

Chapter 7

Use of Data

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Introduction

Data can be defined as “factual information used as a basis for discussion and making decisions.” The usefulness of data in a decision-making process depends largely on the type of data and the quality of that data. Programs can use data for multiple purposes, including program management, improvement, and accountability. This chapter will focus on the data collected for the National Reporting System (NRS). (For more information, see *Using NRS Data for Program Management and Improvement*, which is available at www.nrsweb.org.)

- *Quantitative Data.* Quantitative data is designed to provide objective information (i.e., information that is not based on the opinion of the person doing the recording). From sports scores to weather records, student enrollment to test scores, quantitative data can be found in every part of life and can be collected through a variety of methods, including counts, ratings, scores, and surveys. It is focused on very specific and narrow details and can be aggregated and generalized to other groups or to different settings.
- *Qualitative Data.* Qualitative data offers more subjective information. Often organized in a narrative format, it can be collected through a variety of methods, from interviews to observations to case studies. Though it is difficult to aggregate and is not easily generalized, it can provide a wealth of rich information. Examples of qualitative information include records of observations of student work, interviews with students, counseling records, and portfolio assessments of student work.

High quality educational programs make use of both types of data. New York State requires programs to use specific assessment practices (See Chapter 4) and to collect a common set of data (See Chapter 2). However, teachers may use a range of information gathered through a variety of other sources to help their students succeed. These sources might include off-the-shelf assessment instruments; samples of student work; records of conversations or observations that reveal information regarding student goals, backgrounds, and life issues; as well as other holistic or authentic forms of assessment.

Data Quality

Data is only valuable if it is of high quality: Reliability and validity generally determine data quality.



Reliability. Reliable data consistently measures the same thing in the same way. (Different individuals can collect data that is reliable at different times and still produce the same results.) A poor data collection instrument, inadequate staff training, poorly defined procedures, and careless recording or entry of data will affect reliability. For example, inconsistent practices regarding attendance will affect the reliability of attendance records. Similarly, programs that do not follow the standardized instructions for administering tests will produce unreliable test results.



Validity. Valid data measures what it is supposed to measure. For example, a reading test is valid if it provides an accurate picture of a student's true ability to read. However, a math test that relies too heavily on a student's ability to read may not provide a valid measure of that student's skill in mathematics.

Data that is not sufficiently valid and reliable is meaningless, and it provides a distorted picture of student progress and program success. To ensure that data is valid and reliable, and that any conclusions drawn from data are justified, programs must engage in an ongoing process to maintain high quality data. This includes:

- Continual and ongoing staff development—e.g., attending all appropriate training offered through the Regional Adult Education Network (RAEN).
- Strictly adhering to standardized practices of testing as established by the test publisher.
- Establishing clear written procedures for collecting all program data, including attendance and testing information.
- Ensuring that all staff at all sites use consistent data collection practices.
- Ensuring compliance with practices as outlined in the *Guide for Improving NRS Data Quality* (2002), which is available at www.nrsweb.org.
- Involving management in all aspects of data—i.e., sending management to all appropriate staff development activities, having management oversee data entry and Information Technology Services (ITS) staff, having management establish procedures to double-check data prior to submission, and making sure management understands the value and the limitations of different types of data.

Uses of Data

While data is generally thought of as a tool for ensuring compliance, it can serve a number of purposes.

Marketing

Schools, BOCES, and other organizations are not required to provide adult education programs; they voluntarily offer these services. Committed individuals work hard to develop programs where there is a perceived local need. However, need alone does not ensure success. In order to operate a successful facility, program managers must be entrepreneurial: they must obtain funding from a number of national, state, and local sources, both public and private; they must cultivate relationships with a range of local community organizations; they must recruit students; and they must convince the local business community of the value of adult education as a source of work-ready employees and, potentially, for employer-specific or workplace literacy programs that prepare students for specific jobs.

When culling data for marketing efforts, program managers should consider their audience and select data with a target in mind. For example, a program that is trying to solicit funding from a local school board should select data that addresses the board's priorities, such as data that reflects the value of adult education in enabling parents to participate in their children's education. A program that is trying to solicit funding from the legislature should select data that relates to legislators' concerns, like job attainment and welfare reduction. Potential students will be interested in the success rate of former students as well as the range of services available. Regardless of the effort, programs should present their data in a straightforward manner to best convince the intended audience. Specifically, programs should consider the following factors when using data for marketing purposes:

1. *Establish Clear Goals.* Programs should consider what they want their marketing to accomplish. They should be cognizant of their goals and message, which will help them select the most appropriate data.
2. *Consider Audience.* Programs should ask themselves, whom are we trying to reach with our marketing? Once an audience has been determined, programs should ask themselves several more questions: What information about our program will interest them? How much time will they spend reviewing the information? What is their level of comfort with data? In what format will the information be most readily absorbed?
3. *Select a Simple and Unambiguous Message.* The message must be unambiguous and precise. It is often tempting to provide as much information as possible in the hope that an audience will glean something of interest. Unfortunately, when exposed to an excess of unfocused data, many individuals lose interest and ultimately come away with nothing.
4. *Select Data that Conveys the Message.* If a program wants to establish its need within a community, it should select data that demonstrates that need, such as the number of students it serves, the demographics of the population, and the retention rate of various individuals. If an agency is trying to recruit students, it should select data that demonstrates the program's success, such as information relating to GED and job attainment. Other data, such as Census data, can be used to supplement NRS data. Census data can establish the need for a program by identifying educationally disadvantaged populations in specific neighborhoods.
5. *Present Data in a Manner that Maximizes Impact.* Programs should assume that their audiences will not spend a great deal of time reviewing the information. Therefore, it is often more effective to present data using bulleted lists rather than large blocks of text. Graphic presentations, such as bar or pie charts, are effective means to convey a message. However, poorly designed graphics can confuse the reader or give an erroneous impression. As with other information, graphic content should focus on one or two specific items of information that convey a specific message.

Accountability and Corrective Action

Initially, most educators charged with implementing the NRS consider its sole purpose to be accountability. This, in fact, is one of the primary reasons for the NRS: The NRS was developed as a way to make sure agencies meet an expected level of performance as mandated by various funding sources. When making funding decisions about programs funded by Title II of the Workforce Investment Act (WIA), states are required to use NRS data. New York State has elected to use NRS as the basis for accountability for state funding sources as well, including Employment Preparation Education (EPE), Welfare Education Program (WEP), and Adult Literacy Education (ALE), since most agencies receive funding from more than one of these sources. While states have a great deal of latitude in how they use NRS data, they are required to develop an acceptable protocol. The federal government expects states to establish performance standards, as well as a process to identify agencies that fail to meet the standards. The federal government expects states to establish a process to assist agencies in developing a reasonable plan to improve performance. New York State decided to wait until it received the second year's data (2001-02) before it identified agencies for program improvement. As subsequent years' data is received through the Adult Literacy Information and Evaluation System (ALIES), data quality should improve substantially.

Accountability

New York State has negotiated the following targets on the 15 core indicators:

Core Outcome Measures			
Educational gain (Advancing an educational functioning level):	2002-03 Target	2003-04 Target	2004-05 Target
<ul style="list-style-type: none"> • Adult Basic Education – Beginning Literacy • Adult Basic Education – Beginning Basic Education • Adult Basic Education – Intermediate Low • Adult Basic Education – Intermediate High • Adult Secondary Education – Low • Adult Secondary Education – High 	<ul style="list-style-type: none"> • 21% • 29% • 31% • 34% • 36% • See Received GED below 	<ul style="list-style-type: none"> • 22% • 30% • 32% • 35% • 37% • See Received GED below 	<ul style="list-style-type: none"> • 31% • 33% • 33% • 27% • 30% • See Received GED below
<ul style="list-style-type: none"> • ESL – Beginning Literacy • ESL – Beginning Basic Education • ESL – Intermediate Low • ESL – Intermediate High • ESL – Low Advanced • ESL – High Advanced 	<ul style="list-style-type: none"> • 29% • 29% • 33% • 33% • 30% • 30% 	<ul style="list-style-type: none"> • 31% • 30% • 35% • 35% • 32% • 30% 	<ul style="list-style-type: none"> • 31% • 30% • 35% • 35% • 32% • 30%
<ul style="list-style-type: none"> • Received a GED or secondary school diploma (For Adult Secondary Education – High) 	<ul style="list-style-type: none"> • 30% 	<ul style="list-style-type: none"> • 32% 	<ul style="list-style-type: none"> • 40%
Other goals <ul style="list-style-type: none"> • Entered employment • Retained or improved employment • Entered postsecondary education or training 	<ul style="list-style-type: none"> • 28% • 40% • 30% 	<ul style="list-style-type: none"> • 30% • 42% • 31% 	<ul style="list-style-type: none"> • 32% • 44% • 45%

The targets for 2002-03 and 2003-04 were negotiated after data was received from the 2001-02 program year. The New York State Department of Education (NYSED) will evaluate agencies for educational gain on two primary factors: the percentage of core indicators an agency meets or exceeds, and the overall percentage of students who succeed in meeting their goals. Agencies that fail to meet the established criteria will be placed on corrective action. (More work is needed on the formula to identify these agencies.) Targets will be re-negotiated each year.

Mitigating Factors

It is important that agencies are not unfairly compared to each other. For example, it would not be reasonable to use the same benchmark to compare a volunteer program that offers two hours of instruction per week with a program providing ten to twenty hours. For this reason, NYSED will consider the following factors when identifying programs for corrective action:

- Intensity of instruction—including volunteer versus non-volunteer programs.
- Skill level of students—including literacy in native language.
- Demographic characteristics of students—including those characteristics that might affect performance, such as disability status, single parent status, or welfare status.

Corrective Action

Corrective action is a term that often creates anxiety and controversy. Most program managers perceive being placed under corrective action as an equivalent to parole. In reality, however, corrective action is a process designed to help NYSED target limited technical assistance resources to the programs that need them the most. Presently, there are four reasons why an agency would be placed under corrective action:

- *Late Submission of Data.* Agencies that submit data beyond the required deadline date—therefore making it impossible to include their students in the federal report—will automatically be placed under corrective action.
- *Noncompliant Data Systems.* Presently, New York State requires all agencies that receive funding from WIA Title II, EPE, WEP, or ALE to report NRS data using an automated individual student record system (See Chapter 6). New York provides ALIES software, free of charge. The state provides free ALIES staff development, technical assistance, and upgrades. At present, agencies are allowed to use other electronic data systems as long as the data can be downloaded in an appropriate format compatible with ALIES. Agencies that fail to implement an automated system or implement a non-compatible system will be placed under corrective action.
- *Poor Data Quality.* Agencies that do not take adequate steps to ensure quality data will be placed under corrective action. (This may be discovered through field monitoring or other methods.) Some of the adequate steps include:
 - Implementing consistent data collection procedures
 - Checking data entry accuracy
 - Establishing follow-up practices consistent with Chapter 5
 - Following appropriate testing procedures
- *Failure to Meet State Standards.* As described above, agencies that fail to meet performance expectations on the core indicators will be placed under corrective action.

Corrective action can last between one and three years. Agencies will automatically be taken off of corrective action when they no longer meet one of the four criteria described above. Agencies under corrective action are required to develop and submit a “Corrective Action Plan.” This plan should identify the reasons for the condition requiring corrective action and the steps that will be taken to ameliorate the conditions. This will be a collaborative process between the NYSED, RAEN, and the agency.

The NYSED recognizes that there are many reasons why a program might fail to meet state standards. For example, an agency might serve a population that has a difficult time making progress—e.g., individuals illiterate in their own language, or persons with disabilities. Other programmatic factors, such as intensity of service or local conditions, can affect program performance. NRS data can be used to help identify areas that can be improved.

Program Management and Improvement

Adult education professionals are not accustomed to using data to inform their decision-making process. Although agencies have been required to submit data for years, the process is often still perceived as a necessity of compliance that takes time away from the important job of teaching. The use of data to establish accountability reinforces the following perception: The onerous task of collecting data not only takes time away from more important work—like that of teaching—but the actual data is perceived as a sword of Damocles, which threatens to take money away from programs providing valuable service to the community.

The greatest value of the NRS data, however, is not to identify low performing agencies. Nor are the agencies identified as in need of improvement the only agencies that can—or should—make use of data. Regardless of performance level, every funded agency is expected to engage in a continuous process of improvement.

The Program Improvement Process

All funded programs should engage in the following process at least once a year.

1. *Identify Agency Staff Who Are Involved in the Program Improvement Process.* Agencies should regularly convene a committee made up of teachers, managers, data entry and ITS staff, support staff, and paraprofessionals. While all staff members may not be comfortable discussing data issues, experience has shown that involvement in this kind of activity will not only increase their comfort level but will help them realize that using data can help them do their jobs more effectively.
2. *Identify Issues, Problems, or Topics.* The process of learning is a complex one. Most experienced educators can identify dozens of factors that affect learning. By clearly defining a topic to be investigated, programs can narrow down the variables they need to consider. The topics can come from agency performance (those under corrective action will need to focus on the identified problem areas), from knowledge of research and practice, or from curiosity concerning some aspect of the program. These topics serve to identify areas for exploration.
3. *Develop Measurable Questions.* In order to use NRS data to explore the identified issues, programs must frame these topics as measurable questions. However, programs should be careful when constructing the questions. They should make sure that several questions are not embedded within a specific question, that the question can be answered using available data, and that the information can be assembled in a reasonable timeframe using the existing system. For example, a question like, “What are the factors that are leading to poor student progress?” is too broad; it needs to be refined. Is student progress poor in all areas, in all locations, for all students, for all teachers? How do we define “poor”? What is the measure or metric that is used to demonstrate student progress? The process of refining the question will help programs identify areas for exploration as to the cause. (For more information, see “Developing Research Questions” below.)
4. *Develop an Analysis Plan.* In this step, programs should link their research questions to specific data elements, which they will then use to answer the question. Programs should determine the format they will use to display the data. If gains are poor, are they poor for every site, for every teacher, for all demographic groups? The data should be displayed in such a way as to answer the measurable research question.
5. *Analyze and Interpret Data.* Using the data produced in the analysis, programs should answer the research question.
6. *Develop Plan for Changes in Program Management or Procedures.* Once the research question has been answered, agencies should develop a “program improvement plan.” This will require agencies to define the changes that must be made and to identify the procedures, resources, and staff that will be involved.
7. *Implement Plan.* Staff must understand and support the program improvement plan. In order to help facilitate this process, management must play a strong leadership role. In addition, all involved staff members should attend staff development workshops to help them learn the process and appreciate its value.

8. *Evaluate Change.* After a predetermined period of time, agencies should ascertain if the program improvement plan was effective. Agencies should prepare the same data used during the analysis portion of the process for the evaluation period.
9. *Return to Step One.* Program improvement is a continuous process: It should be built into an agency's foundation and become the basis for programmatic decision-making.

Developing Research Questions

Inputs Versus Outputs

For purposes of developing research questions, it is helpful to imagine an educational program as a sort of manufacturing process. The product is the output of the system. The quality of the product will vary depending on inputs, such as the quality and type of raw materials, the amount of time to treat the materials, the skill of the workers, the quality control measures implemented, etc. Granted, the educational process is significantly more complex than the manufacturing process; however, in both cases similar measures can be employed to improve quality. In the NRS, the core measures are all outputs (although there are other outputs that are not core measures). Each of these outputs is affected by a number of inputs.

Data Fields that Can Be Compared

The NRS provides programs with a rich source of programmatic information, and it makes available both input and output data. Comparing input data with output data is the most effective way to answer research questions.

Outputs:

- Eleven levels of educational gain, including Adult Basic Education (ABE), Adult Secondary Education (ASE), and English as a Second Language (ESL)
- Obtaining, retaining or improving employment
- Entering postsecondary education or training
- Attaining a GED or high school diploma
- Number and percent of students who are post-tested
- Student retention (i.e., contact hours)
- Attainment of secondary measures (family and community)
- Reduction in public assistance
- Achievement of other personal goals

Inputs:

- Race /ethnicity
- Gender
- Age
- Income status
- Public assistance status
- Labor force status
- Single parent status
- Disability status (including learning disability)
- Rural residency status
- Dislocated worker status
- Displaced homemaker status
- Program enrollment type:
 - ABE, ASE, ESL
 - Family literacy
 - Workplace literacy
 - Homeless program
 - Correctional program
 - Community correctional program
 - Other institutional program
 - Distance learning program
- Country of origin
- Literacy in native language
- Intensity of instruction
- Time of classes
- Location of classes

The following is a hypothetical research question from an input/output perspective.

Question: Why are gains markedly less for students on ESL level 4?

Output: Level 4 students advancing one or more educational levels as measured by BEST Plus.

Inputs:


- Country of origin of students
- Students' literacy in their native language
- Age of students
- Intensity of instruction (i.e., number of hours per week, month, or year)
- Teacher ability (education level, experience, full-time/part-time)
- Curriculum
- Time of classes
- Location of classes
- Frequency of post-testing

These, as well as other inputs, can affect the educational gain output. In breaking this question down into inputs and outputs, additional questions can lead to more productive lines of inquiry. For example:

- Are there any characteristics of the students that would affect gains?
- Does intensity of instruction affect gains?
- Are evening classes more effective than day classes in helping students make gains?

Breaking questions down in this way helps programs focus, thereby making the program improvement process manageable. When developing research questions, programs should keep the following in mind.

- Programs should ask questions that will assist them in making data-driven decisions. For example, the question, "Is my program effective for all students?" will not lead to specific data that can help an agency make decisions about its programmatic offerings or management. However, the question, "How does attainment of a GED, entry into employment, and educational gain differ by student age and ethnicity?" will generate data that can reveal important information about a program.
- Programs should ask questions for which data is available. There may be important questions that can only be answered by using data that is not required by the NRS. In the example above, the question, "Do curriculum differences affect student gains?" is such a question. The NRS does not require programs to collect data on curricula. Therefore, this question cannot be answered using available data. For questions like these, programs can opt to supplement NRS data with additional information. It is up to each individual agency to determine whether a question like this is important enough for staff to expend the time and effort to collect the additional data.
- Programs should pursue only those questions about areas that can be changed. However, those areas that can't presently be changed might be considered for long-term program goals that may impact fund raising or program structure. For example, it does not help to know that more contact hours will improve gains if a program is unable to modify its schedule of classes. Similarly, discovering that more experienced teachers have better results does not help if only inexperienced teachers are available.

 NYSED expects programs to use a data collection system that is capable of conducting the analyses needed to support the program improvement process. Programs using ALIES, the software supported by New York State, can employ this tool to compile data useful for analyses during the research and evaluation stages. In future versions, ALIES will undergo significant improvements to its data analysis capacity by adding more standard reports and an improved ad hoc reporting module.