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

American Institutes for Research

NRS
National Reporting System for Adult Education

Welcome & Overview of the Training

OCTAE and Project Team

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Agenda Day 1

- Welcome and Intro Activity
- Overview of the Training
- The Elements of Data Quality
- SCAMPER Problem Solving for Data Issues
- Understanding Your Data
- Identifying and Preventing Data Problems

Agenda Day 2

- Why Change Is So Difficult When Addressing Data Processes
- A Tool for Changing Behavior to Improve Data Quality
- Sustaining Change Through Enhancing Motivation: State and Local Role in Data Quality
- State Team Planning

Agenda Day 3

- State Report Out—Small Groups
- State Report Out—Large Group
- Visual Explorer Part 2
- State Planning Wrap-up
- Q & A with OCTAE
- Wrap-Up

Visual Explorer Ice Breaker

- Take a few minutes to look at the pictures posted around the room.
- Select one picture that represents how your team feels about data quality right now.
- Select one person to introduce the members of your team and explain why you selected your picture.

Why Do We Need to Manage Data Quality?

https://www.youtube.com/watch?v=E0dIu4dCnJE

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NRS Data Quality Planner

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Handout 1: NRS Data Quality Planner

Handout 1: NRS Data Quality Planner

This planner is designed for use while your state team develops a plan that can help you address the data quality issue that you have identified and brought with you to the training.

Section A: Identify the Issue or Problem
The data quality issue or problem that our state team has identified is:
What is the biggest impact that issue/problem is having in your state right now?

Section B: Your State's Data Quality Procedures

Look at the Procedures for Data Quality that your state submitted prior to the training (or brought with you). In the back of your binder are the procedures submitted by other states. You should use those procedures as a resource while you complete this section.

NRS Data Quality Planner

- Overview of Planner
- Section A:
  - Enter the problem with data quality that your team identified prior to the training.
    - Specific
    - Actionable by the state
  - Biggest impact

Handout 1: NRS Data Quality Planner, Section A

Share Out

- What is the data quality issue you are facing in your state right now?
- What is the biggest impact it is having?

First Break

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The Elements of Data Quality

Defining Data Quality

- Quality data are data that accurately reflect what they are intended to represent.
- In statistical terminology, quality data have reliability and validity.

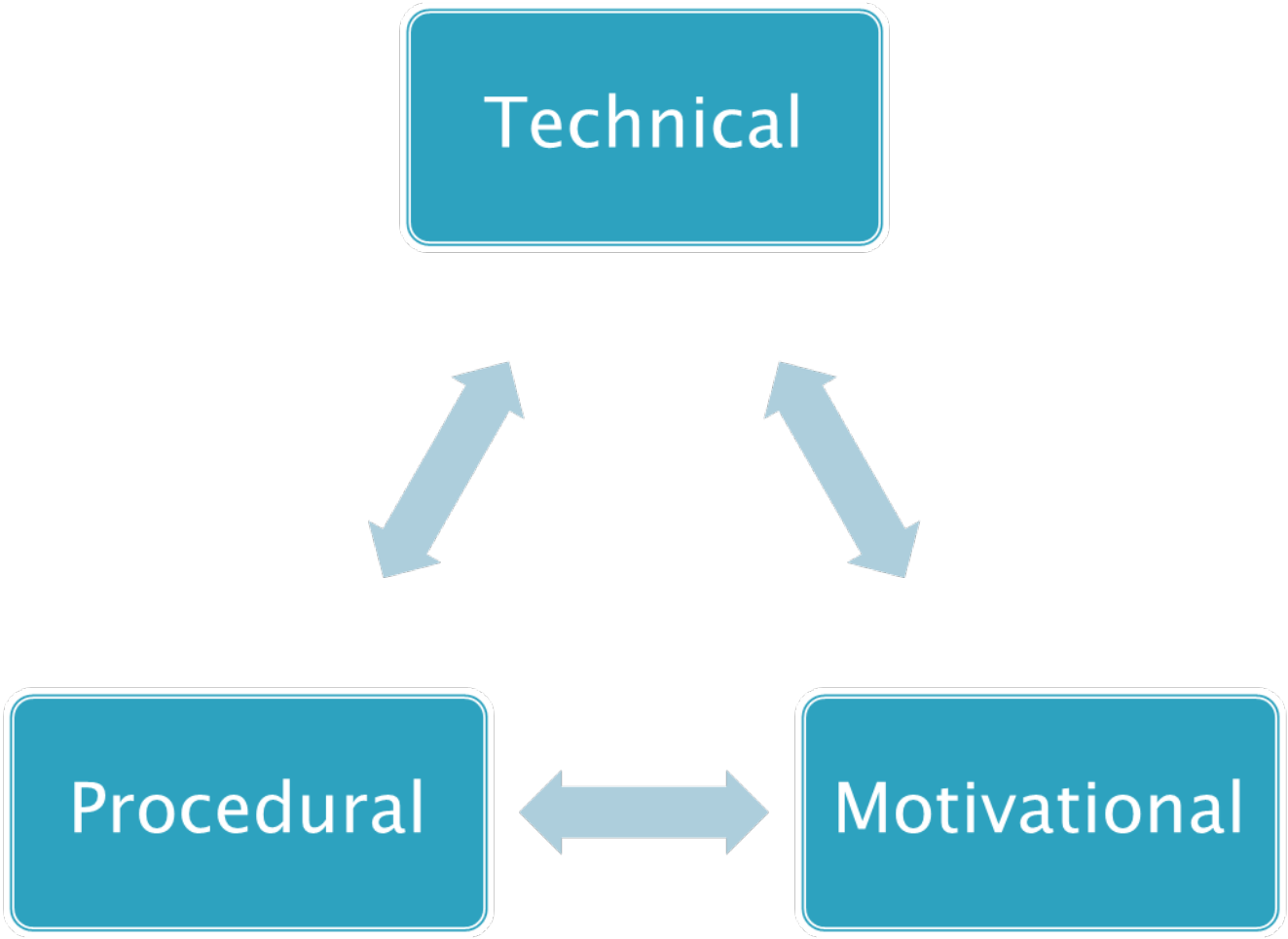
Defining Data Quality (cont. 1)

- *Reliability* = the consistency of measurement
  - 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.
- Attendance data can have low reliability if one teacher records attendance when class starts and another records it when class ends.

Defining Data Quality (cont. 2)

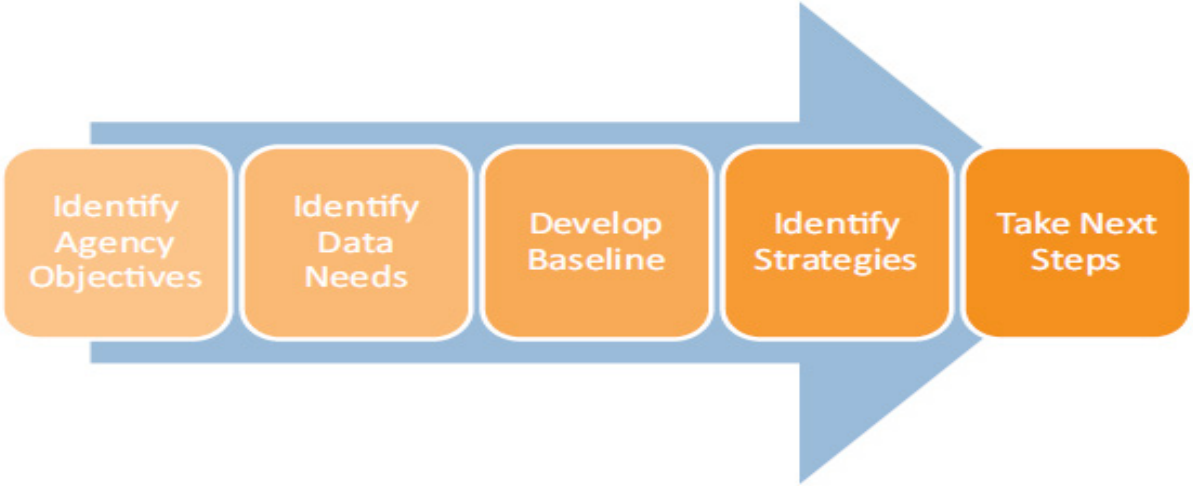
- *Validity* = whether the data measure what they purport to measure
  - The more valid the data, the more it approximates the concept underlying what is being measured.
- A score on a reading comprehension test has high validity if it provides an accurate indication of a student's true comprehension ability.

Key Factors for Data Quality



Data Collection Procedures

- Producing reliable and valid data boils down to having well-planned data collection procedures:
  - Sound data collection forms and tests
  - Reliable data systems
  - Effective training for staff
  - Continuous evaluation of procedures



Understanding Your Data

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Data Storytelling: Activity

- Work with your assigned group.
- You have 10 minutes to examine the data at your table and develop a story about the data.

Handout 2: Data Storytelling Activity

Look at Your Data

- The first step in improving data quality
  - Closely review your data
  - Leads to knowledge and understanding of what your data tell you

Look at Your Data (cont.)

- You can run a simple test of knowledge of your own data by asking such questions as:
  - How many students do you have?
  - What was the average percent gain on the educational functioning levels?
  - How do these numbers compare to last year—was there improvement?

NRS Tables

- Changes occurred in PY 2012–2013 that affected reporting in the NRS tables.
  - Table 4—Educational gain
  - Table 5—Follow up measures
- Understanding these changes and what the data (in all NRS tables) tells you can help to prevent data errors.
  - Table 7

Educational Gain Performance: NRS Table 4

- Table 4 is the single most important table in the NRS because it provides a wealth of data on students:
  - Beginning educational functioning level (EFL)
  - Contact hours
  - Number who separated
  - Educational gain

NRS Table 4

EDUCATIONAL GAINS AND ATTENDANCE BY EDUCATIONAL FUNCTIONING LEVEL
PROGRAM YEAR: 2012 - 2013 (Aggregate Table)
REGION: ALL REGIONS

Entering Educational Functioning Level	Total Number Enrolled	Total Attendance Hours	Number completed Level	Number who completed a Level and Advanced One or More Levels	Number Separated Before Completed	Number Remaining within Level	Percentage Completing Level
ABE Beginning Literacy	45,552	7,513,842	19,932	14,466	13,755	11,865	43.80%
ABE Beginning Basic Education	165,299	19,582,684	76,780	52,888	57,864	30,655	46.40%
ABE Intermediate Low	288,949	30,299,176	133,657	84,599	104,367	50,925	46.30%
ABE Intermediate High	323,430	31,065,306	125,355	73,796	127,234	70,841	38.80%
ASE Low	118,795	11,952,797	45,110	20,714	48,423	25,262	38.00%
ASE High	87,696	7,968,187	36,383	1,829	31,856	19,457	41.50%
ESL Beginning Literacy	117,059	13,451,541	58,727	45,616	33,911	24,421	50.20%
ESL Beginning Low	77,204	9,302,737	41,516	30,518	21,501	14,187	53.80%
ESL Beginning High	115,951	15,183,374	62,867	44,531	29,953	23,131	54.20%
ESL Intermediate Low	145,813	20,321,019	69,745	46,669	39,246	36,822	47.80%
ESL Intermediate High	123,075	17,915,550	53,225	33,504	35,231	34,619	43.20%
ESL Advanced	99,282	14,793,744	25,425	3,887	33,218	40,639	25.60%
Total	1,708,105	199,349,957	748,722	453,017	576,559	382,824	43.80%

From Goal Setting to Cohorts: NRS Table 5

- In PY 2012-2013, changed from goal setting to cohort definitions for the follow-up measures.
- Examining these data offers an opportunity to evaluate how well it is working as a performance measure.
- The data can also reveal clues to problems that local programs may have collecting and reporting the information.

NRS Table 5

Follow-up Outcome Measures	Average Percent Achieving Outcome					
	2008	2009	2010	2011	2012	Change between 2012 and 2011
Entered Employment	55%	49%	48%	48%	43%	**-5%**
(N)	(75,163)	(72,139)	(78,486)	(80,770)	(128,572)	
Retained Employment	65%	64%	62%	66%	55%	**-11%**
(N)	(87,476)	(82,522)	(77,634)	(87,310)	(179,630)	
Obtained a GED or Secondary School Diploma	64%	52%	61%	61%	73%	**12%**
(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)	

Evaluating Follow-up Measures

- Data matching or local surveys are the methods used to collect the follow-up measures.
- By showing how the data are calculated, Table 5 gives us three pieces of data by which to evaluate its quality:
  - The outcome measure
  - Response rate or percent used for matching
  - The number of students in the cohort

Excerpt from Table 5

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

Internal Consistency of Data

- Using the national NRS data can help you understand performance and identify data quality problems.
- State and program directors can gain further insight by thinking about logical connections that should exist within the data:
  - Student totals in NRS Tables 1–4 should be the same.
  - Teacher data in NRS Table 7.

NRS 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	79	343	0
Local-level Administrative/Supervisory/Ancillary Services	4,677	5,069	1,273
Local Teachers	38,132	10,592	14,774
Local Counselors	1,105	720	625
Local Paraprofessionals	4,704	1,872	9,444
Teachers' Years of Experience in Adult Education			
Less than one year	4,887	595	
One to three years	8,873	2,038	
More than three years	24,205	7,895	
sub total	37,965	10,528	
Teacher Certification			
No Certification	14,277	2,457	
Adult Education Certification	7,547	4,699	
K-12 Certification	14,953	3,465	
Special Education Certification	1,431	385	
TESOL Certification	2,746	524	
sub total	40,954	11,530	

Student Status Reported in NRS Table 6

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%**

Tips for Data Review

- Keep the following in mind when reviewing trend data for indicators of errors:
  - Extreme outliers
  - Inconsistent values
  - Unusually consistent values
  - Missing data

Working Lunch

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Identifying & Preventing Inaccurate Data

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Handout 3: Good Data Quality Procedures

Activity

- Find the sticker on the back cover of your binder to find your group.
  - Blue—tables 4 and 4b
  - Green—table 5: Core Follow-Up: Across time points
  - Silver—table 5: Core Follow-Up: Entered Employment
  - Red—table 7
- In groups, work on your assigned NRS Data Tables.
- You have 20 minutes to answer the questions that accompany your group's table.
- Report out to other groups.

Handout 4: NRS Data Checking Activity

Main Causes of Inaccurate Data

- There are two main causes of data quality breakdown:
  - System (technology) error
  - Human (process) error

Cause: System Error

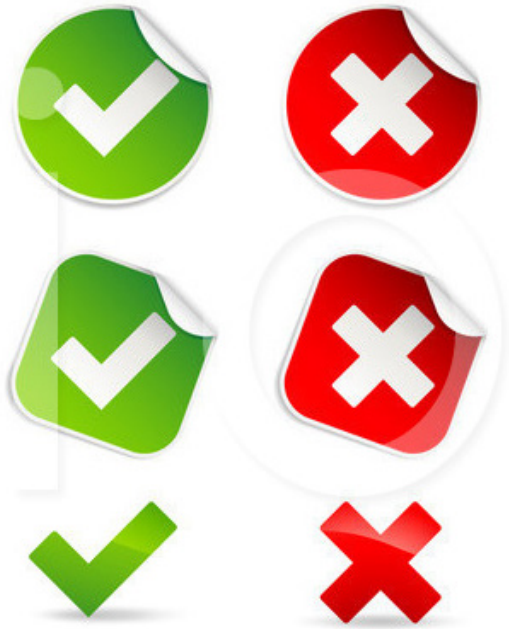
- Bad system, difficult to use
- Contains errors in reporting formulas
- Is difficult to read or understand
- Is not easily adaptable

Effective Data Systems

- Effective data quality requires frequent and timely data entry and error checking, and the ability for local staff to access the data directly.
- A good system:
  - Provides an effective tool for storing and reporting data
  - Automates error checking

Error Checks

- A quality data system can minimize and help to detect errors through built-in data error checks
- Two main types of error checks:
  - Intake error checks
  - Assessment error checks
- Prevention – never enters system
- Corrections once in system



Intake Error Checks

- Missing data
- Student age
- Pretest requirement
- Duplicate student
- Minimum or maximum contact hours

Assessment Error Checks

- Dates
- Test scores
- Placement and advancement in EFLs

Other Data Quality Checks: Alerts & Reports

- Status reports that inform program staff of anomalies and missing data.
- Automatically generated reports, including NRS tables, are a great benefit that statewide data systems provide.
- Important to assure that they are programmed with accuracy.

Built-In Error Checks

- Reports in your data system that can prevent errors and improve data quality:
  - List the number of students having enough contact hours to be posttested.
  - Identify student cohorts for follow-up measures.
  - Changes in enrollment over time: errors or reality?
  - Changes in attendance or contact hours: participation issues or missing data?

Error Checks for Reporting Tables

- NRS tables must have an internal consistency:
  - For example, student totals must agree in NRS Tables 1–4.
  - See pages 19–20 in Guide
- Build them into your data system
- OCTAE has built into national reporting website:
  - Appendix 1 in Guide.
  - Organized by data item and table.

Data Quality Through Ease of Use

- Bad data systems:
  - Disorganized entry screens lead to confusion.
  - Promote erroneous entries.
  - Make it difficult to complete even simple data entry tasks.
- Well-designed data systems:
  - Easy to use; intuitive.
  - Offer a clear path to accomplish each task.
  - Allow more data to be entered with fewer errors.

Cause: Human Error

- Unclear roles and hierarchy
- Unclear processes and forms
- Changing policies and initiatives
- Lack of training
- Overwhelmed staff
- Lack of motivation

Effective Processes & Procedures

- Characteristics that are central to the success of a good data collection process:
  - Clear description and understanding of staff roles and responsibilities.
  - Clear definitions are established for each measure.
  - Standard forms in use by programs for collecting data are tied to the program database.

Effective Processes & Procedures (cont.)

- Ongoing training on data collection is provided.
- Clear and timely data entry procedures.
- Timely or direct access to information from the database.
- Regular review of data by staff (state and local).

Data Monitoring

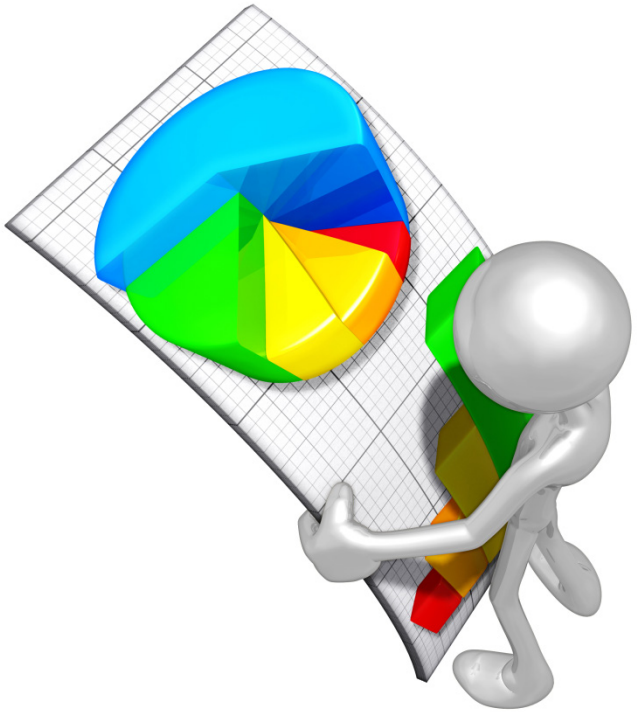
- Similar to OCTAE's monitoring of states, states monitor local programs to ensure programs are following state requirements.
- Onsite reviews:
  - Comparing data in the data system with written records to assess accuracy
  - Interviews and observations of staff and students
  - Intensive, time-consuming events
  - Usually once a year

Data Monitoring (cont.)

- Desk monitoring:
  - Review of data and materials submitted through the state data system
  - Regular communications with local programs, as needed.
  - Uses quantitative data to see trends and compare program data with both other programs and overall state data
  - Cost-effective
  - Allows regular review of local programs

Critical Review of Data

- Should happen regularly but also during the following:
  - Changes in policies or procedures
  - New staff
  - New data system



Designated Data Expert

- Serves as a resource for technical assistance and training
- Builds capacity for data use and future problem solving
- Provides useful tips and materials
- Maintains contact with data system developers to discuss issues and concerns
- Reinforces the idea of data being a statewide responsibility

SCAMPER METHOD

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SCAMPER Method

- Creative problem-solving method.
- Uses a checklist of questions to help think about and solve a problem.
- Everything that exists is a modification of something that already exists.

Handout 5: SCAMPER Sample Helper Questions
Handout 5a: SCAMPER Data Quality Helper Questions

SCAMPER Method (cont. 1)

- Helps you to look at what exists and figure out a way to transform it into something better, more useful, and more productive.
- Goal is to remove all constraints in the problem-solving process to allow for optimal results.

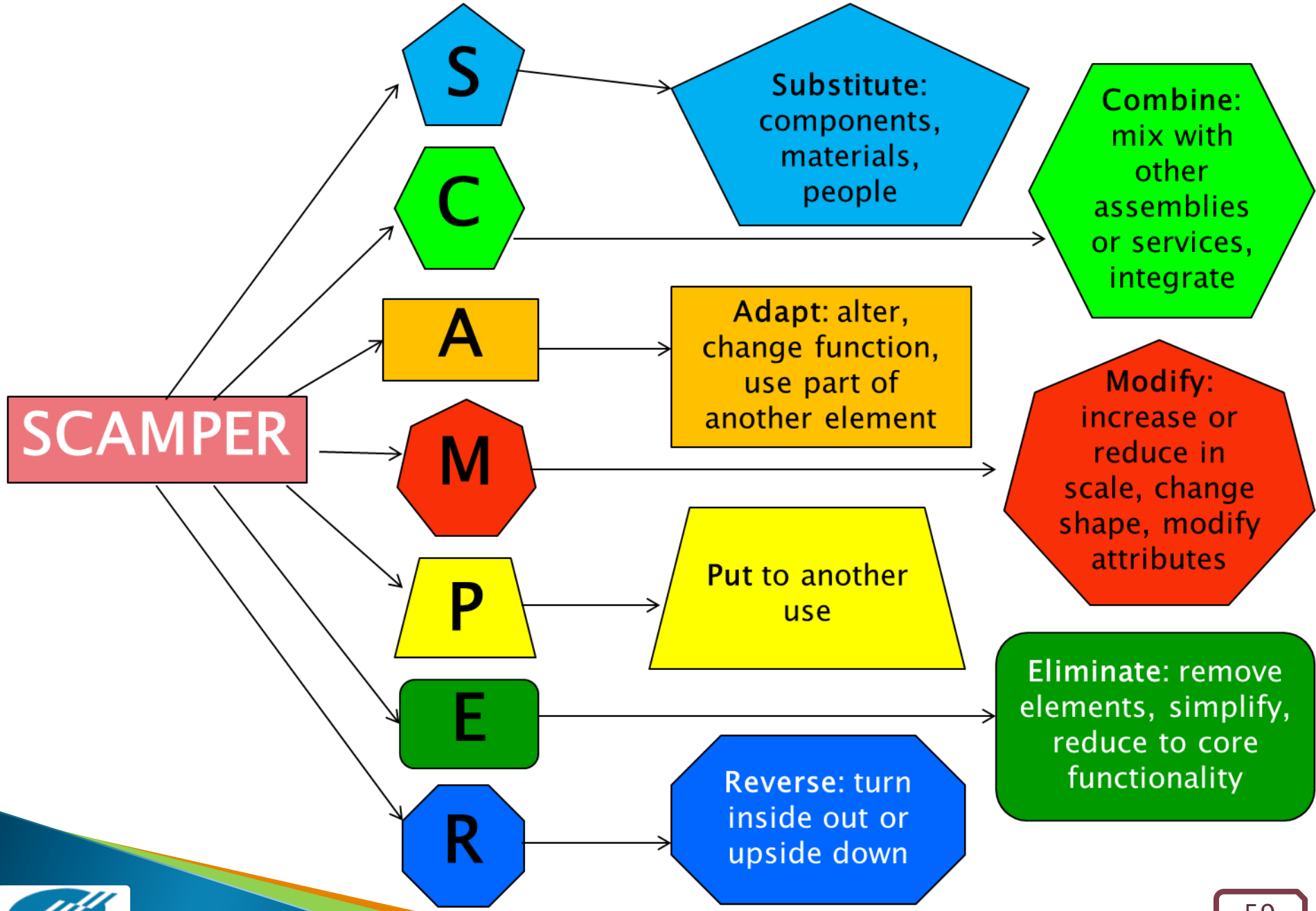
SCAMPER Method (cont. 2)

- Each letter represents active verbs in order to associate action with the problem and to focus on solutions.
- We will use it throughout to spark ideas for addressing data quality issues.

SCAMPER Adult Education Scenario

- You are the AE state director
- Your data manager is frustrated because of the lack of buy-in from local programs
  - Attendance has significantly decreased for data focused PD
- Time to problem solve!

Handout 6: SCAMPER
Handout 7: SCAMPER Scenario


SCAMPER
S
Substitute: components, materials, people
C
Combine: mix with other assemblies or services, integrate
A
Adapt: alter, change function, use part of another element
M
Modify: increase or reduce in scale, change shape, modify attributes
P
Put to another use
E
Eliminate: remove elements, simplify, reduce to core functionality
R
Reverse: turn inside out or upside down

Break

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Speed SCAMPER Activity

- Find your group assignment.
- Using your state's data quality issue or problem—complete the speed SCAMPER process.
- Use Section B of your planner to note additional ideas and solutions as you are going through the activity.

Handout 1: NRS Data Quality Planner, Section B

NRS Data Quality Planner (Cont. 1)

- Section C
  - Review the list of procedures and processes that your state brought to the training.
  - Look at examples of procedures and processes from other states (back of binder).
  - Are there substitutions you can make to improve your procedures?

Handout 1: NRS Data Quality Planner, Section C
Handout 5: SCAMPER Sample Helper Questions

SCAMPER

- Substitute:
  - Can I replace or change any part of the data collection process?
  - Can I use other processes or procedures?
  - Can I use a different tool or system for data collection?
  - Do I need to replace someone involved in the process?

Data Quality Checklists

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Local Data Quality Checklist

- Modeled after the state checklist
- Includes four sections related to data collection procedures and professional development activities
- Three levels of quality:
  - Acceptable
  - Superior
  - Exemplary
- Appendix 2 of the Guide

NRS Data Quality Planner (Cont. 2)

- Section D
  - Look at your state's data quality checklist
  - Use SCAMPER "M"—Modify to review your use of the checklist

Handout 1: NRS Data Quality Planner, Section D

SCAMPER

- Modify:
  - What can be altered for the better?
  - Can I increase frequency of using a data quality checklist or other monitoring tool?
  - What steps can be duplicated?
  - Can I somehow add extra value to ensuring accurate data quality?
  - What could be magnified, made larger, or extended?

Using Moodle

Access Moodle at http://airlearning.org/

- Refer to the Handout for detailed instructions on how to access Moodle and upload your planner
- All procedures and plans should be uploaded by September 30th.

Questions & Discussion

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Preview Day 2

- Why Change Is So Difficult When Addressing Data Processes
- A Tool for Changing Behavior to Improve Data Quality
- Sustaining Change Through Enhancing Motivation: State and Local Role in Data Quality
- State Team Planning

Pluses and Changes for Day 1

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