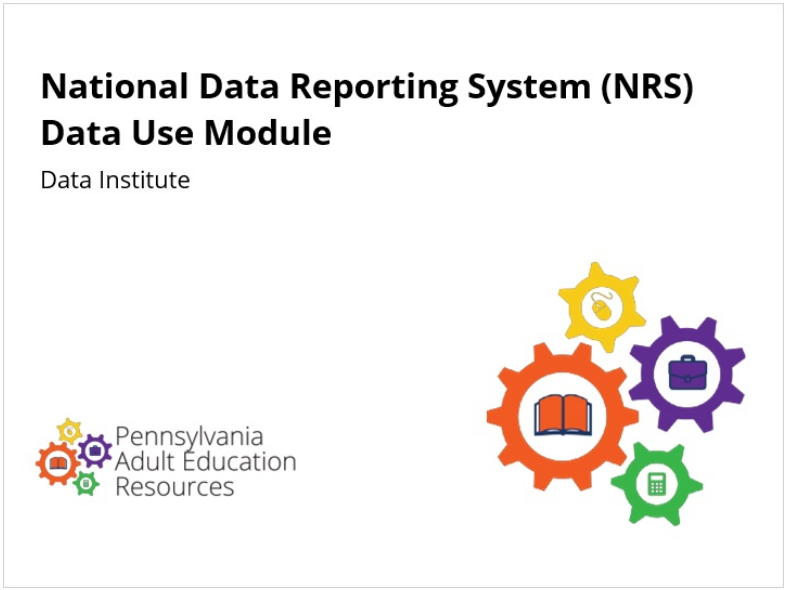
NRS Data Use Module Presentation Notes

Introduction

Welcome

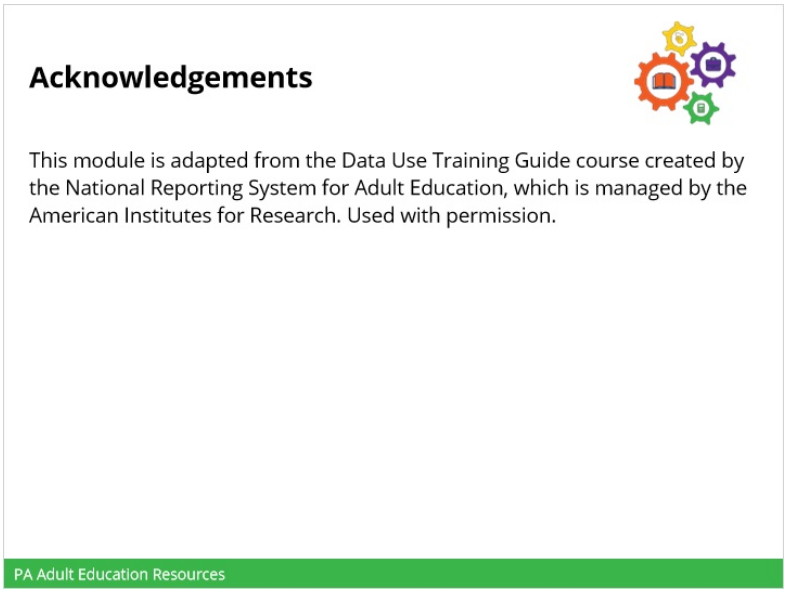


Notes:

Welcome to the NRS Data Module. Please be sure to have your audio turned on as you work through this module. You may stop the module at any time, and it will resume where you left off if you return to it using the same device.

Please click on the Next button to continue.

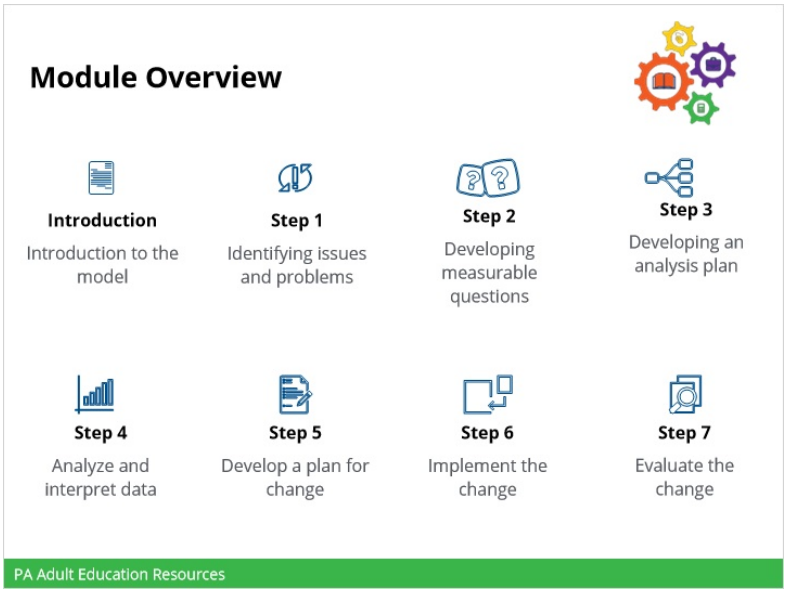
Acknowledgements



Notes:

This module is adapted from the Data Use Training Guide course created by the National Reporting System for Adult Education, which is managed by the American Institutes for Research.

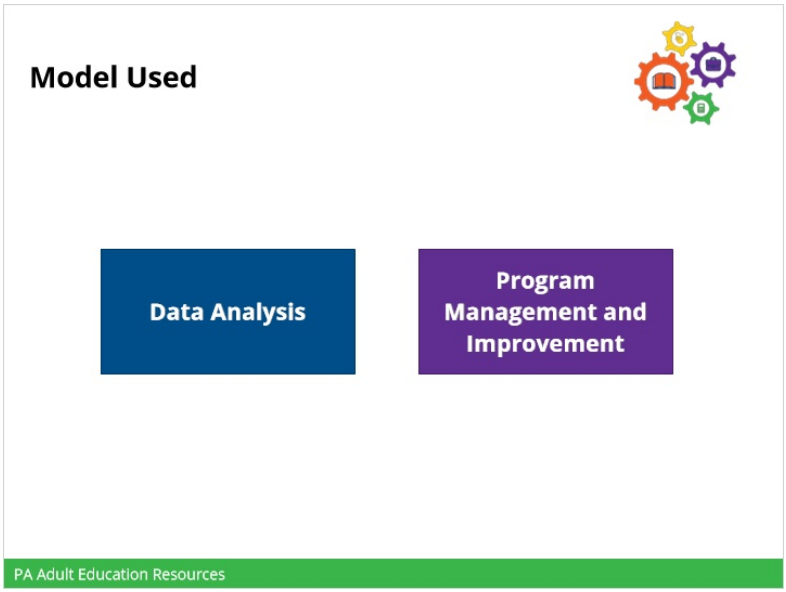
Module Overview



Notes:

This in-depth, eight-part module includes a variety of readings and tools that illustrate the art of being a data detective and using data to monitor performance, understand programs, and plan and evaluate program improvement efforts. The module is designed to follow a sequence in which each new section builds upon the previous section.

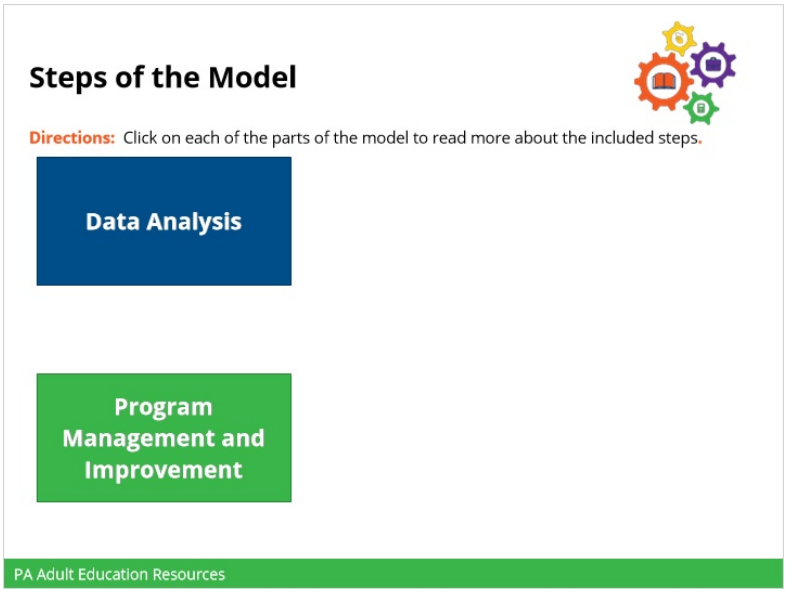
Model Used



Notes:

Recently, much has been written about using data for decision-making and program management and program improvement. Several models of this process exist. The model presented in this module was created by the National Reporting System (NRS). The process is divided into two parts: data analysis and program management and improvement.

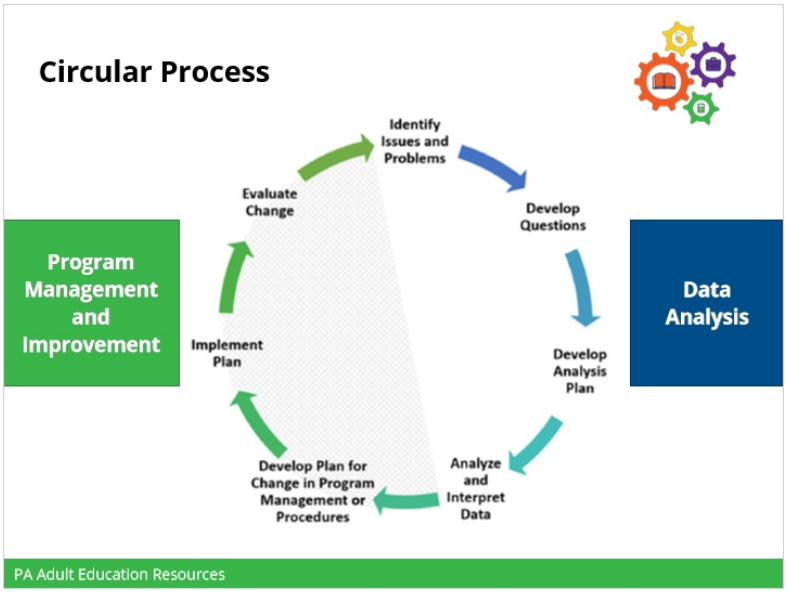
Steps of the Model



Notes:

Click on each of the parts of model to read more about the steps included in the model for using data for program management and improvement.

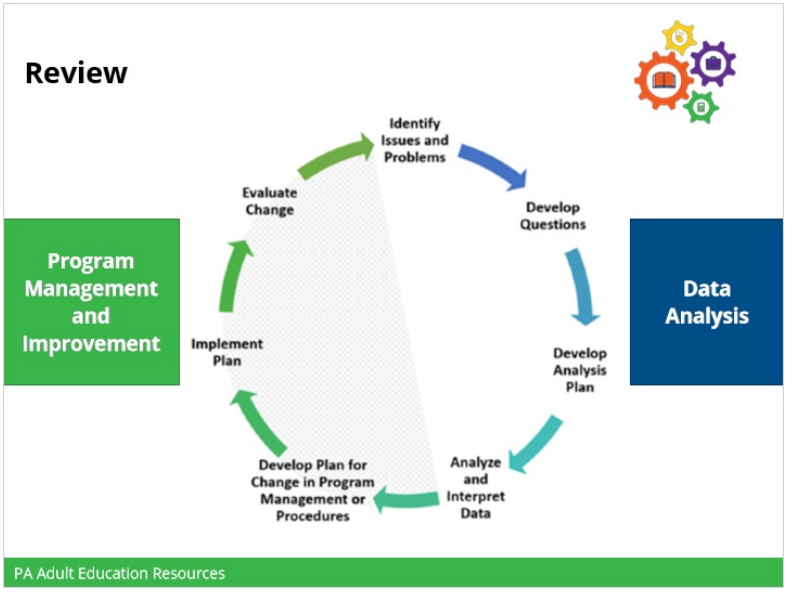
Circular Process



Notes:

We show the entire process as a circle, to emphasize the continuous nature of data-drive program management and improvement.

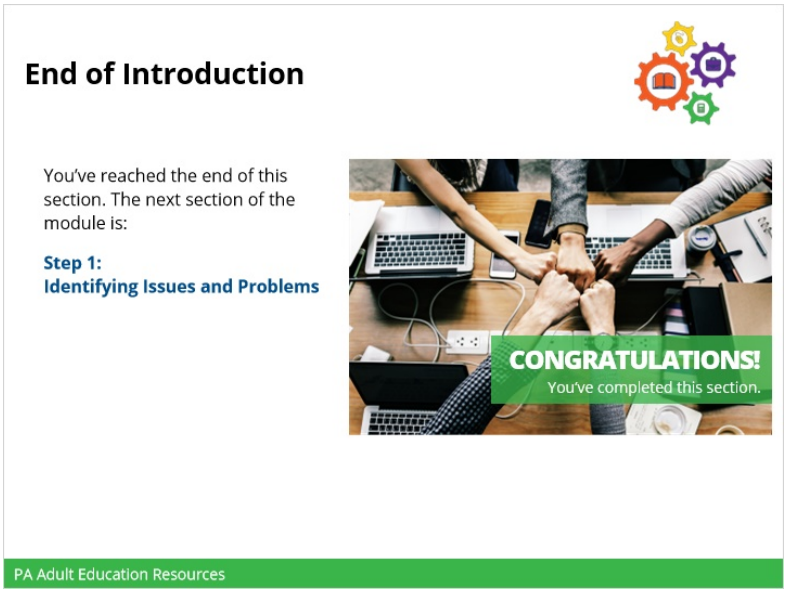
Review



Notes:

Please review the steps in the model. We will be looking at each of these steps more closely as you progress through this module.

End of Introduction

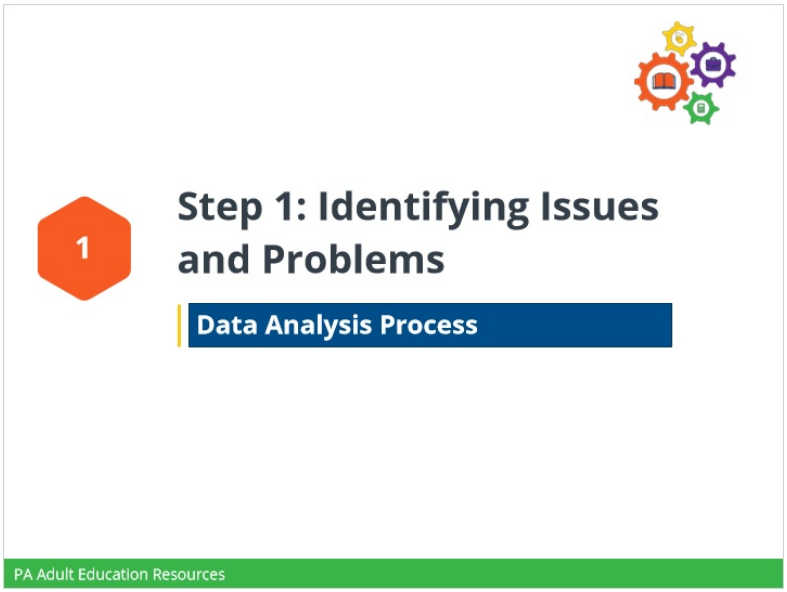


Notes:

Congratulations, you have completed the first section of the module. Please click on Next to advance to the next section, which will look at Step 1 of the Data Analysis Process: Identify Issues and Problems.

Step 1

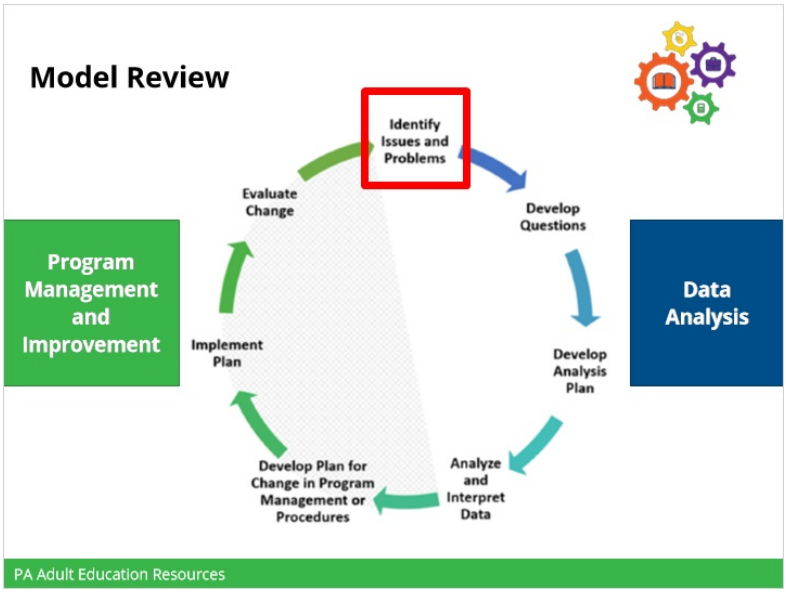
Step 1: Identifying Issues and Problems



Notes:

Welcome to Step 1. This part of the module will provide details on how to better identify issues and problems that face a local adult education program.

Model Review



Notes:

As previously mentioned, there are two parts of this adapted NRS data use model: data analysis and program management and improvement. Each of these parts has steps. We will begin with the four steps of the data analysis part of the model.

Step 1 is a very important step in the process. In this step, we will work to identify issues and problems that your agency may be encountering.

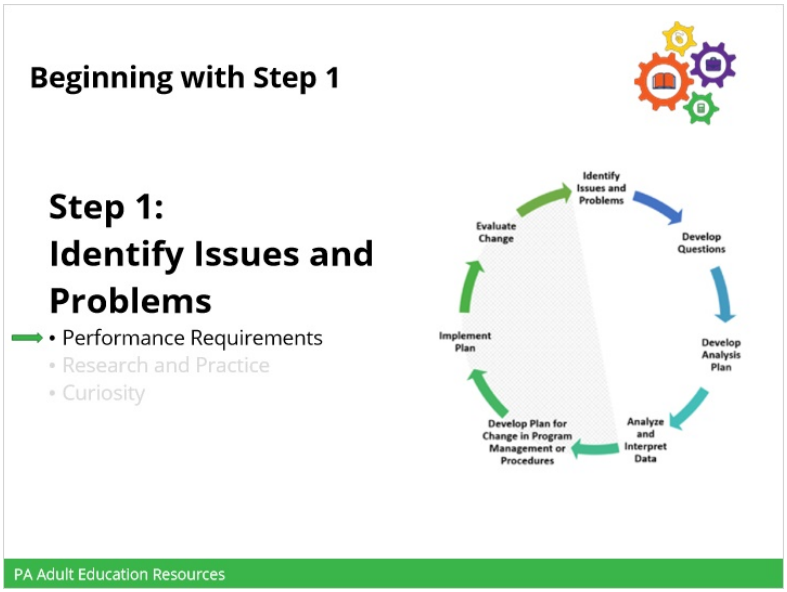
Beginning with Step 1

Notes:

When confronting complex issues such as student learning and adult basic education program management, the amount of information or data you have to process may seem overwhelming. You may quickly become lost or confused without something to guide and focus your efforts. Having specific issues or a framework as you begin will make your efforts to use data more efficient and successful. The identification of issues and topics may come from performance requirements, research or knowledge of good program practices, or simply from your own curiosity.

Examples of program problems may include such issues as inefficient data flow processes, not meeting performance standards, decreasing attendance hours, or lack of goal setting with students.

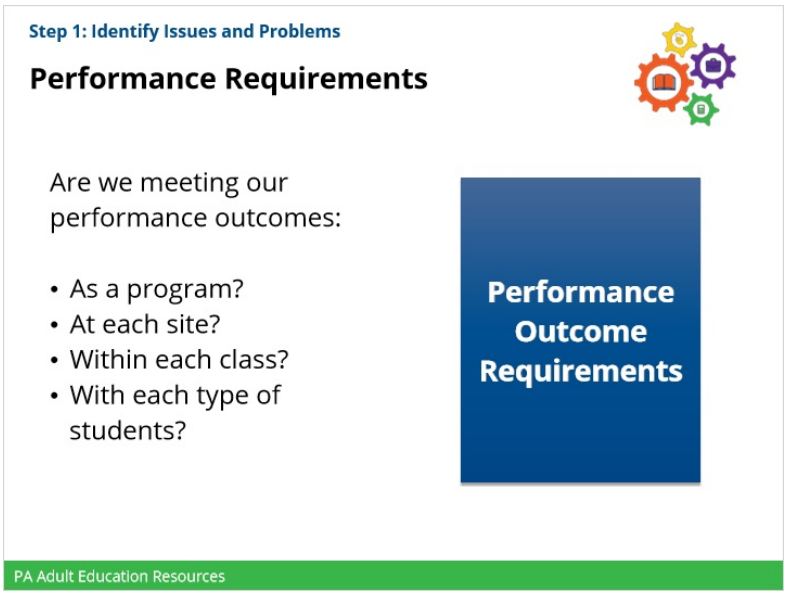
Beginning with Step 1



Notes:

Let's first look at how performance requirements can be used to identify issues and problems.

Performance Requirements



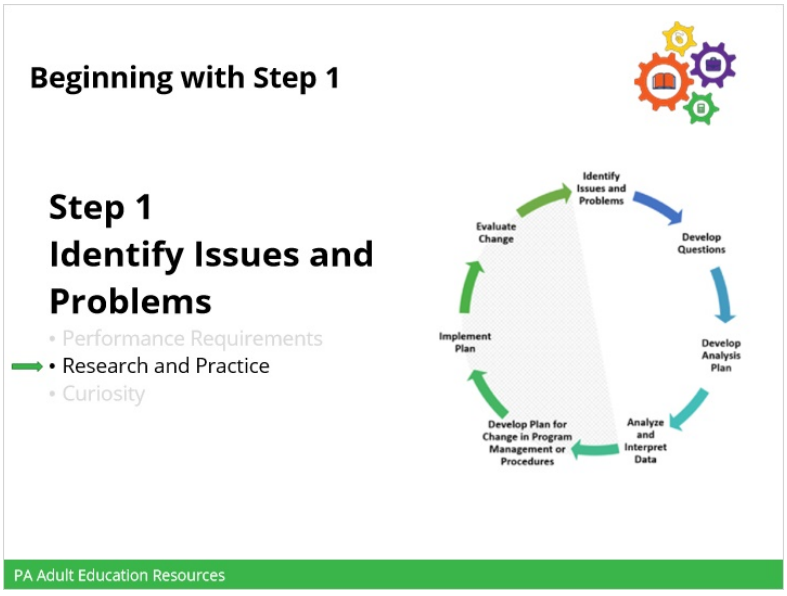
Notes:

One way you can identify program issues and problems is by looking at performance requirements.

Under the National Reporting System (NRS), programs must meet performance standards for their student outcomes. In addition, many programs must meet other requirements set by state or other funding agencies as part of their grants.

For example, all programs have performance outcomes related to employment, educational gain, and enrollment in postsecondary education. Programs also have contracted enrollment numbers, which is the number of students that must meet enrollment in a program year. All of these performance outcomes are benchmarks by which to evaluate your program using data. They offer areas for you to investigate that will help you to manage and improve the quality of your program. You can examine whether you are meeting the requirements and look at variations by sites, classes, or types of students.

Beginning with Step 1



Notes:

Now let's explore how research and practice can be used to identify issues and

problems.

Practice and Research

Notes:

Your knowledge and beliefs about what is good practice in adult education regarding instruction, retention, intake, goal setting, and other areas can also guide you when deciding what data to examine. We all have our own ideas, based on our experiences and education, about what is important to program management you can use data to test these ideas.

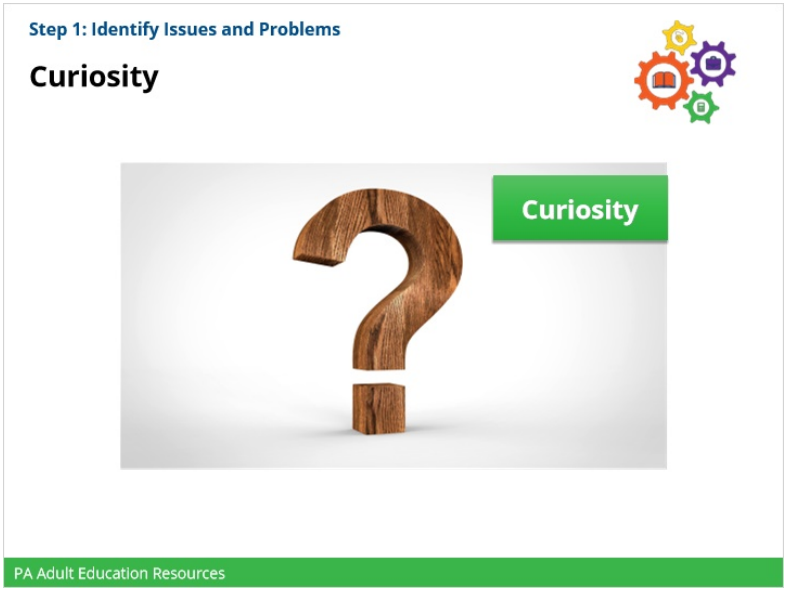
Research sometimes suggests other topics you might want to investigation with your program's data, such as a new way to recruit or retain students, a curriculum found to be effective, or an instructional approach. Finally, you might want to know whether you are retaining students long enough, how well you are reaching your target population, and if you are meeting performance standards. Any of these issues can serve as a basis for study using your program's data.

Beginning with Step 1

Notes:

Curiosity is also an important element of identifying issues and problems.

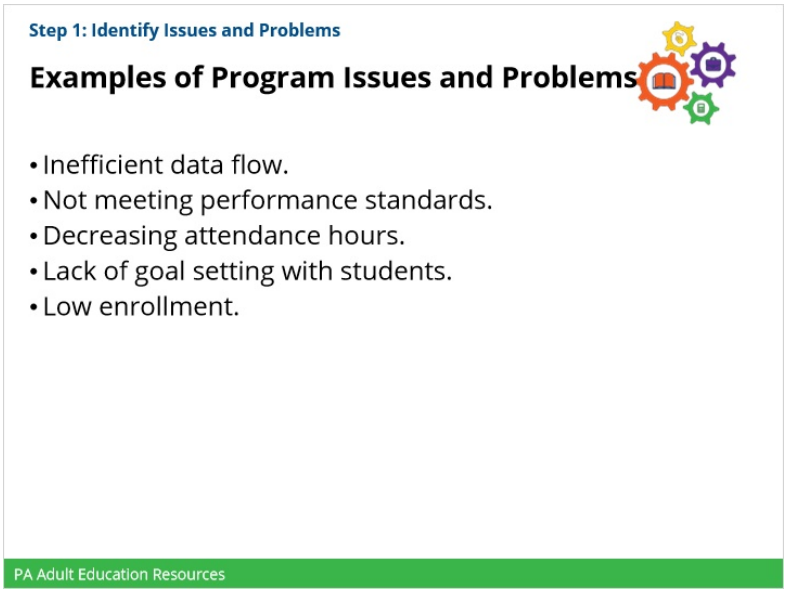
Curiosity



Notes:

Your interest in your data may stem from simple curiosity - and this approach is not to be discouraged, as many important findings in all fields began just that way. You may just want to look at data to see what you can find out. Indeed, this practice is common among people who appreciate and get excited about data. When exploring data, you are bound to find patterns that indicate good practice or problems, or are otherwise worthy of further investigation.

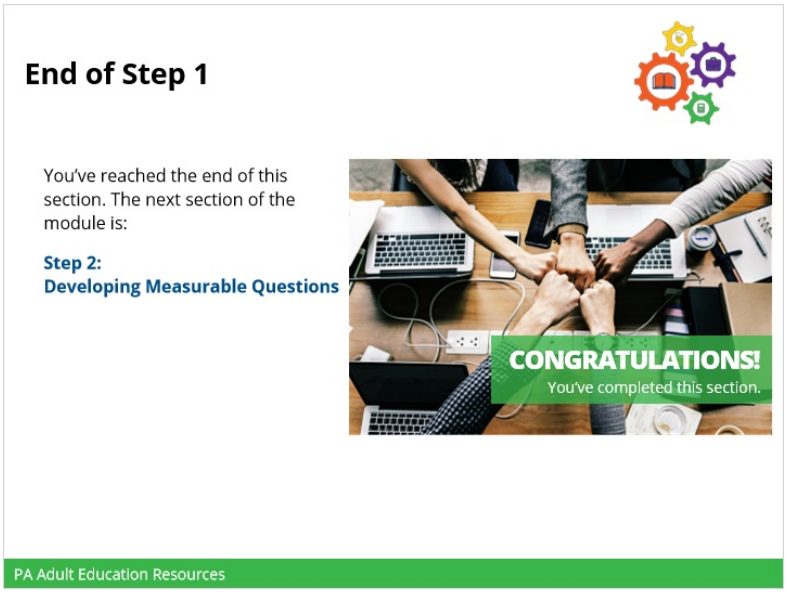
Examples of Program Issues and Problems



Notes:

After considering program requirements, practice, research, and your curiosity, you will most likely have identified one or more issues or problems. Some examples of program problems may include such issues as inefficient data flow, not meeting performance standards, decreasing attendance hours, or lack of goal setting with students.

End of Step 1



Notes:

Congratulations, you have completed the first section of the module. Please click on Next to advance to the next section, which will look at Step 2 of the Data Analysis Process.

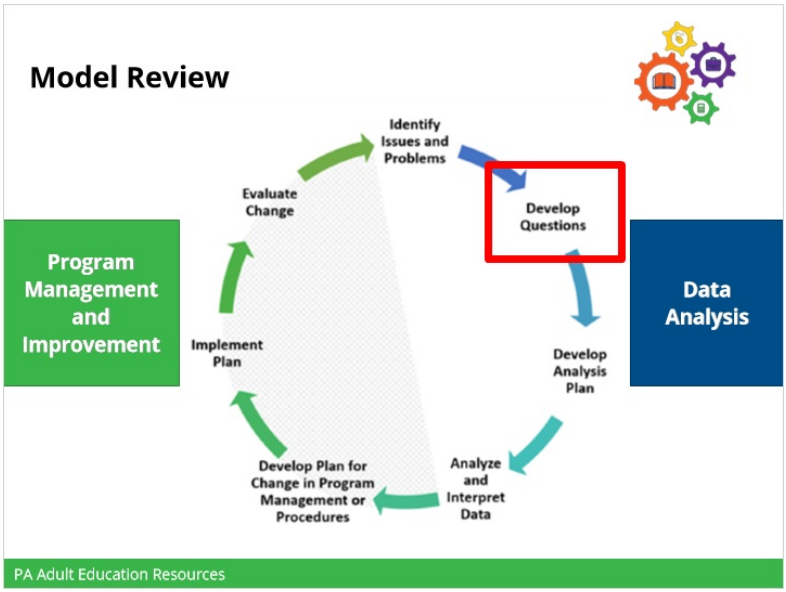
Step 2

Step 2: Developing Measurable Questions

Notes:

Welcome to Step 2. This part of the module will provide details on how to develop measurable questions that can be answered with data. This data can be qualitative or quantitative.

Model Review

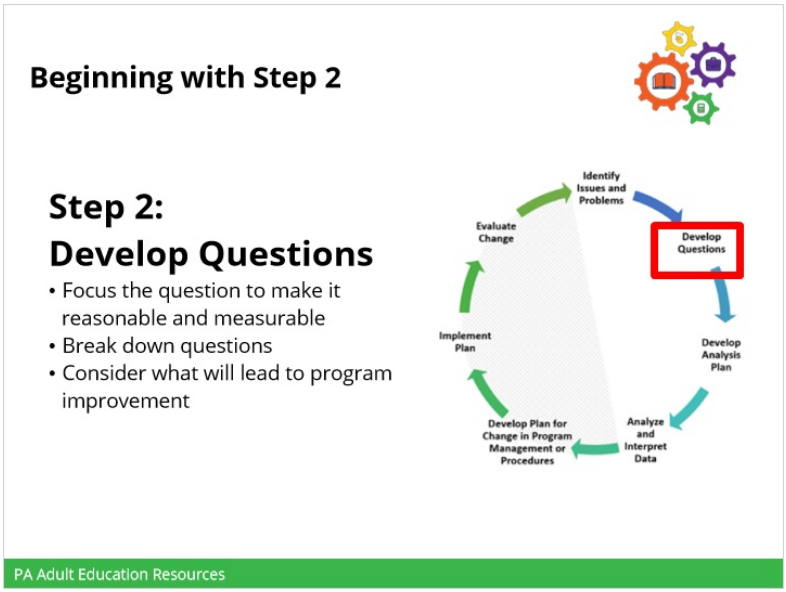


Notes:

After identifying the issues, questions are developed. These questions focus on the issues, educational inputs and outputs, and core outcomes. They are written in such a way that there are measurable answers to the questions. Think of questions like the S for specific and M for measurable in SMART objectives. Your questions should be specific and measurable.

Some issues will need to be broken down into a series of questions in order to completely understand the issue. For example, a question might be, "Is the agency meeting performance standards?" In this case, there are several performance standards, so it behooves the agency to break down the standards into the unit parts.

Beginning with Step 2

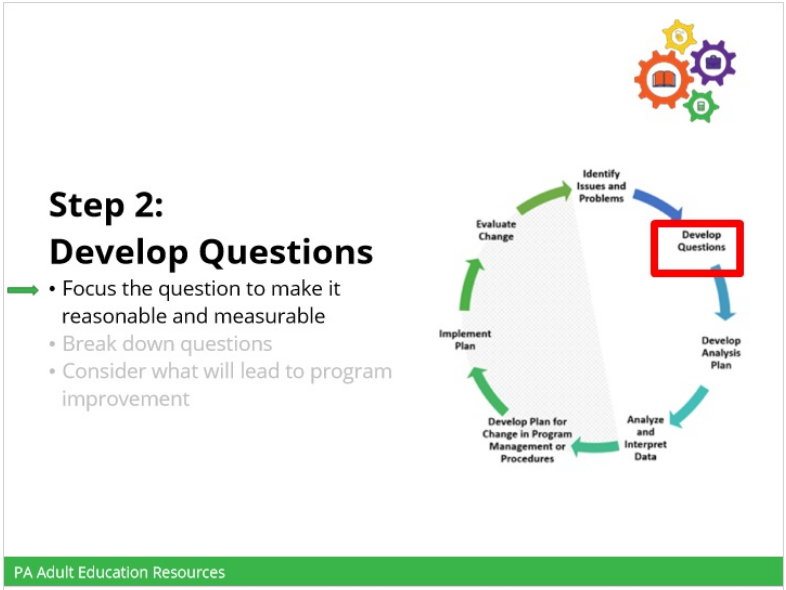


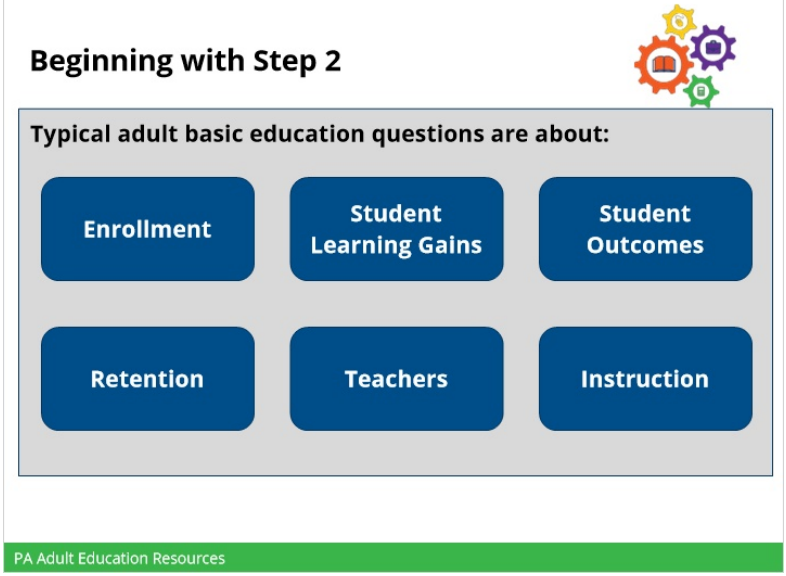
Notes:

Regardless of how your program decides which issues or topics to pursue, it is essential that you focus and refine them in a way that allows the questions to be translated into measurable questions that can be addressed with data. The development of good data questions is central to using data for decision-making, as the questions determine the data you will examine and the conclusions you will draw. A poorly developed question cannot be answered or will provide an answer that is not helpful. Therefore, you should carefully consider and refine the questions you are asking before you continue.

Almost all the questions we ask in adult basic education are about enrollment, student learning gains and outcomes, retention, or teachers and instruction. It is not difficult to generate questions about these issues. A few minutes of brainstorming on your own or with teachers and program staff is likely to produce a long list. You may find, however, that you are unable to use many of these questions, as they will be too conceptually cloudy or unable to be tied to data. There is an art to refining questions to make them useful in the data for decision-making framework, and this skill improves with experience. The following guidelines will help you to develop measurable questions that you can answer with your data to get information that will help with program management and improvement.

Focus the question



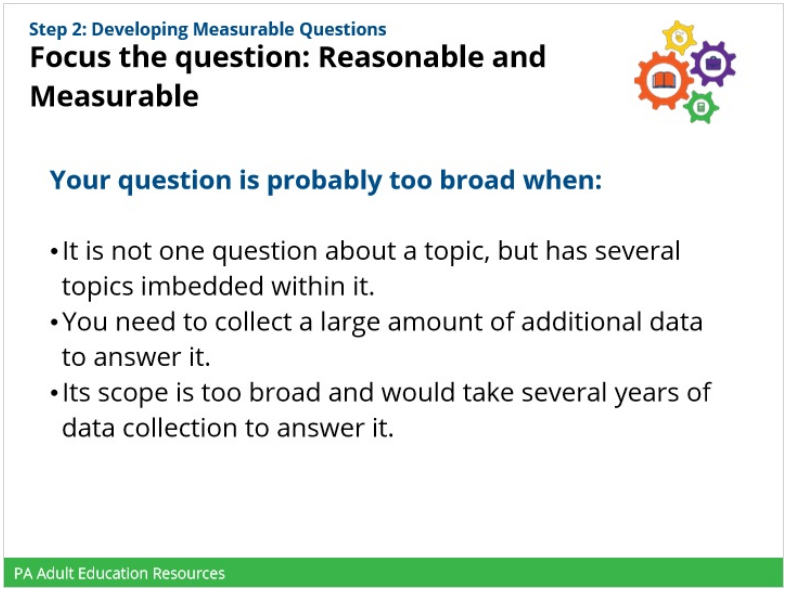


Notes:

Let's first take a closer look at how programs can focus the question to make it reasonable and measurable.

Focus the question: Reasonable and

Measurable



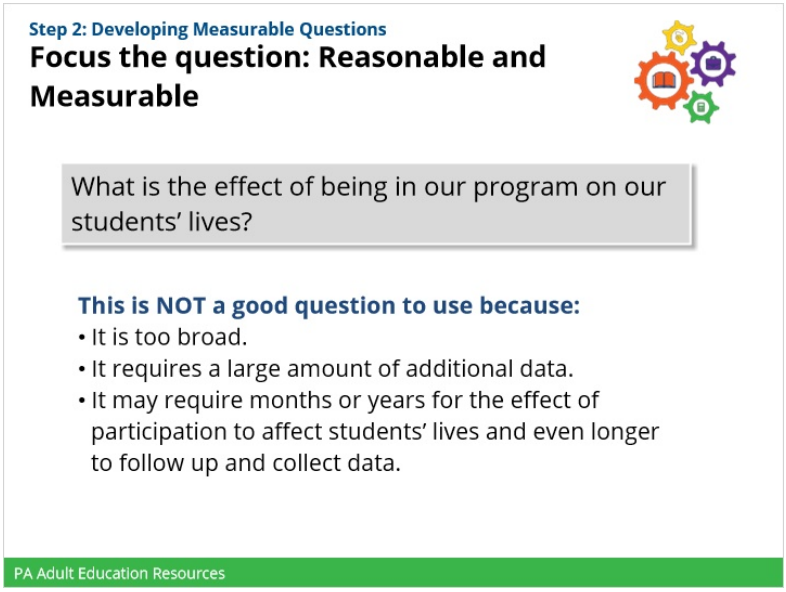
Notes:

A common mistake is to pose the question far too broadly for you to answer. The question may address the topic of interest, but it may be unmanageable because you do not have the time or resources to address it.

Your question is probably too broad when:

- It is not one question about a topic, but has several topics imbedded within it.
- You need to collect a large amount of additional data to answer it.
- Its scope is too broad and would take several years of data collection to answer it.

Focus the question: Reasonable and Measurable



Notes:

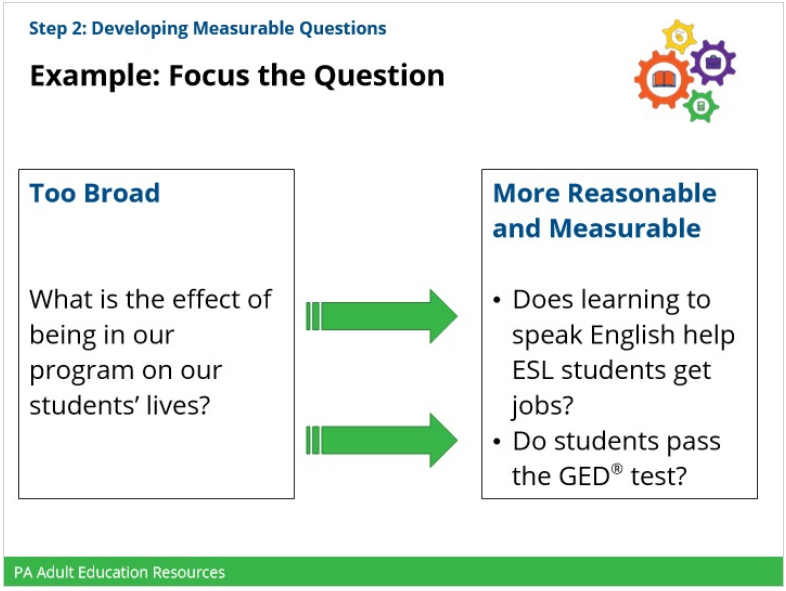
Let's take a closer look at this question. It certainly is a fascinating question, but it is unlikely that you would want to try, or be able, to answer it with your program's data. There are several reasons why this would not be the best type of question to use.

First, there are clearly several topics and questions imbedded in it. The question does not specify which features of the program might affect students, nor what about student's lives you would expect to change. A question this broadly stated could also take years of data collection and a major research student to answer adequately.

Furthermore, a satisfactory answer would require data about students' lives that you almost certainly do not collect for the NRS, meaning you would have to devise additional measures and data collection procedures.

Finally, it may take months or years for any effect of participation in an adult basic education class to affect students' lives, longer than you would be able to follow-up and collect data on this topic.

Example: Focus the Question



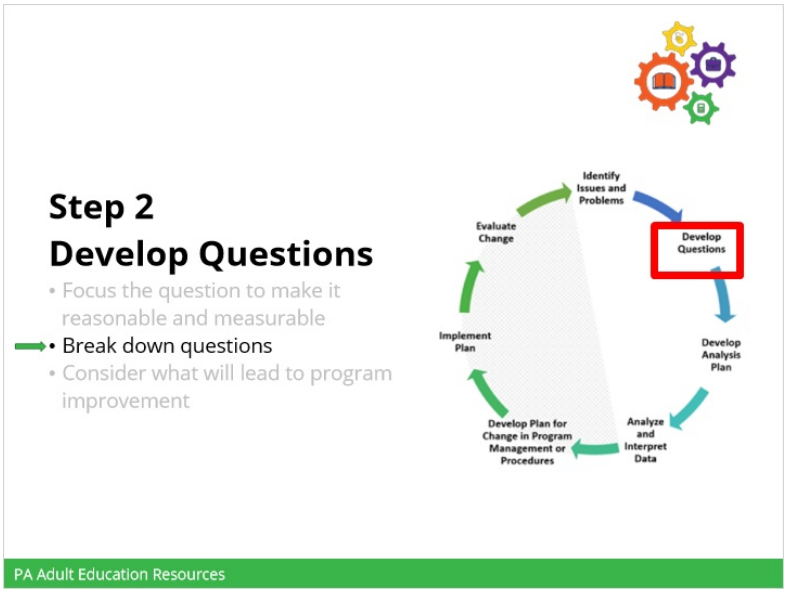
Notes:

A broad question could be a good start through, for by posing it, the discussion centers on how it is measured and what data is collected. Narrower questions are the desired result. Here are two examples of reasonable and measurable questions that may come from the broad question:

- Does learning to speak English help ESL students get jobs?, and
- Do students pass the GED® test?

You can answer these narrower questions with your program's data.

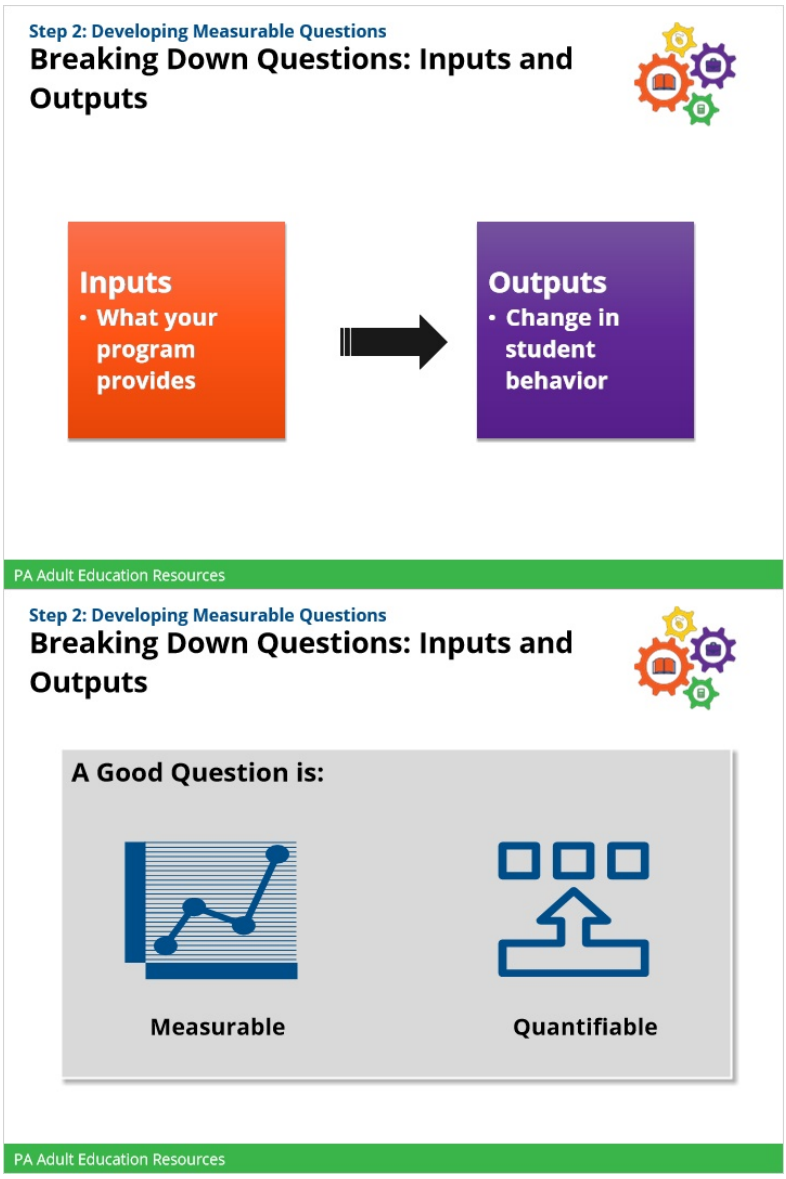
Breaking Down Questions



Notes:

Now let's look at how programs can break down questions.

Breaking Down Questions: Inputs and Outputs



Notes:

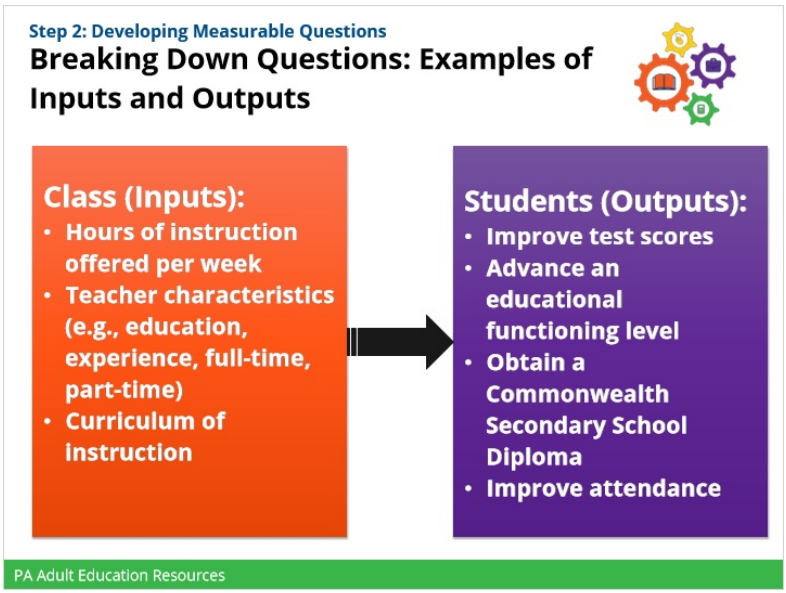
A good question is one that is measurable and quantifiable. That is, the question suggests the data that you need to answer it. One way to focus and improve a question for data-driven decision-making is to see whether you can break it apart to identify educational inputs and outputs.

Think of your program as providing educational inputs to students, such as instruction or other experiences, which result in a change in a student behavior or outputs as measured through your data. Thinking about the question this way will help you to evaluate whether it is a good question and also suggests ways you can narrow it.

For example, the question "Which of our classes help students more?" needs to be narrowed and refined before it can be of help. While the question does refer to educational inputs, "classes," and outputs "help students," the next step is to define more clearly what these inputs and outputs are.

Breaking Down Questions: Examples of

Inputs and Outputs



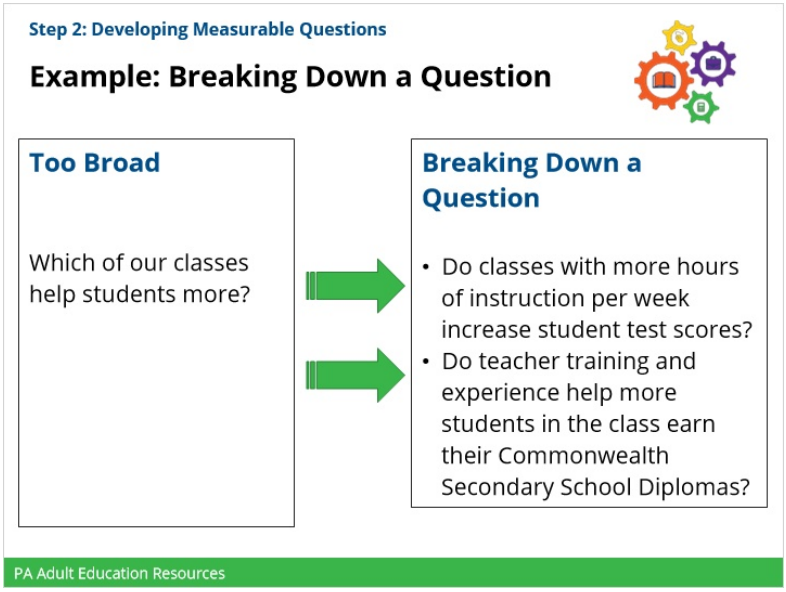
Notes:

The educational inputs, or what your program does, are what happens in a class that might affect the student. The amount of instruction offered per week, the

characteristics of the teacher, and the content of the instruction or the curriculum, can affect student outcomes or outputs.

Learning outputs related to attending the class could include improving on tests, advancing an educational function level, or passing the GED tests. Better attendance might also be a student output you want to study, assuming that more regular attendance helps the student.

Example: Breaking Down a Question



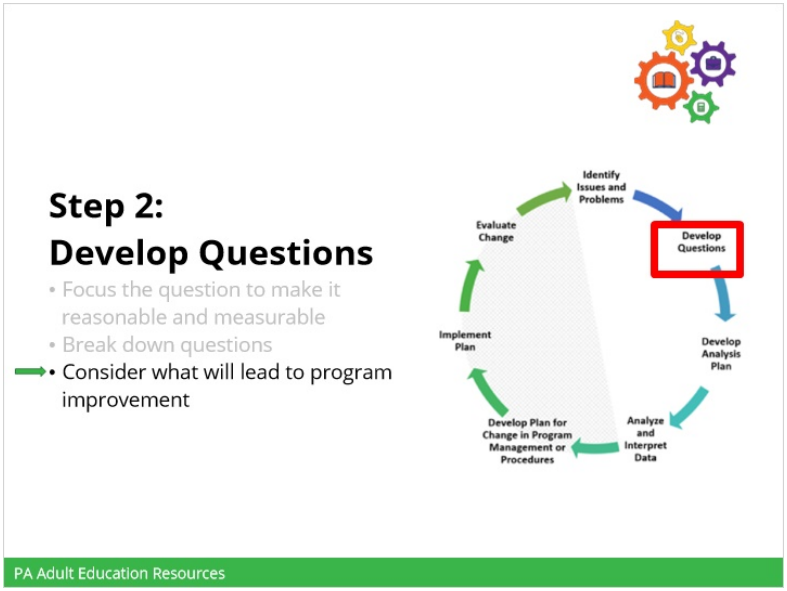
Notes:

Breaking down a question in this way helps you to focus on what you really want to know and makes getting the answer more manageable. For example, this analysis suggests that the original question about which classes help students more might be better phased as:

- Do classes with more hours per week increase student test scores? or
- Do teacher training and experience help more students in the class earn their Commonwealth Secondary School Diplomas?

These questions are more direct, can be related to NRS data you have available, and can help you with program decisions on how to design your classes.

Consider what will lead to program improvement



Notes:

A third consideration that will help you to develop data questions is to ensure that your question will give you the information that you need for program improvement. Click Next to explore this topic further.

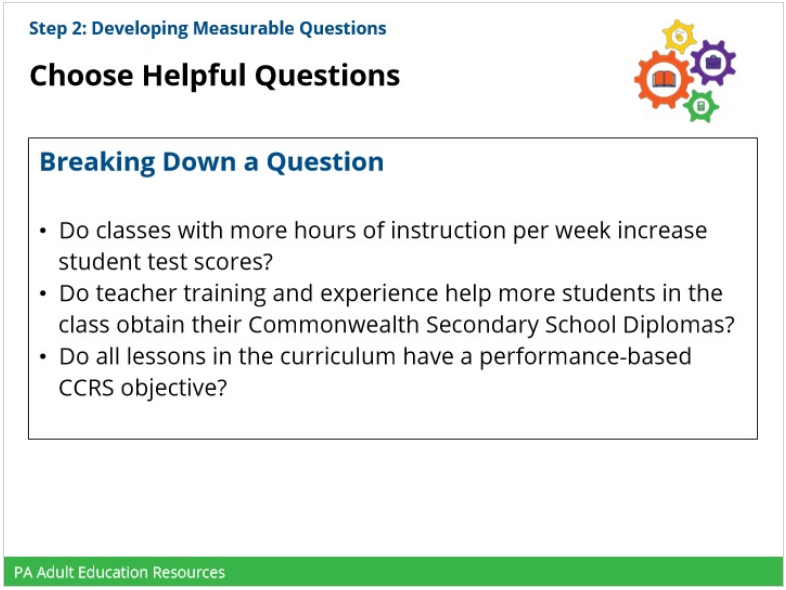
What will Lead to Program Improvement?

Notes:

In other words, the question, when answered, should give you information that will guide you toward a positive change in your program. While this may seem obvious, it is not uncommon for people to enter the data analysis process not really sure about what they want to know or whether they can use the information that eventually will result.

On the other hand, if you enjoy data analysis, you may get carried away and ask too many questions. “Nice to know” questions - which are interesting and satisfy your curiosity - should be avoided, unless you have the luxury of time and resources to answer them.

Choose Helpful Questions



Notes:

Once you begin breaking down questions, you are likely to generate several more questions, some of which you will be unable to address or will not be helpful for you to answer.

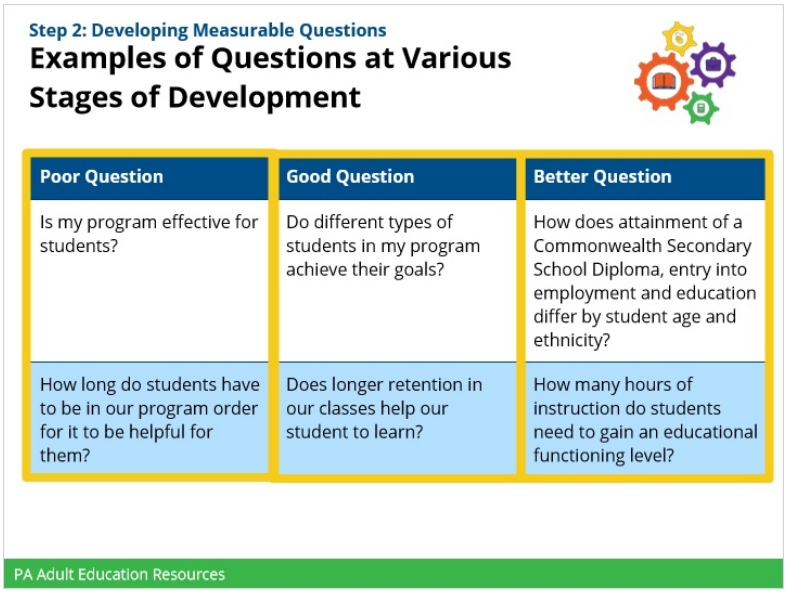
For example, earlier, we broke down the general questions about classes into three topics: instructional hours, teachers, and curriculum. To decide which of the questions you want to pursue, think about which provides you with information you want to know and whether the information will help you to make good decisions about your program.

Knowing that more hours of instruction per week are related to improvements in your students' test scores, for example, does not help you if you are unable to change your class schedules and instructional hours allotted.

Similarly, knowing if any teacher characteristics are related to learner advancements will be of little use to you in managing your program if you are unable to hire the teachers you need.

Quite simply, ask for the information you need and can use.

Examples of Questions at Various



Notes:

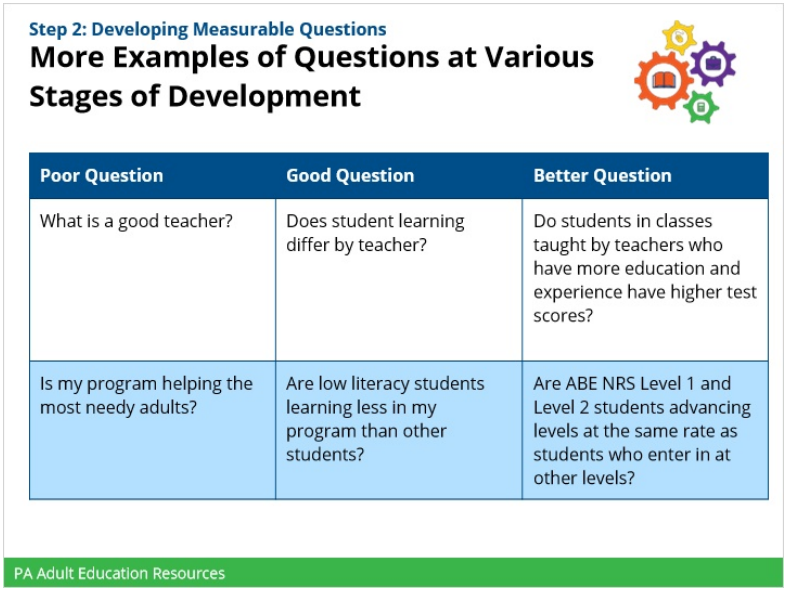
To summarize, this table shows examples of questions at various stages of development for use in data-driven decision-making. The questions in the first column, Poor Questions, are broad and unfocused. They address global concepts and imply a range of outcomes. Answering them fully would require collection of much data over an extended time. In addition, the issues they address, good teaching and program effectiveness, require several distinct questions.

In the second column, Good Question, the questions have been narrowed and focused on data that are available in most programs. Program effectiveness in the first question has been defined in terms of student goal achievement, and an outcome has been added to help to clarify what good teaching and helping adult learners mean. These questions are more amenable to the next step, breaking them down to reveal the implied educational inputs and outputs for analysis.

The last column, Better Questions, shows questions that result from this breaking down process and phrasing the questions to give more specific answers. These questions are unambiguous, identify specific data for review, and will produce answers that can help with program management and improvement.

Take a moment to review each of the questions and notice the difference. After you have reviewed these questions, click Next to view more examples.

More Examples of Questions



Notes:

Read through each of these questions, noticing the difference between the various stages. After you have read these questions, click Next to advance to the next activity.

End of Step 2

Notes:

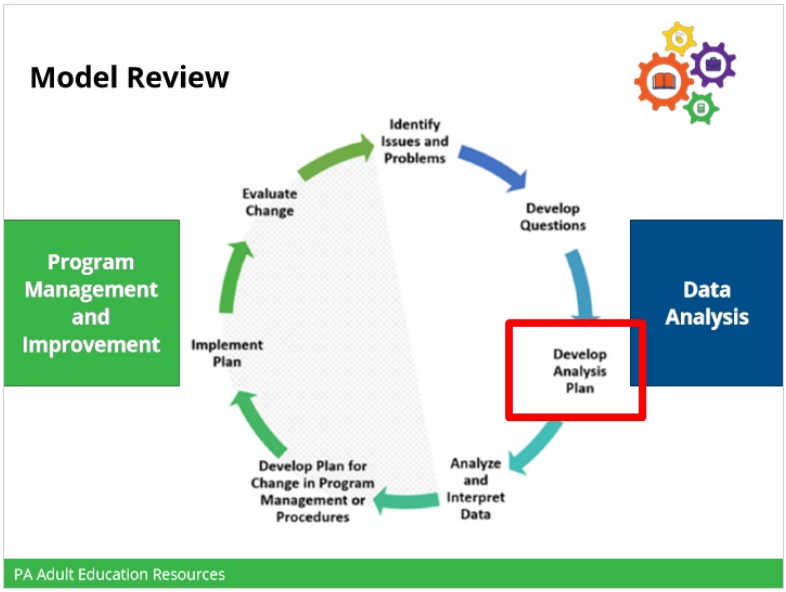
Congratulations, you have completed this section of the module. Please click on Next to advance to the next section, which will look at Step 3: Develop an Analysis Plan.

Step 3

Notes:

Welcome to Step 3. This part of the module will provide details on how to create a data analysis plan that describes the data needed to answer the questions and how to present that data.

Model Review



Notes:

Once you have finalized the questions, it is time to plan more explicitly for the analysis.

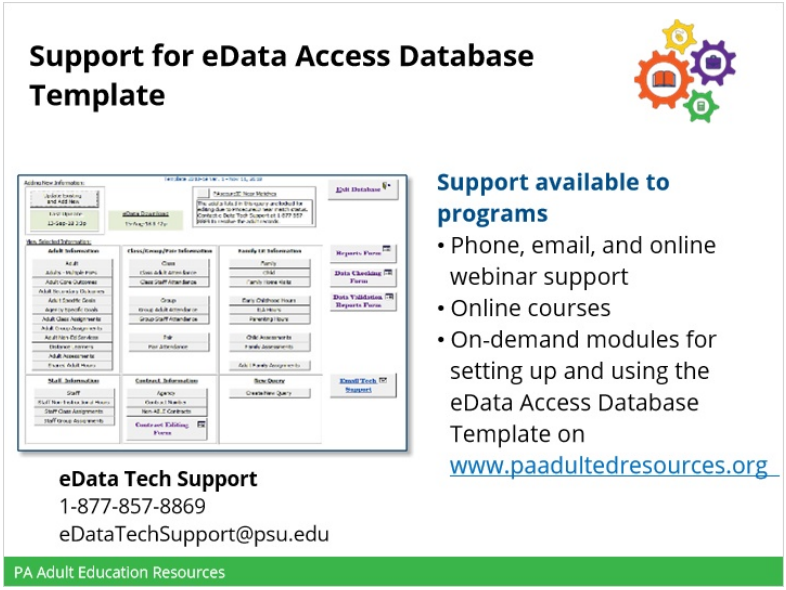
While analysis plans can be quite formal and detailed, for our purposes, a data analysis plan need only to describe the data you need and how you want the data to be presented. The plan should tie your question to the specific NRS or other measures needed and describe how you will present this data.

Beginning with Step 3

Notes:

As you develop a data analysis plan, you'll first want to identify the data needed and then determine how the data will be presented. The questions developed in the previous step may need to be refined in this step.

Focus the question



Notes:

Agencies may use the eData Access Database Template in order to gather important information about their students, program services, and outcomes. The eData Access Database Template includes many built-in reports that provide useful data in a variety of ways. It also allows programs to build custom queries and reports in order to further analyze data. The eData Tech Support team is available to provide assistance with using the eData Access Database Template.

Focus the question

Notes:

Let's first take a closer look at how programs can identify the data needed to answer the questions developed in the previous step.

Data Needed

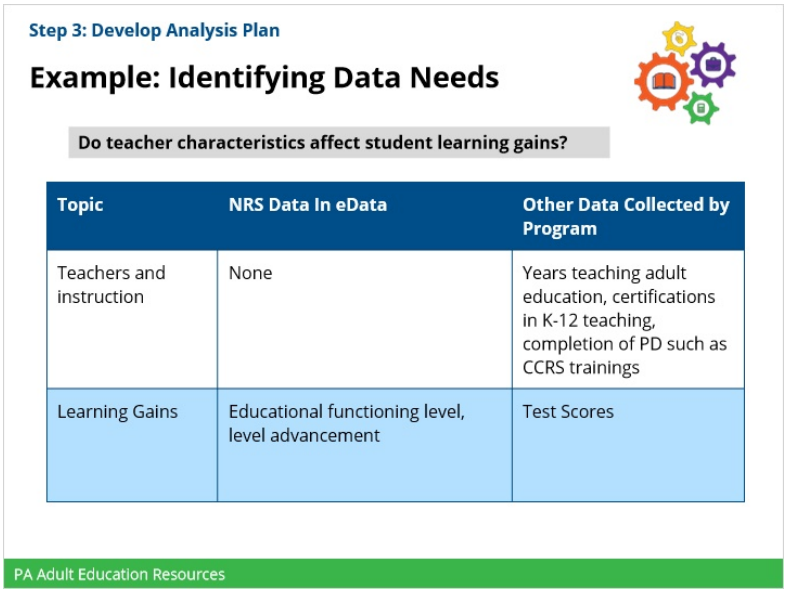
Notes:

In Step 2, the question was broken down into inputs and outputs. In this step, you'll use the inputs and outputs identified in the previous step to identify the data needed to answer the question. As you work through this step, it may be determined that additional data may be required. At this point, the questions may be refined so that the appropriate data is collected.

If you have a very simple question, or if you have asked your questions quite specifically, the data you need will be readily apparent. For example, it is clear what data you need to determine whether older students attend class more than younger students. Most questions, however, are more complex and will benefit from more formal deconstruction. One approach toward identifying data is to make a list or chart of the topics and related data for each component of the question.

Click on the Next, to see an example of this chart.

Example: Identifying Data Needs

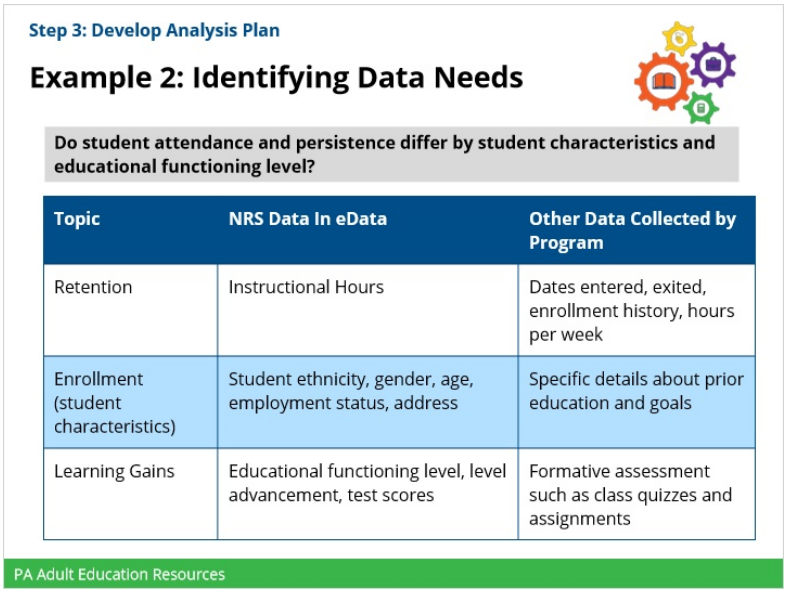


Notes:

This chart shows one example of a format that can be used to identify data needs. The columns list the topics addressed by the question, the NRS data available from eData and the eData Access Database Template, and other data that are not likely to be in your database. For student learning, there are measures of student learning available, educational functioning level and advancement, which are NRS-required measures. Test scores are also recorded in eData, but they are not required to be reported to the NRS.

The NRS does not require any data to be collected on teachers; however, in Pennsylvania, we do collect teachers' start date in adult education, highest degree completed, and any teaching certifications. To fully answer this question, the program may have to collect additional information beyond what is available in eData.

Example 2: Identifying Data Needs



Step 3: Develop Analysis Plan

Example 2: Identifying Data Needs

Do student attendance and persistence differ by student characteristics and educational functioning level?

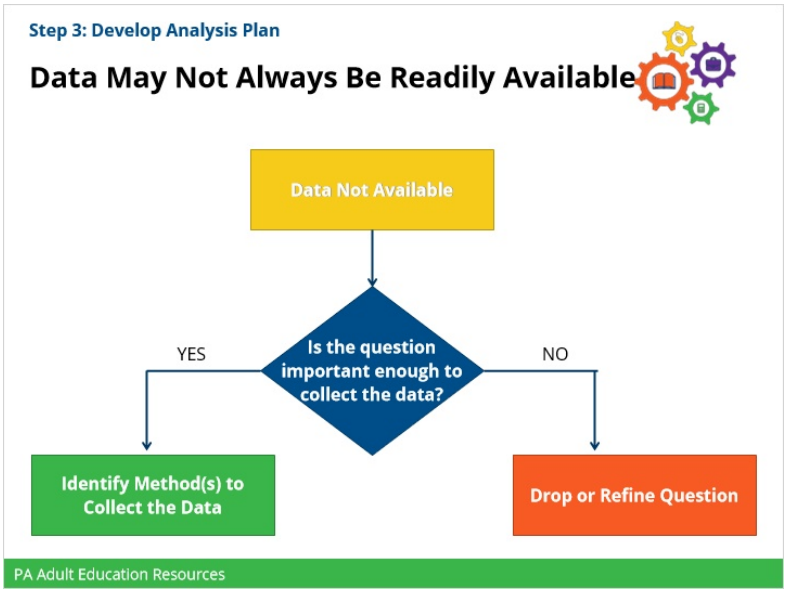
Topic	NRS Data In eData	Other Data Collected by Program
Retention	Instructional Hours	Dates entered, exited, enrollment history, hours per week
Enrollment (student characteristics)	Student ethnicity, gender, age, employment status, address	Specific details about prior education and goals
Learning Gains	Educational functioning level, level advancement, test scores	Formative assessment such as class quizzes and assignments

PA Adult Education Resources

Notes:

Here is another example of a question with the data needs identified. In this example, you can see that all of the data are available to answer this question. Since the NRS requires data on instructional hours, student demographics, and educational functioning level, all of this data is available in eData. Programs also would have the additional data needed to address the question, such as dates when students enrolled and exited and test scores. The total weeks enrolled could be computed using the dates, allowing another measure of retention. Test scores allow for another measure of student learning.

Data May Not Always Be Readily Available



Notes:

Once you have conducted this type of analysis, you may find that the data you need are not available. However, you may feel the question is of such importance that you are willing to go through the extra effort to obtain the information. Some additional data, such as on teacher characteristics, can be sometimes be collected easily.

More often, you may find that you do not have the time or resources to collect data, and you will have to either drop the question or refine it so that you can answer it with the data that you do have.

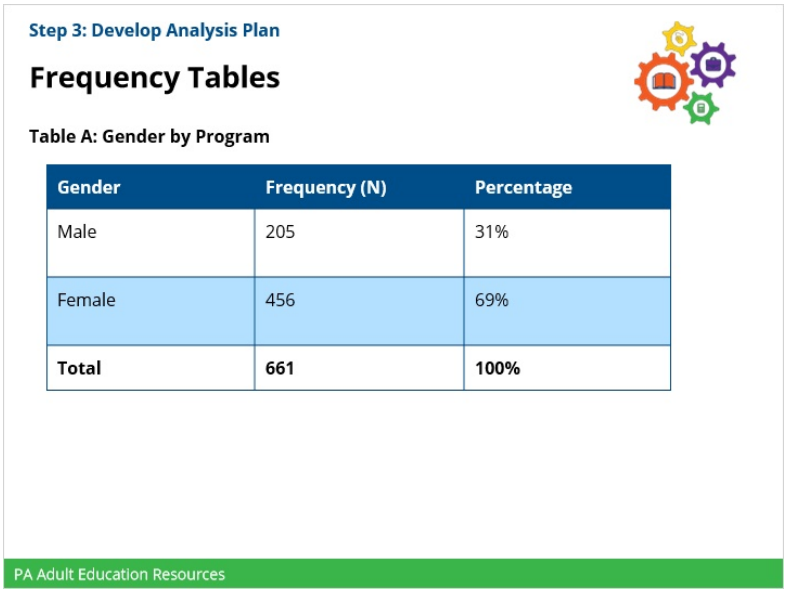
For example, you could change the question on teachers and learning gains by looking at specific teachers or classes. You could compare classes taught by full- and part-time teachers or by teachers with advanced degrees and baccalaureate degrees. The refined question would then be: "Do student learning gains differ among classes taught by full- and part-time teachers, or teachers with advanced degrees? You could address this question by identifying classes taught by teachers with the characteristics of interest and comparing student performance among them.

Determine Data Presentation

Notes:

After questions have been decided and data elements identified, the next step is to plan how the data will be presented for review. While data presentations can be quite complex, most data analyses you will use for management and improvement of your programs will be simple and often will be in the form of a report generated by the eData Access Database Template. However, a basic understanding of data presentation is essential, since often the type of presentation will determine what you will actually find - or fail to find- in the data. Click on Next for a quick review of some of the basic approaches and concepts you are likely to encounter as you use data for decision making.

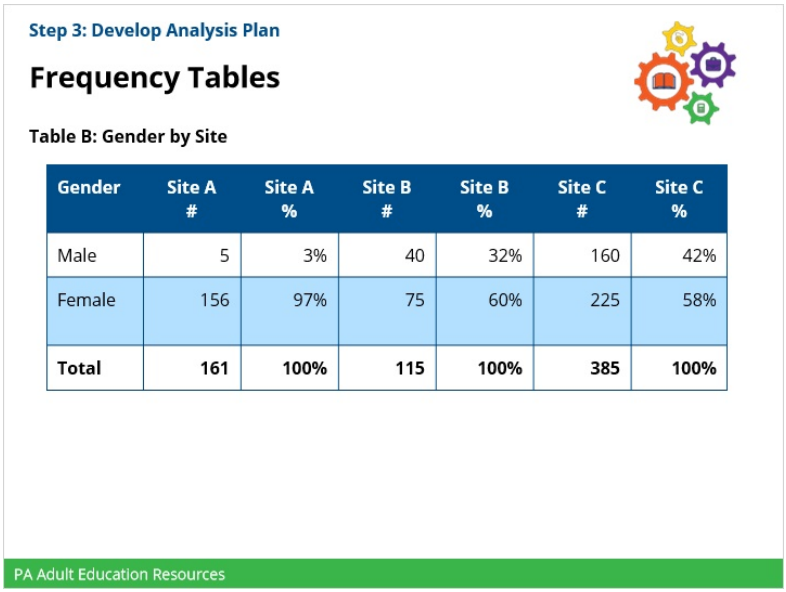
Frequency Tables



Notes:

The most familiar form of data presentation is the frequency table. This type of table is appropriate for categorical data (e.g., ethnicity, gender) and in its simplest form, shows the frequency (sometimes referred to as the "N"), and the percentage falling to each category. You will often see frequency tables with two measures called a two-way or cross tabulation table. In the example on the slide, this frequency Table A shows the percentage and gender by program.

Frequency Tables



Gender	Site A #	Site A %	Site B #	Site B %	Site C #	Site C %
Male	5	3%	40	32%	160	42%
Female	156	97%	75	60%	225	58%
Total	**161**	**100%**	**115**	**100%**	**385**	**100%**

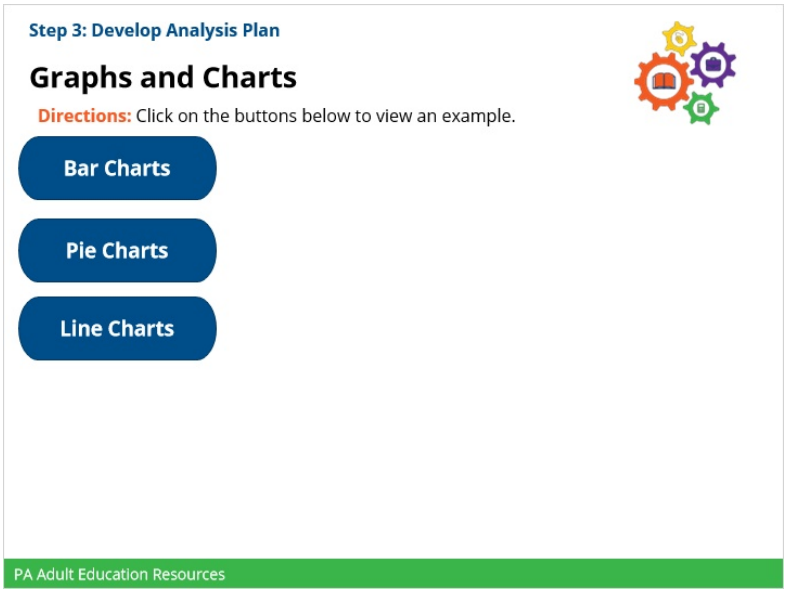
Notes:

Table B shows the gender of students for each site in the program. While both tables provide the total gender breakdown for the program, Table B (the two-way table) gives more information about how the students are distributed across the sites.

The additional detail in Table B demonstrates the advantage of tables that show more than one measure and that disaggregate, or break down the data into smaller categories. Site B has a gender distribution similar to the program total; however, Site A has significantly more females than males.

When working with data, consider how showing data with more than one measure can be useful for analysis. Click on Next to learn more about graphs and charts.

Graphs and Charts



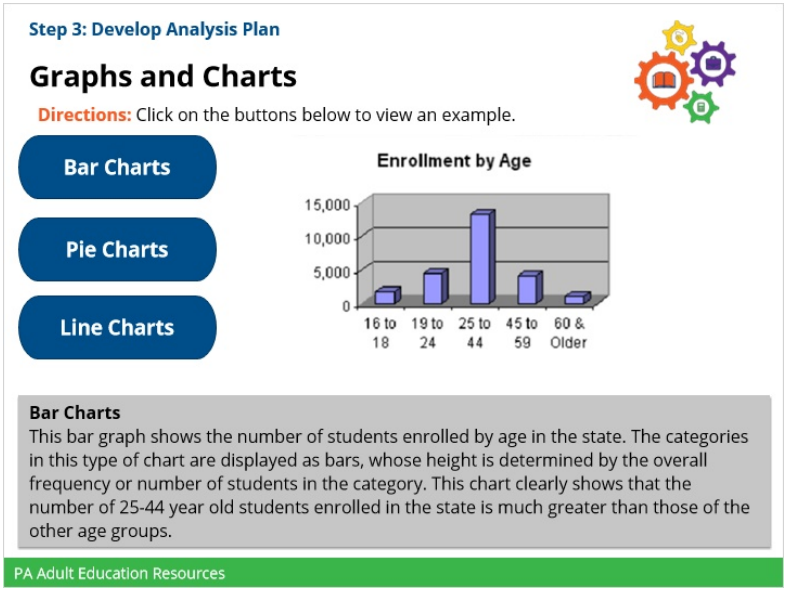
Notes:

It is easy to get overwhelmed looking at rows of numbers in frequency tables. The important relationship may not stand out easily, lost in a sea of numbers.

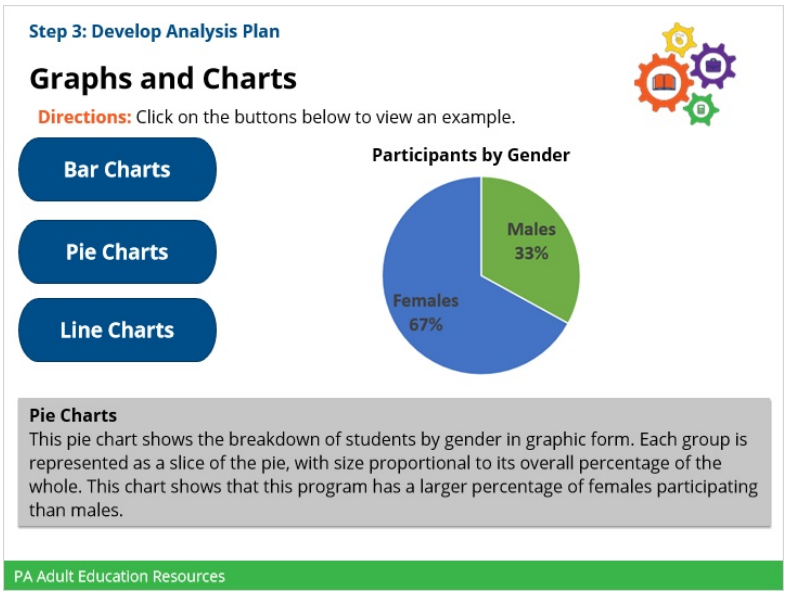
Graphic presentations show data more clearly and often have a dramatic impact when showing large effects or important findings in your data. There are many different ways to present data graphically, but we will focus on the most commonly used: bar charts, pie charts, and line charts. Click on each of the buttons to view an example and read more about each type of chart.

After viewing each type of chart, click Next to review averages and variations.

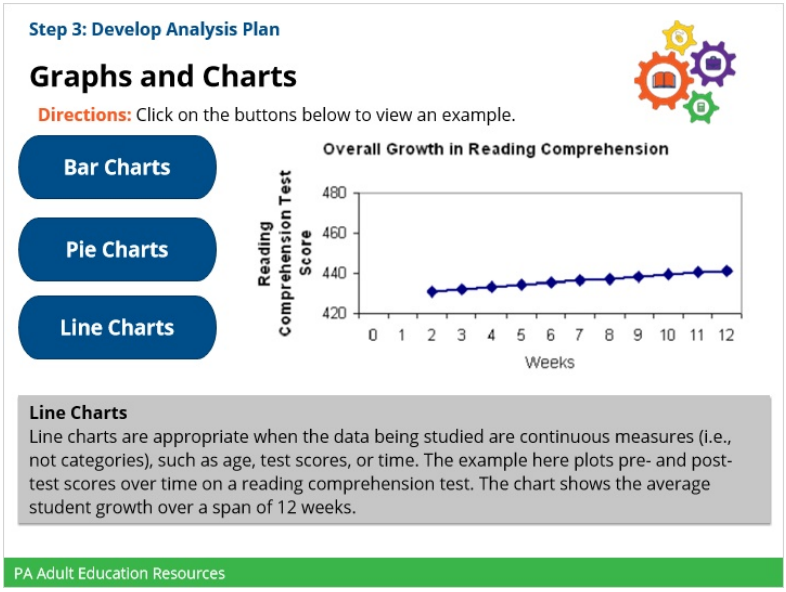
Bar chart (Slide Layer)



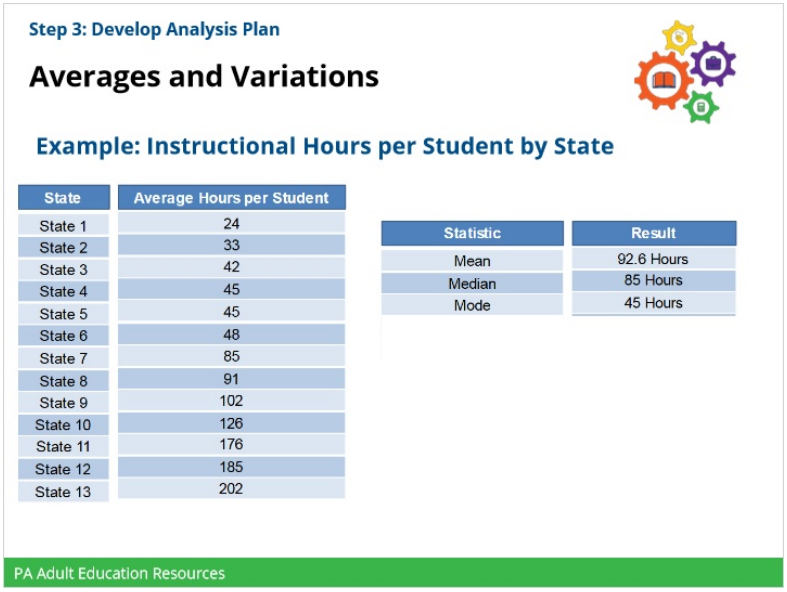
Pie Chart (Slide Layer)



Line Chart (Slide Layer)



Averages and Variations



Notes:

When presenting data measured on a continuous scale such as test scores, we usually report the average score, which is computed by summing all of the scores and dividing by the total number of scores. This average is called the mean and is probably the most often used statistic. Means are helpful for getting a sense of how a group scores on a measure. However, the mean doesn't always convey an accurate sense of the real "average" or what is known as the central tendency. Means are misleading when there are some numbers in the distribution that are much higher or much lower than most of the others.

For example, the mean is not usually a good measure of average income because some people may have extremely high incomes and others have no income at all. If you compute the mean income for the state of Washington and included Bill Gates (principle founder of Microsoft™), for example, the result will be much higher than the true average of that state's residents.

A statistic that corrects for such extremes is the median, defined as the number where half the scores fall below it. Medians are the appropriate measure of the average when there are great extremes in the low or high end, or range. For determining the average Washington state income, the median would provide a

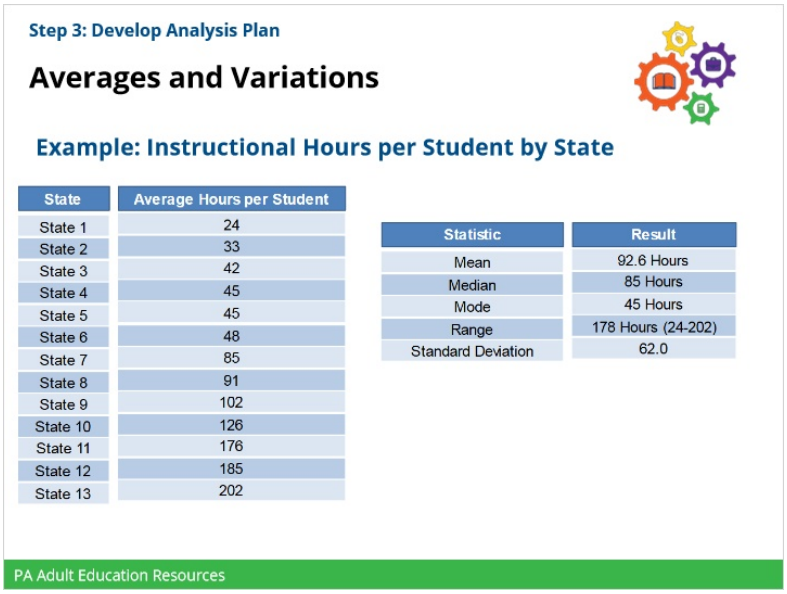
more accurate picture, since Mr. Gates' income and that of other wealthy individuals, would not weight the average so highly in the upward direction.

Another measure of the average is the mode, which is simply the number that occurs most frequently in the distribution. This measure, however, is normally only used when information on the most common score or response is needed.

Mean, median, and mode help to look at the data through measures of central tendencies.

Take a moment to review the data on the screen. Be sure that you understand how the mean, median, and mode were calculated before advancing to the next slide. Please contact your facilitator if you have any questions.

Averages and Variations



Notes:

The simplest and most common measure of variations is the range, which is the difference between the lowest and highest scores.

In this example, the range of average attendance hours among the states is 178, the difference between 24 hours and 202 hours. This high variation is common with student attendance, as in any class or program, some students stop attending after one or two classes, while others stay for a relatively long time.

A common measure of variation is the standard deviation, which provides a sort of average variation of measures from the mean. Most data-related software programs can compute this measure of variance routinely. The standard deviation for the above example is high, indicating attendance hours are highly variable among states.

End of Step 3

Notes:

Congratulations, you have completed this section of the module. Please click on Next to advance to the next section, which will look at Step 4: Analyze and Interpret Data.

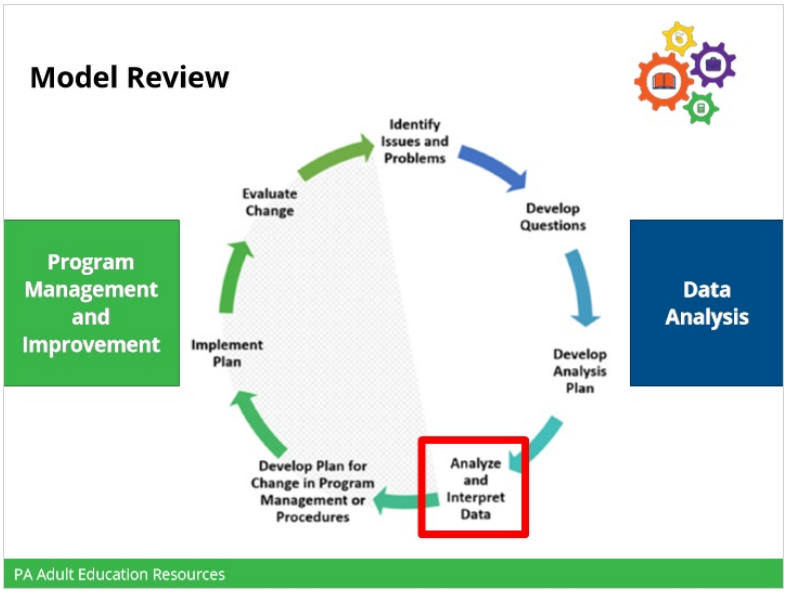
Step 4

Step 4: Analyze and Interpret Data

Notes:

Welcome to Step 4. This part of the module will provide details on how to analyze and interpret the data retrieved in Step 3.

Model Review



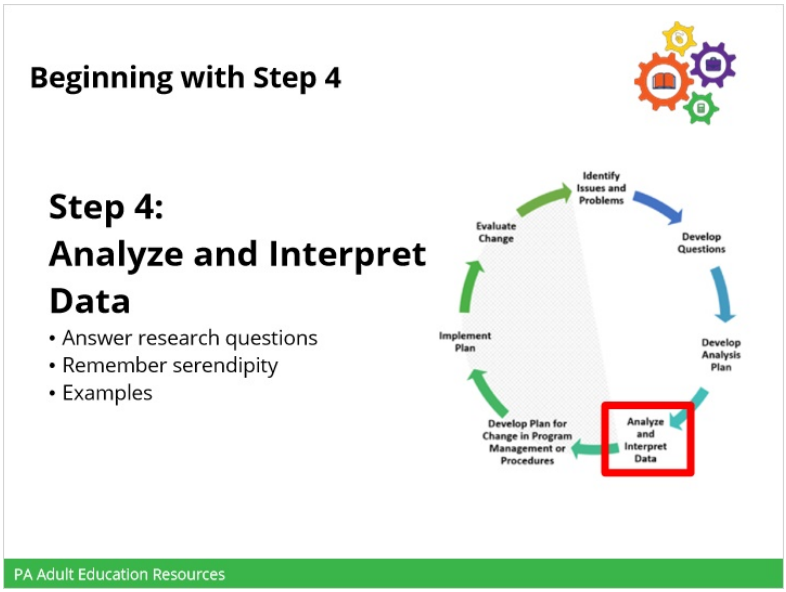
Notes:

The final step in the data analysis part of the model is to analyze and interpret the data. In this step, the data selected to answer the question developed in Step 2 is analyzed. After the analysis is completed, the data findings are interpreted.

How does the data answer this question?

For example, upon analysis of educational functioning level gains, a program may have interpreted the data to find that the issues are with math instruction at the NRS 3 and 4 levels.

Beginning with Step 4

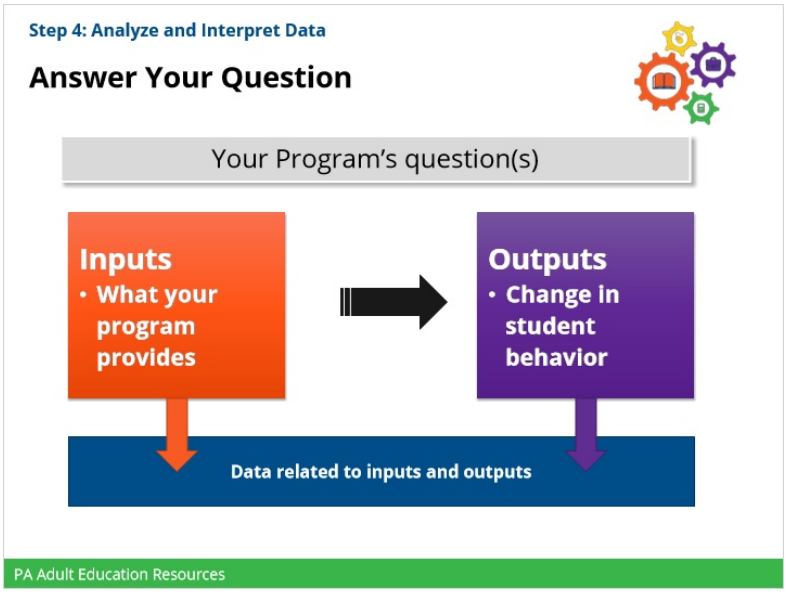


Notes:

When your research questions are formed and measures identified, and you have tables and charts in hand, you are now ready to analyze the data to find your answers. If you are new to data analysis, you should begin with simple data displays, like frequency tables and simple charts. You may also find it helpful to get assistance from someone who is more experienced with data.

We will offer a general strategy on how to analyze data and then provide some examples for illustrations.

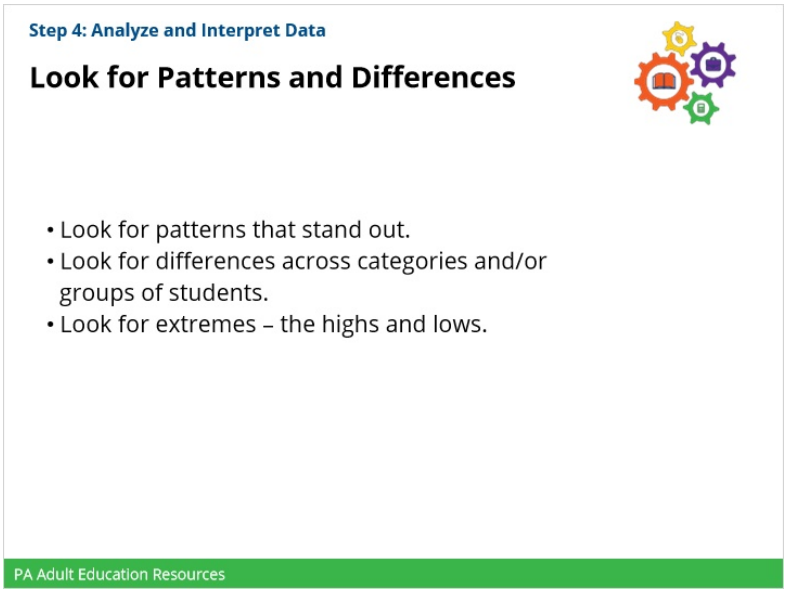
Answer Your Question



Notes:

As you look at the data, keep your original question in mind. Make sure you have the specific data elements and categories that brought you to the data and that the data match the inputs and outputs identified through your question. Avoid getting distracted by the side issues that might come to mind as you work.

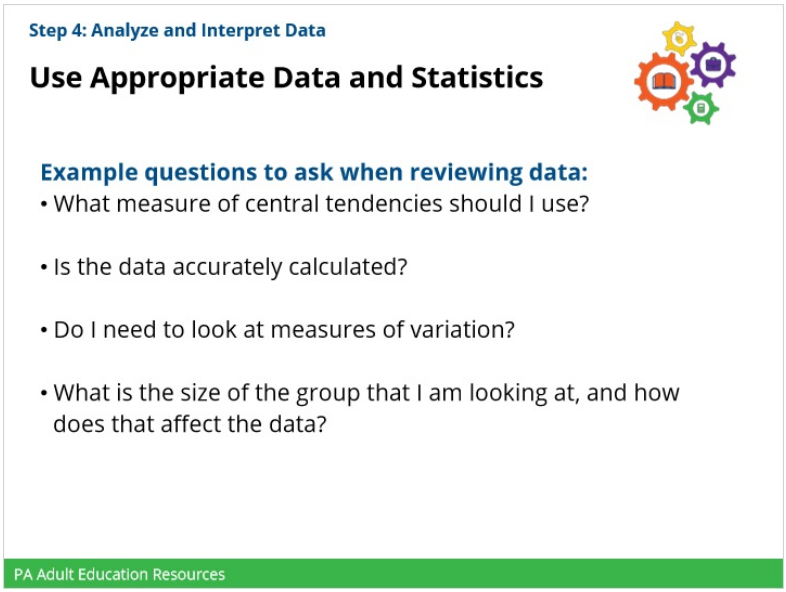
Look for Patterns and Differences



Notes:

As you analyze your data, look for patterns that stand out and differences across categories and groups of students. You'll also want to look for extremes - for example the highs and the lows.

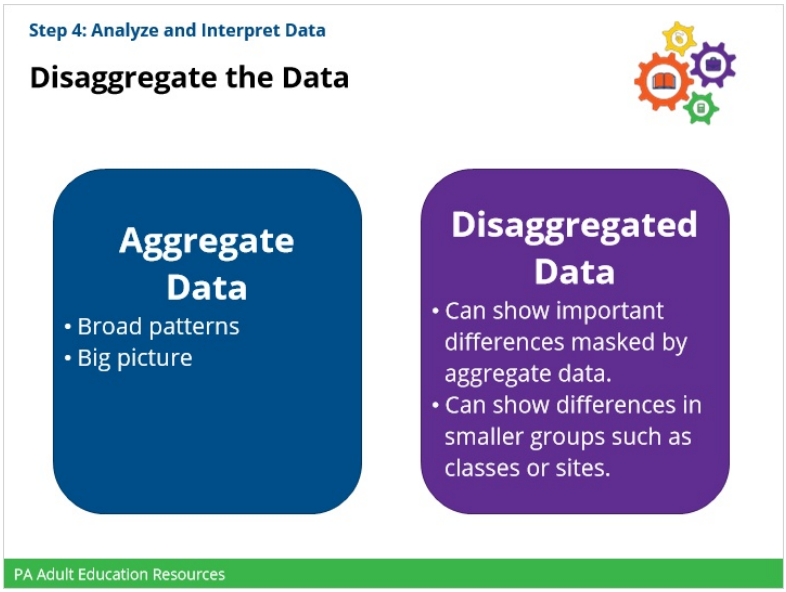
Use Appropriate Data and Statistics



Notes:

Make sure the numbers you examine are appropriate. Do you need the median or mean? Are percentages computed correctly? Do you have measures of variation? Also, be alert for categories that have small numbers of students, a small "N." For example, you might notice a large difference in test scores among groups of students, but one group has only a handful of students. Do not place much faith in small numbers in a group.

Disaggregate the Data

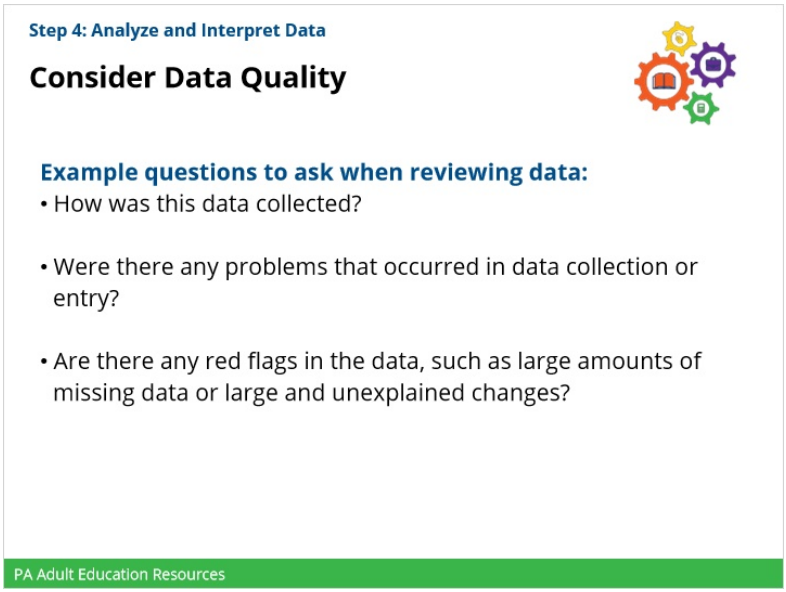


Notes:

Often the data and tables you will get are combined, aggregated totals of several levels of data. For example, the state NRS tables include the combined data from all programs in the state, your program data combined with all other sites, and a site's data combined with all other classes. While aggregate data tables are helpful to understand broad patterns and the big picture, they can make important differences among sites or classes.

Break down your tables and data into these smaller units to ensure you see the right patterns and draw appropriate conclusions.

Data Quality

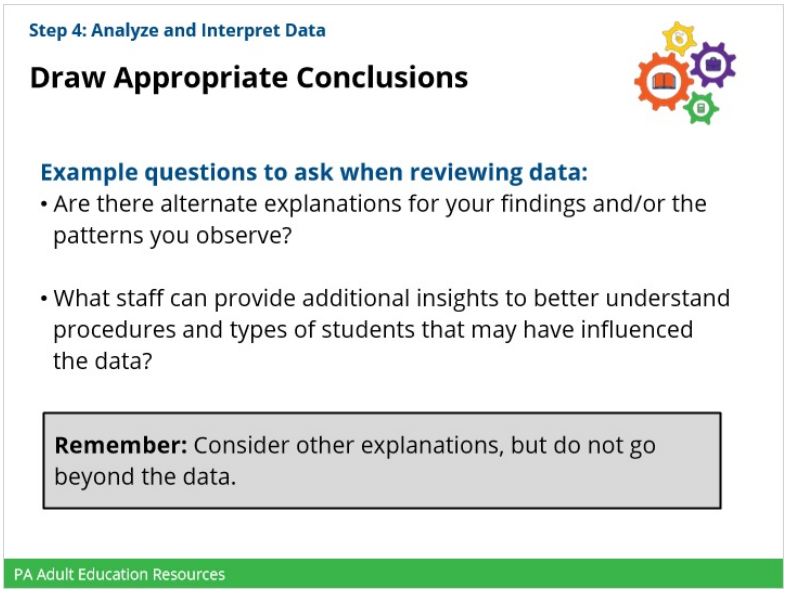


Notes:

When looking at data, it is also important to consider the data quality. Make sure the data you have are valid and reliable. Know how the data was collected and any problems that occurred in data collection. While quality may be difficult to determine, the data may offer you some clues. For example, look for holes in the data - lots of missing data or a patchwork of data - and for similar student sample sizes.

Large unexplained changes in the data across students, sites, or time also may indicate poor data quality. For example, attendance hours might be high at one time and low another, many posttest scores may be lower than pretest scores, or demographics of students might radically change. Anomalies of this sort may indicate poor data collection procedures and data quality problems.

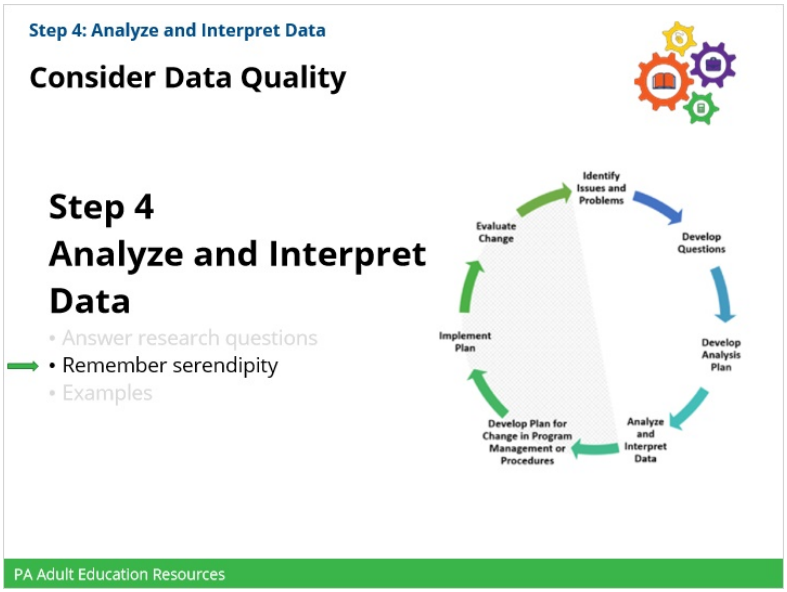
Draw Appropriate Conclusions



Notes:

If you do find patterns that answer your questions, you will want to make conclusions that closely follow what the data indicates. It is often tempting to interpret data and draw inferences that may not be warranted. Likewise, you should consider alternative explanations for your findings - that is, other plausible explanations for the patterns you find. For example, if you find the number of Hispanic students is lower at one site than at others, you might be tempted to conclude that recruitment efforts are inadequate for that group of students. However, the data may not necessarily support this conclusion. One explanation may be that may be no Hispanic students in the site's service area. Similarly, poor student test performance in one class compared to others at the site may not indicate poor teaching. Consider other explanations, but do not go beyond the data. One way to help you draw appropriate conclusions is to talk to your staff and staff of other programs to understand procedures and types of students that may have influenced the data.

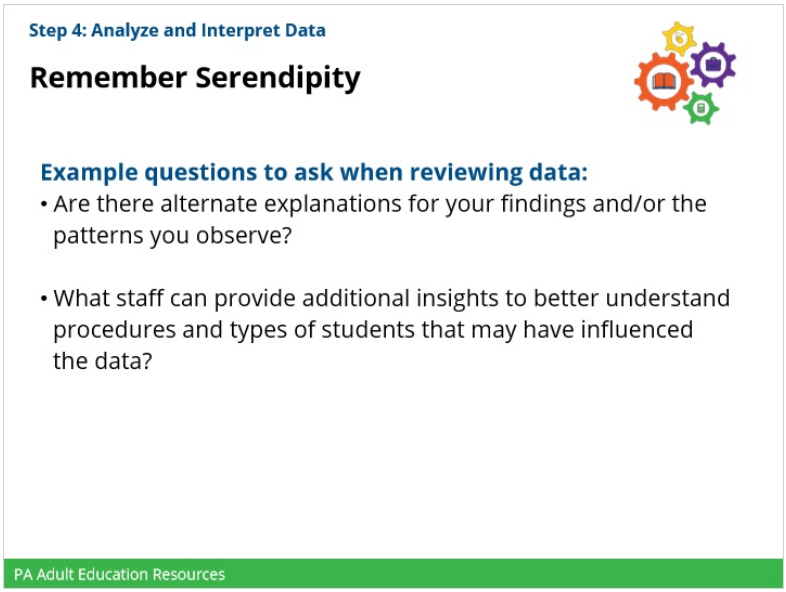
Remember serendipity



Notes:

While using a basic strategy to analyze and interpret data is important, remember serendipity as well.

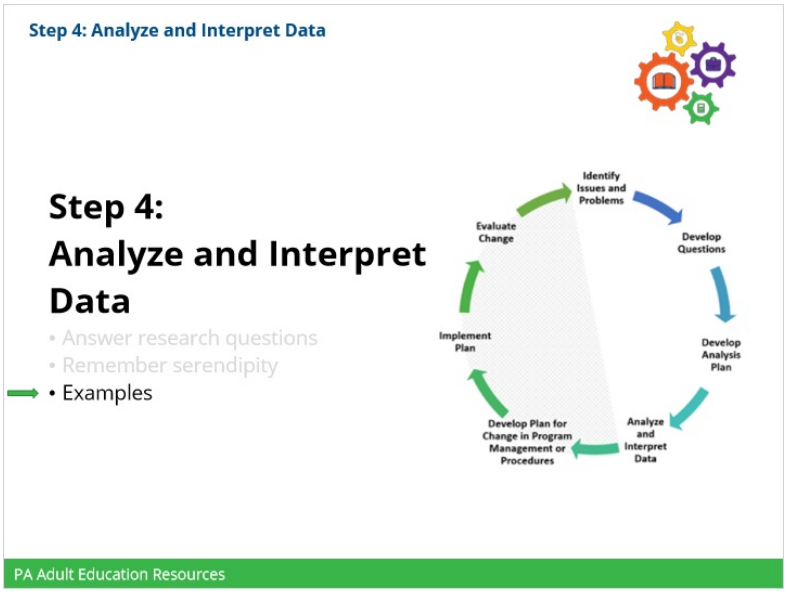
Remember Serendipity



Notes:

Serendipity is finding something that you were not seeking. Science is filled with stories of serendipitous findings and inventions - penicillin, X-rays, Post-it® notes - that proved more useful than the original objects of study. As you examine data, keep your mind open to the unexpected. Often in answering a question, you will find that many new ones arise. Try not to dismiss something that at first, may seem unexplainable, illogical, or irrelevant.

Examples

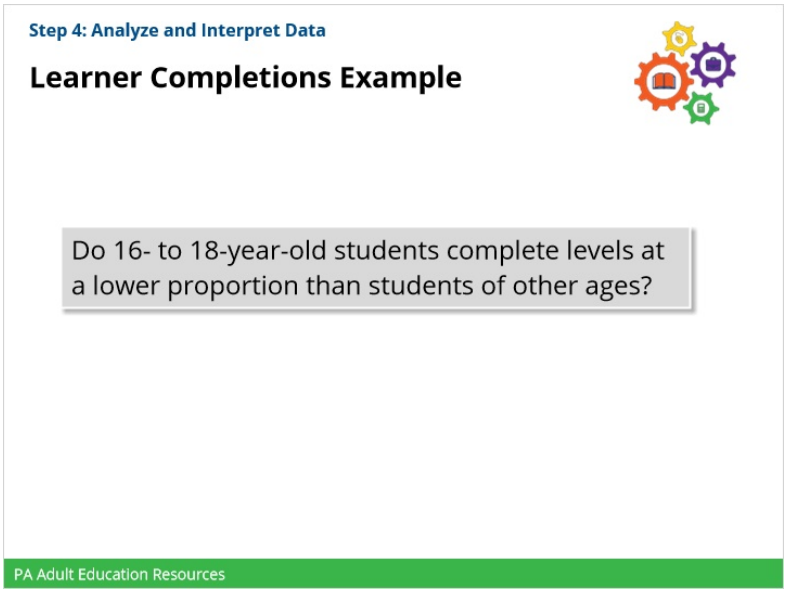


Notes:

Like learning to drive, the best way to learn to interpret and analyze data is to actually do it once you know the basic rules and have a general strategy on how to approach it.

In this section, we will discuss four examples about common program management issues facing adult educators. Each example is based on actual NRS data collected by local programs during program year 2000-2001 and frequency tables like those that local adult education programs could generate through the data systems.

Learner Completion Example



Notes:

For many programs, the most important student outcome measures for adult education are the number and percentage of students who complete an education level.

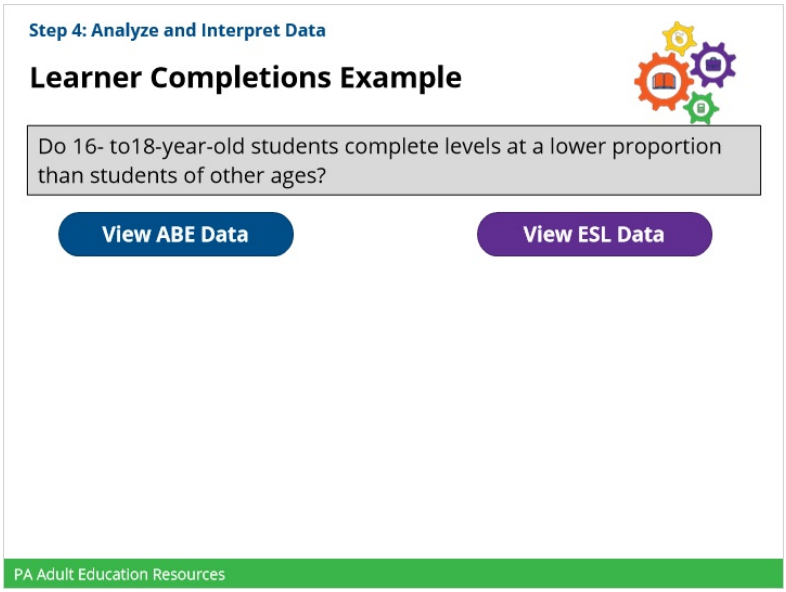
To gain an understanding of which students complete levels, one state conducted a comparison of level completions by student characteristics. Of particular concern to the state was the completion of younger students, aged 16 through 18.

These students had been enrolling in higher numbers in recent years with the goal of obtaining a high school equivalency diploma. The state was concerned that these students enter with lower basic skills and had lower completion rates than the older students that programs were accustomed to serving.

Program directors worried that lower completion rates of younger students would adversely affect their ability to meet performance standards. The question they asked was:

Do 16-to 18-year-old students complete levels at a lower proportion than students of other ages?

Learner Completion By Age



Notes:

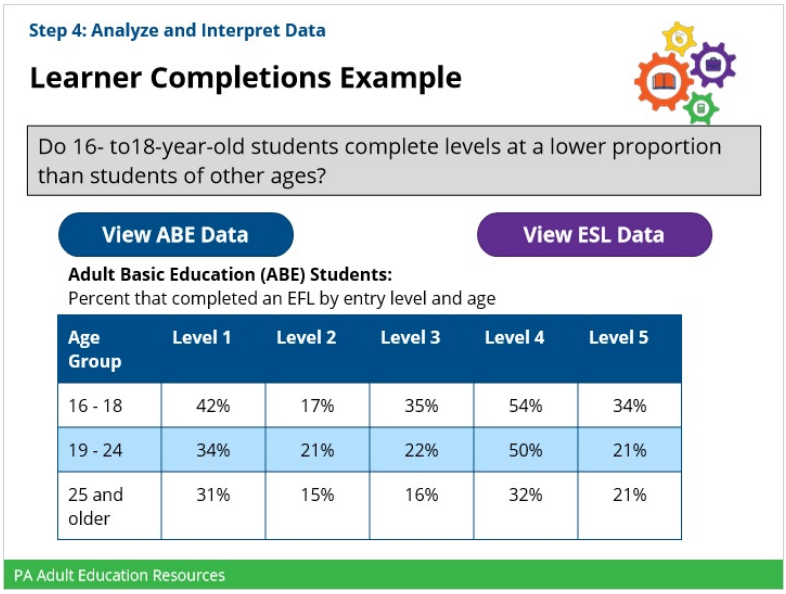
Using NRS data, the state computed a table of the percentage of completions by level for ABE and ESL students. Click on the buttons on the screen to view the data.

Students were broken into three age groups, 16 - 18, 19 - 24, and 25 and older. When program directors examined the tables shown on the screen, they were surprised that, for ABE students, the reverse of what they expected was true: the older students had lower completion rates, and the younger students had the highest rates of completion in all but one level.

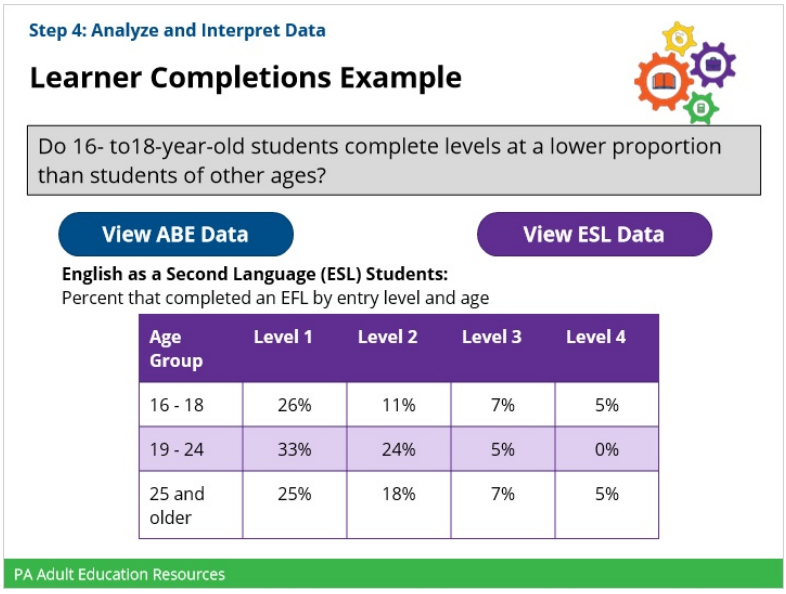
For example, 42% of the 16 to 18-year-old ABE/ASE students completed Level 1, 35% completed Level 3, 54% completed Level 4, and 34% completed Level 5. In contrast, the percentage of completions of ABE/ASE students 25 and older in these same levels were all lower, sometimes significantly lower.

On the other hand, the younger and older ESL students completed levels at about the same rate, and students 19-24 years old had the most completions at the lower level. In addition, there were few completions in the higher levels of ESL.

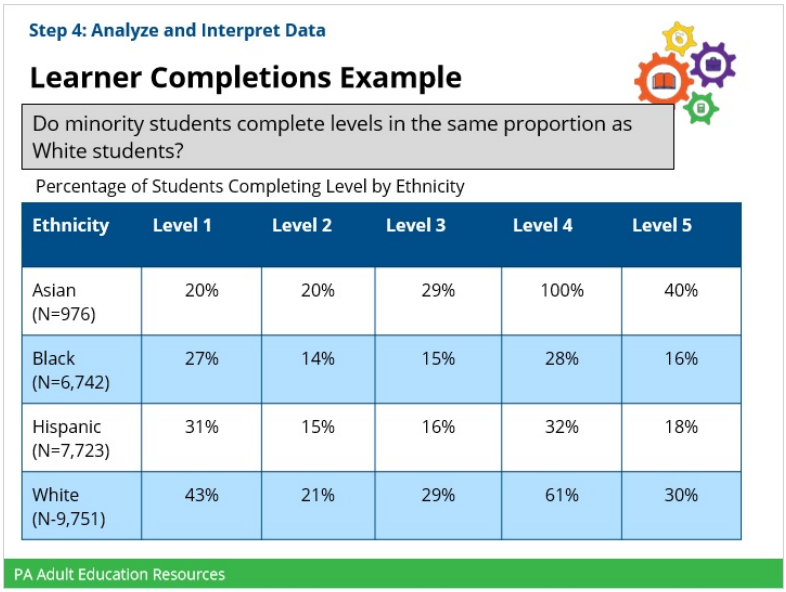
ABE Data (Slide Layer)



ESL Data (Slide Layer)



Learner Completion By Ethnicity



Step 4: Analyze and Interpret Data

Learner Completions Example

Do minority students complete levels in the same proportion as White students?

Percentage of Students Completing Level by Ethnicity

Ethnicity	Level 1	Level 2	Level 3	Level 4	Level 5
Asian (N=976)	20%	20%	29%	100%	40%
Black (N=6,742)	27%	14%	15%	28%	16%
Hispanic (N=7,723)	31%	15%	16%	32%	18%
White (N-9,751)	43%	21%	29%	61%	30%

PA Adult Education Resources

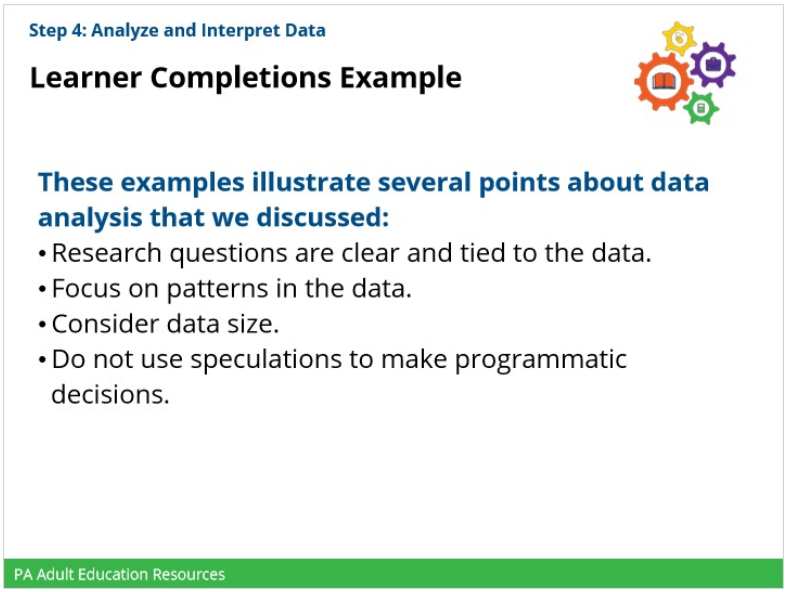
Notes:

The state was also concerned that minority ABE students had different instructional needs and incoming skill levels than White students. Program directors wanted to look at completion level by student's ethnicity. The question here was: Do minority students complete levels in the same proportion as White students?

The table shows that the state's concerns were justified for Black and Hispanic students. With only one exception (Level 1 for Hispanic students), these students had lower percentages of completions at all levels of ABE. While lower percentages of Asian students in Level 1 completed a level, Asian students' completion rate was higher than White students' completions at the two higher levels and about the same at other levels.

However, the findings should be interpreted with caution because of the relatively small percentage of Asian students in the sample (4%) compared with the percentages of the other students (i.e., Black 27%, Hispanic 31%, and White 39%).

Learner Completion Example Summary



Notes:

These examples illustrate several of the points about data analysis discussed in this module. The research questions were clear and tied to the data, allowing focus on the relevant patterns in the tables and avoiding distraction by the many rows of the data.

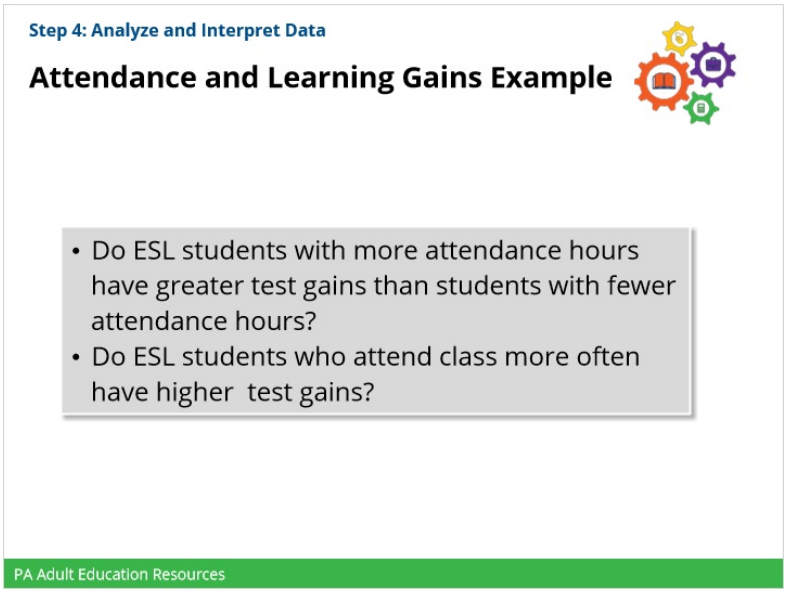
This disaggregation of the state data by student age and ethnicity allowed the identification of patterns that may have not otherwise been seen, and for the example just cited, the small number of Asian students included in the state data exemplified the need to be cautious about making too much of their different completion patterns.

Finally, these data do not tell us why the patterns exist. One may speculate some of the following reasons:

- Younger students may complete faster because their recent school experience may help them with school-based topics and tasks in ABE.
- They may also have a higher level of overall education than older students.
- Minority students may have lower education or language and cultural issues that slow their progress.

This speculation should not be used to make programmatic decisions, but it can help to guide continued data analysis. Discussion with staff and students and a review of other data will help to narrow possible reasons for the differences.

Attendance and Learning Gains Example



Notes:

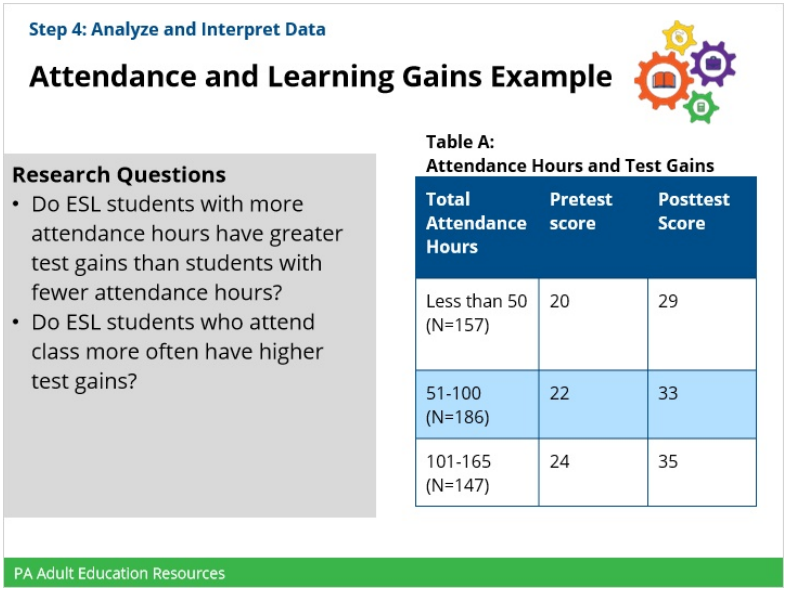
The relationship of attendance to student learning is of interest to many adult educators.

There is a general assumption that greater attendance will result in more learning, but no one knows how much instruction is needed for students to make a meaningful gain. Yet, this information would be invaluable for planning instruction and setting assessment policy.

A local program administrator of a program that serves low-level ESL students wanted to know whether there was a relationship between attendance and learning gains for his students. He also believed that students that attended more regularly had higher learning gains. His two questions were:

- Do ESL students with more attendance hours have greater test gains than students with fewer attendance hours?
- Do ESL students who attend class more often have higher test gains?

Attendance and Learning Gains Data



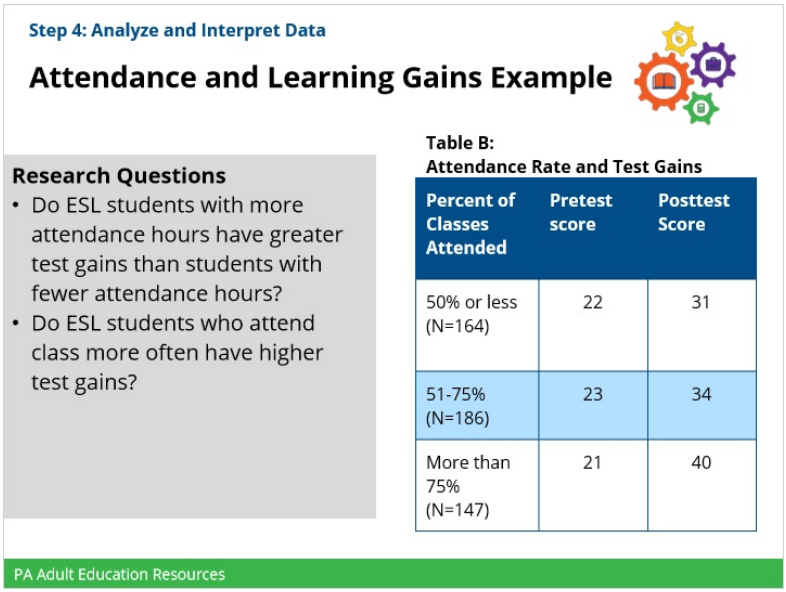
Notes:

The program produced two tables to answer these questions.

Table A included only students who took both a pre- and a posttest, the BEST Literacy. This table breaks out students into three groups, based on their total attendance hours, which ranged from 21 hours to 156 hours.

Much to the program director's surprise, the students in the three groups made about the same amount of average gain on the BEST. Students who attended fewer than 50 hours had slightly lower scores to start and on the post-test, gained about nine points. Students who attended the most hours, had slightly higher pretest scores and gained about 11 points. Their attendance was more than double the low-attending students, but this translated to only two points on the BEST.

Attendance and Learning Gains Data



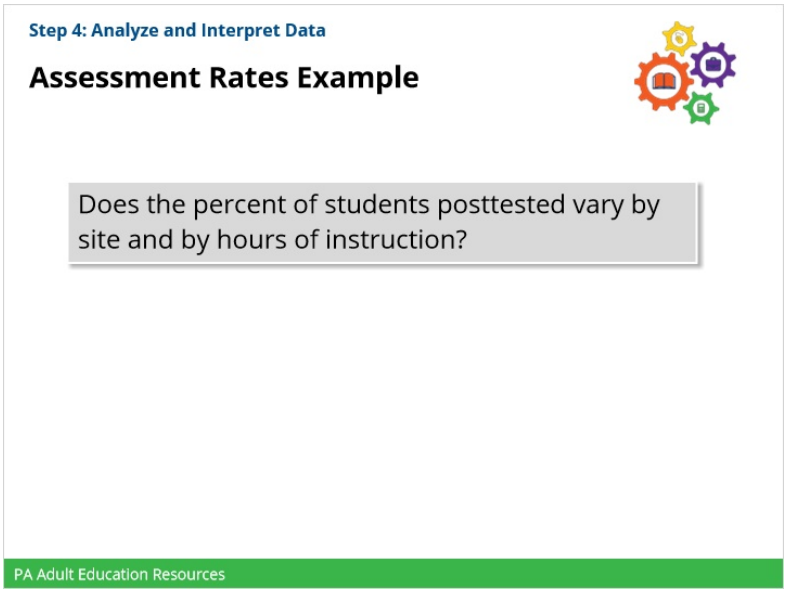
Notes:

However, when looking at the tests scores according to the percent of classes attended, a different pattern emerged.

Students who attended more than 75% of their classes showed a much greater improvement on the assessment than did other students, especially compared to students who attended less than 50% of their classes.

The average gain for students who attended over 75% of their classes was 19 points, while students attending 50% or less of their classes gained nine points on average.

Assessment Rates



Notes:

Here is another example about testing and learning gains that underscores the importance of exploring data by disaggregating it into smaller units to enhance understanding.

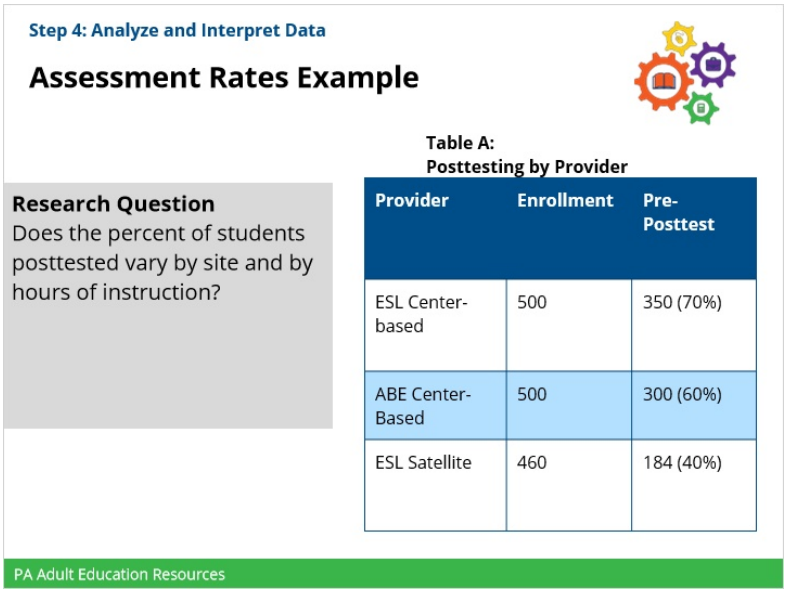
A local program director was dismayed to find that 48%of the 2,180 students enrolled had been posttested, despite training and frequent reminders to staff about the importance of posttesting.

Before deciding what to do, like going through another round of training, the director decided to look at the data. She looked at the posttesting percentages by providers, which included center-based and satellite sites for both ABE and ESL. She also looked at the posttesting rates according to the smaller number of instruction students had received.

Her question when examining the data was:

Does the percent of students posttested vary by site and by hours of instruction?

Assessment Rates Data

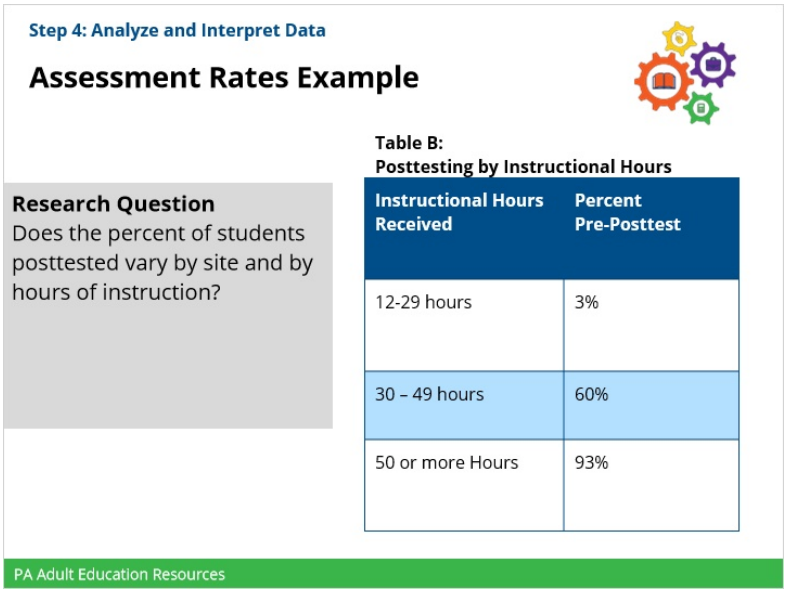


Notes:

She produced two tables to answer this question.

Table A reveals that the ESL and ABE center-based sites had relatively high posttest rates; however, the satellite site's posttest rate was much lower than the center-based sites.

Assessment Rates Data



Notes:

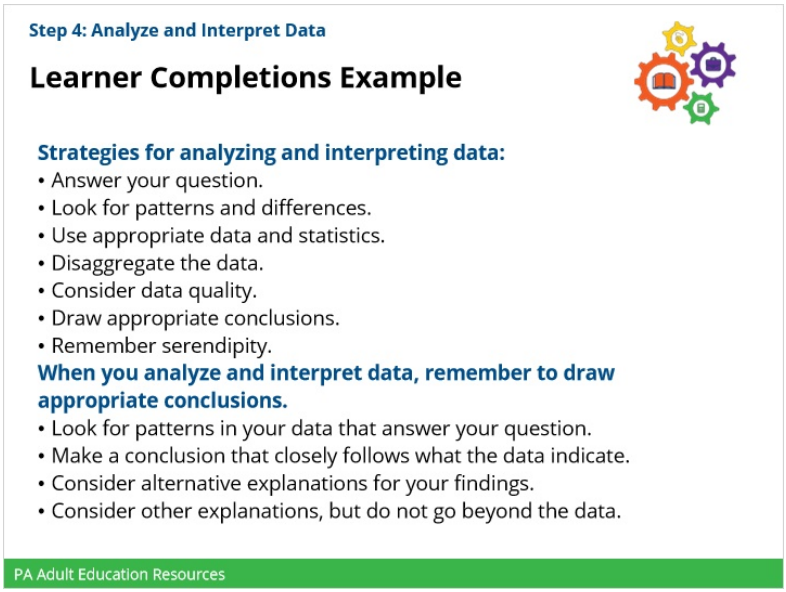
Table B shows that the amount of time a student is in the program, as measured by the hours of instruction received, is strongly related to whether the student is pre- and posttested.

Only three percent of students who receive fewer than 30 hours of instruction were pre- and posttested compared to almost all students (93%) who received 50 hours or more of instruction.

Based on this data, it's clear that the posttesting problem is limited to satellite site and to students who did not stay long enough to be posttested.

The solutions suggested by these analyses are can apply what you've learned to analyze and interpret data in a sample scenario.

Summary



Notes:

Please review the summary of the steps and tips for analyzing and interpreting data. If you are unsure of any of the information or have additional questions, please contact your facilitator.

End of Step 4

Notes:

Congratulations, you have completed this section of the module. Please click on Next to advance to the next section, which will look at Step 5: Develop a Plan for Change in Program Management or Procedures.

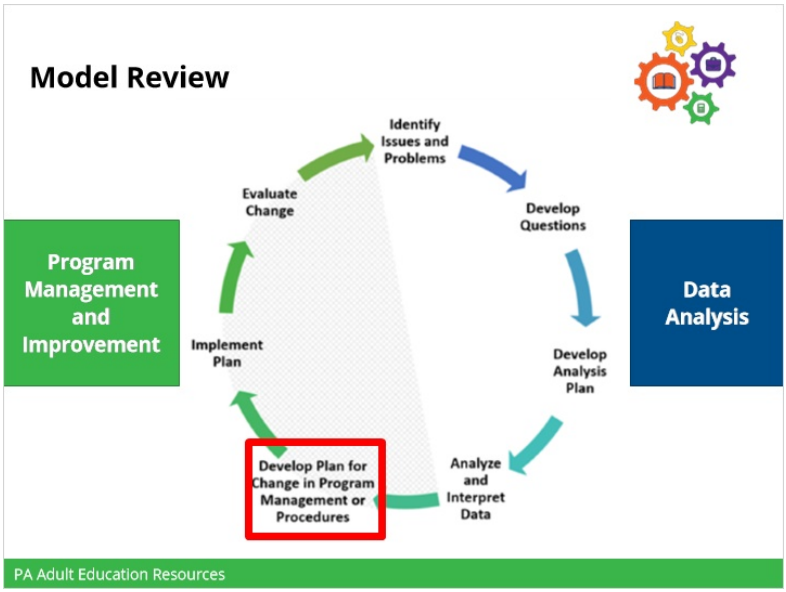
Step 5

Step 5: Develop Plan for Change in Program Management or Procedures

Notes:

Welcome to Step 5. In this section, we'll discuss how to develop a plan for changing the program based on what you discovered by analyzing your data.

Model Review



Notes:

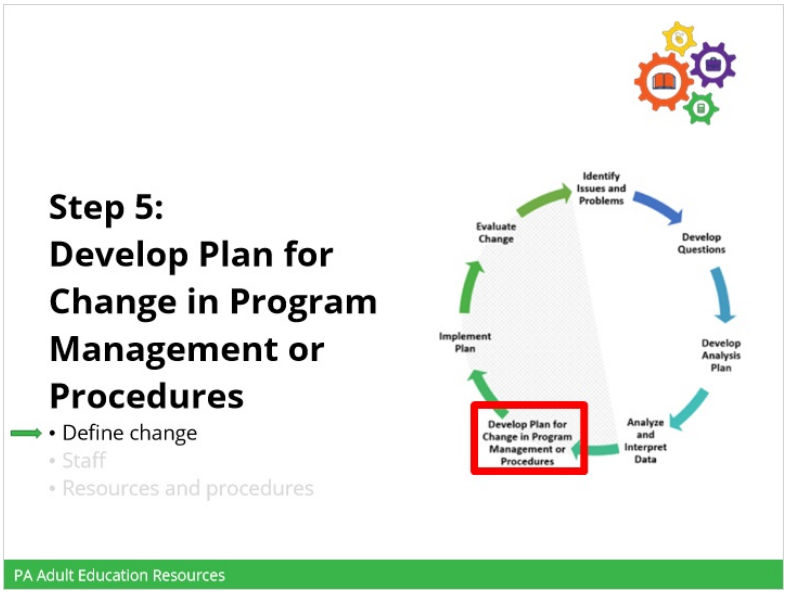
This is the first part of the Program Management and Improvement portion of the model.

Beginning with Step 5

Notes:

In this section, we'll review how programs can define the change and then identify needed resources, procedures, and staff.

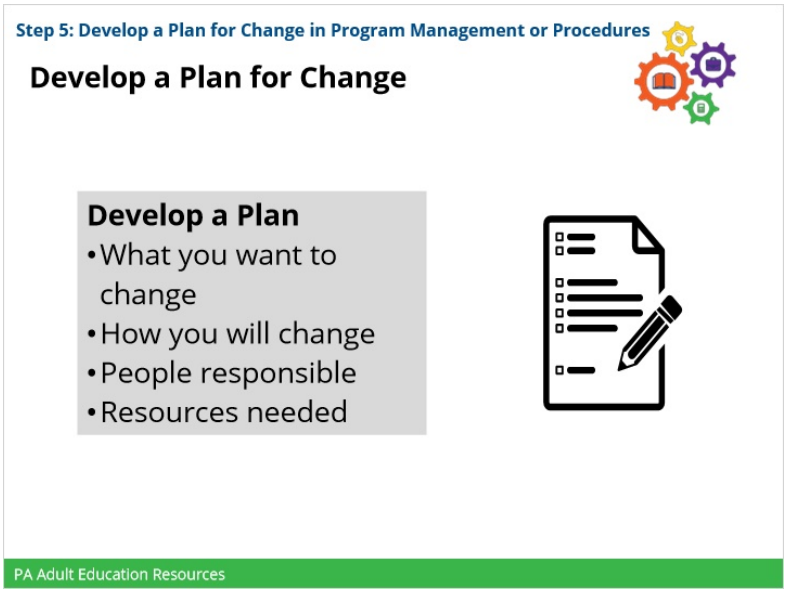
Define Change



Notes:

The desire to improve the management, quality, or outcomes of your program is probably the main reason you looked at the data in the first place.

Develop a Plan for Change



Notes:

By going through the data analysis process, you may have identified one or more components or procedures of your program that you would like to change.

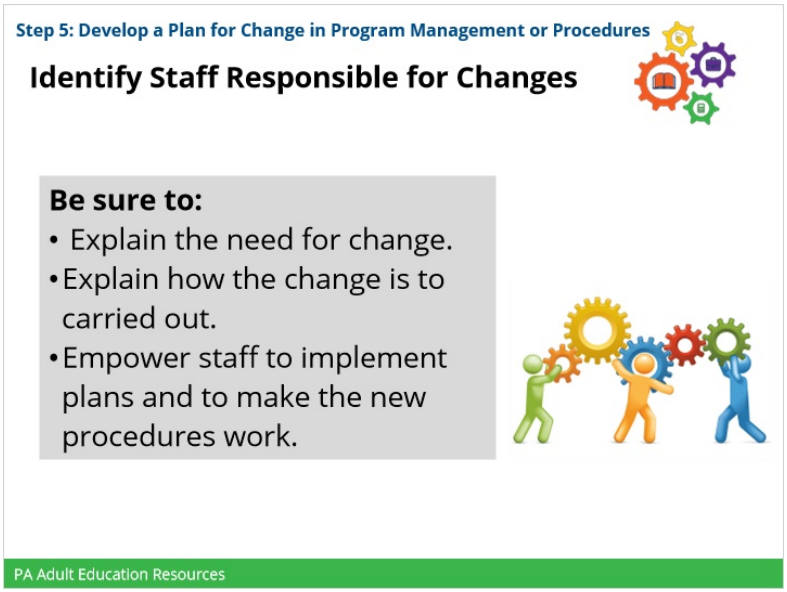
To implement these data-drive changes, the first step is to develop a plan that describes what and how you will change, the people who will be responsible for making the change, and the resources you will need to be successful in the process.

Staff

Notes:

in order to implement change, it's important to first plan who will be involved and their role for implementing the change. Advance to the next slide for tips on how identify and empower staff in order to be successful in implementing the change.

Identify Staff



Notes:

Your plan should identify the staff that will be responsible for making each of the proposed changes.

As you assign responsibility, enroll each staff person as a partner and collaborator in planning the changes that they will carry out.

Ideally, each person should understand the need for the change and how the change is to be carried out. Staff should also be empowered to implement plans to make the new procedures work.

In addition to including staff in planning and empowering them, it is advisable to provide staff with an indication of an expected level of performance.

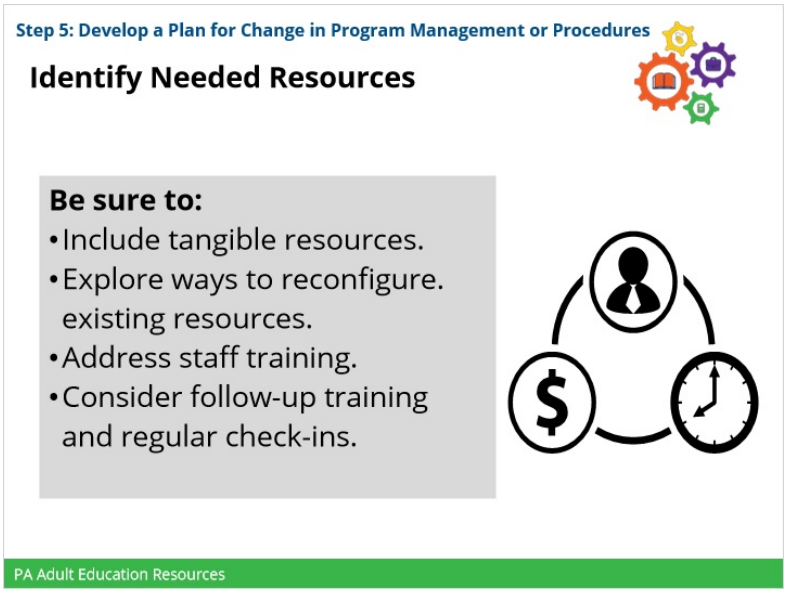
For example, if improving recruitment is the plan, inform the staff recruiters of the rationale and need for the changes you are proposing. Ask them to generate ideas that will address the problem and empower them to try out their ideas, while also giving them goals or a framework to define success.

Resources and Procedures

Notes:

You may also need additional resources to implement your change. Advance to the next slide to learn more about identifying resources.

Identify Needed Resources



Notes:

In your plan, list the resources that will make the change work. You may need tangible resources, such as additional funding, new teachers, additional space or equipment, or new curricula and instructional materials.

You may also be able to reconfigure resources by making procedural changes in your program, such as rearranging schedules and work hours, reassigning staff to different roles, or shifting tasks among individuals.

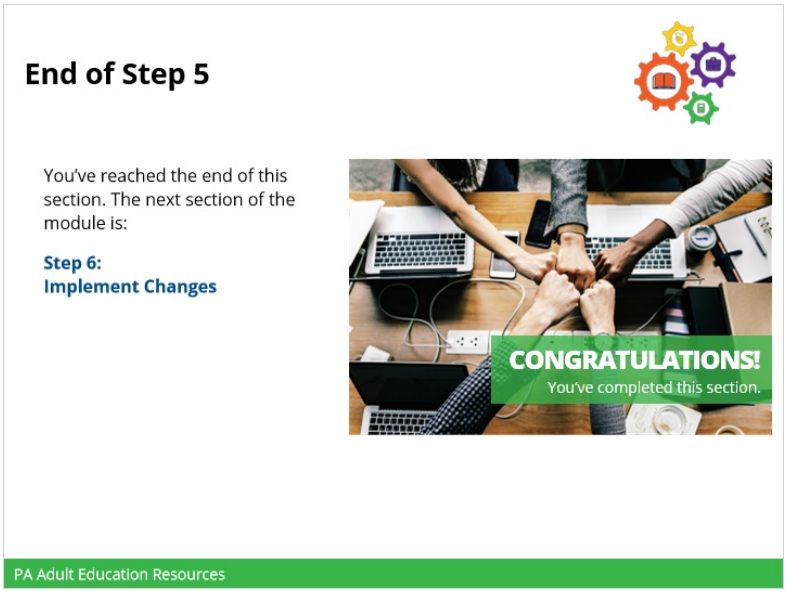
For many changes, you may need staff training on the new procedures. Your change plan should explain how you will train staff, who will be involved in the training and how long that training will last.

Again, it will be important to get staff input into the training content and procedures to help to ensure acceptance of the plan. Include plans for ongoing and follow-up training, especially if the changes will take time to implement.

Follow-up training is especially critical if the new procedures are complicated, new staff is hired, or staff is likely to forget the changed procedures. For example,

changes in intake procedures and instruction are likely to require more ongoing staff development, especially if the procedures are very different from what was done in the past.

End of Step 5



Notes:

Congratulations, you have completed this section of the module. Please click on Next to advance to the Next section, which will look at Step 6: Implement Changes.

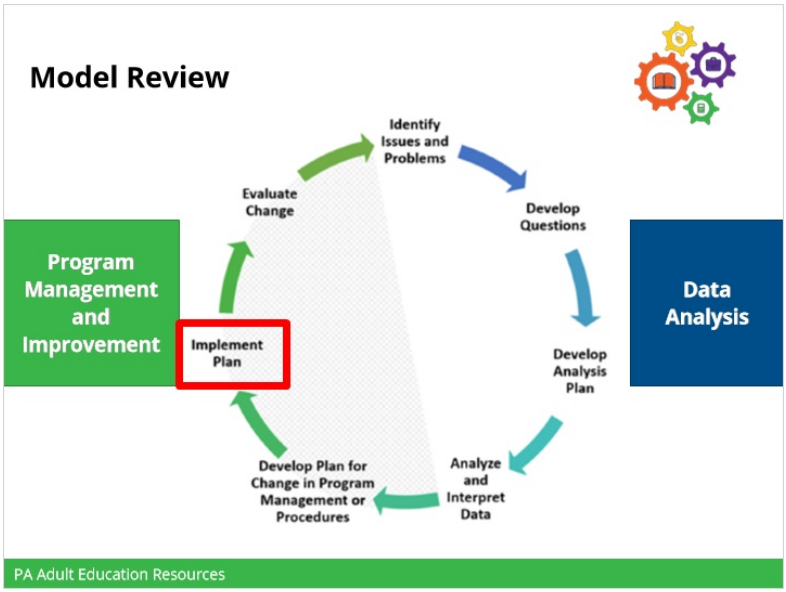
Step 6

Step 6: Implement Plan

Notes:

Welcome to Step 6. This part of the module will provide details on what methods are needed to implement change.

Model Review

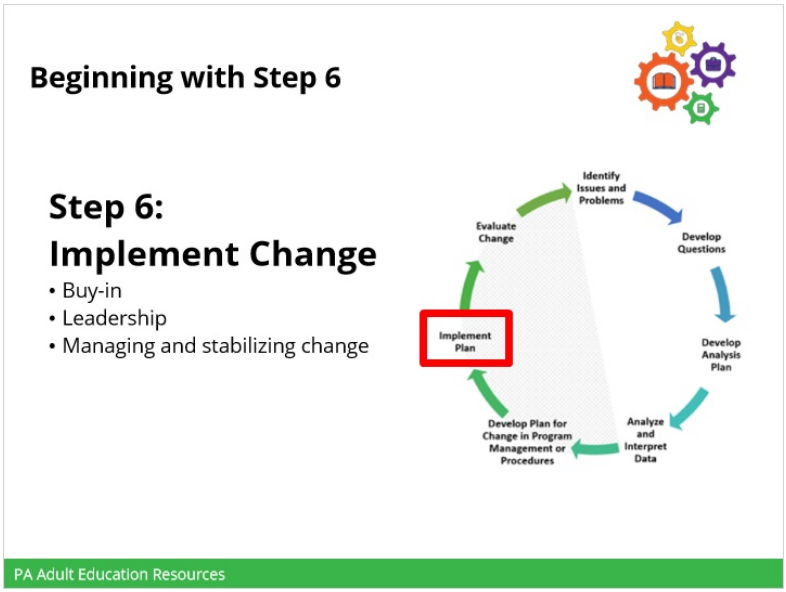


Notes:

It is never easy to implement change and the bigger the change, the more difficult the process may be. In addition, change processes are not linear; they are likely to occur in stops and starts. The implementation of the NRS within your state and program may be a good example for you to remember as you consider change.

There are many models and approaches for making organizational change, and some are cited in the bibliography in this guide. Since the focus of this guide is on explaining how to use data rather than on organizational change, this module includes only a brief summary of important elements to the change process based on several published models and on the experiences of some states and adult education programs that have implemented data-driven change.

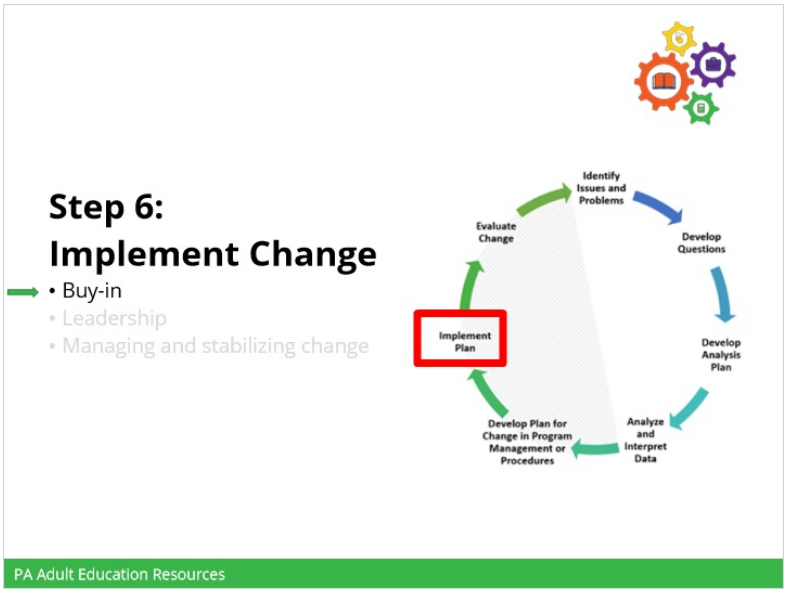
Beginning with Step 6



Notes:

Now that your program has developed a plan for change, it's time to implement the change based on the plan that was developed in the previous step. In this step, programs implement the program improvement plan. This includes learning the improvement plan, getting buy-in from agency staff, and completing professional learning needed to facilitate the process.

Buy-in



Notes:

Let's look at some strategies for creating buy-in to implement the change.

Buy-in

Notes:

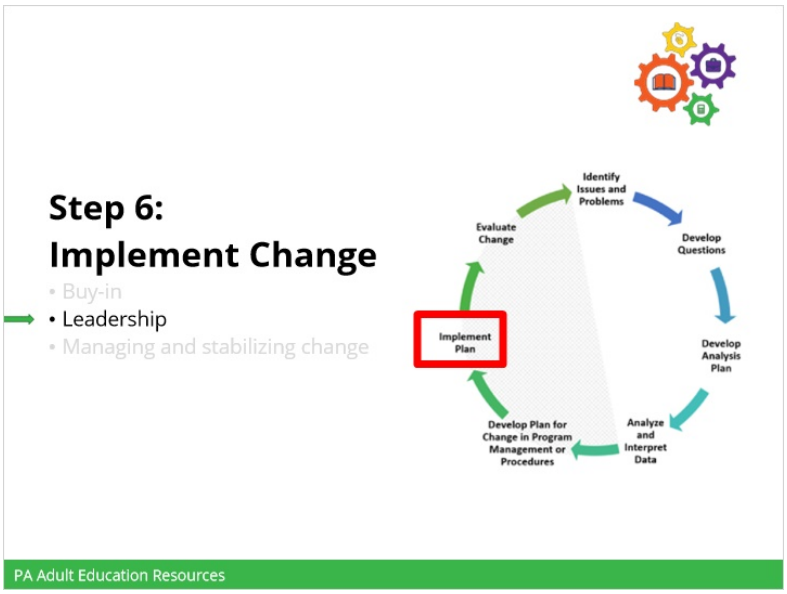
Although some people welcome change, it is difficult for most everyone.

It is hard to disrupt patterns and procedures that people find comfortable and predictable. As a result, skepticism or resistance is likely to be the first reaction to change. The resistance can be overcome if people feel the need for change and understand the reasons for it. Involving staff in the process can be key to developing understanding.

All change models emphasize the importance of staff buy-in to successful change. Depending on the scope of change, you may want to involve the whole staff or only those most affected to discuss the problems, perceptions of difficulties, and proposed solutions. Ideally, you will also want to involve these staff members in the entire data analysis process.

Not only should staff have a full-understanding of changes and the reasons for them, but they should be active participants in the decision and implementation of the change. The greater the participation and consensus, the greater the likelihood that the change will become established.

Leadership



Notes:

Successful change efforts usually have strong leadership through the process and your efforts at change will be greatly enhanced with a strong leader.

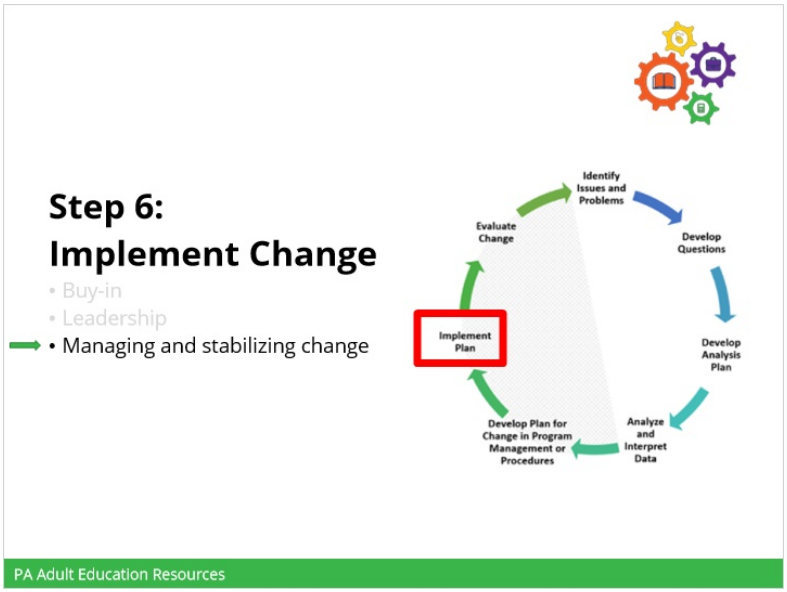
Leadership

Notes:

An effective leader can articulate a vision for the future that includes higher goals such as improving the program and helping students succeed. Besides setting a broad vision, a good leader can motivate people and can inhibit negative reactions by convincing people that the change is in their self-interest.

Effective leadership also entails having power over decisions and resources and the ability to coordinate and manage these resources. Since most efforts at change will require new or different allocations of staff or funding, the leader must have the ability to control these resources either directly or indirectly. If staff believes their efforts cannot be supported or implemented, the change process will fail.

Managing and Stabilizing Change



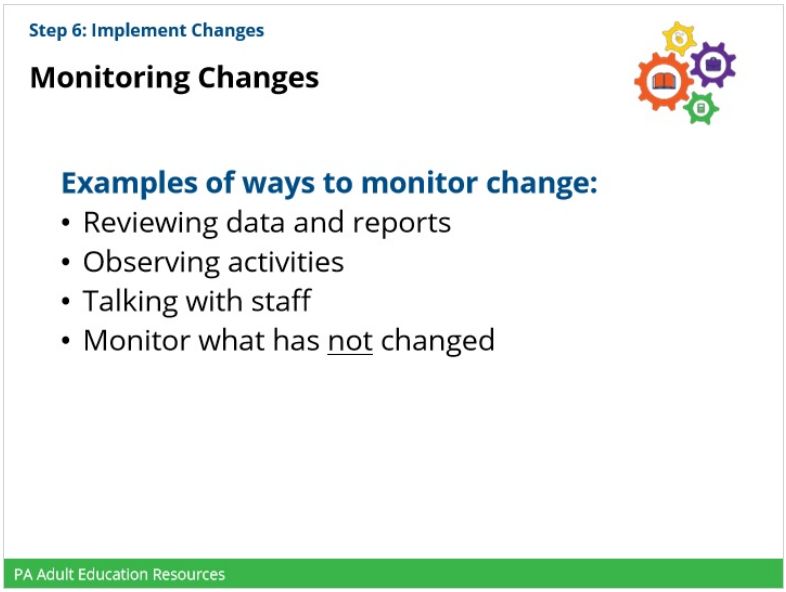
Notes:

It is quite an accomplishment to have identified a need for change through data, planned the change, obtained staff buy-in, and initiated the change.

Once the new procedures are in place, the challenge is to continue and stabilize it. For example, we have all experienced the excitement of learning something new at a training or staff development conference that we try upon returning back to work. After a short time, however, the novelty wears off and we revert to our old habits.

The same risk exists with procedure and organizational change. Initially things may change, but over time processes revert to the way they were before. Experts in organization change have identified the following ways to continue the change process and stabilize the change once it is underway.

Monitor Changes



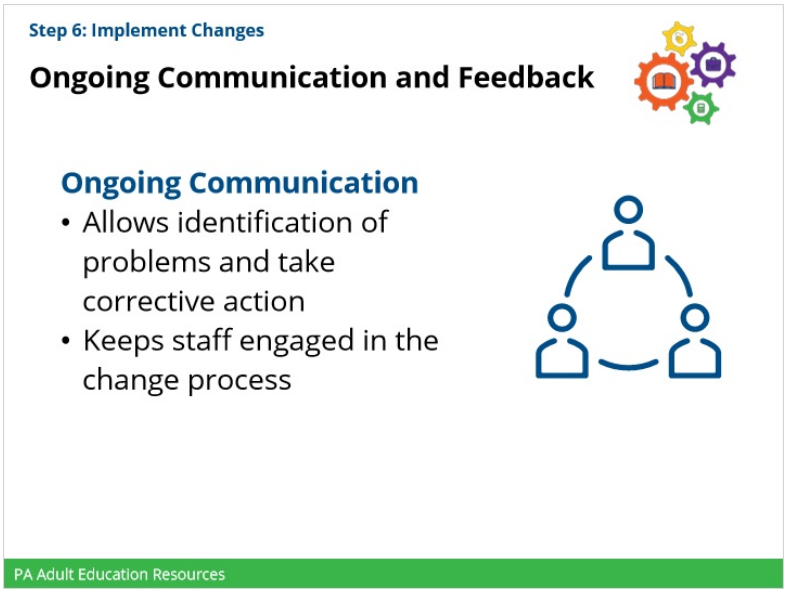
Notes:

As changes are being implemented, monitor activities to ensure the new procedures are being followed and that the old ways are not reasserting themselves.

Monitoring can include reviewing data and reports, observing activities, and talking with staff. Part of monitoring also includes identifying what has not changed, either because the new procedures are not working or something was overlooked during the planning for change.

The monitoring process may identify the need for additional changes or further training.

Ongoing Communication



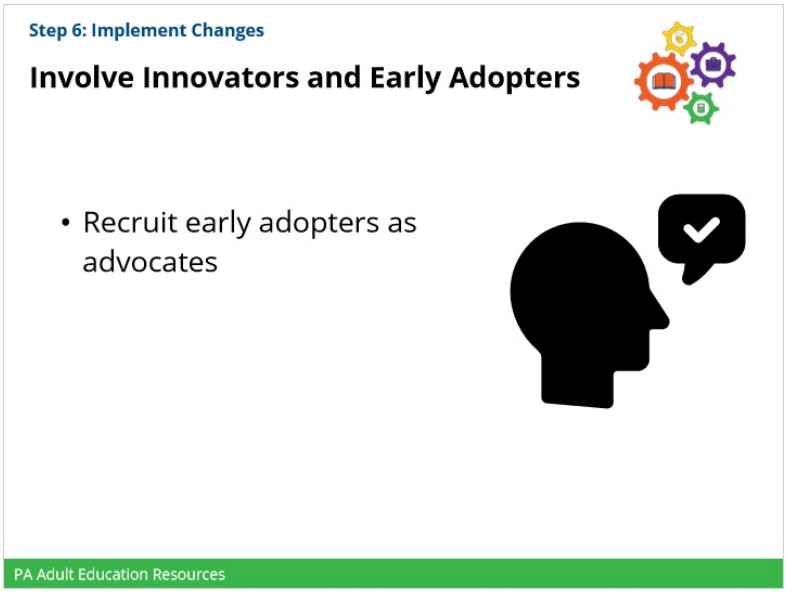
Notes:

Successful change entails continuous communication and feedback from staff as the new procedures are implemented.

You should hold regular meetings to discuss what is being done, the success of the implementation, and any expected or unforeseen problems that have arisen.

This ongoing communication serves two purposes: it allows you to identify the problems and take corrective action if needed and it keeps staff engaged in the change process.

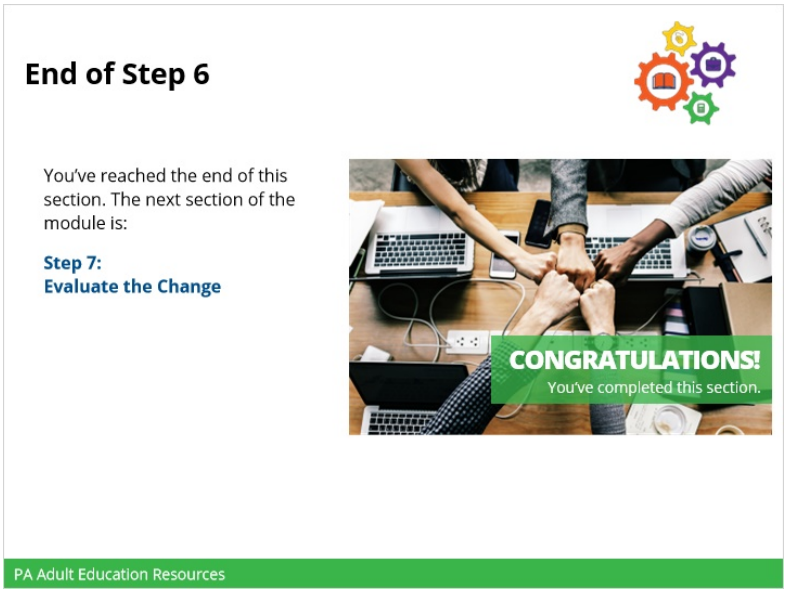
Innovators and Early Adopters



Notes:

In any group, there are people who quickly accept and learn the new processes and are ready for new innovations and challenges. You should recruit these early adopters as advocates in the change process. You can use them in visible positions to serve as examples to other staff as formal or informal advocates at meetings and trainings and have them work with you in monitoring and evaluating change.

End of Step 6

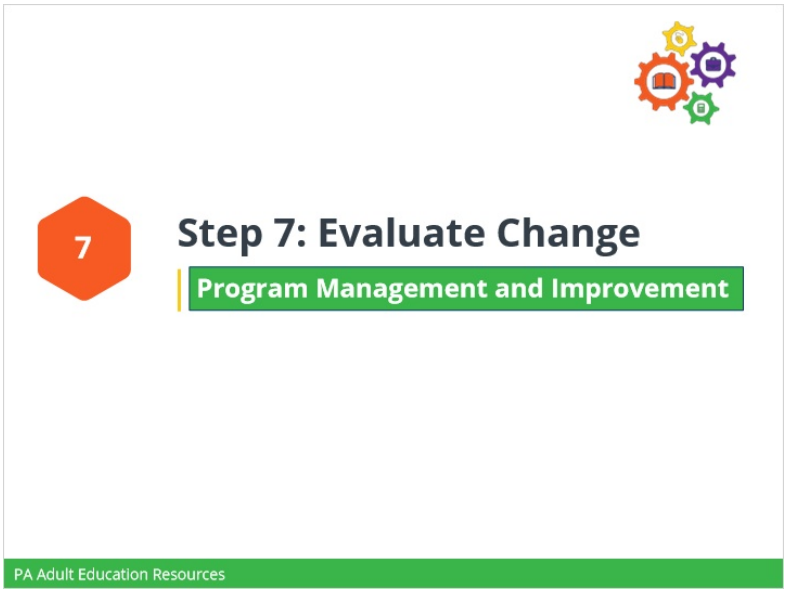


Notes:

Congratulations, you have completed this section of the module. Please click on Next to advance to the next section, which will look at Step 7: Evaluate the Change.

Step 7

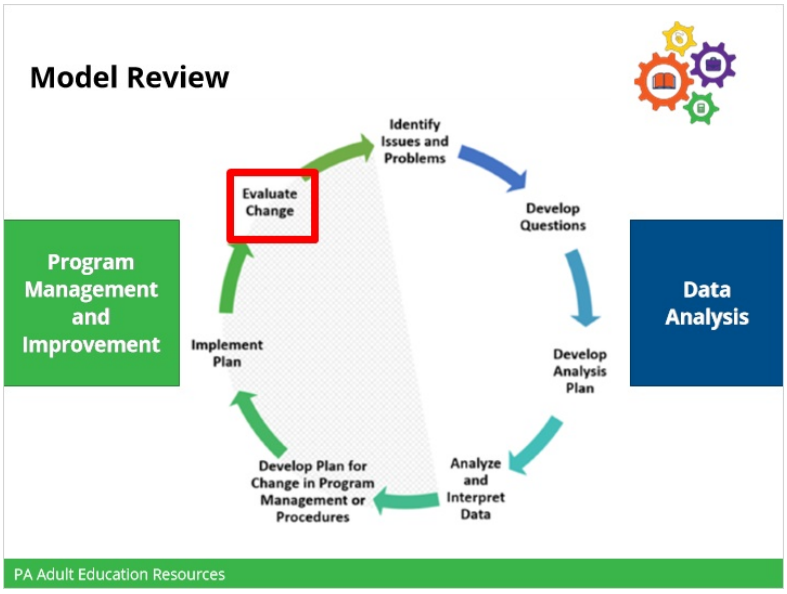
Step 7: Evaluate Change



Notes:

Welcome to Step 7. This part of the module will provide details on how to better understand and evaluate the impact of the changes made to the program.

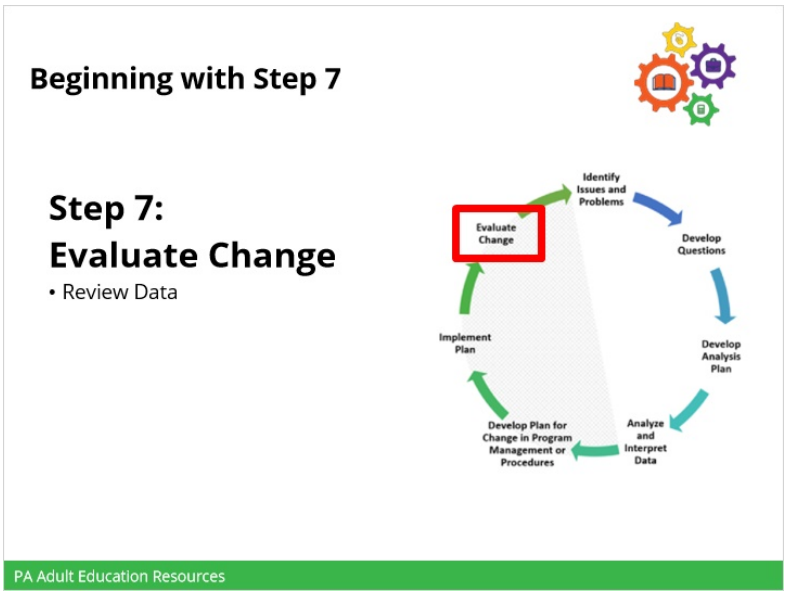
Model Review



Notes:

After the plan is implemented, Step 7 is to evaluate the change. This includes a review of the data collected during the improvement process.

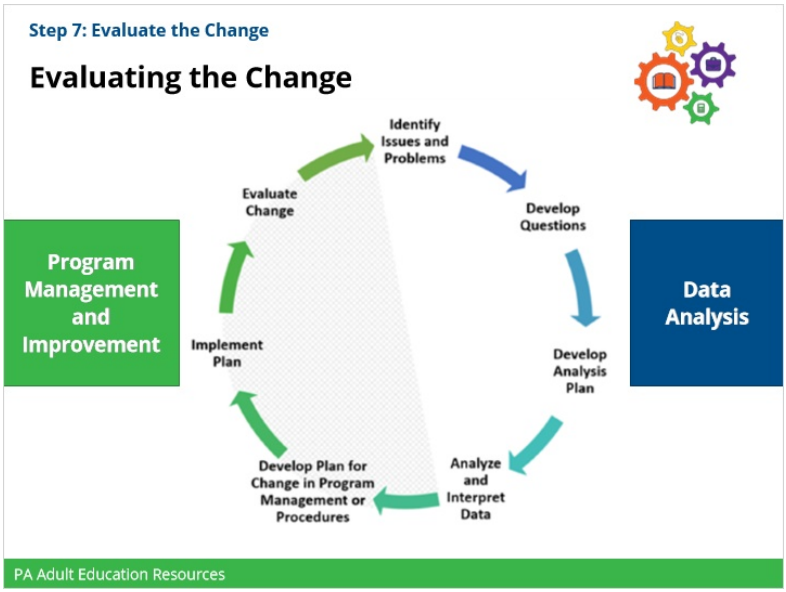
Beginning with Step 7



Notes:

After your changes have been implemented for some time, you will want to look at the data gain to try to determine the effect of the changes.

Evaluating the Change

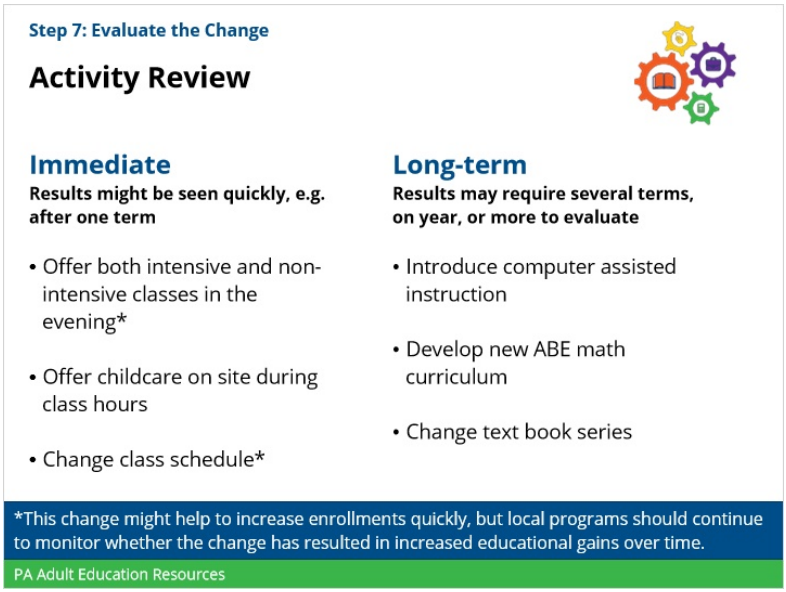


Notes:

Before you begin to look at the data again to determine the effect of change, you'll want to ensure that enough time has passed for the change to show an effect in the data. Some changes will take more time than others. For example, recruitment changes might appear quickly, by affecting the type of students who enroll. Changes designed to affect student learning will take much longer to appear.

The data and decision making cycle is now complete and you are back where you started identifying your topic. This time, however, the change you made will direct you specifically to the topic and question you asked. As before, you should frame the question around the specific issue the data can answer and identify the data elements as you proceed with the analysis and subsequent steps. You also will want to talk to your staff and perhaps the staff of other programs, as you evaluate the data to draw conclusions.

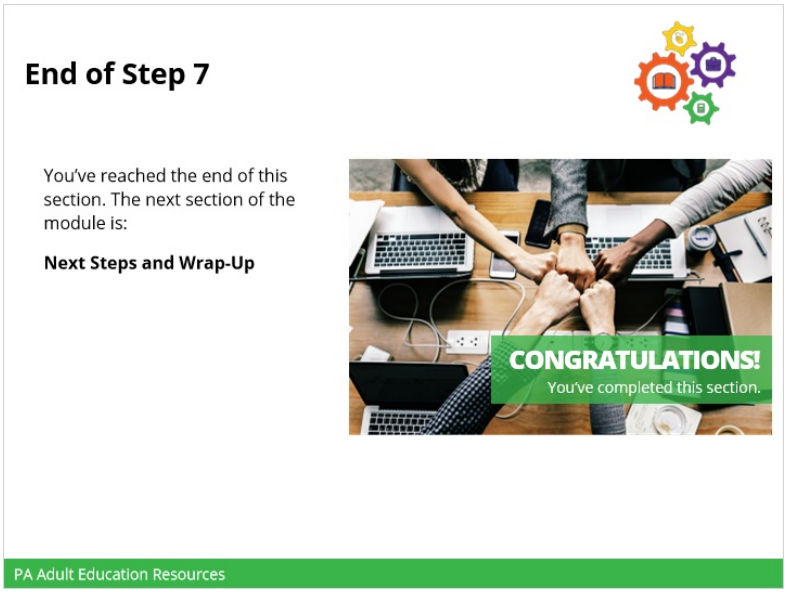
Activity Review



Notes:

Here are the correct answers to the activity you just completed. Remember that you'll want to ensure that enough time has passed for the change to show an effect in the data. Some changes will take more time than others.
Also, some change will have an immediate impact, but that does not mean that your evaluation of the change cannot continue. Depending on your question and data, you may find it informative to continue to monitor whether the change has resulted in change over a longer period of time.

End of Step 7



Notes:

Congratulations, you have completed this section of the module. Please click on Next to advance to the next section, which will look at the next steps and module wrap-up.

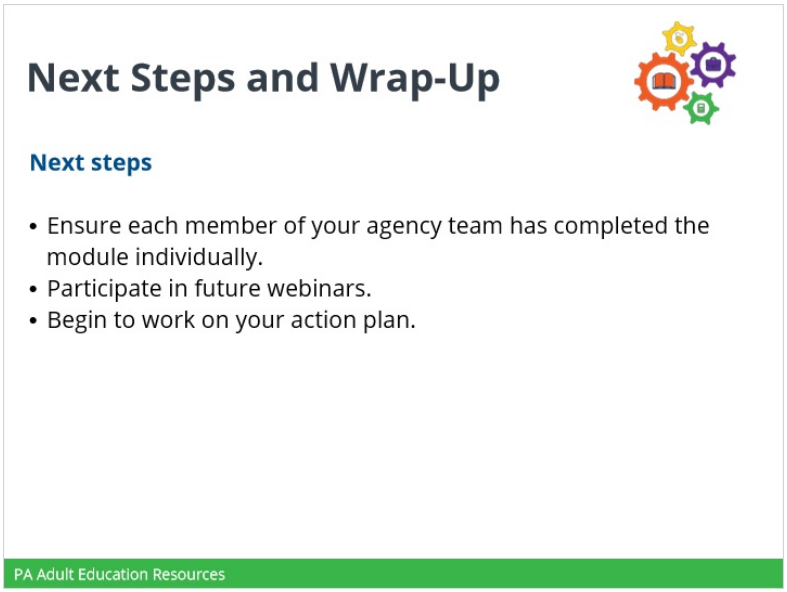
Next Steps and Wrap Up

Next Steps and Wrap-Up

Notes:

This is the final section of the module and will discuss the next steps.

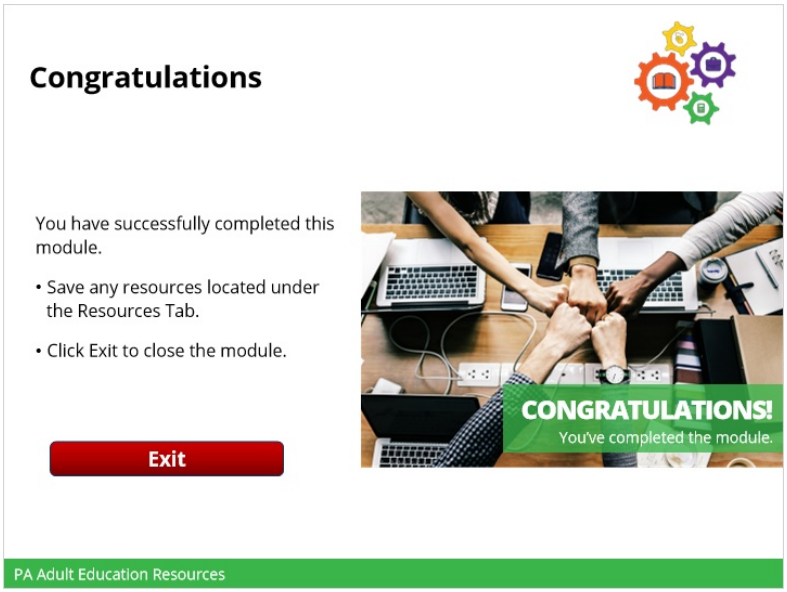
Next Steps and Wrap-Up



Notes:

Participants should ensure that each member of your agency team has completed this module individually. Plan to participate in the upcoming webinars. Information about future webinars are available in the PD Portal. You can also begin to work on your action plan following the instructions given by your course facilitators.

Congratulations



Notes:

Congratulations! You have completed this module. Be sure to download any resources you want to save by clicking on the Resources Tab. Click on the exit button below to close the module.