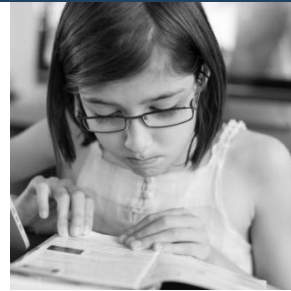


# DU103 Handbook: Using Student Growth Percentiles



Professional development for the NJ SMART Portal, a  
New Jersey Department of Education Data Warehouse

Developed by PCG Education for the New Jersey Department of Education.

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The materials and activities in this handbook were developed by PCG Education and field tested by educational professionals throughout New Jersey during pilot trainings.

Please direct questions related to the NJ SMART system to the NJ SMART Help Desk at (800) 254-0295 or [njsmart@pcgus.com](mailto:njsmart@pcgus.com).




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## How to Read this Document

### Icons

Activity	Discussion/Reflection	Resource/Reference
		
The gear icon appears when course participants are prompted to take part in an activity or exercise.	The light bulb symbolizes that participants will engage in a team discussion or individual reflection.	The paper clip draws attention to additional resources or references that exist to help improve users' understanding.

# Introduction

## Overview of NJ SMART

The New Jersey Department of Education has implemented the New Jersey Standards Measurement and Resource for Teaching (NJ SMART), a comprehensive data warehouse, student level data reporting, and unique statewide student identification (SID) system.

NJ SMART was initiated for three primary reasons:

1. New Jersey's public education system must become more evidence-based, measuring and monitoring progress towards instructional goals.
2. Major regulatory changes, such as the federal *No Child Left Behind Act* (NCLB), require states and districts to collect greater quantities of data to meet increasingly intensive reporting requirements.
3. The New Jersey DOE is committed to providing better information to local education agencies (LEAs) and other stakeholders, simplifying the burdensome data reporting requirements and increasing administrative efficiency through the use of technology.

Several important NJ SMART initiatives are occurring concurrently:

1. The state assessment data warehouse has been populated with statewide test results dating back to 1999.
2. The initial statewide NJ SMART data submission occurred in December 2006. Data provided by districts through this submission were used to create unique student identification (SID) numbers. SIDs were issued to districts on March 21, 2007, and continue to be issued for all students as they enter the New Jersey public school system.
3. All districts have been offered training on EDanalyzer, a web-based tool that allows districts to view and analyze state assessment data, as well as assessment-related student demographic information currently in the NJ SMART data warehouse.
4. Districts have an opportunity to create local data marts and access District Reports, for which they can receive training through the NJ SMART online portal throughout the year.

Each of these initiatives will result in important outcomes for local districts:

1. Integrated state assessment data means that districts will have access to assessment reports that will allow easy monitoring and comparison of critical performance measures.
2. With the implementation of SIDs, districts will be able to track students and their performance more effectively over time, even if they transfer in or out of New Jersey school districts.
3. EDanalyzer allows districts to access assessment data that are as current as the most recent data loaded into the NJ SMART data warehouse.
4. A local data mart offers the opportunity for districts to bring together data that are currently stored in a variety of locations into one integrated data warehouse, allowing staff to access linked student data. Reports will further provide districts with a user-friendly way to view and analyze student data.

These activities combine to provide the foundation for a more comprehensive system of data reporting and student performance management for New Jersey public schools.

## Overview of NJ SMART Professional Development

A series of five courses have been designed to introduce you to the tools of the NJ SMART data warehouse and allow you to access, analyze, and use data more effectively. Data Use 103: Using Student Growth Percentiles (DU103) is the third course in this series and will introduce you to the history and function of the NJ SMART data warehouse, information that will help you better understand New Jersey's student growth model, and help you answer questions and navigate NJ SMART to analyze data.

This handbook is designed to accompany the DU103 course which is part of the educational series for New Jersey educators, but it can also be used as a standalone resource. The material in this course and handbook will provide you with the concepts and skills necessary to access and use reports provided through the NJ SMART data warehouse which contain aggregate and individual student growth data. The screen shots in this handbook are based on fictitious data, but the structure and function of the reports are the same as your district's reports, and we recommend using this handbook's instruction to help you access and analyze your own district's data.

As you go through the course, consider the following:

- What are you learning and who else needs to know this material?
- What key concepts will you want to share with others?
- What technical information would be helpful for others in your school or district to know?

## Where are we now?

### DATA USE TRACK

#### *Making Decisions Using NJ SMART Data*

- ☐ DU101: Using School/District Reports
- ☐ DU102: Using EDanalyzer
- ☒ DU103: Using Student Growth Percentiles
- ☐ DU104: Using Ad Hoc Analysis
- ☐ DU201: Using Data for District & School Improvement Planning

### DATA QUALITY TRACK

#### *Establishing High-Quality Data*

- ☐ DQ301: Getting Started with NJ SMART
- ☐ DQ302: SID/SMID Management
- ☐ DQ303: NJ SMART Submissions
- ☐ DQ304: Data Quality

#### **Audience:**

District leaders, principals, and district/school improvement team members

#### **Prerequisites:**

DU101: Using School/District Reports

#### **Course Topics:**

- What is growth and why measure it?
- Student growth percentiles
- Median SGPs
- Answering growth-related questions through inquiry



The information in this course is designed for educators who would like to understand the New Jersey Assessment of Skills and Knowledge (NJ ASK) growth model and use it to make decisions to improve teaching and learning. In New Jersey, the phrase *growth model* describes a method of measuring individual student progress on the NJ ASK tests by tracking student scores from one year to the next.

New Jersey, through information gained from the administration of the NJ ASK in grades 3 through 8, has provided students, families, educators, and the general public with valuable information about student, school, and district achievement. This information has proven invaluable in helping schools and districts engage in program evaluation activities—understanding, for example, how well district instruction and curriculum are aligned with the state’s core curriculum content standards, or how well a particular subgroup of students is performing by school, by district, and across the state.

Until now, however, we have been unable to answer the question: *How much academic progress did a student or group of students make in one year as measured by NJ ASK tests?* With the development of the student growth percentile model, it is now possible to answer this question. Measuring student achievement, and now student improvement, will help all involved in education identify and support effective practices that help students attain higher levels of academic performance.

The student growth percentile is a new statistic in New Jersey that provides a comparison of a student’s change in achievement over time with that of his academic peers. This methodology allows all educators to identify strengths and weaknesses they could not previously detect. Student growth percentiles reported at the school and district levels will make it easier to target assistance to schools, identify promising programs that are improving student achievement, and provide all students and schools a measure of improvement beyond simply identifying *proficiency*.

The research and practice literature shows that a culture of data use is only developed, sustained, and maintained when there is distributed knowledge base school- or system-wide and a commitment to the importance of data-driven decision making. Think about how you will share the knowledge and skills you acquire about student growth with others, thereby enhancing the potential that data will be broadly used to inform decision making. As you go through this handbook, think about others who need to understand what you are learning, what key concepts you will want to share with them, and what technical information would be helpful for others in your school or district to know.

## Course Objectives

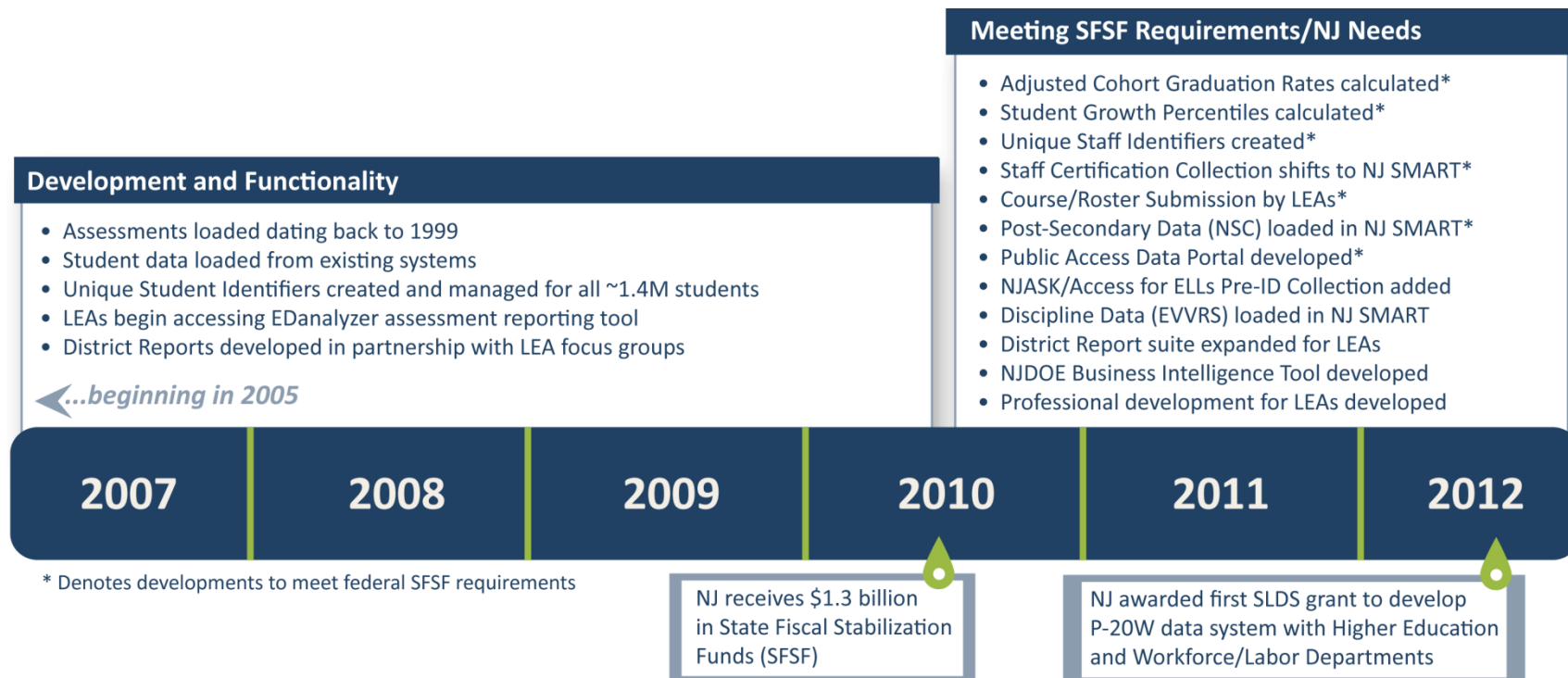
Upon completion of this course, you will be able to:

- Understand the reasons for seeking a new way to measure student performance,
- Understand key growth model concepts and terminology,
- Know how student growth percentiles are developed for individuals and groups,
- Interpret student growth percentiles for individuals and for groups,
- Use student growth percentiles in the inquiry process, and
- Access and use District Reports from the NJ SMART data warehouse that contain aggregate and individual student growth data.

# NJ SMART's History and Function

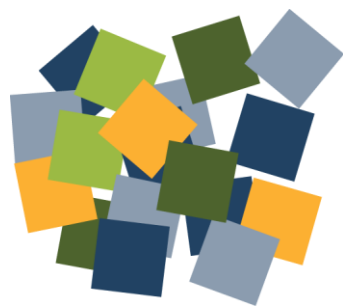
NJ SMART is a comprehensive state data warehouse for use by educators throughout New Jersey. The warehouse stores data from a variety of sources and serves as a central data repository for pre-K to post-secondary educational data about students and educators. NJ SMART also provides easy-to-use reports for both state- and district-level use for federal compliance as well as local data-driven decision making school improvement efforts. Over the next few pages, we'll describe NJ SMART's history and function, including its data inputs and report outputs that will help you better understand how you can effectively leverage data in NJ SMART.

## History



## NJ SMART Data Inputs

NJ SMART data comes from a variety of sources that are submitted by local districts through the NJ SMART portal, as well as through various data feeds received from external sources, such as National Student Clearinghouse and assessment vendors. Data from these disparate sources are combined in the NJ SMART data warehouse and packaged so they can be viewed in relation to each other. For example, student assessment performance data can now be crossed with attendance, post-secondary enrollment, and many other types of data to allow a more complete and rich picture of a student's educational experience. In addition to combining the data, NJ SMART has reduced duplicative reporting required by the state. By expanding data collection, multiple state systems have been eliminated and are fulfilled through only two main submissions to NJ SMART.



### State Submissions

- Student Identification (SID)
- State
- Special Education
- Career/Technical Education (CTE)
- Course Roster
- Staff Member Identification (SMID)
- Staff

### District Data Marts

- Program Enrollment
- Credits Earned

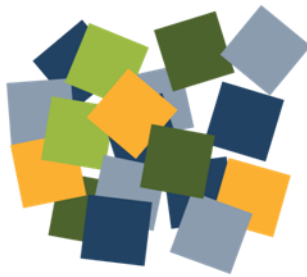
### Data Feeds/Derived Information

- NJ state assessments (NJ ASK, HSPA, APA, AHSA, ACCESS for ELLs)
- National assessments (PSAT, AP, SAT)
- Graduation Rate
- Student Growth
- Post-Secondary
- Student Discipline (EVVRS)

## NJ SMART Outputs

NJ SMART currently provides two district-level reporting tools: EDanalyzer and District Reports. Educators can use these tools to learn more information about their students' enrollment, demographics, assessment performance, special education characteristics, and much more. While each tool displays data about students enrolled in a district, the tools differ in the type of data in the reports and how the data is presented.

### NJ SMART Submissions



### NJ SMART Data Warehouse



### NJ SMART Outputs



- District Reports
- EDanalyzer
- State/Federal

## A New Way to Measure Student Achievement

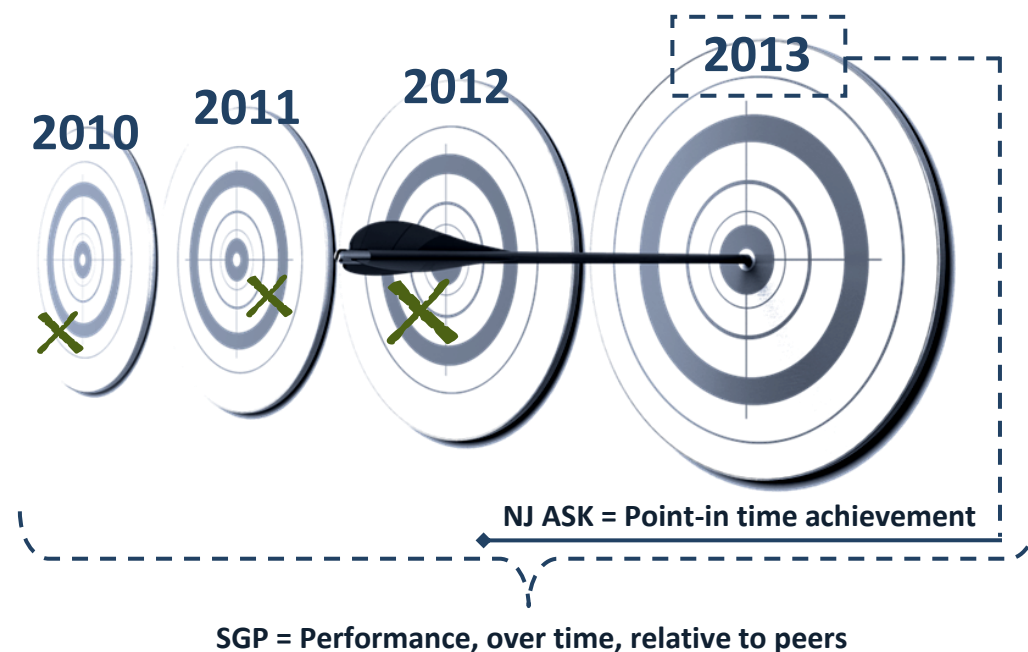
Measuring student achievement relative to core content standards specific to each grade level is useful in determining whether a student has met the goals for that grade at a particular point in time. However, annual assessment of student achievement against grade level standards does not measure students' academic growth from year to year. This is why the New Jersey Department of Education has implemented the student growth percentile (SGP), a measure of student progress that compares changes in a student's NJ ASK scale score to changes in NJ ASK scores of other students with similar test score histories (achievement profiles). We refer to students with similar test score histories as *academic peers*.

Because SGPs measure change in achievement rather than absolute achievement, it doesn't matter how a student scored on the NJ ASK tests last year. In any given testing year, each student has an equal opportunity to demonstrate high growth. In other words, although a student may score well below the proficiency mark, that student could potentially improve, or grow, faster than students scoring well above the proficiency mark. Such an occurrence could indicate that a program, a teacher's new approach, or something else is working for this student.

It is helpful to think of the SGP as a statistic that puts NJ ASK achievement into greater context.

NJ ASK achievement scores answer one thing: *"How did a student perform relative to grade level standards in a given year?"*

NJ ASK student growth percentiles add another layer of understanding by asking: *"How did a student's achievement change from one year to the next, relative to other students with a similar NJ ASK test score history?"*



Why use growth data? The growth model makes it possible to see progress for students at *all* performance levels. A low-achieving student might be growing “faster” than a higher-achieving student. Trends in the growth of groups of students can be identified and studied to highlight strengths or areas of concern in instructional practice. This is impossible to see using only point-in-time “status” metrics. Growth data gives us evidence of improvement for schools with large populations of at-risk students and it enables evaluators to identify where educators are making an impact over time.

Measuring growth enables us to redefine student performance as the combination of achievement *and* growth.

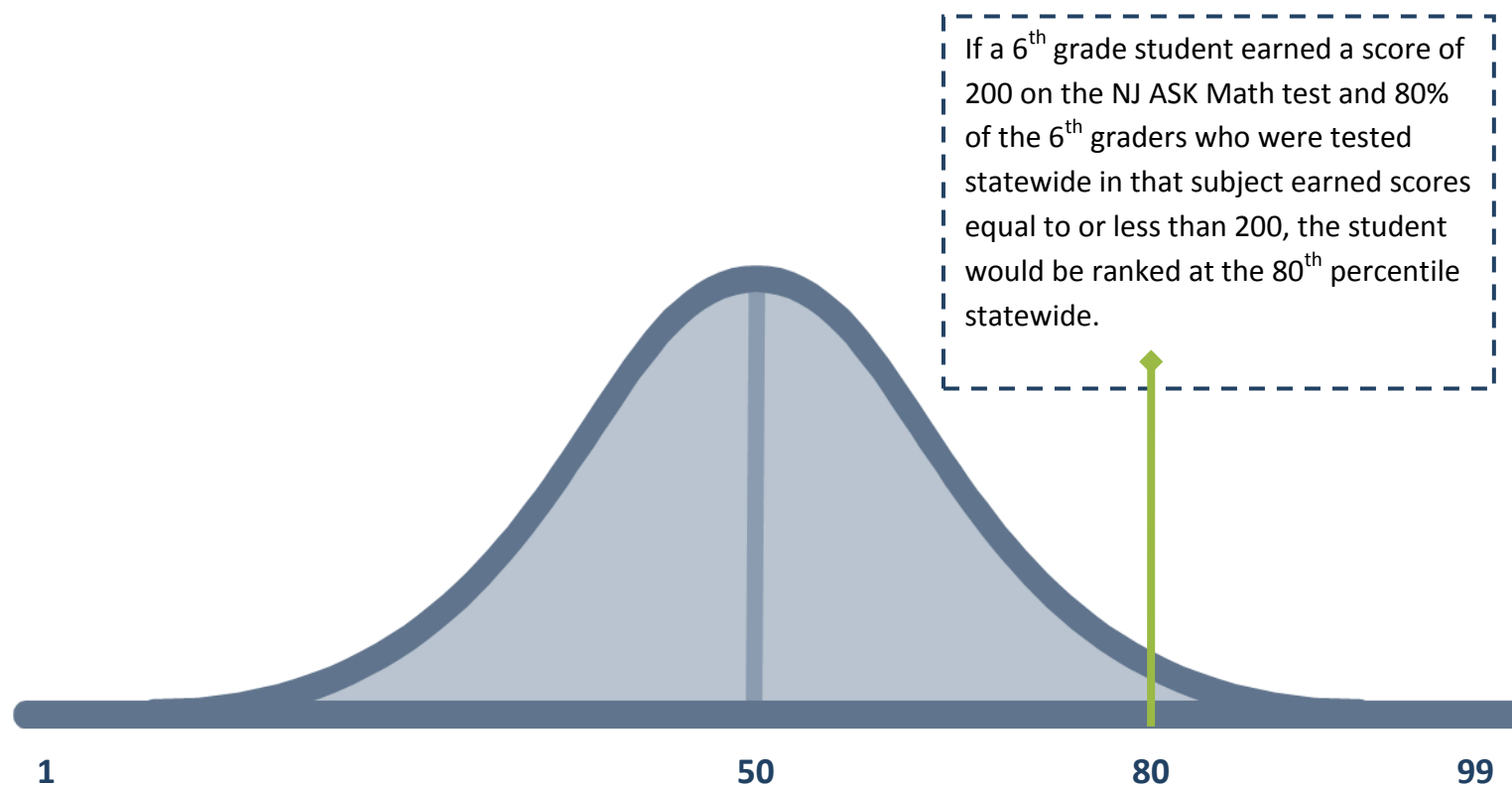
### Measuring the Growth of Groups of Students

While student growth percentiles enable educators to chart the growth of an individual student compared to that of his academic peers, student growth percentiles can also be aggregated to understand growth at the subgroup, school, or district level. The most appropriate measure for reporting growth for a group is the *median student growth percentile* (the middle score if one ranks the individual student growth percentiles of each student from highest to lowest). Median SGPs (MSGPs) allow fair comparisons to be made between any school’s or district’s growth and that of the state as a whole.

## Key Growth Concepts and Terminology

### Percentile Rank

For our purposes, a percentile is a statistic that indicates the percentage (from 1 to 99) of a reference group obtaining scores equal to or less than the individual's score. For instance, if a sixth grade student earned a score of 200 on the NJ ASK Math test and 80% of the sixth graders who were tested statewide in that subject earned scores equal to or less than 200, the student would be ranked at the 80<sup>th</sup> percentile statewide.





## Individual Student Growth Percentiles

In New Jersey, the student growth percentile measures student progress by comparing one student's progress to the progress of other students with similar NJ ASK score histories. The students with similar NJ ASK score histories are referred to as an individual student's *academic peers*. Let's explore an example.

Three years ago, Maria scored 205 on the NJ ASK LAL test in grade 4. She scored 200 in grade 5. Maria's academic peers are students throughout the state whose LAL test scores are similar to hers. This year, in grade 6, some of Maria's academic peers scored substantially higher, earning scores in the Advanced Proficient category, and some scored significantly lower, dropping to the Partially Proficient category.

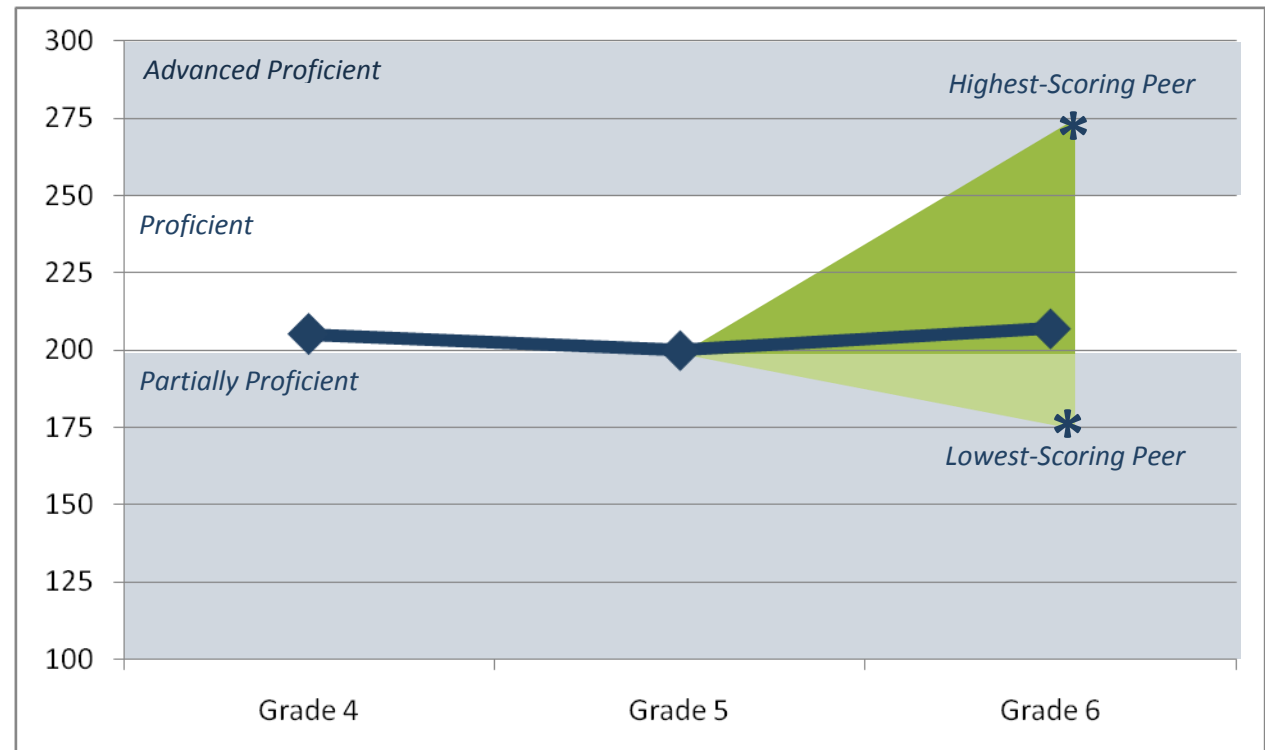
### Maria's Test History

- Grade 4: 205
- Grade 5: 200
- Grade 6: 207

### Maria's Academic Peers

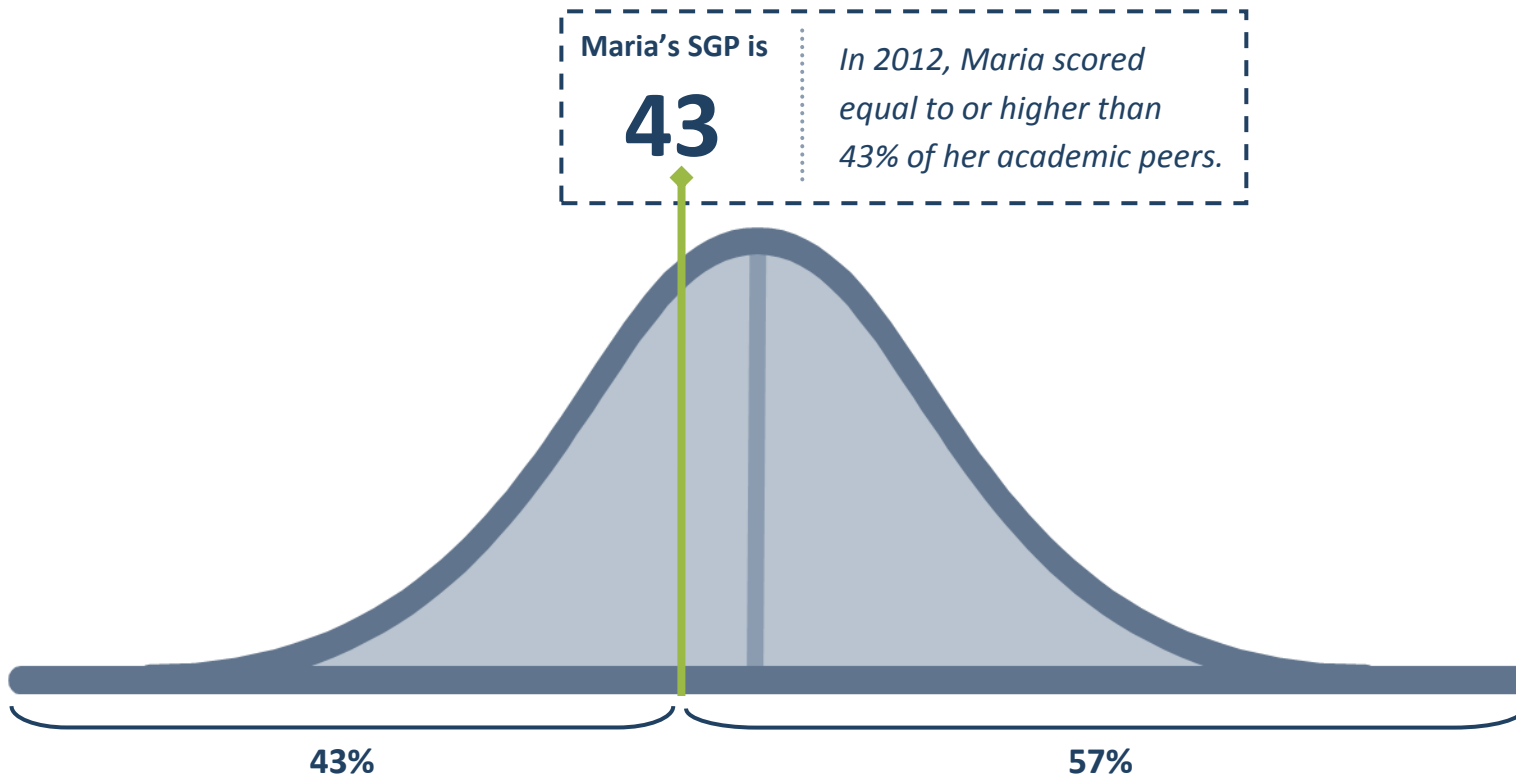
- Grade 4: ~205
- Grade 5: ~200
- Grade 6: ?

Maria's NJ ASK LAL Test Scores Compared to her Academic Peers



So how does Maria's score compare? In grade 6, her score increased to 207. When we compare her score to the distribution of her academic peers' scores, most of the peers scored higher than she did. In fact, 57% of them scored higher than she did, while she scored the same or higher than 43% of her academic peers. Therefore, Maria has an SGP of 43.

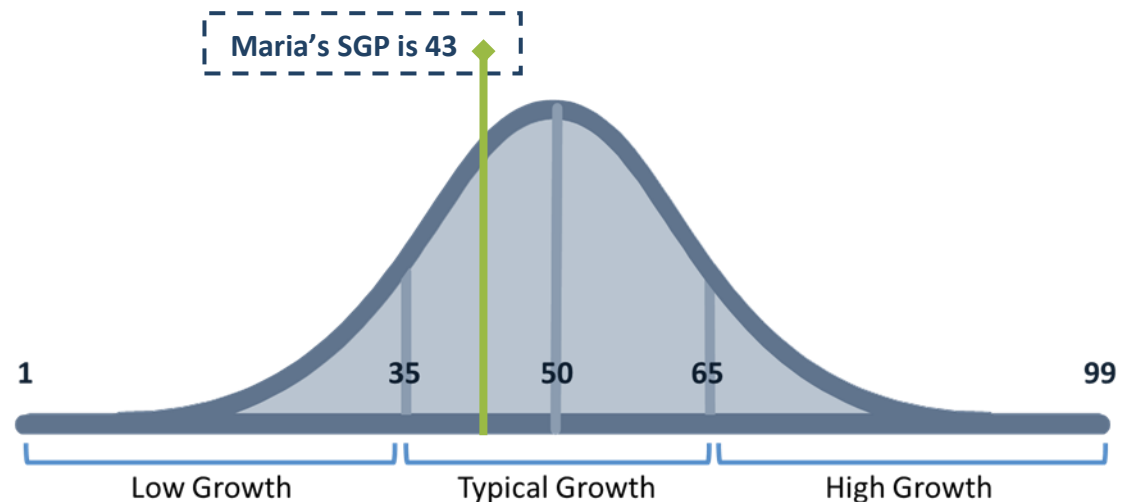
To interpret Maria's SGP, we want to consider how she did in comparison to what would be considered *typical growth* for students having her score history. Since they are percentiles, SGPs range from one to 99 with a median of 50 (50 percent of the students scoring higher and 50 percent scoring lower than the middle). In New Jersey, typical growth is considered to be between the 35<sup>th</sup> and 65<sup>th</sup> percentiles.



Maria's SGP is at the low end of the typical growth range. When we consider Maria's performance (achievement *plus* growth), we see that she is achieving at the low end of the proficiency range (scale score of 207) and is growing on the lower side of the typical range. This suggests that she may be at risk of falling behind her peers over time.

This is important information and shows how SGPs provide a new way to understand student progress. Without being able to compare Maria's change in achievement to that of her academic peers, we would be left looking only at her variable NJ ASK test score history.

It is almost certain that a student's academic peer group will change with each successive administration of the NJ ASK tests. In our example, Maria scored 207 on her most recent NJ ASK test. Only students in her original academic peer group who also scored about 207 on the most recent test would have the same academic history and thus be in her academic peer group for the next year's NJ ASK test.



## Median Student Growth Percentiles

Student growth percentiles can be aggregated at the subgroup, grade, school, and district levels. The most appropriate measure for reporting growth for these groups is the *median student growth percentile* (the middle score if one ranks the individual SGPs from highest to lowest or from lowest to highest). The median SGP provides a "summary" of the growth of the group—which is helpful—but we must be mindful of the full range of SGPs in the group so we can provide appropriate services for students with high, typical, or low growth. Let's first understand the state's aggregate median of 50.

About 100,000 New Jersey students in grades 3 through 8 take each of the NJ ASK tests each year. At each grade level—starting with grade 4—individual SGPs are calculated for all students as described above and result in a very large set of students with an SGP distribution

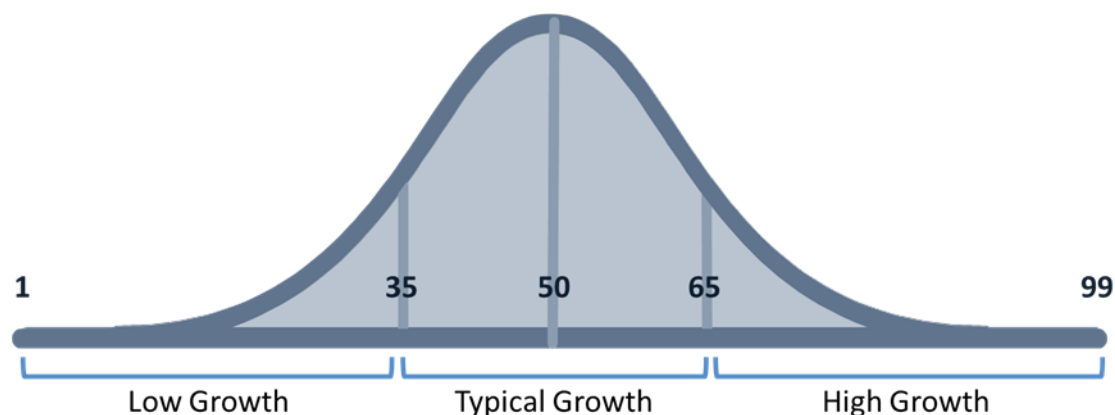
ranging from one to 99 for each test at each grade level. This statewide distribution is the *norm* or *comparison group* to which all other districts', schools', and subgroups' median SGPs can be compared.

Because students of all types make up this distribution and have scores that extend the full range of the SGP scale, the median SGP for New Jersey's students always remains 50, with 50% of the students above the median, and 50% of the students at or below it. Because of the very large number of students in the state, this median is a stable metric to which comparisons can be made.

For any subgroup of students, whether the group is as large as a district or as small as a classroom, the median can be determined by rank-ordering the group's individual SGPs and locating the middle number. If there is an even number of SGPs, average the middle two numbers and that is the median SGP for the group.

To interpret the meaning of this median, remember that the comparison group is all students, statewide, who took a given test at a given grade level. Unlike the calculation of individual SGPs, this comparison group is not composed of academic peers. For example, if the students with disabilities in your district have a median SGP of 53, that particular group of students, on average, achieved higher growth than 53% of all students state-wide who took that test. The comparison group is *not* composed solely of students statewide who have disabilities. It does not indicate that your students with disabilities grew more than 53% of all other students with disabilities statewide.

It is important to keep in mind that the SGP is another piece of data educators can use to better understand their students' performance. There is a story behind every SGP, and educators are encouraged to seek out these stories. Through the use of the inquiry process in seeking out these stories, this new measure of student performance can provoke high-quality conversations about student achievement, programs, schools, curriculum, and the teaching and learning that takes place in every classroom across the state of New Jersey.



# The Inquiry Process

## Cycle of Inquiry and Action

The graphic at right describes a theory of action, or logic model that serves as the foundation for effective data use. In this course, we will deal with the first two steps in the cycle and set the stage for moving on to the third step.

A disciplined application of this kind of data-driven approach builds a district and school environment focused on continuous improvement grounded on evidence. The District Reports in the NJ SMART data warehouse are an excellent tool for accessing achievement and growth data, but the reports alone will not bring about continuous improvement. Only an intentional process of inquiry that guides actions grounded in evidence continually monitored through the collection and analysis of formative and summative data will support continuous improvement in districts and schools.



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## Asking Questions with Growth Data

Student growth percentiles—both individual and aggregated for subgroups, schools, and districts—can open powerful new lines of inquiry into student learning and the teaching process. As with all of the other courses in this educational series for New Jersey educators, this course aims to introduce you to the tools needed to be successful in identifying what data you need to support actions that lead to success for your students.

The inquiry approach used throughout the courses in this series begins by using focusing questions to guide your exploration. Instead of poring through substantial amounts of data looking for answers to undefined questions, focusing questions help set the stage by guiding your analysis. The first step in the inquiry process is to ask: *What is it that I want to know?* Then you will be able to craft questions that guide your inquiry toward that end. This allows you to search for specific answers without being distracted by other data. The answers to these questions will be more meaningful because you have targeted your search.

Once you have established a focusing question, the data needed to answer that question becomes apparent. You will find that when your focusing question is answered, it will lead to other questions. Answering these clarifying questions will yield richer information pertaining to your search.

The following page provides examples of focusing and clarifying questions you might ask when using achievement and growth data to look at student performance.

## Achievement Data

NJ ASK data provide insight into the achievement of individuals and groups of students at particular points in time (NJ ASK test administration dates). Achievement data enable us to answer questions such as those listed below.

### Focusing Question

Are there certain groups of students in my school that are having difficulty in math?

### Data Analysis



### Clarifying Questions

- Which clusters are causing them the most difficulty? On which clusters are they being successful?
- Over time, are students having difficulty with the same clusters?

## Growth Data

The addition of SGP data to the NJ SMART data warehouse allows us to identify focusing questions that could not be easily investigated before. For example, we can now ask questions such as those listed below.

### Focusing Question

Did eighth grade students grow as much this year as they did last year when they were seventh graders?

### Data Analysis



### Clarifying Questions

- What was the median growth for students who scored at the Proficient Level? The Partially Proficient level?
- What are the characteristics of the students who had high or very high growth? Low or very low growth?

The combination of achievement data and growth data paints a more complete and accurate picture of student performance and allows us to answer significant questions such as:

- Are our Proficient students growing as much as should be expected?
- Although many of our students are not yet Proficient, are our programs successful in helping them grow to become proficient in a reasonable period of time?
- How much academic progress did an individual or group of students make in the last year?
- How does an individual student's growth compare to that of students with similar prior NJ ASK test scores?
- Is a student's/school's/district's growth higher than, lower than, or similar to growth by students across the state?
- Are students in the pilot reading program demonstrating better growth than students in the traditional program in our school?

Growth data open avenues to investigate impact in ways we could not before. Asking and researching growth-related questions will help us understand what types of programs and teaching is most effective for students of all types and backgrounds. This is powerful information for parents, teachers, principals, and district leaders that will help them identify and expand strategies that work for every student.

## Types of Questions

You ask questions about your district, schools, and students all the time. The questions are based on your observations, your experience, your intuition, and, ideally, on data. The challenge is to develop meaningful questions to drive the inquiry process that are based on all of these sources and that, if answered, will significantly improve teaching and learning in your district.

As you formulate questions that will have a direct impact on teaching and learning in your district or school, you should consider two things.

1. Does the question relate to something over which the district or school has control?
2. Does the question relate to something which, if improved, will have a significant impact on teaching and learning?

Questions about factors that districts and schools can influence form the basis for the action steps of the inquiry process.



You may also ask questions about factors that can have an effect on teaching and learning, but that cannot be influenced or changed by districts and schools. These questions are more rhetorical in nature and help you develop a better understanding of your students. This understanding can place other data into the appropriate context and increase the effectiveness of improvement initiatives. These questions begin to tell the story behind each student's SGP.

For example, the size and distribution of the low-income student population in a district is not a factor a district can control. However, knowing the size and distribution of this population may suggest factors, such as homelessness, that could impact a student's growth during a particular time period.

As you go through the question formulation process, you will discover that starting with broad questions to focus your inquiry will lead to the development of narrower questions that will deepen the inquiry process. As noted earlier, these broad questions are called *focusing questions*, and the narrower questions are called *clarifying questions*. Focusing questions provide a starting point to help you identify the data you will need to begin your inquiry. Clarifying questions are generated in response to the analysis of the initial data set and often require the collection and analysis of additional data.

Questions that you might want to explore can be grouped into two major categories: *resource allocation* and *teaching and learning*. Resource allocation questions address topics such as staffing, professional development, instructional resources and materials, and program evaluation. Teaching and learning questions include the context for learning, achievement, and engagement with the learning process. Context questions look at student demographics, instructional practices, and program participation. Achievement questions look at all aspects of student performance. Engagement questions deal with factors such as attendance, discipline, and dropout status as indicators of students' active participation in the learning process.

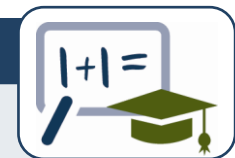


### Resource Allocation

- Staffing
- Professional development
- Instructional resources and materials
- Program evaluation

### Teaching and Learning

- Context (demographics, instructional practices, program participation)
- Achievement
- Engagement (attendance, discipline, dropout status)





## Activity 1: Formulating Good Questions Protocol

The following process will help you identify questions that will guide your investigation of a significant issue in your district or school related to student growth (or any other issue). You can complete this process by yourself or, for more comprehensive results, you may want to invite several colleagues to join you.

1. Identify an issue in your district/school that you wish to address. It can be formulated as a statement or question. Your issue/question should be related to student outcomes. Write the issue on the top of a piece of chart paper.
2. Brainstorm questions that stem from the statement or question. Write the questions on the chart paper. All items must be phrased as questions. Your questions should be related to student outcomes.
3. From this group of questions, identify three questions that deal with issues that the district/school has control over and which, if positively resolved, will have a significant impact on teaching and learning.
4. Out of these three, identify the top priority question. Your top priority question should serve as the focusing question to initiate the inquiry process. You will use this question in Activity 4.

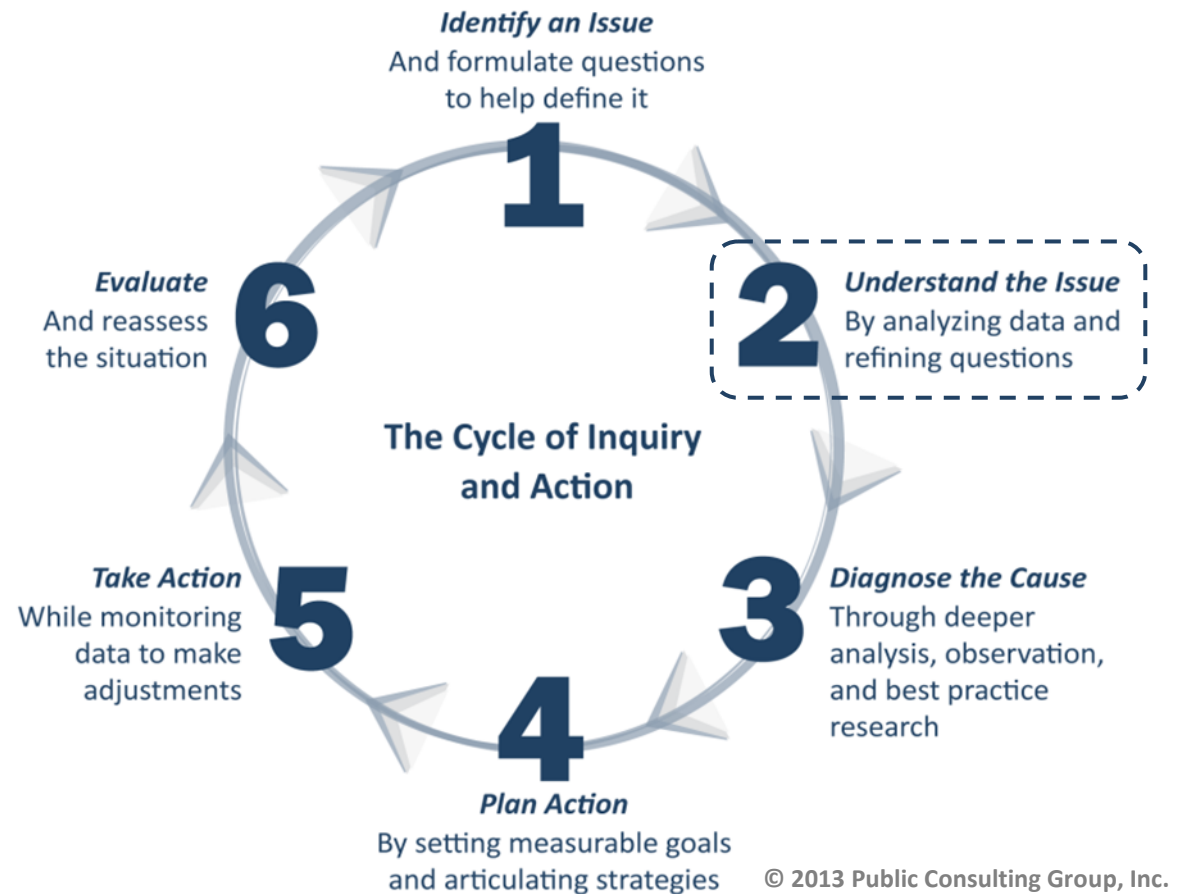
# Analyzing Data and Making Valid Inferences

## The Data Analysis Process

Data analysis can happen during several of the steps in the Cycle of Inquiry and Action, but analysis usually begins in the second step: *Understand the Issue*. In this step, you will be looking at data in various reports to help you answer your focusing question and to better understand what the issue you identified is really about.

A thoughtful, rigorous, and unbiased analysis of data related to your focusing question is key to a successful inquiry. It can be easy to unknowingly approach data with the answer already in mind. Consciously or unconsciously, we may seek evidence that supports what we already believe to be true. Approaching data with a truly open mind takes practice and discipline.

The first step in data analysis is the objective description of what the data say, for example, *what patterns and trends are evident in the data?* It is very important to focus on this first step before making inferences or drawing conclusions from the data because clarifying questions often need to be posed and additional data collected before valid inferences can be made.



**Observations:** An observation captures an unarguable fact and may be indicated by phrases such as: *I observe that ..., some patterns or trends that I notice ..., or I am surprised to see that ...* Examples of observations include: factual interpretations and statements about quantities (“over half of the students are not proficient in math”); the presence of specific information and/or numerical relationships between ideas (“twice as many boys as girls are proficient in math”); or patterns and trends (“the percentage of ELL students decreases from elementary school through high school”).

**Inference:** An inference reflects the meaning that the observer is making from the data, and may be indicated with phrases like: *I predict..., I think..., because..., therefore...,* or by imprecise qualifiers like: more, less, adequate, or poorly. Another way to identify an inference is to notice when a conclusion, explanation, or conjecture is drawn from a data set, such as using a smaller set of data to make broader generalizations or predictions.

Both observations and inferences play crucial roles in the data analysis process. It is important to be able to distinguish between the two. One must be sure to rigorously examine the data for patterns, trends, and outliers that can be factually explained prior to making any inferences or conclusions about what the data may mean.

Much of the data that you will analyze is based on assessment results, primarily the NJ ASK tests, yet no single data source can provide a complete picture of teaching and learning within the district. Using *both* achievement and growth data enables you to develop a deeper understanding of teaching and learning by asking specific questions about the teaching and other factors that contribute to student performance. The validity and credibility of inferences increase if a variety of related data sources are used to provide more information about the question being investigated. Inferences about student performance are much stronger if they are based on at least two assessments that produce similar data.

Assessment results are only one data source. To extend the inquiry and discover the factors that influence student performance, data from other domains such as demographics, perceptions, and school structures and processes need to be considered. Through the use of multiple data sources we can get a more accurate picture of the factors that affect student outcomes.

The Data Analysis Model on the following page illustrates how data analysis happens. Analyzing data is mostly about carefully observing and noting what you see in the data, and then drawing inferences and conclusions from it. It is important, however, to make sure that you’ve collected enough facts before you draw conclusions.

***Prepare to analyze***

You've identified the issue on which you want to focus and have selected a high priority focusing question to guide your inquiry. The first step in analyzing the data is to find the report(s) that contains the data related to your question.

***Make factual observations***

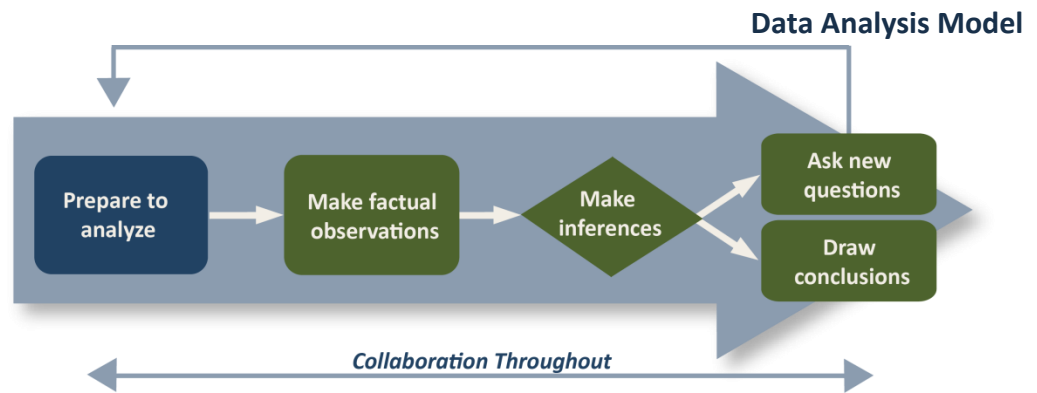
Once you have the data you need, the next step is to make and record factual observations about what the "data say." At this stage in the process it is critical to focus only on the facts: what differences exist across variables, are trends apparent, and are there obvious "outliers?"

***Make Inferences***

After you have studied the data carefully and have enough notes about your observations, make some inferences to try to explain what you see in the data (e.g., students who decreased in performance also had low attendance, so it may be likely gaps of school instruction that affected their performance).

***Ask new questions***

Given the inference(s) you've made, is there more data you should look at before making a conclusion (e.g., it seems that attendance is the main factor in determining if a student decreases in performance from one year to the next, but I've only looked at the Cohort Performance Profile for the 7<sup>th</sup> grade to 8<sup>th</sup> grade cohort. I should check other cohorts and see if students who decreased a performance level from other grades also had low attendance)?



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*Draw Conclusions*

You should only make conclusions once you think you've seen enough data to support your inferences. Once you've drawn your conclusion(s), you're ready to move on to action (e.g., after analyzing four additional cohorts and noticing that those who have decreased in performance also have low attendance, I feel it's safe to conclude that poor attendance is a problem for the students who decrease in performance from one year to the next.).

## Activity 2: Applying the Data Analysis Model



### Scenario:

As assistant superintendent for curriculum and instruction, you have been interested in the issue of student growth across the elementary schools in your district. You convened a meeting of your elementary school principals to look into this issue. As a team, you collaboratively employed the focusing question protocol outlined to identify a focusing question to guide your inquiry.

Focusing question: How did the growth on the most recent 5<sup>th</sup> grade LAL test compare across all elementary schools in the district?

### Directions:

1. *Prepare:* Follow these steps to generate the NJ ASK Student Growth Profile for Training District 1:
  - a. Log into the NJ SMART training site ([www.training.njsmart.org](http://www.training.njsmart.org)). The instructor will provide a username and password.
  - b. Hover your mouse over the Reporting tab and select District Reports to view the available reports in NJ SMART.
  - c. Select the NJ ASK Student Growth Profile under the section “Starting Points: Assessment Profiles”
  - d. Choose the criteria from the available selections that will answer the focusing question above. The district is already selected for you, so next you need to select:
    - i. School: *All Schools* (so you can view how different schools compare against each other)
    - ii. Test Year: *2011-2012*, the most recent year available
    - iii. Test Year Grade Level: *Grade 5*
    - iv. Subject: *LAL*
  - e. Click *Run Report*.

The report you generated should look like this:

Modify Report Selection									
NJ ASK STUDENT GROWTH PROFILE (SA*)									
State Snapshot Report: Jun 30, 2012 (Generated: 4/3/2013)									
Training District 1				Test Year: 2011-2012					
All Schools				Grade Level: 05					
Subject: LAL									
Student Characteristics	Total Students		Median SGP	Low Growth: (1-34)		Typical Growth: (35-65)		High Growth: (66-99)	
	# of Students	% of Total		# of Students	% of Total	# of Students	% of Total	# of Students	% of Total
Total Students	339	100%	56	100	29.5%	98	28.9%	141	41.6%
School									
Juniper Elementary School	100	29.5%	57	31	31.0%	25	25.0%	44	44.0%
Moon Valley Elementary School	89	26.3%	57	25	28.1%	26	29.2%	38	42.7%
Rosewood Elementary School	76	22.4%	58	24	31.6%	17	22.4%	35	46.1%
Saguaro Elementary School	74	21.8%	50	20	27.0%	30	40.5%	24	32.4%
Gender									
Female	168	49.6%	59	43	25.6%	49	29.2%	76	45.2%
Male	171	50.4%	49	57	33.3%	49	28.7%	65	38.0%
Race/Ethnicity									
American Indian or Alaskan Native	1	0.3%	n/a					1	100.0%
Asian	51	15.0%	64	7	13.7%	20	39.2%	24	47.1%
Black	24	7.1%	61	7	29.2%	7	29.2%	10	41.7%
Hispanic	81	23.9%	57	19	23.5%	26	32.1%	36	44.4%
White	182	53.7%	49	67	36.8%	45	24.7%	70	38.5%
Lunch Status									
Free Lunch	49	14.5%	57	14	28.6%	14	28.6%	21	42.9%
Reduced Rate Lunch	19	5.6%	n/a	4	21.1%	7	36.8%	8	42.1%
Not Eligible	271	79.9%	55	82	30.3%	77	28.4%	112	41.3%



2. *Observe:* Make objective, factual observations about what the data say *related to the focusing question* and record them in Data Analysis Record 1 on the following page.
3. *Infer:* Once you are satisfied that you have made all of the relevant observations possible from the data presented in the NJ ASK Student Growth Profile, record inferences that may explain the facts that you have observed in the data. Record your inferences in the Data Analysis Record in the box next to your observations.
4. *Clarifying Questions:* Given the inference you've made, are there additional questions that need to be asked before a conclusion can be drawn? Is there more data you should look at before making a conclusion? Formulate these questions and record them on the Data Analysis Record. For each question you identify, list the data that you will need to gather to answer the question.
5. *Drawing Conclusions:* At this point, you have worked through most of the steps in the Data Analysis Model. However, you probably are not in a position to collect and analyze the data needed to address the clarifying questions and form conclusions about the focusing question presented in this example. You will be able to employ the full process, through drawing conclusions, when you interact with your own local data.

**Data Analysis Record 1****Issue:***Student growth across the elementary schools in your district.***Question(s):***How did growth on the most recent 5<sup>th</sup> grade LAL test compare across all elementary schools in the district?***Observations:****Inferences:****Clarifying Questions:****Additional Data Needed:****Tentative Conclusions or Additional Clarifying Questions:**



## Activity 3: Practice Exploring a Clarifying Question

A clarifying question that might have arisen from analyzing the NJ ASK Student Growth Profile for all schools in the previous activity is:

Are there subpopulations at Saguaro Elementary School whose performance (achievement and growth) could have resulted in the relatively low growth demonstrated by the school?

Apply the data analysis model to the data provided in the NJ ASK Student Growth Profile for Saguaro Elementary School as you address this clarifying question. Record your work using Data Analysis Record 2 on the next page.

*Drawing Conclusions:* The inferences that your group drew from the data related to the clarifying question, above, may provide enough information for the group to draw a conclusion or they may lead to additional clarifying questions. If the group feels the data they have analyzed support a conclusion, record the conclusion on the Data Analysis Record 2. If more information is needed, record the new clarifying questions and the data that need to be collected to answer those questions.

## Data Analysis Record 2

**Issue:**

*Student growth across the elementary schools in your district.*

**Question(s):**

Are there subpopulations at Saguaro Elementary School whose performance (achievement and growth) could have resulted in the relatively low growth demonstrated by the school?

**Observations from Data Display 2:****Inferences:**

- 1.
- 2.
- 3.

- 1.
- 2.
- 3.

**Clarifying Questions:****Additional Data Needed:****Tentative Conclusions**

## Using District Reports

Like NJ ASK achievement data, you can view NJ ASK growth data in District Reports, which is accessible through the NJ SMART portal. District Reports contain a variety of reports that will be helpful in answering your focusing and clarifying questions about student growth, achievement, and context.

Accessing and using Districts Reports are detailed more fully in the *DU101 Using District Reports* course handbook, which is a pre-requisite to this course. If you have not completed DU101, please take some time at this point to access the course handbook and materials from the *Help & Support* tab in the NJ SMART portal.

The following information is included as a reminder for those who have completed the DU101 course.

## Logging in to District Reports

To log in to District Reports, follow the steps below:

1. Open your browser and access NJ SMART at [www.njsmart.org](http://www.njsmart.org).
2. Enter your assigned username and password. This will open the NJ SMART Portal home page as seen on page 39. If you don't have login credentials or can't remember them, please contact your district's web user administrator.

Understanding school and student success

**NJ SMART**  
Education Data System

**Welcome to the NJ SMART Portal. NJ SMART is a secure data transfer and reporting site.**

By accessing this site you acknowledge that the work completed within NJ SMART is subject to the rules and requirements of the Family Educational Rights and Privacy Act (FERPA) regarding the confidentiality of student records. Any suspected unauthorized use of this site should be reported immediately to NJ SMART at 800-254-0295.

For security purposes, you will automatically be logged out of the system after 30 minutes of inactivity. If needed, you may log back in to continue working in the portal.

USERNAME

PASSWORD

☐ Remember my Username

[Forgot Password?](#) [Change Password](#)

For more information or questions, please contact the NJ SMART Help Desk by calling (800) 254-0295 or e-mailing [njsmart@pcgus.com](mailto:njsmart@pcgus.com)

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## NJ SMART Portal

The NJ SMART portal contains:

- A. A compilation of frequently asked questions,
- B. Information about upcoming events and trainings, as well as
- C. Announcements.

**NJ SMART Education Data System**

Home | State ID Management | Submissions | Reporting | Tools | Account Management | Help & Support

**FAQs of the Day**

Q: [Special Education] If a student is declassified after June 30, 2012 does the student get submitted to the Special Education Submission?

A: Yes. The student should be submitted to the State and Special Education Submission with the Special Education Code of 99 = Declassified. Once the student is declassified in both submissions, the student will no longer need to be reported as a special education student.

Q: [ACCESS for ELLs] Why are the Release and Release with Errors button not enabled for the submission?

A: The ACCESS for ELLs is currently in the Practice Period. Once we open on January 4, 2013 for the Official Submission you will be able to upload and release your file at that time.

**Announcements**

**2/12/13**

In an effort to continue to provide tools to assist you in completing each submission on time and accurately, NJ SMART would like to introduce the **Submission Guides**. The new documents offer step by step guidance for each NJ SMART data collection by supplying a monthly task list. LEAs are encouraged to print these guides and post them for a convenient reminder of the recommended course of action for each submission. The Submission Guides are located in the Submission Guide Folder under the Help & Support tab of the NJ SMART portal.

**12/21/12**

The October 15th 2012 Official State Submission data is now available in all District Reports.

**Upcoming Events**

**NJ SMART Portal Event Schedule**

**April 15, 2013**  
Open: Practice CTE  
Open: Practice Course

**June 28, 2013**  
Snapshot: SID Management  
Snapshot: SMID Management  
Close: State LDM  
Close: Practice CTE  
Close: Practice Course

**July 5, 2013**  
Open: SID Management  
Open: SMID Management  
Open: Official State  
Open: Official CTE  
Open: Official Course

**August 2, 2013**  
Close: SID Management  
Close: SMID Management  
Close: Official State  
Close: Official CTE  
Close: Official Course

To access District Reports, hover over the Reporting tab in the NJ SMART portal (D), then select District Reports.





Clicking on the District Reports tab will reveal the welcome screen below, displaying all the reports currently available. These reports are categorized into two sections: *Starting Points* or Profile Reports (E) and *Jump To* Reports (F). Profile Reports present aggregate information about students allowing you to analyze patterns and trends across various categories of information. Profile Reports should be used as a starting point to drill down to a student list and individual student records. *Jump To* reports provide direct access to a student list report for a selected group of students, or a record for an individual student without having to first go through the Profile reports.

**NJ SMART**  
Education Data System

Home | State ID Management | Submissions | Reporting | Tools | Account Management | Help & Support

HOME > Reporting > District Reports

## Welcome to District Reports

**Starting Points:**  
Contains "Profile" reports that present aggregate information about your students allowing you to analyze patterns and trends across various categories of information. Profile reports can be used as a starting point to "drill down" to student lists and individual student records.

**Jump To:**  
Contains Student List and Student Record reports that allow you to jump directly to a customized list of students or an historical individual student record.

**Jump To:**

**Student List**  
Customized selection of students showing their characteristics, program enrollment, and assessment performance (exportable to Excel).

**Student Record**  
Characteristics and history of enrollment, program information, and assessment performance for an individual student.

**Starting Points: Enrollment Profiles**

**School Profile**  
Characteristics and performance of students across schools.

**Grade Level Profile**  
Characteristics and performance of students across grade levels.

**Starting Points: Assessment Profiles**

**Cohort Performance Profile**  
Characteristics of students who increased, stayed the same, or decreased in state assessment performance over 2 years.

**NJ ASK Student Growth Profile**  
Characteristics and performance of students who have demonstrated low

Student growth data is available in all these reports:

- **Student Growth Percentile Profile:** displays SGP levels (number and percent of students with low, typical, and high growth) and SGP median in the *columns*, disaggregated by each subgroup of students typically displayed in District Reports (school, gender, race/ethnicity, lunch status, time in district, NJ ASK achievement, etc.).
- **All other profiles:** displays SGP levels in the *rows* of each profile (where appropriate), which is disaggregated by other data as columns (school name, grade level, special education classification, etc.) depending upon which profile you select.
- **Jump to Student List:** displays the SGP and SGP level for each student in the list.
- **Jump to Student Record:** displays the SGP and SGP level as well as achievement performance level, scale score, and raw cluster scores in the student assessment record (you must click the assessment record link from the enrollment record to view assessment information).

For additional resources and information on using school/District Reports, visit the *Help & Support* tab (G) and select District Reports from the topic list (H).

**NJ SMART Education Data System**

Home State ID Management Submissions Reporting Tools Account Management **Help & Support** (G)

HOME > Help

**Help and Support**

Find information about using the portal, NJ SMART data submission guides, list of district points of contact, frequently asked questions, etc.

Topic	Files List	Downloads & Video Player
NJ SMART Documents	How to Access District Reports	<p><b>You've selected:</b></p> <p>District Reports FAQ</p> <p><b>Frequently Asked Questions</b></p> <p>Download Your Selection ✓</p>
NJ SMART Training Webinars	How to Read a Profile Report	
FAQs	Data Analysis Protocol	
<b>District Reports</b> (H)	<b>District Reports FAQ</b>	
EDanalyzer		
Student Growth Percentile		
Submission Handbooks		
Submission Templates		
CTE Supplemental Documents		
Staff Submission Supplemental Documents		
High School Graduation Supplemental Documents		



## Activity 4: Addressing Your Growth Related Issue

You now know about the NJ Growth Model, the Cycle of Inquiry and Action, the Data Analysis Model, and how to access achievement, growth, and context data from District Reports. Now you'll have an opportunity to apply what you learned to address a local issue.

### Step 1: Generating Your Data Displays

#### Directions

1. Work with your school or district team if you have one. If not, work individually on this activity. Since individual student data for your district will be available in District Reports, only authorized district or school personnel may access the data.
2. Locate the issue and focusing question that you developed in Activity 1. If, after becoming familiar with the data available in District Reports, you feel you can address the question using District Reports, write the issue and question on the Data Analysis Record 3 (on page 46). If this question is not appropriate, choose one from those created by the group earlier in the session or develop a new question of personal interest.
3. Identify the following parameters and record the information below.
  - a. What population of students does your focusing question address? \_\_\_\_\_
  - b. Do you want data on growth, achievement, or both? \_\_\_\_\_
  - c. Do you want data on individual students or aggregate data on groups of students? \_\_\_\_\_
4. Log on to District Reports in the NJ SMART data warehouse.
5. Identify the report(s) that are most likely to contain the data that will address your focusing question (keep in mind that most profiles also display student growth data in the rows—student growth data are not *only* available in the NJ ASK Student Growth Profile).
6. Generate the report(s).

## Step 2: Data Analysis Protocol

### Directions:

1. If you are working with a group, use chart paper to record your team's work during the following steps. If you are working individually, record your answers in the Data Analysis Record 3 on page 46.
2. Write the focusing question that you have selected to investigate on Data Analysis Record 3 if you have not already done so.
3. Make objective, factual observations about what the data in the District Reports you generated say. Record the observations on Data Analysis Record 3.
4. Brainstorm inferences based on your observations and record them on the Data Analysis Record.
5. If working with a group, write the title—clarifying questions—at the top of a new sheet of chart paper. Each team member should write one or more clarifying questions that stem from the inferences on a “sticky note” (one question per note). Place the sticky notes on the chart paper. Record your own questions on Data Analysis Record 3 if working individually.
6. Review the questions, then group similar questions together. Develop a title for each group such as: questions about growth, questions about achievement, questions about relationships among variables, etc.
7. Reach consensus on the clarifying questions that seem most appropriate to move the inquiry further.
8. For each clarifying question, identify additional data that need to be collected to address the question. Record the data elements on Data Analysis Record 3.
9. Use the District Reports to access the additional data that you need to answer the clarifying questions.
10. Repeat the Data Analysis Model as appropriate until you feel you have sufficient evidence to support a tentative conclusion. Record the conclusion on the Data Analysis Record form.

**Data Analysis Record 3**

<b>Issue:</b>	
<b>Question(s):</b>	
<b>Observations:</b>	<b>Inferences:</b>
<b>Clarifying Questions:</b>	<b>Additional Data Needed:</b>
<b>Tentative Conclusions or Additional Clarifying Questions:</b>	

## Wrapping Up

Congratulations! You've just completed the Using Student Growth Percentiles course and have learned:

- The reasons for seeking a new way to measure student performance,
- Key growth model concepts and terminology,
- How student growth percentiles are developed for individuals and groups,
- How to interpret student growth percentiles for individuals and for groups,
- How to use student growth percentiles in the inquiry process,
- How to access and use District Reports from NJ SMART that contain aggregate and individual student growth percentile data, and
- How to use student growth percentiles in the inquiry process.

Now it's important for you to take action using your new capabilities and understanding. Take a few minutes to answer the questions on the following page. Your responses will help guide your next steps toward building a culture of data use in your school and/or district.

## Now What?



- Who else in your school or district needs to understand this material?

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- What are the key concepts that you will want to share with others?

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- What technical information would be helpful for others in your school or district to know?

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- What will be your plan to make sure this occurs?

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## Tools and Resources



There are a number of resources available to help you effectively use student growth and achievement data to improve teaching and learning in your school and district. In addition to this handbook, there is a video about the growth model, and resources to help you use District Reports. Additionally, *DU103 Using Student Growth Percentiles* is available as part of the educational series for New Jersey educators. Participation in this course and review of materials will help support continuous improvement by building your capacity to use growth data, NJ ASK achievement data, and other data describing your student population.

Resources that specifically address growth data are available on the DOE's website. You are encouraged to contact the NJ SMART Help Desk at (800)254-0295 or [njsmart@pcgus.com](mailto:njsmart@pcgus.com), if you have additional questions.

The *DU103 Using Student Growth Percentiles* course (both in-person and online) are available through the *Help & Support* tab in NJ SMART.

Additional resources, including a short video about the Growth Model are available at [www.state.nj.us/education/njsmart/performance/](http://www.state.nj.us/education/njsmart/performance/) (shown at right).

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**NJ SMART**  
Education Data System

Background  
Student Performance  
District Reports

**Student Performance**  
High School Graduation Rates and Status

In 2005, the National Governors Association (NGA) introduced the 4-year adjusted cohort graduation rate calculation in an effort to move all states towards using a common calculation. The Adjusted Cohort formula has been deemed more accurate than other calculations in its ability to track student movement.

If you would like to know more, please review the documentation posted on the [Documents for Download](http://www.state.nj.us/education/data/grate/) page and the NJ DOE Graduation webpage at <http://www.state.nj.us/education/data/grate/>.

**Student Growth Percentiles (SGP)**

Student Growth Percentiles add a new dimension to our understanding of student performance, allowing New Jersey parents, educators, and students to look beyond a point in time status (NJ ASK proficiency) to also understand the change in achievement from one year to the next. By understanding a student's academic status and her or his growth, parents, teachers and students have more information to better inform reflection, discussion, and improvement of overall performance. Please review the following video and documentation for more information on SGP; the blue headings will link you to that particular document.

**SGP Video**

This video is part of the NJ SMART educational series. This video provides viewers with a better understanding of what a student growth percentile (SGP) is, the concept of academic peers and how it relates to growth percentiles, how an individual SGP is calculated and interpreted, and how SGPs can be reported and interpreted for groups.

**Growth video**