AGT 101: Introduction to Academic Growth over Time
Fall 2011

Learning Goals 101

- Learn to interpret and understand the information AGT provides and how to harness the power of two: *achievement* and *AGT.*

- Gain a conceptual understanding of the AGT measure and introduce control variables, prediction and confidence intervals.

- Understand how to read an AGT report and the information provided.

- Practice some basic scenarios of interpreting AGT to identify problems, recognize successes and opportunities.

The following learning goals will be addressed during this introduction to AGT.

Pause and allow time for reading.

READY? LET'S GO!

Warm-Up Your Thinking

"With increased accountability, American schools and the people who work in them are being asked to do something new—to engage in systemic, continuous improvement in the quality of the educational experience of students and to subject themselves to the discipline of *measuring their success by the metric of students' academic performance*."

—Richard Elmore, *Bridging the Gap between Standards and Achievement*

Let's ground this learning by thinking about an educational quote that relates to this topic. This quote by Richard Elmore highlights our national focus on ensuring that all students are learning. Today, successful schools throughout the country use measurement data on a daily basis to ensure that all students are achieving and making gains. However, our current system of measurement, achievement, is incomplete. Achievement alone does not help us see our successes.
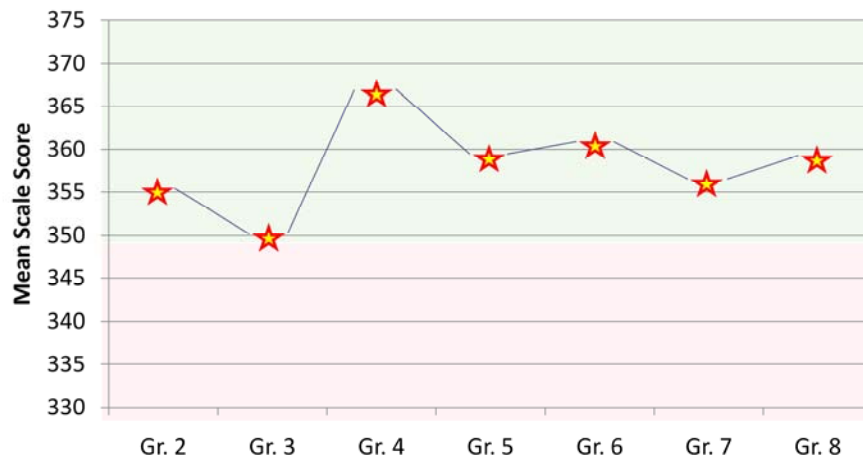
Achievement

- For many years, our understanding of student outcomes have been based on achievement.
- Let's take a look at our understanding of achievement.

Although achievement measures have been used for many years as a measure of a school's success, there are some concepts that we must understand in order to get the full picture.

What do you think of your school's performance in grade 2? Grade 3? Grade 4?

Statewide Mean Scale Score

What inferences can we make about the effectiveness of California's educators in ELA?
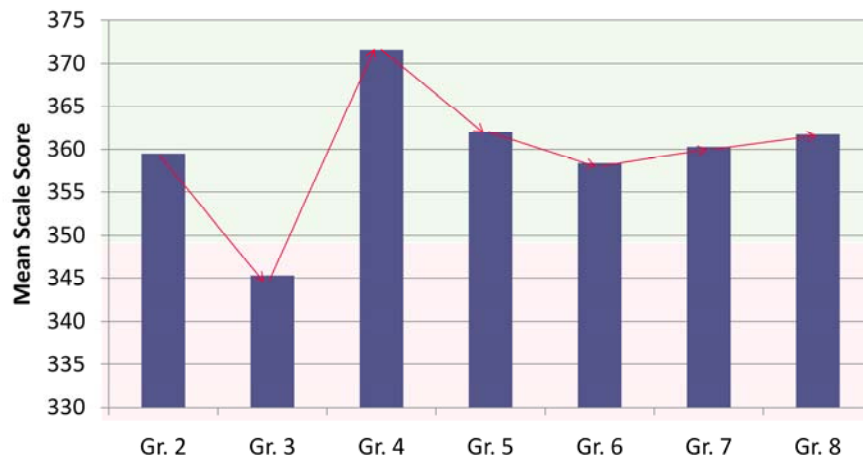
When examining the State of California's ELA scores, does the overall pattern of performance statewide in California show a different strength or challenge grade than our school?

My School Compared to State

What inferences can we make about my school's performance in ELA?
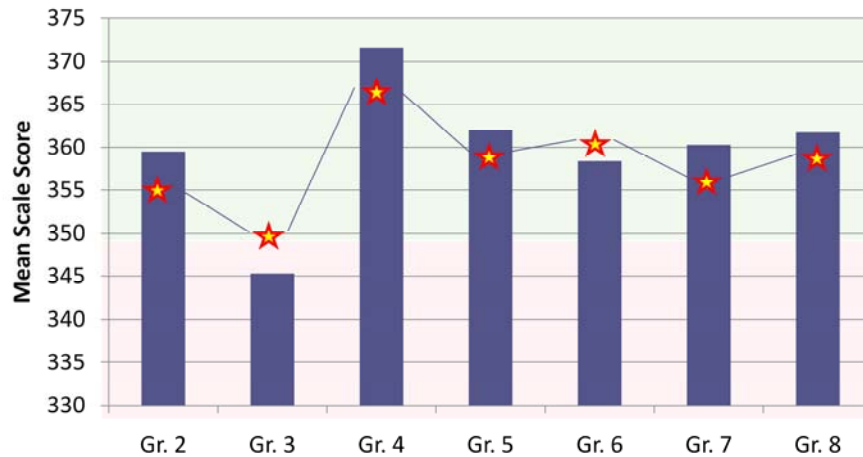
In looking at my school compared to the state, does this graph change your thinking about your school's performance in grade 3 and grade 4?

Pause for reflective answers.

Pause and Reflect

- Are some grades harder than others?
  - Standards?
  - Tests?
- Is this a fair comparison of my school's contribution to student learning?
- Are some students harder to get over the achievement benchmarks (e.g., proficient)?
- Do some schools have a disproportionate number of students who are English Language Learners?
  - Could these schools face challenges with ELA results compared to the state mean?

AGT: A Primer

What is AGT?

- AGT measures estimate the contribution of schools, teams and teachers to student growth.

- Many factors influence students' academic growth. AGT measures take into account factors outside the control of schools, teams and teachers. This helps isolate the contribution of schools, teams and teachers.

- AGT provides insights to our effectiveness so that we can continuously improve.

Although many of you have heard the term "value-added" before, there is often confusion as to the real meaning. Having a common understanding of AGT will lay the foundation for what is to follow. AGT, is one of many measures used to measure teacher and school contribution to student learning. It takes into consideration variables that are out of the control of the school or teacher. By considering these variables, it helps to isolate the actual contributions of schools and teachers. When combined with other measures it becomes even more powerful.
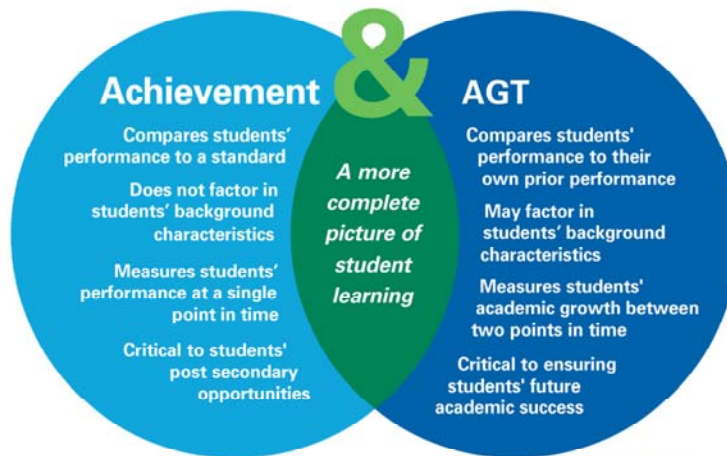
AGT: A Primer

Why AGT?

- To support educators in a continuous improvement process
- To provide information in addition to achievement data that isolate the contributions of schools and teachers on the learning of students
- To promote educator <u>collaboration</u> within schools, grade levels and subjects
- To promote responsive and reflective teaching
- To increase the learning of <u>all</u> students in your district
- To recognize and validate teacher and school contributions to student growth

This list on this slide summarizes the reasons LAUSD is adopting AGT.

Setting the Stage: The Power of Two

Achievement & AGT

Achievement
- Compares students' performance to a standard
- Does not factor in students' background characteristics
- Measures students' performance at a single point in time
- Critical to students' post secondary opportunities

A more complete picture of student learning

AGT
- Compares students' performance to their own prior performance
- May factor in students' background characteristics
- Measures students' academic growth between two points in time
- Critical to ensuring students' future academic success

© Battelle for Kids

Achievement and AGT…in order to better understand AGT, it is important to review the difference between these two measures of student academic performance. They each tell a story and are most powerful when used together. One is a snapshot and the other measures student growth between two points in time.
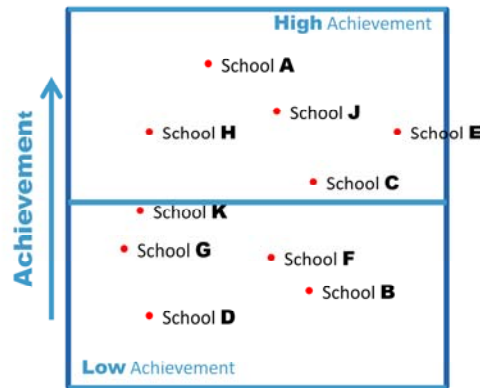
Now let's consider the Power of Two and explore how these results can provide useful information about our schools and classrooms. This chart shows achievement data from a variety of schools. From this chart, can you determine differences between schools H and E? They are both higher achieving.

Pause

What about differences between schools F and G? They are both lower-achieving.
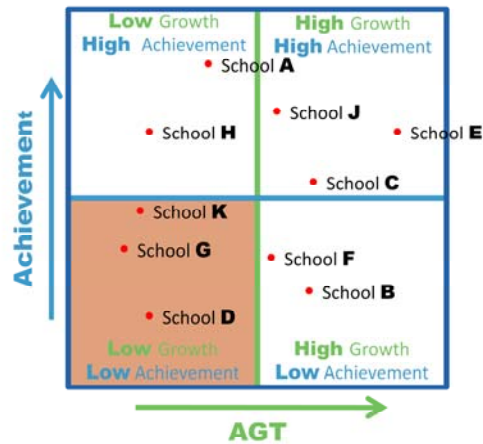
The Power of Two: Achievement & AGT
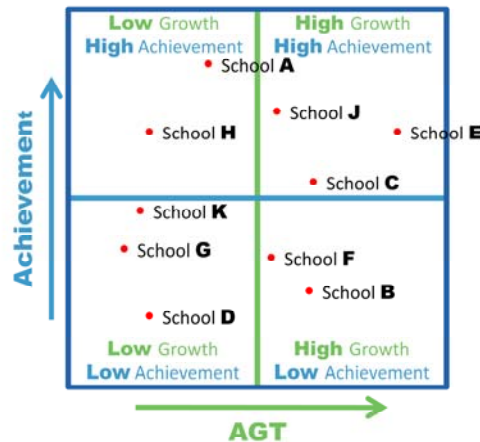
Adopted from The Leadership and Learning Matrix,
Douglas B. Reeves, Ph.D.

When we distinguish this grid by adding another dimension…AGT, we see that there are clear differences between schools H and E and schools F and G. We will explore these differences in the following examples.

The Power of Two: Achievement & AGT

Losing Ground
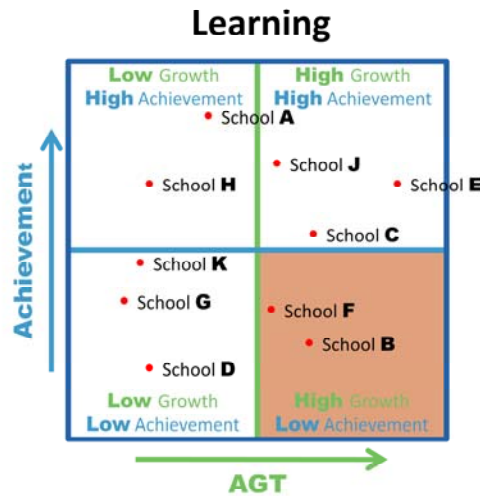
Adopted from The Leadership and Learning Matrix,
Douglas B. Reeves, Ph.D.

In the highlighted quadrant, (Low AGT and Low achievement) these schools are quickly losing ground. They are spiraling, it could be initiative overload, desperation, not knowing what direction to take, not allowing enough time for processes to work, less effective instruction or leadership and a variety of other issues.

The Power of Two: Achievement & AGT

Learning

Low Growth / High Achievement — School A, School H

High Growth / High Achievement — School J, School E, School C

Low Growth / Low Achievement — School K, School G, School D

High Growth / Low Achievement — School F, School B

Achievement

AGT
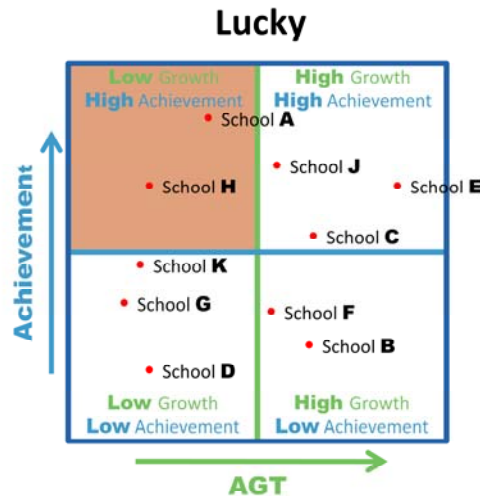
Adopted from The Leadership and Learning Matrix,
Douglas B. Reeves, Ph.D.

This quadrant, (Low achievement and High AGT) represents a school that is learning. Something that they are doing has taken hold. What they are doing is working! Perhaps they are a data rich culture that uses data formatively. They know what to do and have set goals to get there. They are making progress!

The Power of Two: Achievement & AGT

Adopted from The Leadership and Learning Matrix,
Douglas B. Reeves, Ph.D.

The schools in this quadrant, (High Achieving and Low AGT) are by some standards "lucky". Their high achievement could be left to the luck of the clientele that attend and support the school. It does not mean that there is no instruction and staff are resting on their laurels, but it could mean that students are not provided with rigorous instruction or content is repeated even though students may have entered the school already mastering. At any rate, these students are not getting a year's worth of growth for a year's worth of instruction.

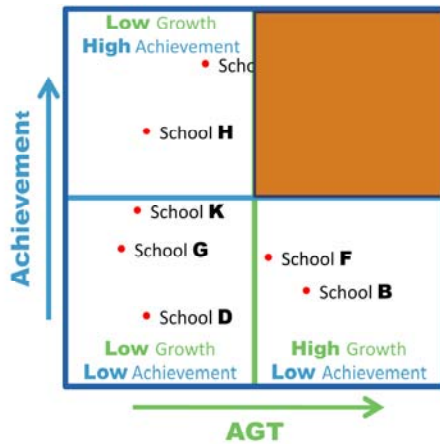This quadrant, (High achievement and High AGT) represents schools that are leading. They break the myth that high – achieving students cannot demonstrate growth. They have rigorous curriculums and provide access to that curriculum to all students. They are focused and diligent….

Pause and Reflect

Low Growth
High Achievement
• Scho
• School H

• School K
• School G   • School F
• School B
• School D
Low Growth   High Growth
Low Achievement Low Achievement

Achievement

AGT

- In which quadrant would you want your school to be?
- If you couldn't choose the upper right, in which quadrant would you want your school to be?
- In which quadrant would you *not* want your school?

Adopted from The Leadership and Learning Matrix, Douglas B. Reeves, Ph.D.

Follow screen prompts and facilitate discussion questions. Probe for reasons why.

Discussion (when top-right quadrant removed): When asked, which quadrant do most teachers choose? Principals? Central office administrators?
Typically, teachers choose the lower-right corner. Principal results here are mixed with elementary leaning lower-right while secondary leaning upper left. Central office administrators almost all upper-left.

Understanding AGT: A Conceptual Analogy

- Measurement
  - Achievement
  - Simple Growth
  - Academic Growth over Time (AGT)
- Control Variables
- Prediction

In this analogy, we will look at concepts of achievement, simple growth and AGT. We will also explore the concept of prediction and controlling for variables.

❑ Measurement
   ❑ Attainment
   ❑ Simple Growth
   ❑ Academic Growth over Time
❑ Control Variables
❑ Prediction
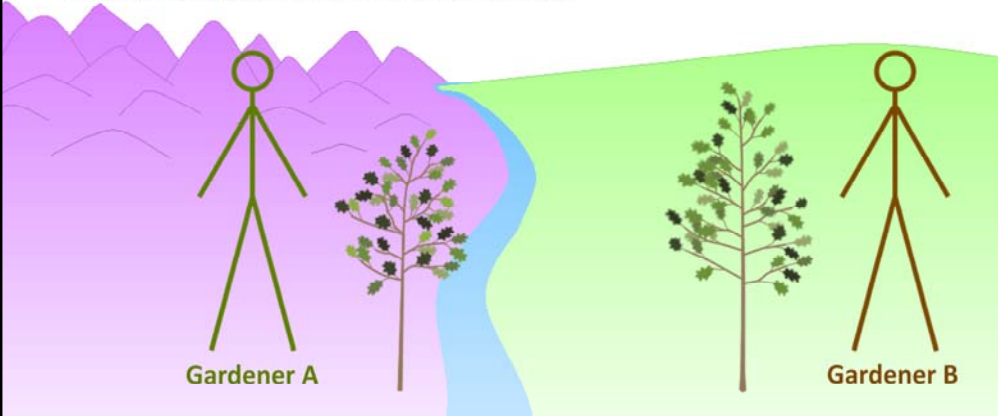
The Oak Tree Analogy

Who is the more effective gardener?

For the past year, these gardeners have been tending to their oak trees trying to maximize the **height** of the trees. Each gardener used a variety of strategies to help their own tree grow. Which of these two gardeners was **more effective** with their strategies?

Gardener A

Gardener B

Developed by the Value-Added Research Center

For the past year, these gardeners have been tending to their oak trees trying to maximize the height of each tree. Each gardener used a variety of strategies to help their own tree grow. We want to learn which of these two gardeners was more effective with their strategies.

The Oak Tree Analogy
Measuring height, one year later

Using this method, Gardener B is the more effective gardener. This method is analogous to using an achievement model.

Gardener A

61 in.

72 in. Gardener B

Developed by the Value-Added Research Center
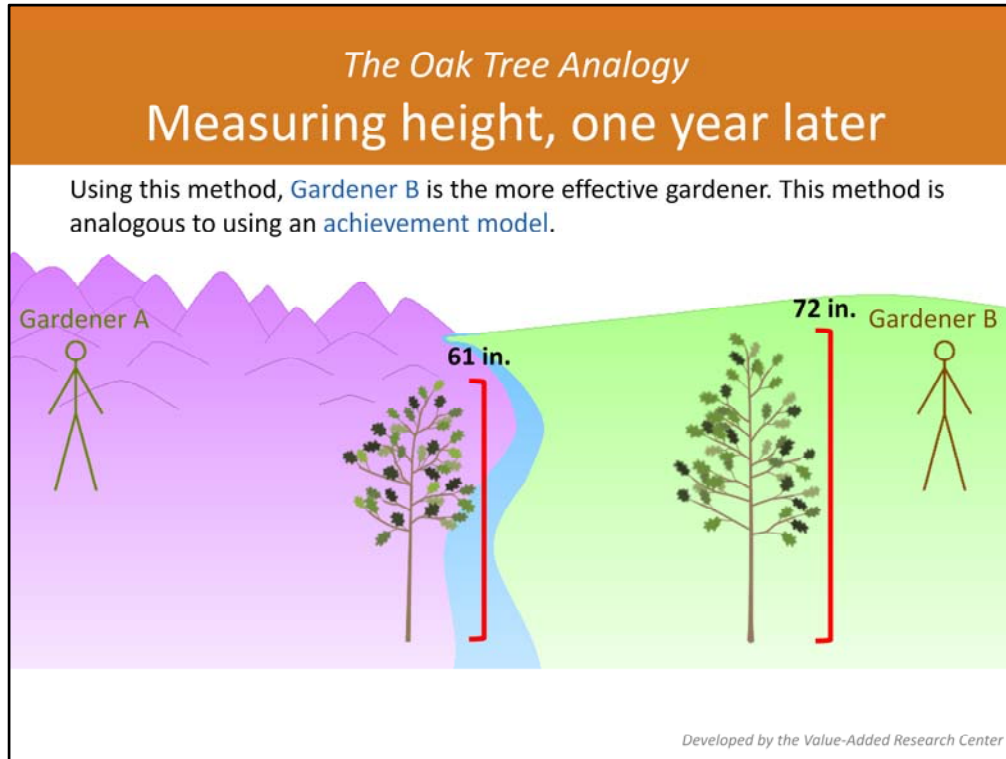
To measure the performance of the gardeners, we will measure the height of the trees today, 1 year after they began tending to the trees. With a height of 61 inches for Oak Tree A and 72 inches for Oak Tree B, we find Gardener B to be the more effective gardener. This method is analogous to using an Achievement Model to evaluate performance.

The Oak Tree Analogy

Achievement doesn't tell whole story.

The trees are 4 years old. Gardeners began tending to them 1 year ago. We need the starting height for each tree when gardeners took over to more fairly evaluate the gardeners' performance.

Gardener A

Gardener B

72 in.

61 in.

52 in.

47 in.

Age 3

Age 4 (Today)

Age 3

Age 4 (Today)

Developed by the Value-Added Research Center
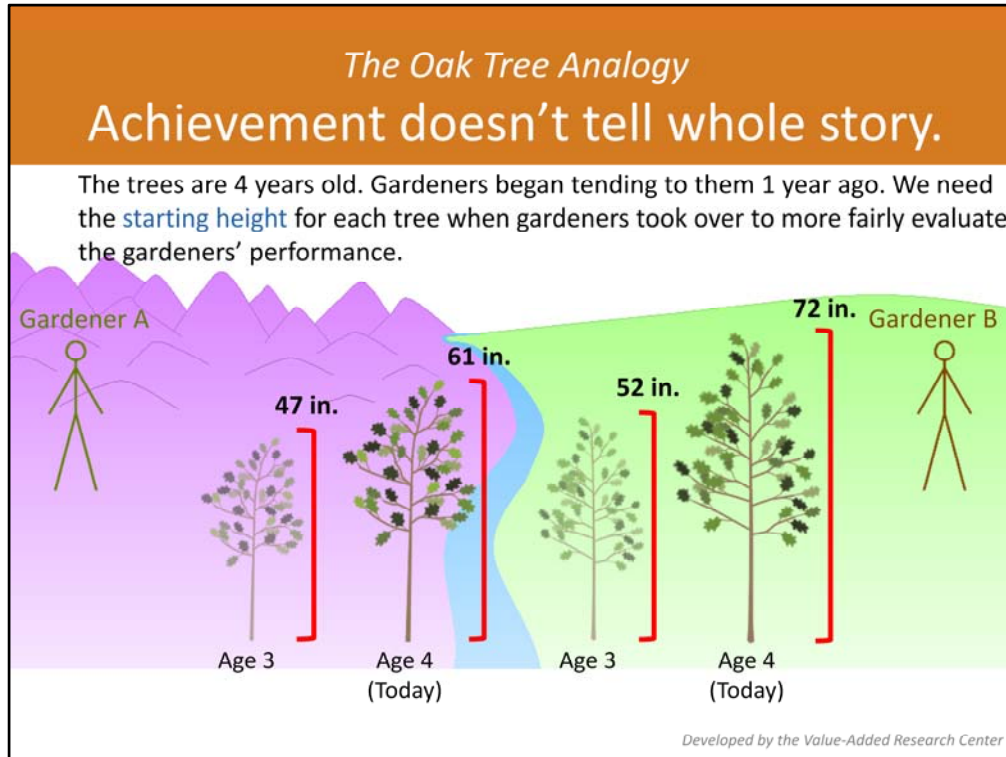
But, this achievement result does not tell the whole story. More data is needed! These gardeners did not start with acorns. The trees are 4 years old at this point in time. We need to find the starting height for each tree in order to more fairly understand each gardener's performance during the past year.
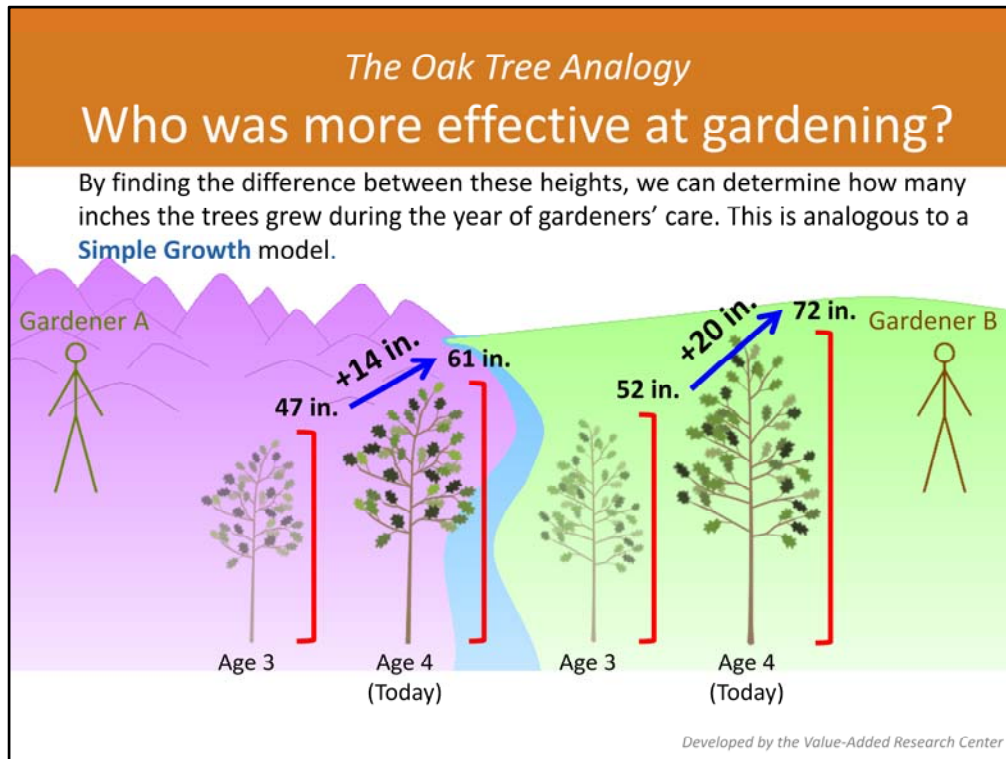
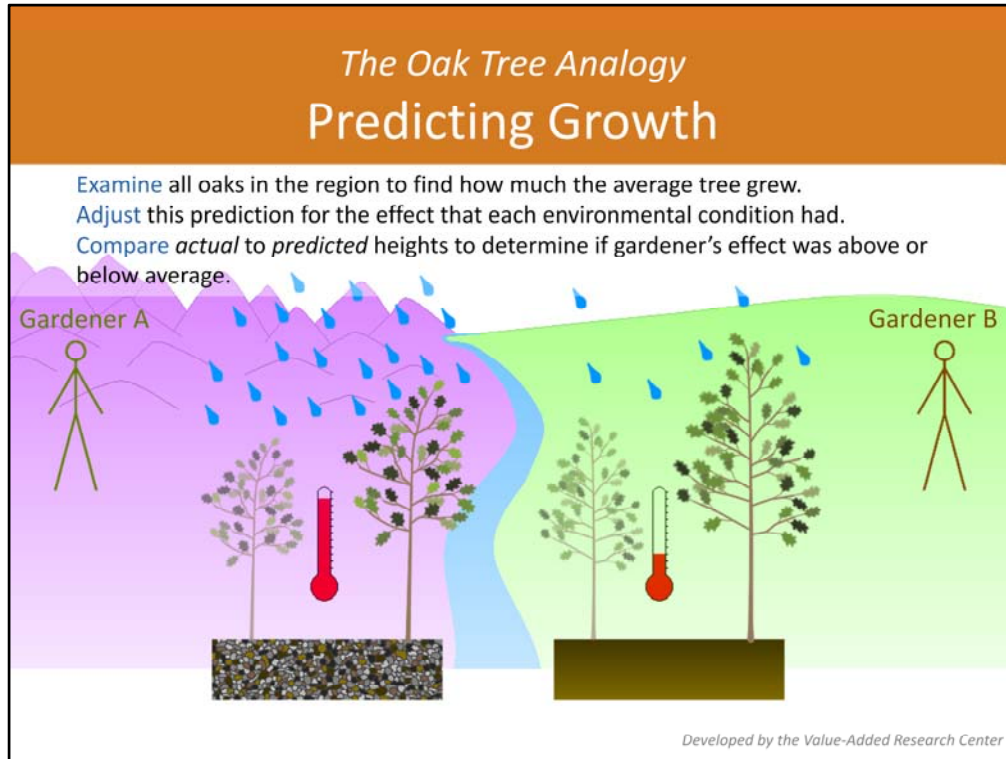We can compare the height of the trees one year ago to the height today. By finding the difference between these heights, we can determine how many inches the trees grew during the year of gardener's care. By using this method, Gardener A's tree grew 14 inches while Gardener B's tree grew 20 inches. Oak B had more growth this year, so Gardener B is the more effective gardener. This is analogous to using a Simple Growth Model.

The Oak Tree Analogy
Simple growth doesn't tell whole story.

Three environmental conditions outside of the gardeners' control that we will examine are: Rainfall, Soil Richness, and Temperature.

Gardener A

Gardener B

Developed by the Value-Added Research Center

But this simple growth model does not tell the entire story either. We do not know how much of this growth was due to the strategies used by the gardeners. This is an "apples to oranges" comparison. What might be some environmental factors that are out of the gardeners' control?

Pause

For this example, we will look at rainfall, temperature and soil richness.

The Oak Tree Analogy
Predicting Growth

Examine all oaks in the region to find how much the average tree grew.
Adjust this prediction for the effect that each environmental condition had.
Compare *actual* to *predicted* heights to determine if gardener's effect was above or below average.

Gardener A

Gardener B

Developed by the Value-Added Research Center

Based on the data for our trees, we can see what kind of external conditions the trees experienced. The data tell us that Oak Tree A was in a region with high rainfall, low soil richness and high temperatures. Oak tree B was in a region with low rainfall. High soil richness and low temperatures.

We can use this information to calculate a predicted height for each tree today if it was being cared for by an average gardener in the area. We examine all oak trees in the region to find an average height improvement for trees. Then we adjust this prediction for the effect of each tree's environmental conditions. We compare the actual height of the trees to their predicted heights to determine if the gardener's effect was above or below average.
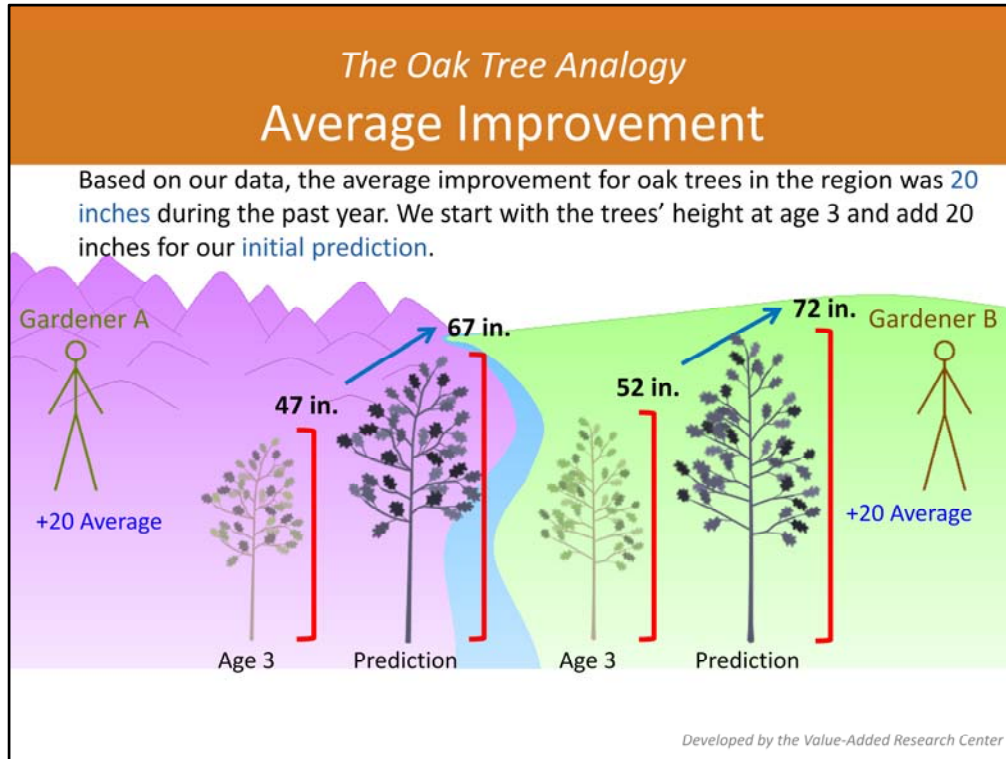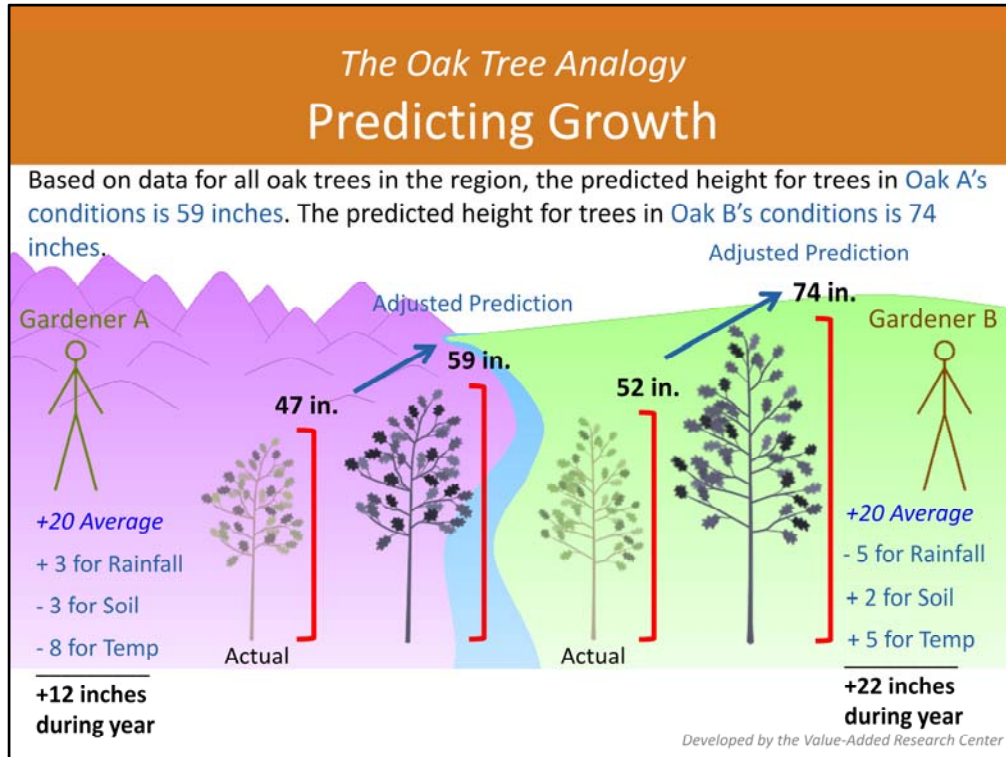
Remember, to make our initial prediction, we use the average height improvement for all trees. Based on our data, the average improvement for oak trees in the region was 20 inches during the past year. We start with the trees' height at age 3 and add 20 inches for our initial prediction. Next, we will refine our prediction based on the growing conditions for each tree.

The Oak Tree Analogy
Variable Impact to Growth

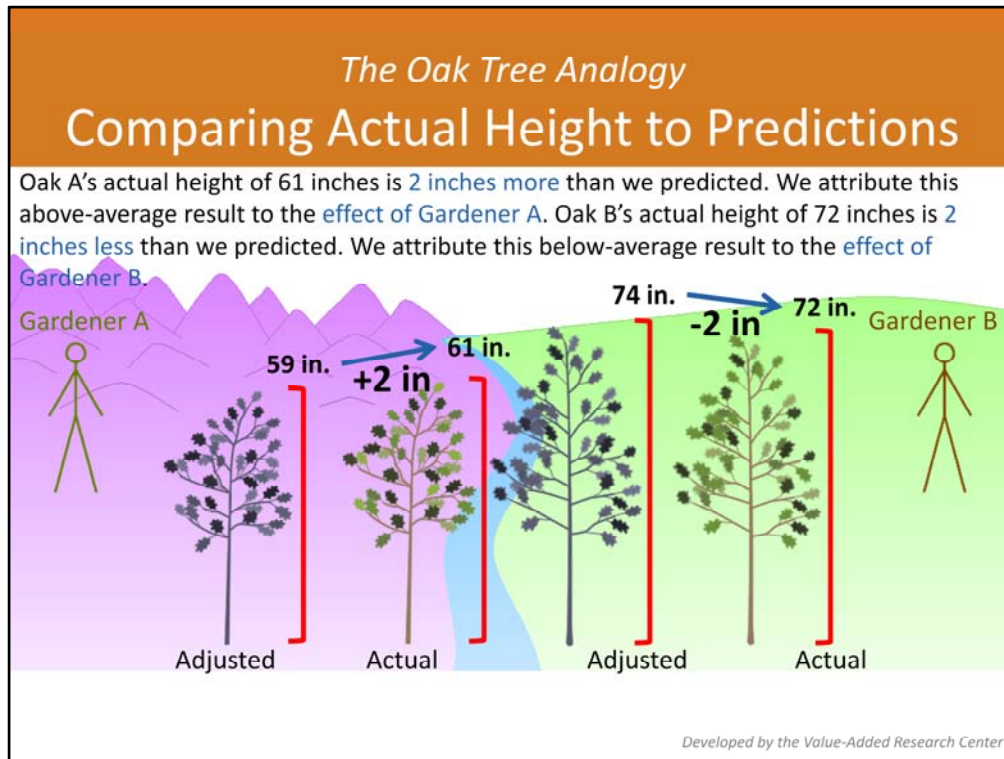| Rainfall	Low	Medium	High
Growth in inches relative to the average	-5	-2	+3
Soil Richness	Low	Medium	High
Growth in inches relative to the average	-3	-1	+2
Temperature	Low	Medium	High
Growth in inches relative to the average	+5	-3	-8

Developed by the Value-Added Research Center

From the data we collected for our region, we find that more rainfall and higher soil richness contributed positively to growth. Higher temperatures contributed negatively to growth. With those growth trends, we need to convert them into a form usable for our predictions.

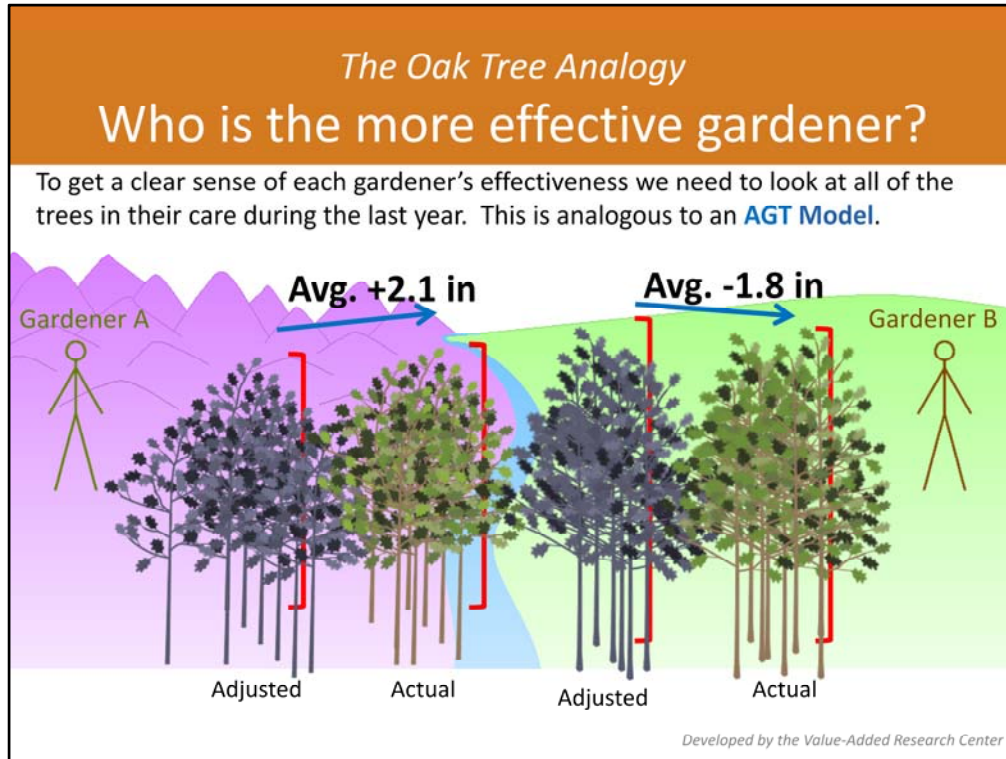For example, we found that oak trees that experienced low rainfall tended to have 5 fewer inches of growth compared to the average growth of oak trees in the region. Trees with medium rainfall tended to have two fewer inches of growth and tress with high amounts of rainfall tended to have three more inches of growth compared to the average. This table shows the adjustments made for all three environmental conditions.

The Oak Tree Analogy
Predicting Growth

Based on data for all oak trees in the region, the predicted height for trees in Oak A's conditions is 59 inches. The predicted height for trees in Oak B's conditions is 74 inches.

Developed by the Value-Added Research Center

Since oak tree A had high rainfall, low soil richness and high temperatures we adjusted the initial prediction of 20 inches by adding three inches, subtracting three inches and subtracting eight inches again to compensate. The same process was conducted for oak tree B. Once we have refined our predictions based on the effect of environmental conditions, our gardeners are on a level playing field. The adjusted predicted height for trees in Oak A's conditions is 59 inches. The adjusted predicted height for trees in Oak B's conditions is 74 inches. This is an apples to apples comparison.

The Oak Tree Analogy

Comparing Actual Height to Predictions

Oak A's actual height of 61 inches is 2 inches more than we predicted. We attribute this above-average result to the effect of Gardener A. Oak B's actual height of 72 inches is 2 inches less than we predicted. We attribute this below-average result to the effect of Gardener B.

Gardener A

59 in. +2 in 61 in.

74 in. -2 in 72 in. Gardener B

Adjusted   Actual   Adjusted   Actual

Developed by the Value-Added Research Center

When we compare the actual height of the trees to our predictions we find that Oak A's actual height of 61 inches is 2 inches more than we predicted. We attribute this above-average result to the effect of Gardener A. Oak B's actual height of 72 inches is 2 inches less than we predicted. We attribute this below-average result to the effect of Gardener B.

The Oak Tree Analogy
Who is the more effective gardener?

To get a clear sense of each gardener's effectiveness we need to look at all of the trees in their care during the last year. This is analogous to an **AGT Model**.

Avg. +2.1 in   Avg. -1.8 in

Gardener A   Gardener B

Adjusted   Actual   Adjusted   Actual

Developed by the Value-Added Research Center

To get a clear sense of each gardener's effectiveness, we need to look at all of the trees in their care during the last year. For Gardener A, some trees may have grown more or less than the 2 inches to give an average of 2.1 inches above predicted. For Gardener B, the average growth was 1.8 inches less than the prediction. This is analogous to an AGT model. Now, who is the most effective gardener? Note: AGT applies several statistical techniques beyond a simple average to ensure statistical significance.
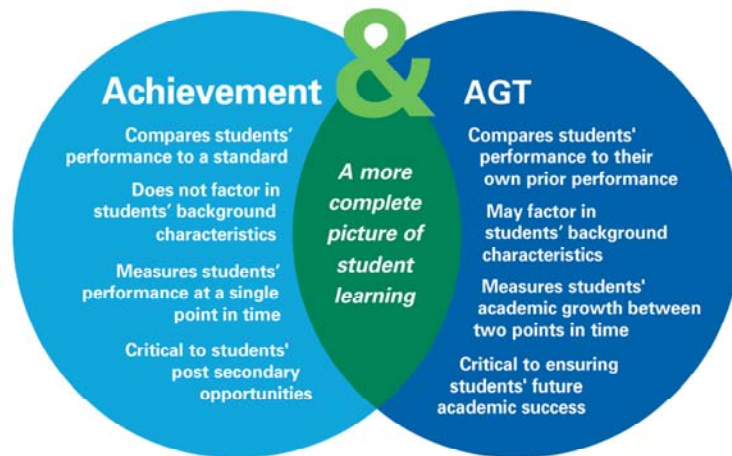
Pause and Reflect

- Which measure was fairer in inferring the effectiveness of the two gardeners?

	STRENGTH	LIMITATION
Achievement		
Simple Growth		
AGT		

Facilitate the discussion about the strengths and limitations of each of these measures.

Recall the power of two.

Prediction and Control Variables in LAUSD AGT

Predictor (Control Variables)

The AGT model uses statistical techniques to separate the impact of schooling from other factors that may influence growth. The following variables are controlled for in LAUSD:

1. Prior CST Scores
2. Grade Level
3. Gender
4. Race/Ethnicity
5. Low Income Status

6. ELL Status
7. SPED Status
8. Continuous Enrollment
9. Homelessness

It is important to note that controlling for demographic characteristics does not mean lowering expectations for any grouping of students addressed by the control variable.

These are the control variables that are considered in the LAUSD AGT reports.

But what does this mean in terms of an educational context? Like the Oak Tree Analogy where we controlled for environmental factors, in AGT, we control for other factors or variables like prior achievement and low-income status. This list indicates the control variables used in LAUSD. These variables help to isolate the teacher's and school's contributions to student growth. These are measureable student characteristics outside of the control of the teacher or school which are associated with meaningful differences in student outcomes. It is important to understand that the actual district data and the model itself determine the relationship to student achievement.

AGT: Relative to the Prediction
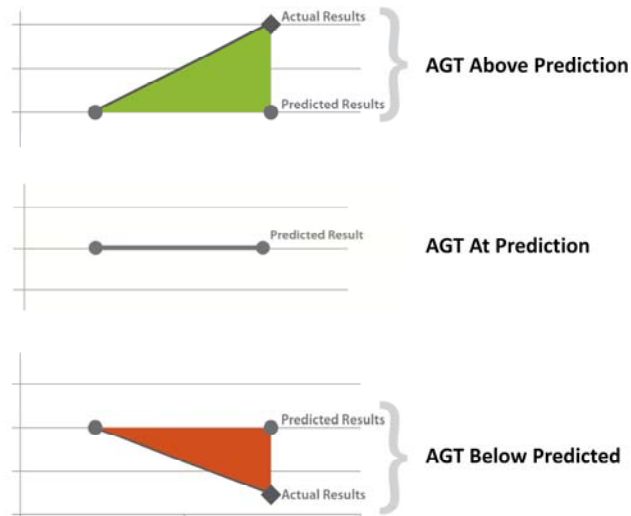
Schools and classrooms where students are improving *faster than predicted* indicate high AGT. Schools or classrooms where students are growing *slower than predicted* indicate low AGT.

AGT REPORTS:
AN EXPLORATION

Next we will examine the contents of an AGT report and learn how to read and interpret the information.

LAUSD RTI²:
Leveraging Strengths and Solving Problems

1. **Problem/Strength Identification**
   - *What is the problem or strength?*
2. **Problem/Strength Analysis:**
   - *Why is it occurring?*
3. **Intervention Design:**
   - *What are we going to do about it?*
4. **Response to Instruction and Intervention (RtI²):**
   - *Is it working?*

The Goal: **All Youth Achieving**

As we explore AGT, we will be asking you to interpret various signals from AGT data. It's often said that "AGT tells you what is happening, but not why."

In order to understand *why*, we must use a problem-solving process such as LAUSD's response to intervention (RTI²). This process should first focus on identifying strengths, problems and opportunities. We will explore AGT further and begin to apply the RTI process to understand how to accelerate all youth achieving.

AGT – The Story So Far

- 2009–10 AGT reports produced for schools throughout the district.

- AGT was reported for:
  - ELA in Grades 3–9
  - Math in Grades 3–7
  - Algebra/General Math in Grade 8

Expanded AGT for 2011

Mathematics
Algebra I
Geometry
Algebra II

English
ELA Grade 9
ELA Grade 10
ELA Grade 11

Science
Biology
Chemistry
Physics
Integrated Science I
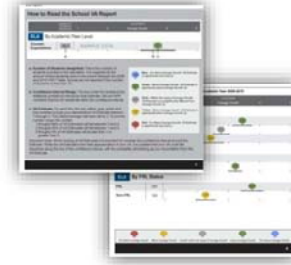Science Grade 5
Science Grade 8

Social Science
History and Social Science 8
US History
World History

These additional subjects are being included for the new 2011 AGT results.

Your AGT report includes informational text that will help you understand each section. The reports provide an overall school AGT result for tested subjects used in the analysis, results for individual grade levels and subjects and specific student groupings chosen by your district. Student groupings or differential effects that often are chosen demonstrate how different groups of students are performing when compared to each other. Common groupings are Academic peer level, Students with Disabilities and Students that have Free or Reduced Lunch Status.

Color-Coded Results

Blue - Far Above Average Growth: AGT Estimate is significantly more than 4.

Green - Above Average Growth: AGT Estimate is significantly above Average Growth (3).

Gray - Within the range of Average Growth: AGT Estimate is not significantly different from Average Growth (3).

Yellow - Below Average Growth: AGT Estimate is significantly below Average Growth (3).

Red - Far Below Average Growth: AGT Estimate is significantly less than 2.

Results will be color-coded based on the location of the result and the confidence interval (CI).

- Blue: Result and CI is entirely above 4.
- Green: Result and CI is entirely above 3.
- Gray: CI crossed 3, the district average.
- Yellow: Result and CI are entirely below 3.
- Red: Result and CI are entirely below 2.

The district has chosen a five-color key to describe AGT results. These results and colors indicate whether student growth was far above, above, no different than, below or far below the district AGT average.

Pause for reading

AGT Result and Confidence Interval

Confidence Interval
+2.9 to +4.3
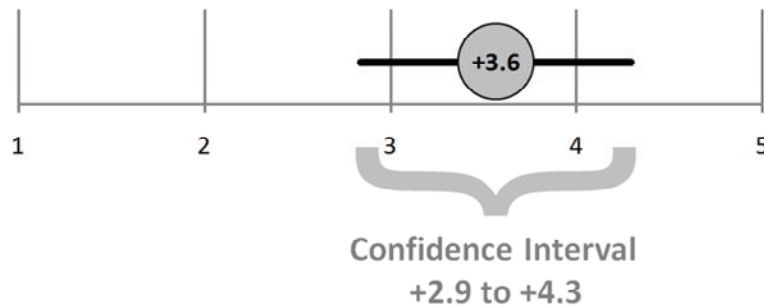
In order to better understand the reports, we will take a few minutes for a refresher on a few technical terms from statistics to understand results and confidence interval. Each analysis produces an AGT result and a confidence interval in order to communicate the precision of each result. The true confidence interval indicates a range of where the true result lies. In this case the AGT result is 3.6. The result could be somewhere between 2.9 and 4.3. However it would be less likely to be closer to the ends of the confidence interval. The confidence interval is mostly affected by the number of students included in the analysis and by how student test scores are distributed and related.
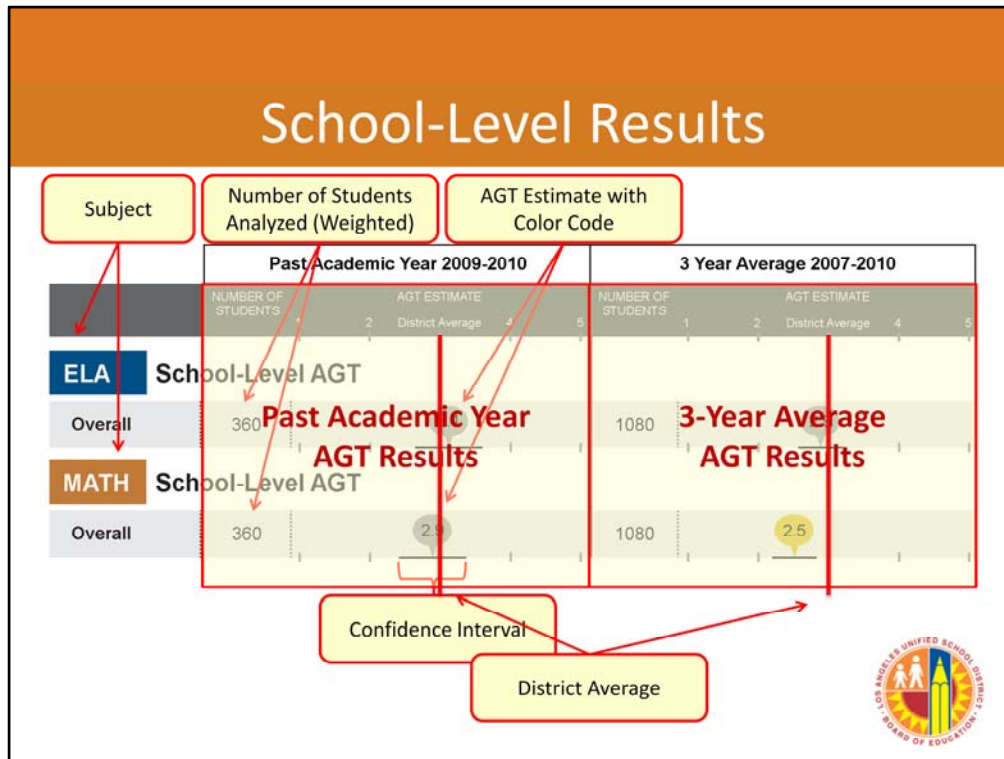
This is a sample of an LAUSD AGT result.

In this case, we are looking the school-wide AGT result in English Language Arts for the 2009-2010 school year. Notice that results are on a scale from 1 to 5 with 3 being the District average.

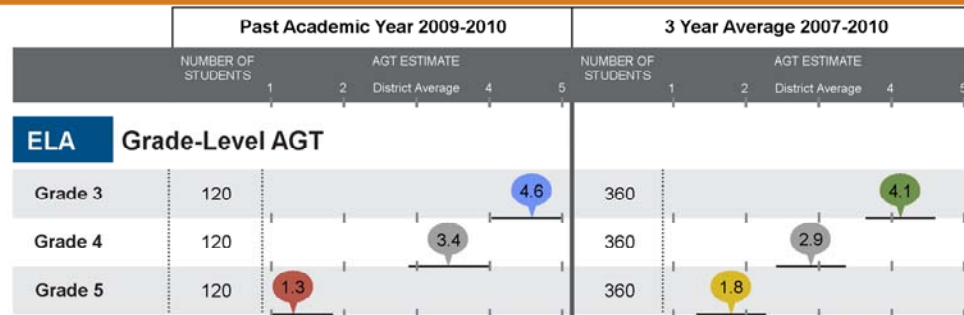The yellow arrow is pointing to the number of students in this result

The green arrow is pointing to the result itself, which includes a point estimate of 3.1 as well as a confidence interval – the black line under the point estimate – that stretches from approximately 2.7 to 3.6.

In this example, the bubble is grey because the confidence interval stretches across the district average.

3.1 and the grey bubble indicate that these students are not growing in a manner that is significantly different from the district average.

This report shows the overall AGT results. The information in this report is an aggregate of all the grades in the school included in the analysis. High School reports may also have an overall subject aggregate result that is related to "end of course" exams.

Grade-Level Results

	Past Academic Year 2009-2010			3 Year Average 2007-2010		
	NUMBER OF STUDENTS		AGT ESTIMATE	NUMBER OF STUDENTS		AGT ESTIMATE

ELA Grade-Level AGT

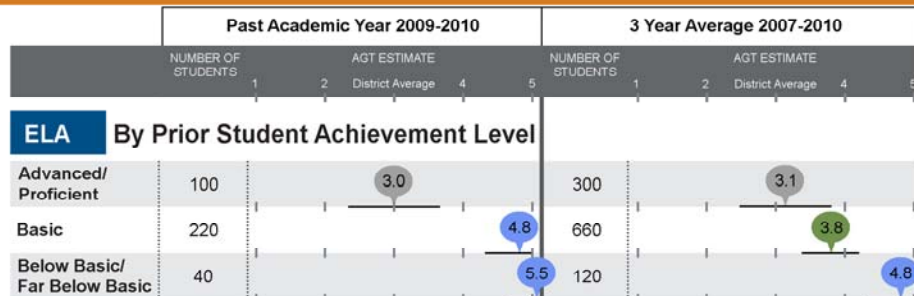|					
Grade 3	120	4.6	360		4.1
Grade 4	120	3.4	360	2.9	
Grade 5	120	1.3	360	1.8	

- In the previous slide, this school's overall ELA was 3.1 — at the district average or predicted performance.

- Is the grade-level performance in ELA consistent with the overall result?

- What could be contributing to our strengths? Our problems? Develop a hypothesis.

•Third grade students are growing faster than the district average.
•They are <u>far above</u> their predicted score. Notice that both the point estimate and the confidence interval are above 4, indicating a far above average AGT result.
•The third grade team has grown students at a rate that far exceeds what the typical third grade team in LAUSD has produced with similar students.

Student Group Results: ELA

	Past Academic Year 2009-2010		3 Year Average 2007-2010	
	NUMBER OF STUDENTS	AGT ESTIMATE (District Average)	NUMBER OF STUDENTS	AGT ESTIMATE (District Average)

ELA By Prior Student Achievement Level

	Number of Students	AGT Estimate	Number of Students	AGT Estimate
Advanced/Proficient	100	3.0	300	3.1
Basic	220	4.8	660	3.8
Below Basic/Far Below Basic	40	5.5	120	4.8

- Performance categories are determined by where the students began the school year.
  - This may not be where the student performed upon completion of the school year.
- What can you infer about this school's performance with students show starting performance category is:
  - Advanced/Proficient
  - Basic
  - Below Basic/Far Below Basic

•Educators may want to compare two student groups to each other.

•It is **true** this school's performance with students whose performance category is **Advanced/Proficient** is close to the district average for all students in LAUSD who are **Advanced/Proficient**.

•It is **true** the school's performance with students whose performance category is **Basic** is far above all students in LAUSD whose performance category is **Basic**.

•It is **not necessarily** true that students in the Basic performance category grew more than students in the Advanced/Proficient

Additional Student Groups

AGT results are reported for different groups of students in LAUSD.

- Prior Student Achievement Level
- Students with Disabilities (SPED)
- Free and Reduced Lunch Status (FRL)
- English Language Learners (ELL)
- Gender
- Race

Often, there are other student groupings included in the reports. This list shows some common groupings that are chosen by districts.

In LAUSD, the following student groupings are included in the reports.

Teacher-Level Reports

- LAUSD provides teacher-level reports. You will find that they look very similar to the school reports.
- These reports can be interpreted and applied in a similar manner as the school reports.

•LAUSD will provide teachers with individual classroom-level value-added reports.
•Like the school reports, these reports will provide powerful information for teacher reflection and improvement in student learning.
•They look very similar to the school reports and can be read and interpreted in the same way.

Pause and Reflect

1. How might you use the information that AGT provides to leverage strengths and address challenges?

2. How might you use information from AGT reports to have conversations with your:
   - Leadership team?
   - Teachers?
   - Parents?
   - Students?

The Exploration Activity

- This guide will help you practice how to examine example AGT results.

- By working through this activity you will practice how to diagnose some important patterns and trends in terms of strengths, opportunities and challenges.

Exit Ticket

- What are **four** things or concepts that you **learned** today?

- What are **three** things or concepts you are really excited about and will **share with your colleagues**?

- What are two concepts you will use to **improve your practice**?

- What **one** question do you still have?