posttests are important, as well as options they have when they are struggling to stay in their classes because of personal demands.
Put to other uses	**Q: What else can our NRS data be used for?** Idea: NRS tables provide valuable information for programs. Instead of being used only for administrative levels, specific tables will be included in monthly staff updates, as teaching tools for new teachers and during staff meetings when needed, and potentially as teaching tools. This possibility increases knowledge and understanding for all parties, as well as prevents issues from getting too far along before being handled.
Eliminate	**Q: What's nonessential or unnecessary?** Idea: Reexamine what reporting is required and determine if any items are unnecessary and are taking away time to understand the data. All reporting should be meaningful.
Reverse or Rearrange	**Q: Can I transpose cause and effect?** Idea: What if more data collection responsibility were given to the students? Local programs can develop a self-monitoring tool for students to complete each class (i.e., attendance hours, hours until next test), which they can used to deepen their understanding of posttests, as well as provide a learning experience. Idea 2: A state report card is issued annually. This can be rearranged a bit not only to include the basic data but to highlight "most improved" data collection or posttest percentage.
As you can see, there are multiple ways to approach a problem, and those avenues become clearer when a team uses the SCAMPER Method. Not all the ideas will be used to solve an issue, but these multiple perspectives support a well-rounded, thoughtful response to a problem.	

SCAMPER Questions

In the previous example, a small sample of SCAMPER questions was shared. There are many possible questions a team could ask, and the questions provided are not by any means the only questions that can be asked. They are meant to prompt your thinking.

Exhibit 3-6 provides sample questions to ask during each section of the SCAMPER Method. Remember that not every question will be appropriate to your current concern and that is fine. Finding out the principle behind the question will guide your team to more answers. Problem solving can be an opportunity for a team. Working together to find atypical solutions to solve a typical problem has great potential for innovation. Using the SCAMPER Method can support creative thinking, team building, flexibility, and desired outcomes.

Summary

This chapter has discussed the last part of the data quality equation, motivation. While procedures and data systems are essential for ensuring data quality, it is staff behavior that puts these processes into operation to collect data. Staff must be motivated and interested in data to make the whole system work effectively. We have reviewed ways to enhance motivation, including stressing the importance of data in funding and as the public face of the program. Many people, particularly funders and legislators, only know about adult education through data that describe students and what they accomplish. Most members of Congress, for example, who vote to provide federal funding for adult education, only know about the program through NRS data in OCTAE's annual Report to Congress. Poor quality data do not reflect the program accurately can have an adverse effect on support and funding.

We have also discussed six psychological motivators that states and programs can apply to increase interest in using data for program improvement. We have focused on six motivators and used the motivator of learning and knowing about students and their outcomes as an example of how to motivate data use among teachers. We have also offered two examples of state initiatives to improve local data use. Data use learning communities are another way to stimulate data use and provide professional development about data. This approach allows for a collaborative and shared environment for local staff to learn about data and use it constructively.

We have concluded the chapter with a presentation on a creative problem-solving approach, the SCAMPER method. This method is organized as a checklist of questions intended to spark creativity and to trigger ideas to help solve a problem. SCAMPER provides a structured path toward creatively approaching and solving problems. Each letter of the acronym represents a different lens through which to attack the problem by asking targeted questions to spark ideas for solutions. The goal of the SCAMPER Method is to remove all constraints in the problem-solving process to allow for optimal results. We have illustrated how adult education programs can use this method to approach the problem of improving data quality and increasing posttesting.

It may seem that, after identifying data quality issues and finding creative solutions to resolve them, data quality will improve. Indeed, by following through on the processes described in Chapters 2 and 3, your state or program will have made great progress in doing so. But there is

one final step—actually making a real change—that still needs to be explored. This is where we really link data with action, the topic of the next chapter.

Exhibit 3-6. SCAMPER Model

	Sample Helper Questions
S Substitute	• Can I replace or change any part of the process? • Can I replace someone involved? • Can the rules be changed? • Can I use other processes or procedures? • What if I change its name? • Can I use this idea in a different place? • Can I change my feelings or attitude towards it?
C Combine	• What ideas or processes can be combined? • What can be combined to maximize the number of uses? • Can I combine different talents to improve it?
A Adapt	• Is there something similar to it, but in a different context? • Does the past offer any lessons with similar ideas? • What could I copy, borrow or steal? • Whom could I emulate? • What ideas could I incorporate? • What processes can be adapted? • What ideas outside my field can I incorporate?
M Modify	• What can be exaggerated or overstated? • What can be made more prominent? • Can I increase its frequency? • What can be duplicated? • Can I somehow add extra value?
P Put to other uses	• What else can it be used for? • Can it be used by people other than those it was originally intended for? • How would a child use it? An older person? People with different disabilities? • Are there other possible uses if it's modified? • If I knew nothing about it, would I figure out the purpose of this idea?
E Eliminate	• How can I simplify it? • What parts of the process can be removed without altering its function? • What's nonessential or unnecessary? • Can the rules be eliminated?
R Reverse or rearrange	• What other arrangement might be better? • Can I interchange process components? • Are there other patterns, layouts or sequences I can use? • Can I transpose cause and effect? • Can I transpose positives and negatives? • What if I try doing the exact opposite of what I originally intended?

Source: http://litemind.com/scamper/

Chapter 4. Implementing Change: Linking Data Quality With Action

In Chapter 2, we have presented ways to identify data quality problems and isolate their sources. By examining data, understanding data collection procedures and evaluating data systems, state and local staff can understand data quality issues they confront. We have turned in Chapter 3 to focus on motivation, a critical component of data quality, and have considered ways to interest staff in data collection and data use. We have also presented a problem-solving model, SCAMPER, as a means to analyze and resolve problems to improve data quality.

By following these data review procedures, state and local adult education teams can identify areas for improvement and develop a plan to improve data quality, using the SCAMPER Method or other problem-solving approaches. Despite the best of intentions, though, we often find that our well-planned attempts at improving data quality by changing our behavior or that of our team falls short. When we return from training or a staff meeting to the "real world" of our office, local program, or classroom, we find that all the demands on our time and attention chip away at our commitment to change and improvement. McChesney and Covey in *The Four Disciplines of Execution* (2012) call this the "whirlwind," a very apt description of the "busy-ness" that frequently keeps us from focusing on our goals. When we are caught up in the whirlwind of our work—teaching, assessment, tracking data, completing necessary paperwork, interacting with our colleagues, developing and addressing policy, keeping abreast of the latest research and information about adult learning, and all the other activities that demand our time and attention at work—it is easy to push aside the additional goals we create at training and strategic meetings.

In this chapter, we try resolve this problem of making real change directly. We discuss models for making behavioral change and executing plans in a way that can make them a reality and result in true improvement. These models come more from the world of business, health, and organizational change, not education. Most directly, we draw from the model used by McChesney & Covey (2012). Nevertheless, these models of change and implementation have applicability to our adult education context, and we will use an illustrative example of a state that decided to address what had been an intractable problem—improving educational gain.

Behavior Change in the Real World

It can be exciting to develop a vision and all the steps to execute it. Whether a state adult education program, a local program, or an individual working for weeks or months on a plan for change—including the goals, objectives, key indicators, and measures—the people who contribute to this work have bought into the plan and committed themselves to the goals. And for a few weeks, perhaps months, the team remains focused, and then slowly the whirlwind of our everyday work demands begins to take over. Then the strategic goals begin to look like extra work, a burden, or a "nice to have" activity that is not directly relevant to the daily work that has to get done. This collapse of best intentions is all too common in the world of work, and maintaining a focus long term can seem challenging, perhaps impossible.

Several theories of behavioral change exist, and the application of these theories is most prevalent in the health arena. Some examples of effective health behavior change we have seen

in the United States include reduced smoking, pervasive use of seatbelts in cars, and the increased use of child safety seats and safety helmets. Whether large scale or small, these behavior changes occurred as a result of an intense and ongoing focus on a health or social behavior issue. An early model for behavior change titled "Stages of Change" by Prochaska and DiClemente (http://www.stepupprogram.org/docs/handouts/STEPUP_Stages_of_Change.pdf) looks at six stages of change, including (1) recognizing that there is a problem/issue, (2) thinking about the issue, (3) thinking about how to address the issue and what barriers might exist to changing behavior, (4) attempting to change the behavior, (5) successfully maintaining that new behavior, and (6) relapses to old behavior.

An example might be the challenge of increasing exercise. First, we need to recognize that we are not exercising enough, and then we must decide whether that is important. Over time, we might see others around us jogging, playing sports, and joining gyms; so we begin to consider exercise as an option for ourselves. After we make a decision to exercise more, we have to consider the barriers—time, resources to join a gym, new running shoes, for example. We might join a gym and then switch to one closer to the office and easier to reach after the workday. Then we may need to change our work schedule so that we are home in time to pick up our kids from school. Perhaps we will find a neighbor to walk with after dinner, or create sports time with our family. After creating these new behaviors, we need to maintain them—and understand that, even when we miss an aerobics class, get sick and skip walking for a week, or pull a muscle during soccer, we will still need to get back to exercise eventually.

This is a very simple example of the stages of change and one that is familiar to most people. Often individuals try to make a change in their behavior; sometimes they are successful, sometimes not. Consider, however, those individuals for whom exercise is *the* goal—the only or the most important goal. Olympic athletes and professional sports figures are examples of people who successfully make exercise their primary goal and maintain their fitness despite all obstacles. What is the difference between any person's commitment to exercise and theirs? The goals are different because the average person exercises for health or weight loss, but professional athletes do it because it is their job and because it is a life goal. They have focus.

Focus on the Goal

One company that serves as a model of focus is Apple, Inc. In 2010, Apple's COO Tim Cook stated:

> We are the most focused company that I know of or have read of or have any knowledge of. We say no to good ideas every day. We say no to great ideas in order to keep the amount of things we focus on very small in number, so that we can put enormous energy behind the ones we do choose. The table each of you are sitting at today, you could probably put every product on it that Apple makes, yet Apple's revenue last year was $40 billion.
> (Frommer, 2010: http://www.businessinsider.com/how-apple-keeps-its-laser-sharp-focus-2010-2#ixzz2wp9ux3Oe)

Can you imagine this kind of focus in your state office or local program? Think about all the creative and innovative ideas that grab your attention each day, or the opportunities to try

something new? For example, how many statewide initiatives are you and your staff working on? In your program, how many activities are your staff involved in? Having focus does not mean that the day-to-day activities of your program can be ignored; they will not disappear. However, to effectively create change in staff behavior, there must be a focus, and that focus must be on one shared and achievable goal set by you and your staff team.

State adult education offices around the country are conducting all types of activities, such as an evaluation of study to look at what adult learners need in order to enter postsecondary education, a study on the use of technology in ESL classes, a collaboration initiative with postsecondary education, staff involvement in the statewide longitudinal data system, and evaluation of the current state assessments and/or curriculum used and options to replace them. These projects and initiatives are conducted in addition to the ongoing state work of monitoring local programs, monitoring the state data system and data reviews, statewide training of program administrators and teachers, reviews of grant applications for the new funding cycle, and other required work.

Local programs often take on the state initiatives, as well, such as teacher involvement in user groups to look at statewide curriculum choices or data user groups to inform the state about data issues. This is done in addition to running a program, coordinating resources, supporting teachers, tracking student progress, and more.

It can be tiring just to think about all the work you have to do now. This whirlwind of activity makes it particularly challenging to focus on one or two goals, but that is the best way to ensure that you can effectively accomplish the goal, make a change, or create a process. When thinking about data quality in this training, what comes to mind as a goal that you and your team would like to address? What could be the one or two primary data quality issues that you would like to tackle?

The field of psychology offers strong support for effective behavior change by focusing on self-efficacy, which, writ large in a team environment, calls for setting goals that are useful to the team (http://www.psychology.org.au/publications/inpsych/behaviour/). This means that the team members determine together the goal they want to achieve. Even though the state or program director may set the vision, the staff must set the goal(s) that will support that vision. Those goals must be achievable and measureable; that means staff can realistically achieve those goals within a short amount of time (measured in weeks or months, not years), and those accomplishments can be measured using data that exists or can be collected by staff. Most important, those goals depend on the staff accomplishing them. That is, staff are responsible for meeting their individual goals, which will in turn contribute to the team's goals.

Hocus-Focus: What Does This Mean for Change in an Adult Education Program?

What the current theories and motivational techniques all point to are some common ideas about effective change. In the Four Disciplines model, mentioned above, a team is encouraged to select one primary or most important goal, toward which everyone in the team works, including measures identified and frequently revisited to determine progress toward the goal (McChesney and Covey, 2012). In the case of this NRS training, state teams will identify plans to improve and sustain data quality. This approach can also be applied to any strategic planning that a state or

program conducts. In this section, we outline the key ideas to make effective change by applying it to a broad goal: Improve program performance by increasing educational gain.

We are more likely to achieve goals if we understand them and believe we can accomplish them. In a work setting, however, the goal must be in service of some larger vision for the adult education program at the state and local levels. The following is a fictional example of how one state addressed a broad goal—improving program performance—and the steps required to address that goal.

Goal Setting From the Ground Up, To Match the Vision From the Top

One state realized that it needed to improve its program performance across the board. There were several data quality issues, but the state decided to select one goal to try to chip away at what had become an intractable problem—low educational gain. State staff met as a team with their state staff and a few local program administrators from a selected sample of large and small programs to discuss the issues they were dealing with. Using the SCAMPER model, they looked at the issue in different ways, and the brainstorming led them to realize that there were multiple ways to try to address this problem.

Thus, the state director determined the major goal: We will improve educational gain for all learners in our state from 22%, on average, of students moving one or more educational functioning levels (EFLs) to 55% by June 30, 2015. Even though the national average is lower, the team set the goal higher to motivate all state and program staff to "beat the nation" on educational gain. The team made the goal very specific so that it could measure improvement on a regular basis, by looking at data quarterly to ensure that EFLs were improving, and it gave itself through the end of the program year (12 months).

This was a big goal. But the state team believed it could be accomplished. With the goal in mind, the state staff planned how to communicate this goal to local programs and included the selected program administrators to help get the word out. Every local program was required to come up with a program goal that would help it support the larger statewide goal to beat the nation on educational gain. Each local program goal had to be specific and measurable, but it would be a goal that the programs believed they could accomplish in the timeframe. Here is a sample of some of the programs' goals:

- Program A: We will provide quarterly cross-training of test administration staff and teachers, so that there are always adequate numbers of staff to test students consistently and within the correct timeframe.
- Program B: We will review pretest-posttest timeframes with all staff and teachers monthly and provide student-level data to teachers to ensure that students are tested within the range set by the test publisher (and according to state policy).
- Program C: We will improve attendance records by asking teachers to input attendance data daily at the end of each class period through our MIS and review those records weekly.
- Program D: We will assign a staff person to review data weekly and provide reports to teachers with students who are close to the timeframe for posttesting.

- Program E: We will review our instructional curriculum to ensure that it meets the needs of our students and reflects best practices in the field for instruction, then ensure that teachers receive regular training in the curriculum.
- Program F: We will establish an online professional learning community for teachers across our sites to share successful instructional strategies and best practices; we will share teacher-level data every 2 weeks so teachers can review attendance, pretest-posttest timeframes, and other relevant data.
- Program G: We will assign staff to follow up with students who exit before taking a posttest, to encourage them to return for testing.

There are two strategies to ensure support of the state goal. The first is described above—the state team and the local programs must identify the subgoals that they can achieve to support the statewide goal. The second strategy is to ensure that every individual in the state office and local program (1) understands what the larger goal is, (2) knows what the subgoals are, and (3) develops individual goals that will contribute to subgoals. The reasons for this include autonomy, relevance, and recognition (McChesney & Covey, 2012). Every individual in the statewide adult education system contributes to its success, but a goal set by the state director or state office will not suffice to motivate individuals to act. Individuals need to have *autonomy* over the direction of their work; by creating individual goals, they are identifying the way they can support the larger goal on the basis of what they believe they can contribute and how they can succeed. In addition, individuals need to know that the work they are doing is *relevant;* by aligning their individual goals with the state's goals, staff will understand how they contribute to the greater good of the program. And often individuals are not seen when large goals are reached, but when each individual success in meeting a goal is *recognized*, individuals are seen as contributors. Recognition is key to building a sense of connection to the goal and sustaining that work.

With these strategies in mind, each of the programs set their goals (shown above), and all the goals involved using data reports in some way on a regular basis. The state did not tell programs what data to use or what approach to follow. Instead, the state asked programs to identify a goal and explain how that goal would support the outcomes they were looking for. After each local program goal was approved, the local staff and teachers had to set their own goals. Those individual goals were in support of the local program goal, and also had to be measurable and within the timeframe of 1 year. Some examples of staff and teacher goals included the following:

- Program A: We will provide quarterly cross-training of test administration staff and teachers so that there are always adequate numbers of staff to test students consistently and within the correct timeframe.
    - Staff 1: I will let students know at the start of class that testing is important to help them see their progress and let us know how we can better support their learning. I will review data reports weekly to make sure students get tested in a timely manner.
    - Staff 2: I will review attendance hour reports and pretest-posttest reports weekly and flag any outliers for teachers.
    - Staff 3: I will track attendance for my students and cross-check this weekly against the attendance reports, to make sure they are accurate.

- Program E: We will review our instructional curriculum to ensure that it meets the needs of our students and reflects best practices in the field for instruction, and then ensure that teachers receive regular training on the curriculum.
    - Staff 1: I will identify five to six volunteers from the teaching staff to meet every 2 weeks to review our current curriculum and cross-walk it against the new College and Career Readiness Standards.
    - Staff 2: I will join the curriculum review committee to review curricula we are using and identify other curricula that might be a better match for the CCR Standards.
    - Staff 3: I will design training based on the curriculum review committee's results and engage teachers to cofacilitate and bring examples of classroom application.
- Program G: We will assign staff to follow up with students who exit before taking a posttest, to encourage them to return for testing.
    - Staff 1: Weekly, I will print the attendance hours by student and by class to review attendance hours and share those reports with teachers.
    - Staff 2: I will review the program's weekly attendance reports and notify the front office when it appears that a student has dropped out, so the office can contact the student.
    - Staff 3: On the basis of teacher requests and the weekly attendance reports, I will contact students and encourage them to return to complete instruction and to take a posttest.

As described in the examples above, each staff person may have a different goal, but that goal is helping to improve the rate of educational gain by addressing specific problems that the program or staff identify, such as lack of posttesting, improper data entry of attendance hours, lack of contact with students who may be dropping out, lack of strong instructional material that helps students improve their learning, and/or a lack of communication about the value of testing to show improvement. There are many more goals that local program staff can set to meet the program goal.

Also, each program goal shown here is different, but all of them contribute to improving a program practice (data entry, instructional strategies, assessment administration) that will contribute to the larger goal of improving educational gain. Each program knows best where its weakness in data or program quality lies, so each program can identify the goal that staff believe is most pressing.

Identifying measures. It is not enough simply to set goals. To make certain that change happens, there must be clear indicators to show that the goal is being met. For staff and programs to know whether they are getting closer to their goals, they will need to review data—quantitative or qualitative—that will help them determine if they are getting closer.

Although the goals set here appear different, there are some commonalities, including

- Goals are specific and measurable.

- Goals are time limited, that is, data or activities are reviewed daily, weekly, or monthly.
- Goals can be tracked and reviewed regularly, so staff will know within a short period of time whether they are making progress.

Establishing accountability by tracking success. After the state and local programs and staff identified their goals and measures, the next step was to develop a consistent and timely method of tracking goals by looking regularly at measures and progress toward the goal. This meant that the subgoals had to be measurable, as noted above, and could be tracked in a way that was meaningful to staff, to see their individual and team progress. State staff reviewed data from programs regularly to track progress, and local program directors in turn reviewed data with their staff and teachers to ensure progress was being made. This required attention and focus separate from the many other activities and pressing work of the state or local program.

McChesney and Covey (2012) call this step in the process "accountability," and it is the absolute requirement for this approach to work. It sounds basic and simple, because it is. Hold staff accountable for making a change, and they will make the change. The difficulty is in making and maintaining the *focus* on that change. Inherent in the goals above is the regular review of data and progress toward each person's goal—each local program director must commit to reviewing data on a regular basis with staff and holding them accountable for meeting their goals. Likewise, state staff must meet regularly with each local program administrator to review data and progress toward their goal. (At the national level, this could include federal staff meeting regularly with state directors of adult education to review data quality toward that goal.)

This accountability has got to be clear, visual, and easy to review at a glance. For example, the state office may develop a line chart that reflects the trends for each program, as illustrated in Exhibit 4-1 and Exhibit 4-2. At a glance, the state can see how each program is doing compared with where it started and how each program is doing compared with others in the state. These data should be posted on the state website so that programs and staff can view their status at any time; this real-time view of progress can be a strong motivator for programs.

Exhibit 4-1. Average Level Completion—All Programs, Shown by Quarter and Goal

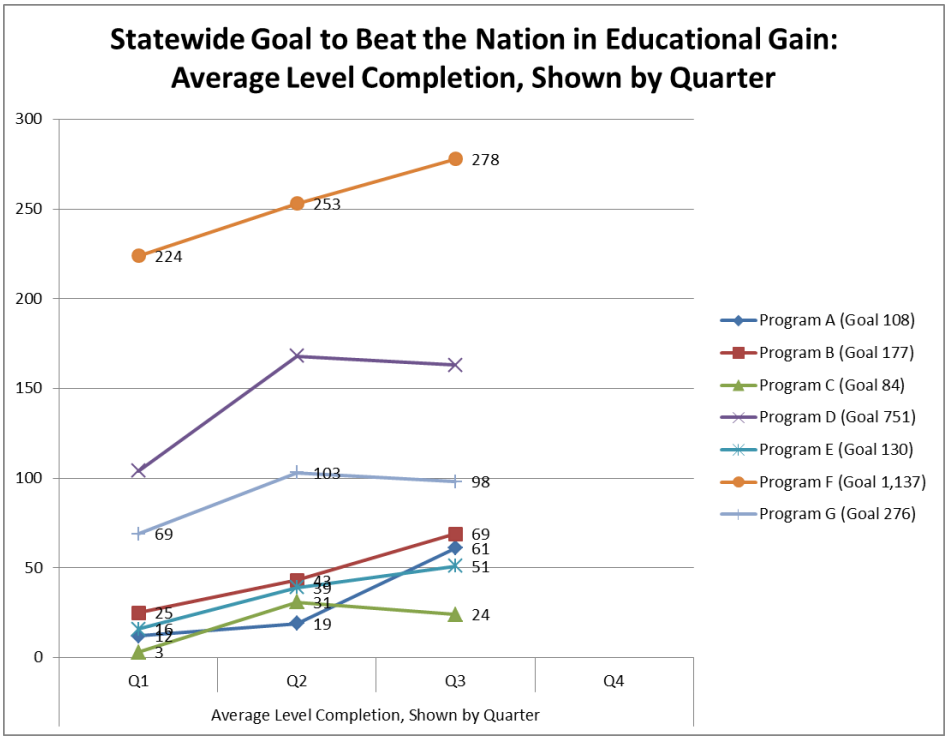
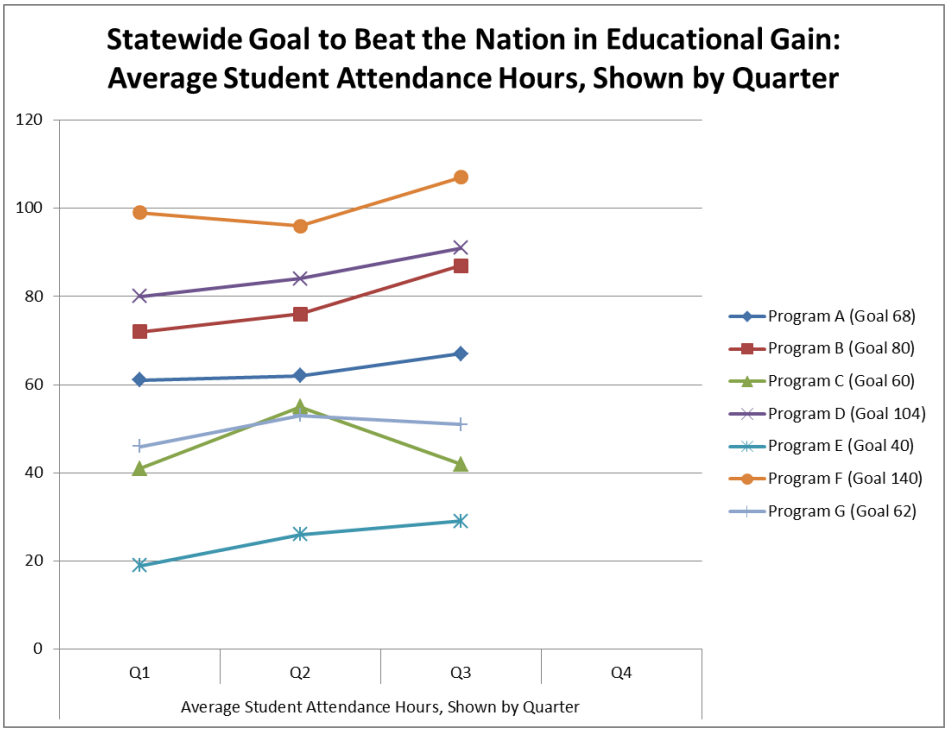
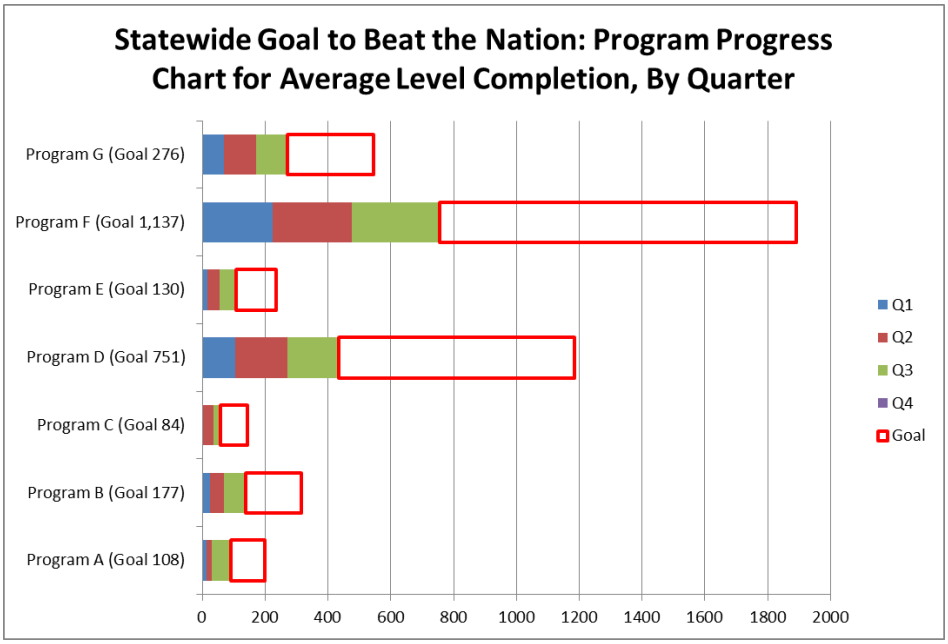


Exhibit 4-2. Average Student Attendance Hours—All Programs, Shown by Quarter and Goal



Similarly, within programs, the local administrator may develop a tracking sheet that each staff person can update electronically. The tracking sheet may be posted; or an administrator may want to post a visual adaptation of the information, using a stimulating concept like a thermometer or a gauge or a chart showing progress, as in Exhibit 4-3.

Exhibit 4-3. Examples of Charts Showing Progress Toward Goal



	Average Student Attendance Hours, Shown by Quarter					
	Q1	Q2	Q3	Q4		Goal
Program A (Goal 68)	64	66	71			68
Program B (Goal 80)	82	80	84			80
Program C (Goal 60)	58	63	67			60
Program D (Goal 104)	101	120	122			104
Program E (Goal 40)	32	48	38			40
Program F (Goal 140)	122	122	132			140
Program G (Goal 62)	60	62	74			62

Whether state staff meet with the local program administrator or the administrator meets with local staff, the review of progress should be accomplished regularly and with the entire group. That means state staff will meet (in person or virtually) with all local program administrators; administrators should report on their progress and next steps toward the goal. This state chose to hold a quarterly meeting with their 29 local program administrators. Each administrator had 5 minutes to report on progress—which was also shared visually through the individual program chart and the cross-program chart—and next steps to continue to make improvements. State staff facilitated the conversation by keeping it focused on progress, and time at the end of the meeting was set aside for brainstorming on how to help programs that were stuck and not making progress. Other programs were very helpful in thinking through options or sharing what was working for them.

In order to make progress, local program administrators held monthly meetings with their staff and teachers. This allowed the staff time to review, track, and update their progress toward the program goal. Then that progress tracking was shared in a visually engaging format (e.g., thermometer, gauge, chart). Each monthly local program meeting followed a format similar to that of the state meetings, and each staff person had 5 minutes to report on his or her progress and next steps—that is, activities planned to continue to support the goal. Time was set aside at the end of each meeting to brainstorm on ways to support staff and teachers who were struggling to make progress.

These meetings remained focused on one topic and only one topic—the goal—and were held separately from state monitoring reviews or local teacher/staff meetings. Exhibit 4-4 shows a table with goals, by staff person, whether the goal was completed, is on track or falling behind, the resources or supports needed to get it or keep it on track, and what will be done between now and the next time the team meets.

Exhibit 4-4. Goal-Tracking Table

State goal	*We will improve educational gain for all learners in our state from 22%, on average, of students moving one or more educational functioning levels to 55% by June 30, 2015.*				
Local Program Goal					
	Individual Subgoal	Measures	Action Steps and Progress	Resources Needed	Next Action Step
Staff name					
Staff name					
Staff name					
Staff name					

As you can see, by meeting regularly with staff and setting the expectation that staff will be responsible for meeting their own subgoals, each person becomes responsible for his or her part of meeting the larger goal. This sort of "communal pressure" leads to the staff's holding one another accountable, and staff's feeling accountable to the group. Rather than focus on competition, who does better than the others, staff are collaborating toward a common goal. Each staff person's success in meeting individual goals contributes to the success of the group in meeting its team goals. As staff become invested in their contribution to the larger goal of the program, they in turn directly support the goal of the state. By setting up a regular meeting to review progress, everyone is aware of how far they have come and how far they need to go to reach their goals (McChesney & Covey, 2012).

Recognition and Rewards. The end goal is important, and that is apparent by the time and energy spent by staff to set subgoals, identify measures, and track progress. Celebrating the progress made along the way will help increase staff motivation and will help the team feel it is making a difference. Recognition of success means recognizing those staff who have contributed to success; the teacher who creates a new curriculum may be recognized by the local program at state meetings, or the staff may be supported to attend a regional or national conference or

webinar, to share information about their curricula and tools. Staff who compile a list of useful resources may share those resources with other local programs and the state office (McChesney & Covey, 2012).

Staff also have to know whether their behavior is making a difference and see this immediately. Staff should be involved in selecting the measures for their subgoals. In other words, each person determines what he or she can do to contribute to the goal, and each person is held accountable for conducting the actions he or she has identified as the right actions to support the goal (See http://www.psychology.org.au/publications/inpsych/behaviour/). Continuing the example above, consider what measures might help staff know and continually observe whether they are meeting their goals.

Keeping the Focus on the (Sub)Goal. Each state and local program must deal with data quality and program improvement issues. Often, staff understand the strategies that are needed to address these seemingly intractable issues but lack the time to focus on those strategies. The process described here can be followed by any state or program; however, to be successful, the state and programs must identify no more than one or two goals to focus on. The larger the number of goals set, the less likely it is that any one of them will be met; there just aren't enough staff, time, or resources to address all the challenges that adult education programs face. But there are enough resources to address one issue.

By staying focused on that one issue, that one goal, staff can make a significant difference. We continue to stress the idea of focusing on the goal because this is the key to making sure that change happens. If the program loses focus, the goals will be lost in the pressing demands of the day and the emergencies that are sure to arise daily, weekly, and monthly.

Summary

Chapter 2 explains data quality and how to identify data quality problems and Chapter 3 explored methods for identifying creative solutions and plans for resolving these problems. This chapter focused on making actual change resulting from these plans. While we often return from professional development events such as NRS training energized and motivated to resolve problems, the stresses and demands of our normal workload, the "whirlwind," often prevent us from executing our plans, despite the effort and time taken to develop them.

The chapter discussed change models used in the business and health arenas to overcome this problem and applied the four Disciplines of Execution model (McChesney and Covey, 2012) to adult education. Examples illustrated how the model works to implement change to improve data quality. The steps include focusing on a specific goal, developing subgoals around the main goal and holding staff accountable to meeting the goals by establishing measures for each goal. Regular and frequent review of progress toward achieving each goal is a central element to the strategy. This approach also requires that staff own their goals by developing subgoals and measures and by tracking them to ensure progress. To maintain motivation, staff must use data to recognize and celebrate their progress over time.

Chapter 5. Tools for Improving Data Quality

As discussed in Chapter 2, essential elements of data quality include procedures for data collection, training of staff, data systems with good error-checking capabilities, and staff motivation for data collection and use. This guide has addressed each of these issues, dissecting the elements of data quality and offering approaches to improvement that can ultimately lead to better data quality. While the second half of the guide has focused on motivation, problem solving, and executing change, we have since the beginning stressed the importance of preventing errors and addressing data quality through staff training and program monitoring. Throughout the guide, we have also made reference to previous guides and training in these topics developed through the NRS support project.

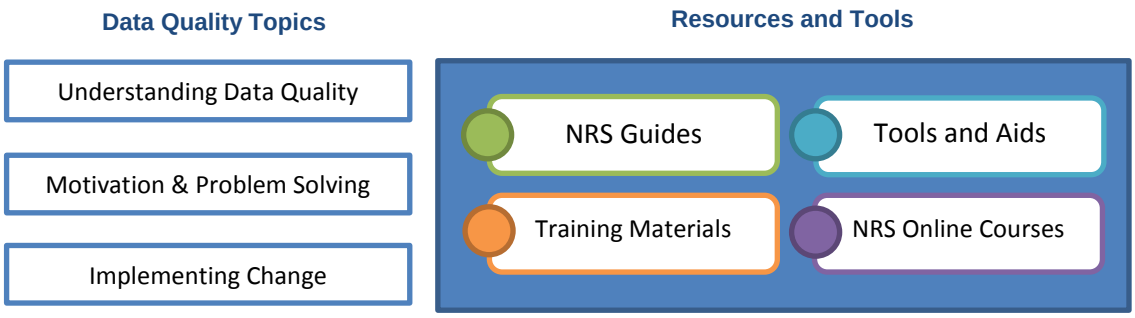
Data Quality Toolkit

The NRS support project website (http://www.nrsweb.org) includes all the resources and online courses related to data quality. However, these resources have been accessible by topic and not organized into a comprehensive form—until now. We have developed the *NRS Data Quality Toolkit* as a way to bring this prior work together into a unified resource. In addition, all the resources and tools referenced in this guide that support the SCAMPER method of problem solving are included in the toolkit.

The toolkit gives state and local staff a single location for accessing all material around data quality and will assist states in professional development activities for these topics. It is designed to help states concerned with data quality to identify quickly and conveniently resources and tools that help to understand how to address factors that contribute to their specific data quality issues and garner support of staff to resolve these issues.

The toolkit is comprised of four types of materials, each aligned to the topics in this guide as shown in Exhibit 5-1. The variety of resources includes NRS guides, tools and aids, training materials and NRS online courses. These resources on their own won't solve data quality issues. Therefore, to support use of the tools and resources included in the toolkit, a description of each tool and suggestions for its use are available to help state and local programs determine how they might use and adapt the tool to address their data quality challenge.

Exhibit 5-1. Data Quality Toolkit Resources and Tools



The Data Quality Toolkit is accessible from nrsweb.org and is available to all state and local program staff.

Local Data Quality Checklist

In Chapter 2, we have discussed how monitoring of local data collection activities can improve data quality by providing a means for the state to verify compliance with requirements and procedures. However, monitoring is a costly and resource intensive. Especially in large states, it is very difficult to implement onsite monitoring, and many states use desk monitoring to keep track of local program activities around data and performance. But even this approach often fails to capture much of what occurs around data within local programs.

To assist states in monitoring local data practices and training, we developed the *Local Data Quality Checklist.* This tool offers local staff a self-monitoring tool focused on data collection and reporting activities. Using this tool, local programs will be better informed about what is necessary to know and do to ensure quality data. Local staff can also use the tool to conduct a self-assessment regarding program practices and policies. The results of the assessment can support program teams in setting an action plan to improve practices. Finally, local program administrators can use this tool to share best practices with the entire team in order to create a common language about data quality and to ensure that everyone understands why policies are put in place and the value of having high-quality data to support program improvement.

We modeled the local checklist after the state data quality checklist, which OCTAE requires each state to submit annually with its NRS data tables. Like the state version, the local checklist includes four sections related to data collection procedures and professional development activities. Within each area are three levels of quality—acceptable, superior, and exemplary—defined by the type of practices followed within the program. Appendix 2 includes the checklist and instructions on how to use it.

Along with the toolkit, the checklists provide states with ways to further understand their data quality issues and provide training to link data quality with action and develop more effective adult education programs.

Appendix 1. OCTAE Error Checks in the NRS Data System

Current NRS Inter-Table Validity Checks							
	TABLES						
Data Item	**1**	**2**	**3**	**4**	**4B**	**6**	**10**
Total Enrollment	Total of Column P		Total of Column G	Total of Column B		Total # of Students in both US and Non-US Based Schooling Columns. Total # Employed, Unemployed, and Not-In-the-Labor-Force	
Total Enrollment by Ethnicity/ Gender	Total of each Column (B-O)	Total of each Column (B-O)					
Total Enrollment by Age Group		Total of each Age Group Row in Column P	Total of each Column (B-F)				
Enrollment by EFL	Total of each Row in Column P			Total of each Row in Column B Row			
Number Completed Level				Total of each Row in Column D	Total of each Row in Column D		
Total Enrollment in Correctional Programs						Total # of students in correctional facilities and community correctional programs (This # must be **equal to or greater than** the # of students reported in the Completed EFL row of Column B in table 10)	Value in Completed EFL row of Column B

The data referenced in cells with the same color (excluding white) must be equal; if values differ an error message will be displayed in NRS when data are saved.

Current NRS Intra-Table Validity Checks Tables 5, 5a, 8, 9, and 10								
Core Follow-up Outcome Measures (A)	**Method**	**Number of Participants in Cohort (B)**	**Number of Participants Used for Representative Cohort (C)**	**Number of Participants Responding to Survey or Available for Data Matching (D)**	**Response Rate or Percent Available for Match (E)**	**Number of Participants Achieving Outcome (Unweighted) (F)**	**Number of Participants Achieving Outcome (Weighted) (G)**	**Percent Achieving Outcome (Weighted) (H)**
Measure	U		N/A	• Value must not be greater than value in Column B. • If the value in Column D is less than 50% of the value in Column B then the value in Column H will be invalid.**		• Value must not be greater than the value in Column D.		
	R		• Value must be at least equal to the minimum sample size required for the cohort in Column B.* • Value must not be greater than value in Column B.	• Value must not be greater than value in Column C. • If the value in Column D is less than 70% of the value in Column B then the value in Column H will be invalid.**		• Value must not be greater than the value in Column D.		

Current NRS Intra-Table Validity Checks **Table 7**			
Function **(A)**	**Total Number of Part-time Personnel (B)**	**Total Number of Full-time Personnel (C)**	**Unpaid Volunteers (D)**
State-level Administrative/Supervisory/Ancillary Services			
Local-level Administrative/Supervisory/Ancillary Services			
Local Teachers			
Local Counselors			
Local Paraprofessionals			
Teachers' Years of Experience in Adult Education			
Less than one year	**Total # of teachers entered into these cells must be equal to the total # of teachers entered above in the "Local Teachers" row in Columns B and C**		
One to three years			
More than three years			
Teacher Certification			
No Certification	**Total # of teachers entered into these cells must be equal to or greater than the total # of teachers entered above in the "Local Teachers" row in Columns B and C (This is a planned future NRS validity check.)**		
Adult Education Certification			
K-12 Certification			
Special Education Certification			
TESOL Certification			

Appendix 2. Data Quality Checklist for Local Programs

Appendix
Data Quality Checklist: Local Programs

Background and Purpose

The goals of the National Reporting System for Adult Education (NRS) include the creation of a national set of data on the Federal adult education and literacy program to demonstrate its effectiveness. The data local programs and states collect and report help meet this goal by providing information on the characteristics of adult education students, their attendance, their learning, and other outcomes. To help ensure the success of the NRS, one of the key strategies of the Department of Education's Office of Career Technical and Adult Education (OCTAE) has been to promote the use of data at all levels to demonstrate program effectiveness, assist management, and promote program improvement. To this end the NRS support project has worked with states through technical assistance and training to assist them in collecting quality data and to foster use of these data at the state and local levels. An underlying assumption has been that when staff use data, its quality will improve: Staff will value what is useful to them.

The development of a Local Program Data Quality Checklist is driven by the need for local programs to have effective self-monitoring tools around data collection and reporting. Several benefits can be gained by using this tool. First, local programs will be well-informed about what is necessary to know and do to ensure quality data. Second, local programs can use the tool to conduct a self-assessment regarding program practices and policies. The results of the assessment can support program teams in setting an action plan to improve practices. Finally, local program administrators can use this tool to share best practices with the entire team to create a common language about data quality and to ensure that everyone understands why policies are put in place and the value of having high quality data to support program improvement.

How to Use the Checklist

The Local Program Data Quality Checklist Tool is divided into the following sections:

- Cover Sheet
- The Data Quality Checklist: The Tool
  - Table 1: Data Foundation and Structure
  - Table 2: Data Collection and Verification
  - Table 3: Data Analysis and Reporting
  - Table 4: Staff Development

- My Program at a Glance: Data Quality Improvement Plan
- Data Quality Checklist: Program Monitoring

This tool is meant to be a "living" document. It has been developed so the program director or data team can respond to the prompts directly in it.

Directions. First complete the Data Quality Checklist Cover Sheet. Next, read through each of the tables to get a sense of what types of questions you will need to respond to. As you respond to the prompts and consider what your program practices are, be sure to provide as many specifics as possible. If you share this document with the rest of your team, it is beneficial for them to understand program practices clearly. Next, determine which scoring interval your program falls in for each table– acceptable, superior or exemplary. Your program's level is determined by the scoring interval for which *all* items have successfully been met. You may have some items met in the interval above that, but it order to score yourself as, for example, Superior, you must have met all of the item requirements in the Superior category. Complete the one-page summary sheet, "My Program at a Glance", to help get an overall sense of your program practices according to best practices presented. You will have the opportunity to capture some areas of strength and areas for improvement on your summary sheet.

Once you have a better idea of your program practices, it's time to make a plan to improve your data quality practices. Each Content Area (Data Foundation and Structure, Data Collection and Verification, etc.) has its own planning template. Complete each template, indicating which 'standard' your program did not meet, and how you plan on addressing this. Finally, a monitoring tool has been provided so your team can document action steps taken and the outcomes of each. It is recommended that local programs use this tool as often as needed to ensure data quality and program success.

NRS Local Program Data Quality Checklist Cover Sheet

Date:

Program Name/State:

Completed by (name and title):

Shared with (names and titles):

Additional Comments/Notes:

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Data Quality Checklist: The Tool	
Table 1: Data Foundation and Structure	
Acceptable Quality	
1. My program is aware of the State's written assessment policies. My program policy mirrors the state's policy and specifies: ▪ Standardized assessments to use for accountability that are valid and appropriate for adult students. ▪ Time periods (in hours or weeks) for when to pre- and posttest. ▪ Score ranges tied to educational functioning levels (EFL) for placement and for reporting gains for accountability. ▪ Appropriate guidance on tests and placement for special populations (e.g., students who are unable to be tested due to language or disability). ▪ Unacceptable methods of assessment for EFL placement. ▪ Appropriate guidance on requirements and conditions for testing distance education students reported in the NRS (if applicable).	1a. *List used assessments permitted for ABE and ESL used by the program.* **ABE Assessments:** **ESL Assessments:** 1b. *Indicate program testing intervals:* 1c. *Indicate special population placement policies:* 1d. *Indicate distance learning testing policy:*
2. My program has written policies for following students to measure post program outcomes that is aligned with the state's plan and explains: ▪ How to determine tracking cohorts. ▪ Follow-up methodology (survey or data match) for each measure that meets NRS requirements. **NOTE: Data matching states may not have this**	2a. *Indicate your follow-up methods for each measure.* Entered employment: Survey ☐ Data match ☐ Both (explain)☐ Retained employment: Survey ☐ Data match ☐ Both (explain)☐ Secondary credential: Survey ☐ Data match ☐ Both (explain)☐ Enter postsecondary: Survey ☐ Data match ☐ Both (explain)☐

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	2b. If you indicated that you use both survey and data match for follow-up methods for one or more measures in 2a, please explain.
Skip to the next item if survey is not used 3. Does your program uses survey follow-up method for any measure:	3a. My program can produce a list of students to survey, according to NRS requirements. *Indicate how you produce list:* 3b. The survey is conducted with a state provided, standard survey instrument. *Indicate the standard survey instrument used:*
Skip to the next question if data matching is not used 4. Does your program use data matching for any measure:	4a. Local data system can produce files for matching that include exit dates and employment status for each student. *Indicate how you access these files:* Program has established a procedure for collecting Social Security numbers or other unique identifiers, including how to deal with missing numbers *Indicate your program procedure:*
5. My program is aware of the State's written definitions for all measures (including demographic measures and actual or proxy contact hours, if applicable), defined according to NRS requirements and has provided them to all programs.	*Indicate here were definitions for all measures can be found:*
Skip to the next item if proxy hours are not used 6. My program is aware of the State's written policies on the use of proxy hour models to assign the proxy hours for distance education learners participation in adult education distance education programs.	If yes, please identify which model or models are used to assign proxy hours ___ Clock Time Model ___ Teacher Verification Model ___ Learner Mastery Model ___ Learner Mastery Model

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Table 1: Data Foundation and Structure	
Superior Quality	
1. My state has a comprehensive data dictionary, which defines all measures on state student data forms and in the state data system, and has provided it with an explanation to all local programs and my program is aware of, and uses, the data dictionary.	*Indicate here where the comprehensive data dictionary can be found:* *Indicate to what extent your program uses it:*
2. My program has standards or requirements for the percentage of students to be pre- and post-tested.	*If yes, indicate the standards or requirements.*
3. My program is aware of additional technical assistance and resources provided by the State, on assessment, data collection and follow-up procedures (e.g., site visits, contact persons, manuals, and/or online resources).	*If yes, briefly describe the assistance used, how it was provided and where to learn about future TA.*
Skip to the next item if survey is not used 4. If your program uses survey follow-up method for any measure: we are aware of the state's verification process to confirm that the survey is being conducted according to NRS guidelines.	*If yes, briefly describe your verification procedures:*
Skip to the next item, if survey is not used 5. If your program uses survey follow-up method: we are aware of the state's written guidance or assistance on how to improve response rates to survey staff.	*Indicate where written guidance can be retrieved:*
Skip to the next item if data matching is not used 6. If your program uses data matching: we are aware of the state's written procedures on how to conduct data matching that comply with NRS guidelines *()*.	*Indicate where written guidance can be retrieved:*
Skip if proxy hours are not used 7. Program has procedures in place that verify whether proxy hours are calculated and assigned appropriately.	*Indicate program procedures to verify proxy hours:*
Exemplary Quality	
1. My program works with the State's Data Quality system for verifying that local programs are following state data policies and procedures through program reviews, auditing or a certification process.	*If yes, briefly describe the verification procedures.*

Table 2: Data Collection and Verification	
Acceptable Quality	
1. My program uses the state electronic management information system (MIS), that has individual student records within a relational data base structure. The MIS incorporates NRS measures using common definitions and categories.	
2. My program's database has error checking functions (e.g., that identify out-of-range values and missing data).	
3. My program uses the State's standardized forms or state approved forms (electronic or paper) for collecting student information (e.g., intake, attendance) that include all NRS measures and have correct NRS definitions and categories.	*Indicate where the forms can be found:*
Skip if you do not have Distance Learning in your program 4. My program is aware of and follows State guidelines or procedures for recording actual and, if applicable, proxy contact hours that conform to NRS requirements.	*Indicate where guidelines can be found:*
5. My program has designated staff with clear responsibility for data collection and data entry.	*Indicate who is responsible and appropriate contact information:*
6. The designated data quality staff in my program checks data for errors after submission by teachers.	*If **yes,** explain error checking process, including what data are checked and how often.*
Table 2: Data Collection and Verification	
Superior Quality	
1. My program enters data into the MIS at least quarterly.	*Indicate designated data entry dates:*
2. x. The data specialist in my program is in regular contact (at least quarterly) with the state staff to review program data for errors, missing data, out-of-range values and anomalous data, and to identify program improvements and accomplishments and has a system to resolve them.	*Indicate contact in state office and regularly scheduled data review times.*
3. I am aware of and staff use the State's documented procedures for correcting errors and resolving missing program data.	*Explain the data review and error correction system.*
4. My program seeks out additional technical assistance provided by the state to programs with poor data, as needed.	*Indicate resources:*

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Table 2: Data Collection and Verification	
Exemplary Quality	
1. I am aware of the State's policies and system for verifying (through software, onsite auditing, contact with local staff) that my program is following state data collection procedures.	*If **yes,** briefly describe the methods used for verification, including use of the correct assessments and assessment forms, reporting of accurate score ranges for placement and for reporting advancement for accountability.*
2. Our program staff are in regular contact with State staff to review and discuss data issues to identify problems and provide assistance.	*If **yes,** specify procedures and type of contact.*

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Table 3: Data Analysis and Reporting	
Acceptable Quality	
1. My state or program's MIS can produce NRS required reports for the state and program monitoring, including federal NRS tables	*Indicate list of tables the program can produce:*
2. My program's MIS is capable of reporting disaggregated data by subpopulation (e.g., student age, race, sex) and program (e.g., ABE, ESL, ASE, correctional education, distance education) and my program utilizes this function.	*Indicate appropriate report used to disaggregate data by subpopulation and program:*
Superior Quality	
1. Program staff person familiar with the data, but not directly involved with collection and data entry, reviews NRS data reports for errors and accuracy.	*Indicate person responsible:*
2. Program staff uses data for program management and improvement.	*If **yes,** provide at least one example of use of data for this purpose in the last year:*
3. Program staff can access data reports that are useful for program management and improvement	*If **yes,** briefly describe the usefulness of two reports produced by your system:*
Exemplary Quality	
1. My program has a system of regular contact with the state on data analysis issues and reporting needs to identify technical assistance needs.	*If **yes,** specify method and frequency of contact.*
2. My program follows the State's documented procedures for dealing with analysis problems and deviations.	*If **yes,** specify procedures:*
3. My program conducts procedures to verify that local reports accurately reflect data collected (e.g., through review of local program documentation, onsite auditing)	*If **yes,** specify procedures:*
4. My program follows a State or local process to compare data among programs and with prior years' data for discrepancies, reasonableness and to identify trends in good and bad performance.	*If **yes,** specify process:*

Table 4: Staff Development	
Acceptable Quality	
1. My program staff has been provided training on general NRS requirements, including assessment policy and procedures, and follow-up policies.	*If **yes** identify the training(s) and how attendance/mastery is documented.*
2. Program staff have received training on data collection procedures	*If **yes** identify the training(s) and how attendance/mastery is documented.*
3. Program staff have been trained on data entry into the state MIS	*If **yes** identify the training(s) and how attendance/mastery is documented.*
4. Program staff have been trained on how to produce and/or interpret reports produced by the MIS	*If **yes** identify the training(s) and how attendance/mastery is documented.*
If applicable: 5. Program staff have been trained on conducting follow-up survey or data matching procedures	*If **yes** identify the training(s) and how attendance/mastery is documented.*
Skip if program does not use Distance Learning 6. My program staff is aware of who to contact at the state to find out about training or details of the distance education policy and use of proxy hours	*If **yes,** who? What is their contact information?*
7. My program staff is aware of the annual training provided by the state about NRS issues, MIS data entry or data analysis issues and a representative from the program attends regularly.	*If **yes,** briefly describe when the most recent additional training occurred, its duration and who attended. This training should not be the same as the one described above in item number 1.*
Superior Quality	
1. Program staff attends State planned, continuous training (at least one training annually) on data collection and NRS issues.	*If **yes,** briefly describe frequency, duration and content of trainings.*
2. Program staff attends NRS training that is planned and delivered based on needs of the state and evaluations of previous trainings.	*If **yes,** briefly describe training offerings and staff attendance.*
If applicable: 3. My program is aware of the ongoing technical support provided by the state to improve data matching and/or survey follow-up procedures, such as collecting the data.	*If **yes,** describe support and how the program uses it.*
Exemplary Quality	
1. My program has timely intervention strategies to identify data problems as they occur and to provide training to programs to correct the problems	*If **yes,** briefly describe the process*

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My Program at a Glance: Data Quality Improvement Plan

Directions: Once you have completed the program assessment, indicate your program's score for each of the content areas (each content area has its own planning section). You may find a variation in scores across content areas. However, understanding the exactly where your program's needs are will support your improvement efforts. In the space below your score, insert the content standards from each category that were not met (a), and document actionable goals on how you plan on implementing changes that will support your program in meeting the standard (b). Additional space is provided to help in your efforts by identifying potential barriers (c), training/TA opportunities (d), support (e) and resources (f) that may help you achieve your goal.

Content Area: Data Foundation and Structure **Score:**		
a. Content Standards Not Met in the Content Area:	**b. Planned Approach to implementing changes to allow you to meet the standard:**	
c. Describe barriers or problems anticipated, if any, to implement these plans		
d. Describe any technical assistance you might need to implement these planned changes:	**e. Who might provide needed assistance:**	**f. Resources available in the program to support change:**

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Content Area: Data Collection and Verification **Score:**		
a. Content Standards Not Met in the Content Area:	**b. Planned Approach to implementing changes to allow you to meet the standard:**	
c. Describe barriers or problems anticipated, if any, to implement these plans		
d. Describe any technical assistance you might need to implement these planned changes:	**e. Who might provide needed assistance:**	**f. Resources available in the program to support change:**

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Content Area: Data Analysis and Reporting **Score:**		
a. Content Standards Not Met in the Content Area:	**b. Planned Approach to implementing changes to allow you to meet the standard:**	
c. Describe barriers or problems anticipated, if any, to implement these plans		
d. Describe any technical assistance you might need to implement these planned changes:	**e. Who might provide needed assistance:**	**f. Resources available in the program to support change:**

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Content Area: Staff Development **Score:**		
a. Content Standards Not Met in the Content Area:	**b. Planned Approach to implementing changes to allow you to meet the standard:**	
c. Describe barriers or problems anticipated, if any, to implement these plans		
d. Describe any technical assistance you might need to implement these planned changes:	**e. Who might provide needed assistance:**	**f. Resources available in the program to support change:**

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Data Quality Checklist: Continuous Program Monitoring

Directions: Use this table to help track the actions you have taken to achieve your planned program improvement. Monitoring your actions and the outcomes will help you identify if changes to your approach should be made and to share progress with the team.

Action Steps Taken:	Outcome:	Additional Notes:

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SCAMPER Resources

SCAMPER Random Question Tool
http://litemind.com/scamper-tool/

SCAMPER MindMap
http://litemind.com/wp-content/uploads/misc/litemind-scamper-reference.pdf

Key Workplace Documents at DigitalCommons@ILR, 2009. Cornell University ILR School
http://www.adb.org/sites/default/files/pub/2009/the-scamper-technique.pdf