A Teacher's Guide to Interpreting State-Provided Growth Scores for Grades 4–8 in 2016–17

The Role of Growth Scores in Annual Performance Reviews

As part of the Annual Professional Performance Review (APPR) process pursuant to Education Law § 3012-d, New York State teachers of mathematics and English language arts (ELA) in grades 4–8 and their principals will receive State-provided growth scores based on 2016-17 State tests **for advisory purposes only** pursuant to Section 30-3.17 of the Rules of the Board of Regents. These growth scores describe how much students are growing academically in mathematics and ELA (as measured by the New York State tests) compared to similar students statewide.

During the 2016-17 through 2018-19 school years, teachers and principals who receive a State-provided growth score (i.e., grades 4–8 ELA and mathematics teachers and principals of schools that include grades 4–8 or all of grades 9–12) will receive two sets of scores and ratings: original scores and ratings and transition scores and ratings. The State-provided growth score shall be excluded from the scores and ratings used to calculate the overall transition rating. Only the transition score and rating will be used for purposes of employment decisions, including tenure determinations and for purposes of proceedings under Education Laws §§3020-a and 3020-b and teacher and principal improvement plans and the individual's employment record. During the 2016-17 through 2018-19 school years, such teachers' original overall rating will be used for advisory purposes only.

State-provided growth scores are just **one** of the **multiple** measures that make up the annual performance reviews. For APPRs completed pursuant to Education Law §3012-d, an educator's overall composite rating is determined using a matrix that combines a rating based on one or more measures of student growth as well as a rating based on teacher observations.

Where and when will data be available?

State-provided growth scores for 2016-17 are expected to be distributed to districts during the last week of August 2017.

Where can I get more information?

- Detailed information on State-provided growth scores

- Additional information on APPR plans under Education law §3012-d

- Detailed guidance documents on New York's law and regulations

Teachers should contact their district/BOCES leaders for additional information about APPR or the calculation of State-provided growth scores.

Development of Growth Measures

The Regents Task Force on Teacher and Principal Effectiveness—comprising representatives from key stakeholder groups, including **educators, educator unions,** and **educator professional organizations**— provided input into the development of APPR regulations and the design of the current State-provided growth scores. In addition, a technical advisory committee of leading experts in the nation reviewed the technical accuracy and utility of the statistical methodology used to calculate scores.[1]

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[1] For a list of task force members and technical advisory committee members, visit the NYSED growth scores resources page.

Why Growth?

All students enter their teachers' classrooms at differing levels of academic proficiency or achievement. One way to measure proficiency is student performance on standardized assessments. By measuring the amount of progress, or "academic growth" a student makes during a given school year on these assessments, we can begin to understand the influence of that particular school year experience on student learning.[2] By measuring academic *growth* rather than *proficiency*, we can identify strengths and gaps in student progress and help teachers to better support students who have a wide range of academic needs.

How Does New York State Measure Student Growth?

The simplest way to measure growth would be to subtract a student's test score in a prior year from his or her test score in the current year (e.g. test score in spring 2017 minus test score in spring 2016). However, New York State's tests are not designed to allow for this kind of calculation because the test scores are not comparable across grade levels. Nor would this approach account for a student's starting point and other background characteristics. Instead, New York State's approach is to compare the current year scores of *similar* students—that is, of students who had the same prior test scores and other characteristics—in order to measure growth while accounting for students' starting levels of achievement.[3]
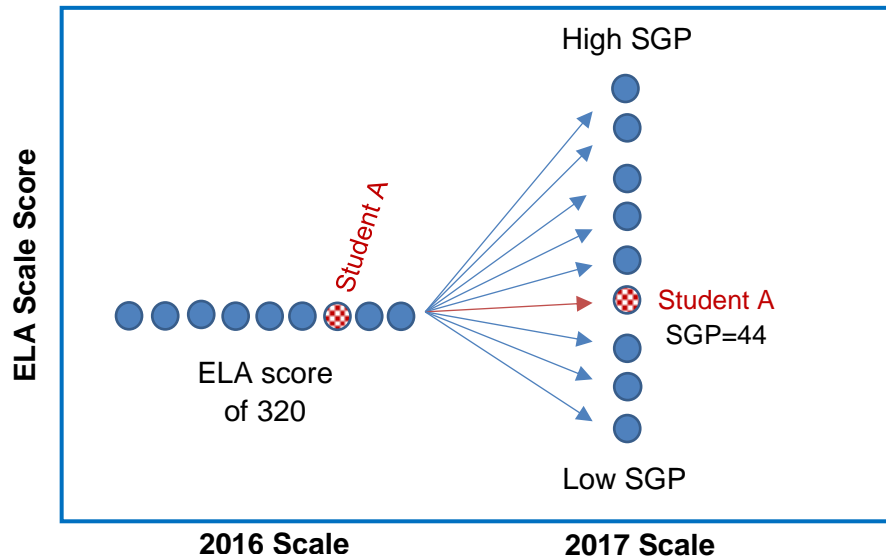
This method, illustrated in **Figure 1**, shows Student A (red checkerboard dot) with an ELA score of 320 in 2016.[4] Compared to other students (solid blue dots) who also had scores of 320 in 2016, Student A's ELA test score in 2017 was in the middle range when compared to those same students. We can describe Student A's growth relative to similar students as a **"student growth percentile" or SGP**. In this example, because Student A's SGP is 44, it means that this student achieved an ELA test score as high or better than 44 percent of other similar students (those with the same starting point and characteristics). **SGPs range from 1–99** and they always tell you where a student stands in a distribution of similar students (specifically, what share of students he or she performed the same as or better than). In New York State's evaluation system, SGPs are calculated separately by subject and grade.

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[2] Education Law §3012-d(2)(c) defines "student growth" as: "the change in student achievement for an individual student between two or more points in time."

[3] This "comparison" is done through a regression modeling approach. For more details, please see the Technical Report for Growth Measures (2015-16). The 2016-17 Technical Report will be available on the NYSED website in the fall of 2017.

[4] Note that the sample scaled scores are for illustrative purposes only.

Figure 1. Measuring Student Growth Compared to Similar Students

Factors Used to Define "Similar Students" in the Growth Model for 2016-17

For educator evaluation, we further refine the definition of *similar students* to include additional factors known to impact student performance in order to better isolate the impact of a student's teacher on his or her performance. In the State growth model, the term "similar students" means not only students with the same academic history, but also students with the same English language learner (ELL), economic disadvantage, or disability statuses at both the student and classroom levels. **Table 1** displays specific factors for each of these categories. We account for whether a student is an ELL, for example; we also account for the percentage of ELL students in a student's ELA or mathematics course. This type of factor is intended to address *peer effects*, acknowledging that it may be a different experience for a student to be in a class or course with many ELL students (and a different job for an educator with many ELL students) than it is to be in a course with fewer ELL students.

Table 1. Factors Used to Define "Similar Students" in 2016-17*

Categories	Factors
Academic History	- Up to three years of student State exam scores, same subject - Prior-year test score, different subject - Retained in grade - Average prior achievement and range around average prior score in student's course (same subject) - New to school in a non-articulation year (e.g., entered middle school as an eighth grader)
English Language Learners	- New York State English as a Second Language Achievement Test (NYSESLAT) scores - Percentage of ELLs in student's course - ELL status (yes or no)

Categories	Factors
Economic Disadvantage	• Percentage of economically disadvantaged students in student's course • Student economic disadvantage status (yes or no)
Students with Disabilities	• Student with disabilities spending less than 40 percent of time in general education setting • Percentage of students with disabilities in student's course • Student with disabilities status (yes or no)

*In the future, additional characteristics may be added or other changes may be made to the growth model as approved by the Board of Regents.

How Is Student Growth Used for Teacher Evaluation?

A teacher's State-provided growth rating (the HEDI rating) and growth score (0–20) are based on his or her **"mean growth percentile" or MGP**, the aggregate measure of his or her students' growth. An MGP is calculated by finding the weighted average of all the SGPs for students attributed to a teacher, across grades and subjects.

Each student's SGP is weighted in the teacher's MGP based on the amount of time that the student was enrolled and attended the course (based on teacher-student data linkage [TSDL] data reported to the State by districts, Boards of Cooperative Educational Services (BOCES), and charter schools, which teachers have an opportunity to verify). **Table 2** illustrates how a weighted MGP is calculated. Students who are enrolled for less than 60 percent of a course's duration are not included in a teacher's MGP. Students with course enrollment of 60 percent or more are included in a teacher's MGP and are weighted based upon the percentage of time the student is enrolled in and attends the course. SGPs for students who were in a teacher's course for longer periods of time and who attended the class more regularly count more heavily in a teacher's MGP than those who were enrolled and attended for less time. **Finally, an MGP is reported only if it is based on at least 16 SGPs**.

Table 2. Example of Calculation of Teacher's MGP Based on Weighted SGPs[5]:
Sample Classroom Data

Student	SGP	Enrollment Duration	Include Student in MGP Calculation (≥60% enrollment)	Attendance	Enrollment Duration x Attendance
Student A	45	80%	Yes	90%	.72
Student B	40	100%	Yes	95%	.95
Student C	70	50%	No	80%	NA
Student D	60	100%	Yes	90%	.90
Student E	40	100%	Yes	75%	.75

To measure teacher performance, we find the MGP for his or her students, which is the weighted average of the SGPs that takes into account the enrollment duration and attendance for each student. In the case described in Table 2, the steps to calculate a teacher's MGP would be:

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[5] For purposes of illustration, this example includes fewer than 16 SGPs. MGPs are reported **only when at least 16 SGPs are linked to a teacher.**
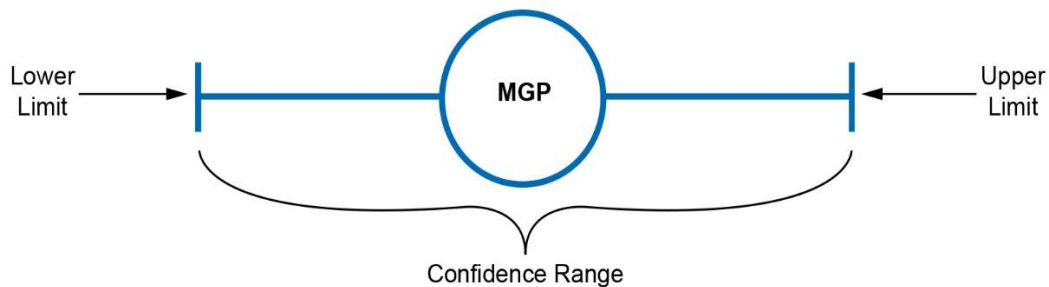
- **Step 1:** Multiply each student's SGP by their "Enrollment Duration x Attendance" value; add all results together.
  Table 2 example: (45 x 0.72) + (40 x .95) + (60 x .90) + (40 x .75) = **154.4**

- **Step 2:** Sum "Enrollment Duration x Attendance" results across all students.
  Table 2 example: 0.72 + 0.95 + 0.90 + 0.75 = **3.32**

- **Step 3:** Divide Step 1 result by Step 2 result.
  Table 2 example: 154.4 / 3.32 = **46.5**

The teacher described in Table 2 has an MGP of 46.5, meaning that, on average, students linked to this teacher performed as well as or better than about 47 percent of similar students.

For purposes of teacher evaluation, we calculate each teacher's MGP based on the weighted average of all SGPs in our definition of similar students (including academic history, English-language proficiency, economic disadvantage, and disability status). We refer to this MGP as the *adjusted* MGP. **Adjusted MGPs are used to determine growth ratings (HEDIs) and scores.** Unadjusted MGPs take into account only students' prior achievement and are reported for informational purposes only. Finally, MGPs are reported by subject and grade and then an overall MGP for a teacher is calculated that combines SGPs for all students across grades and subjects (if applicable for the teacher). Teacher MGPs are based only on students who had test scores from the current and immediate prior school year and who met the State's minimum enrollment requirement (enrolled for at least 60 percent of the course duration) in the current school year.

In addition, MGPs are reported with an upper and a lower limit that represents a 95-percent confidence range (see **Figure 2**).

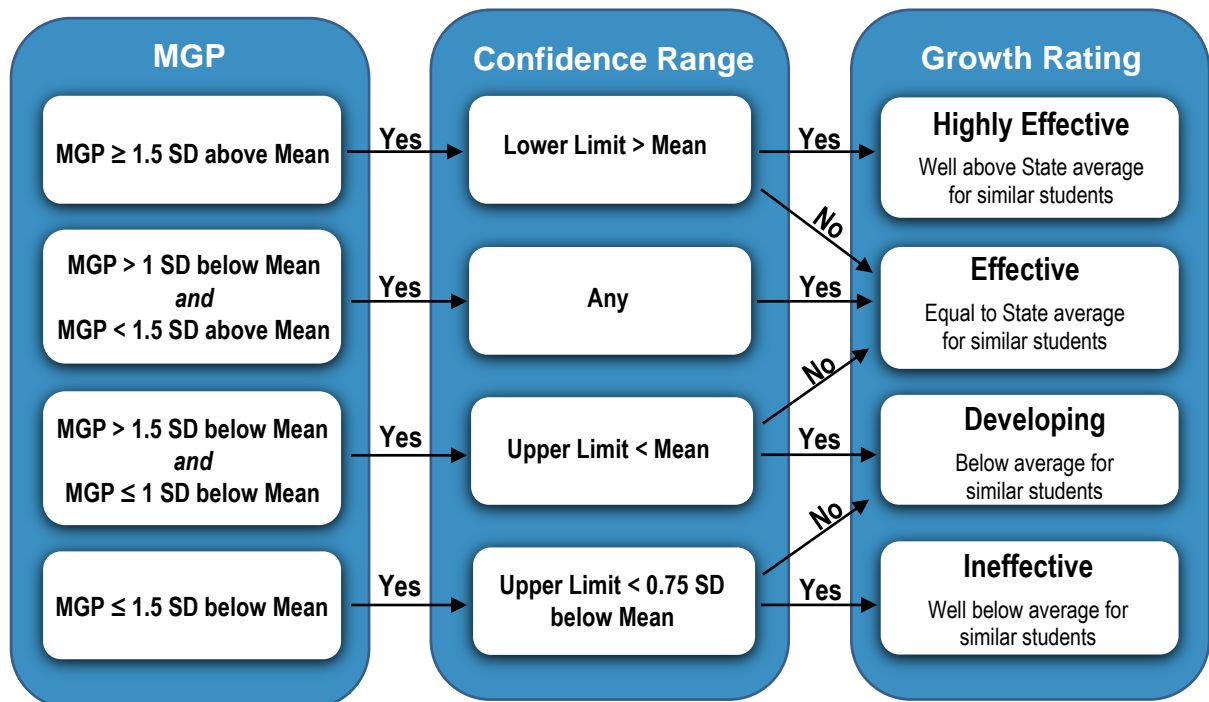**Figure 2. MGP and Confidence Range**

All statistical calculations contain some uncertainty. Although the reported MGP is the best estimate for any teacher, we can also quantify a range wherein we can expect that the *true* answer lies. The upper- and lower-limit MGPs define a set of scores wherein an educator's true MGP lies 95 percent of the time. Reporting upper- and lower-limit MGPs is similar to the way other statistical calculations, such as political polls, are reported (e.g. a candidate can be ahead in the polls by 6 points, *plus or minus 3 points*). The width of the confidence range (that is, the distance between the upper and lower limits) is affected by such factors as the number of students included in generating the score, the spread of student scores, and characteristics of the tests students take.

We report the upper- and lower-limit MGPs to be transparent about the data. We also use upper- and lower-limit MGPs to assign educator ratings in a way that fairly takes uncertainty in MGPs into account.

We use a teacher's overall adjusted MGP (that is, the MGP that combines information across all applicable grade levels and subjects that the teacher teaches) and upper- and lower-limit MGPs to determine his or her growth rating, as shown in **Figure 3**.

A growth score of 0–20 points is then assigned to each teacher based on his or her overall MGP within each growth rating category (HEDI) using the scoring bands prescribed by Subpart 30-3 of the Rules of the Board of Regents (i.e., the regulations that govern evaluations pursuant to Education Law §3012-d). Higher MGPs within each growth rating category receive more points.

Figure 3. Determining Teacher Growth Ratings

MGP		Confidence Range		Growth Rating
MGP ≥ 1.5 SD above Mean	Yes →	Lower Limit > Mean	Yes → / No ↘	**Highly Effective** — Well above State average for similar students
MGP > 1 SD below Mean *and* MGP < 1.5 SD above Mean	Yes →	Any	Yes → / No ↘	**Effective** — Equal to State average for similar students
MGP > 1.5 SD below Mean *and* MGP ≤ 1 SD below Mean	Yes →	Upper Limit < Mean	Yes → / No ↗	**Developing** — Below average for similar students
MGP ≤ 1.5 SD below Mean	Yes →	Upper Limit < 0.75 SD below Mean	Yes →	**Ineffective** — Well below average for similar students

Note: SD = Standard Deviation

Information Available in District Files

State-provided growth scores are made available to districts by September each school year. These files contain the following information:

- **Number of Student Scores:** The number of SGPs included in a teacher's MGP.

- **Percent of Students Above the State Median:** Percentage of students above the State median SGP in the relevant subject and grade, using adjusted student SGPs.

- **Unadjusted MGP:** The weighted mean of the SGPs for students who are attributed to a teacher that are based on prior achievement scores without taking into consideration a student's ELL, student with disabilities, or economically disadvantaged status. The weighted mean is calculated based on the amount of time students were enrolled in and attended a course with a teacher.

- **Adjusted MGP:** The weighted mean of the SGPs for students attributed to a teacher that are based on all factors used to define "similar students" (see Table 1 on page 4). The Adjusted MGP is used to determine a teacher's State-provided growth score and growth rating.

- **Upper Limit and Lower Limit:** Highest and lowest MGP for a 95-percent confidence range.

- **Growth Rating:** Based on an overall MGP for a teacher across grades and subjects, the growth rating describes the teacher's performance category (HEDI) on the State-provided growth subcomponent.

- **Growth Score:** Using scoring bands for implementation of Education Law §3012-d, a growth score of 0 to 20 points is assigned to each teacher based on his or her overall MGP within each growth rating category.

MGPs disaggregated by grade and subject are also provided. Districts are also provided with student roster files. These files show which students were included in a teacher's MGP along with information about each student. These rosters display information about students who were linked to teachers but were not included in the calculation of the teacher's MGP. Students who do not meet the minimum enrollment requirements will have a detailed exclusion reason, and those who do meet the minimum enrollment requirements to be included in educators' MGPs will have an exclusion reason of "NA." For students who were included in a teacher's growth score (exclusion reason of "NA"), the following information will be provided:

- Year, which indicates the end of the school year to which the information applies

- District, school, and teacher name and ID

- Student name and ID

- Assessment subject and grade ("Item Description")

- Enrollment duration (percent)

- SGP weight in teacher MGP [enrollment duration x attendance (percent)]

- Student background characteristics:

  - Disability: Students identified as having disabilities, based on district, BOCES, or charter school-provided information

  - ELL: Students who have been identified as English language learners in accordance with Part 154 of the Commissioner's Regulations, based on district, BOCES, or charter school-provided information[6]

  - Economic disadvantage: Students whose families participate in economic assistance programs such as free or reduced-priced lunch programs, Social Security Insurance, food stamps, foster care, refugee assistance, earned income tax credit, the Home Energy Assistance Program, Safety net Assistance, the Bureau of Indian Affairs, or Temporary Assistance for Needy Families, based on district, BOCES, or charter school-provided information

  - Students with disabilities spending less than 40 percent of time in general education settings

  - NYSESLAT form and score

  - New to school

  - Retained in grade

- 2017 State test score and prior year(s) State test score(s)

- SGP (unadjusted and adjusted)

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[6] See Part 154 of the Commissioner's Regulations.

Questions for Consideration

Following are some questions for teachers to consider in reviewing State-provided growth score information*:*

- How much did my students grow, on average, compared to similar students? Is this higher, lower, or about what I would have expected? Why?

- How does this information about student growth align with information about my instructional practice received through observations or other measures? Why might this be?

- **For teachers with MGPs in both mathematics and ELA:** How do my MGPs in these subjects compare? Why might they be similar or different?

- **For teachers with MGPs across grade levels:** How do my MGPs compare across grade levels? Why might they be similar or different?

Information or Additional Questions

If you have questions about your data, what the scores are used for, or why you received the score that you did, please contact your school's principal, superintendent, or district data personnel for assistance. If unable to obtain answers to questions, contact educatoreval@nysed.gov.

Disclaimer

If any discrepancies exist between the language in these materials and the Statute, Regulations, or APPR Guidance, the Statute, Regulations, or APPR Guidance prevail.