PIERCE MIDDLE SCHOOL
ELA & MATH CURRICULUM UPDATES
AND
ACCELERATED LEVEL REVIEW

May 2021

OVERVIEW

- Foundational Beliefs & Guiding Principles
- Background & Context
- Key Takeaways
- ELA & Math Curriculum Updates
- 2020-2021 School Improvement Plan Goal
- 3-Prong Process of Review
  - Quantitative Data & Cohort Analysis
  - Qualitative Data
  - Studies & Articles
- Summary of Findings
- Next Steps

FOUNDATIONAL BELIEFS & PRINCIPLES

As a school community, we are committed to the belief that every student has the potential to grow and opportunity to succeed. This commitment is realized when:

- Every student engages in the highest quality curriculum every day
- Curriculum challenges every student to grow by offering multiple, embedded opportunities for rigorous learning experiences
- Curriculum gives each student varied learning experiences and opportunities to explore their interests

BACKGROUND & CONTEXT

- 2020-2021 review of the ELA and math classes with specific attention to the practice of leveling (e.g., “accelerated” and “standard” levels in grade 7 and 8)
- This year’s pause in the offering of the accelerated level in grade 7 and 8
- An overview of the review

KEY TAKEAWAYS

- Advancements in Pierce's ELA and math curricula have positioned the school to meet the needs of a broad range of learners in mixed-level classes.
- Pierce has recently adopted research-based curricula in both ELA and math that incorporate strategies to accommodate learners ready for more in-depth study as well as those in need of support.
- The practice of leveling at Pierce has not impacted students' achievement or growth in a material way; grouping students by achievement level has not led to improved outcomes for students.
- Pierce will move forward without reinstating the accelerated level classes. To augment students' learning experiences, and attend to the special and specific interests that students may have, Pierce will refine its ELA and math intensive study exploratory classes to offer additional enrichment opportunities in these content areas.

ELA CURRICULUM - TIMELINE

- Curriculum Review and Selection Process (2019-2020)
  - Partnership with Dr. Nonie Lesaux
  - Interdisciplinary team, grade 4-8
  - September to December
    - Data analysis - MCAS & Lexia
    - Analysis of existing curriculum
    - Classroom observations and data collection
  - December to May
    - Curriculum review/selection - rubric
- Curriculum Implementation (2020-2021)
  - Amplify-led coaching and Professional Development (Winter and Spring)
  - Ongoing Implementation tracker to measure strengths and opportunities for teachers and students

AMPLIFY ELA CURRICULUM

- Features
  - Engaging, thematic curriculum focusing on reading, writing, speaking, and listening.
    - Students learn to tackle complex texts and make observations, grapple with interesting or new perspectives, and find relevance for themselves.
    - The concepts and learning target gets more sophisticated as the year progresses using increasingly complex text and perspectives.
    - Embedded opportunities to meet students where they are, flex day routines which gives opportunity to put into groups based on performance (teacher gets a report every four days to group students into reading/writing/language).
    - The use of discussion protocols to create an inclusive learning environment

AMPLIFY ELA CURRICULUM

- Additional Resources
  - Amplify Family Resources Page
  - Program Components and Lesson Example
  - Grade 6 - 100 Day Lesson Pathway
  - Grade 7 - 100 Day Lesson Pathway
  - Grade 8 - 100 Day Lesson Pathway

MATH CURRICULUM - TIMELINE

- Illustrative Mathematics (released as an open sourced curriculum in 2017)
  - 6th Grade ~ piloted in 18-19 and fully implemented in 19-20
  - 7th Grade ~ piloted in 19-20
  - 8th Grade ~ piloted in 17-18 and fully implemented in 18-19

- Desmos (made available for districts to pilot in 20-21 for 7th & 8th grade only)
  - Piloted in 7th & 8th grade this year and will be fully implemented in 6th-8th next year

ILLUSTRATIVE MATHEMATICS CURRICULUM

- Features
  - Top rated middle school math curriculum (also expanded to K-5 & 9-12)
  - Problem-based design to foster learning and achievement for all students
  - Teacher's role is to facilitate student learning through the use of high-leverage routines and by helping make connections between concepts and procedures

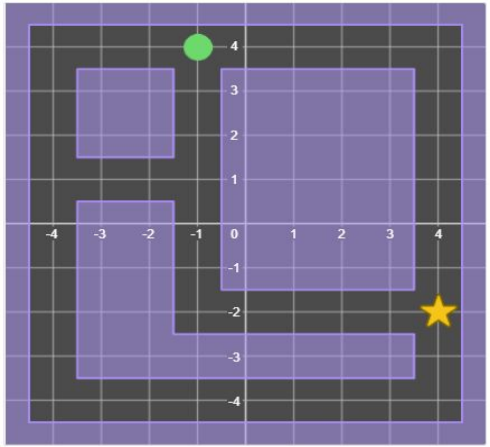
- Additional Resources
  - IM Curriculum Design Principles
  - IM Curriculum Information for Families
  - IM Curriculum Scope & Sequence

DESMOS CURRICULUM

- Features
  - Blend of computer and paper based activities that are creative, student-centered, and interactive
  - Teacher dashboard allows for monitoring student learning, guiding productive discussions, and providing feedback

- Additional Resources
  - Desmos Curriculum Description
  - Desmos Curriculum Preview
  - Desmos Curriculum FAQs

DESMOS SAMPLE ACTIVITY - GR 6



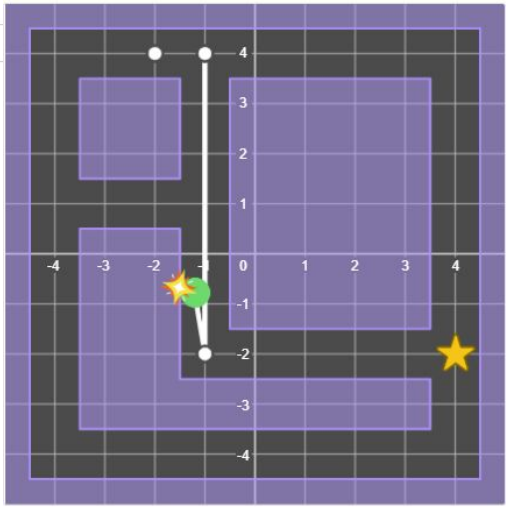
1. Sketch a path to get the ball to collect the star.

2. Enter coordinates for your path and press “Try It."

Note: You do not need to use all the rows.

Your Path
$(-1, 4)$

Try It



1. Sketch a path to get the ball to collect the star.

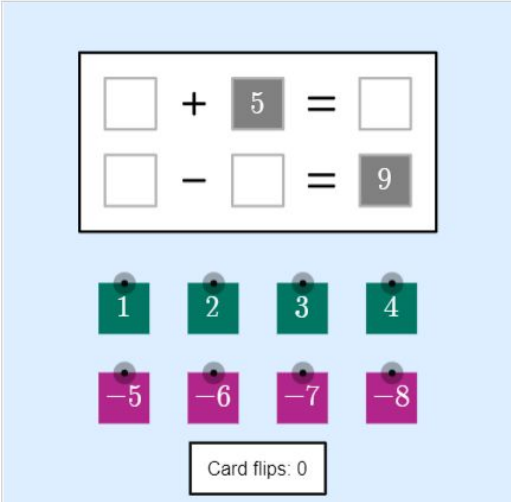
2. Enter coordinates for your path and press “Try It."

Note: You do not need to use all the rows.

Your Path
$(-1, 4)$
$(-1, -2)$
$(-2, 4)$

Try It

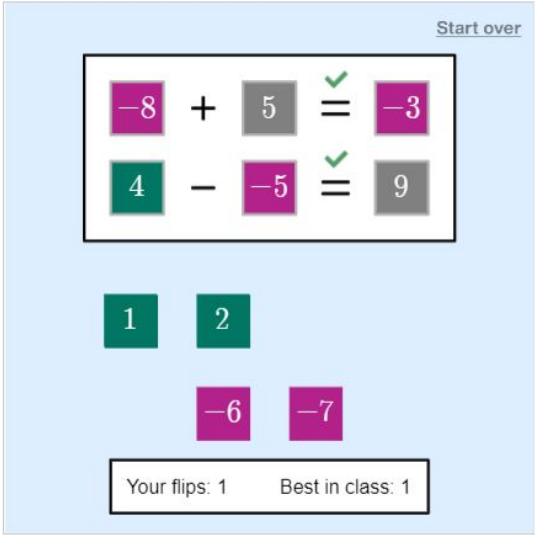
DESMOS SAMPLE ACTIVITY - GR 7



Make true equations by dragging and flipping the cards.

Try to use as few flips as possible.

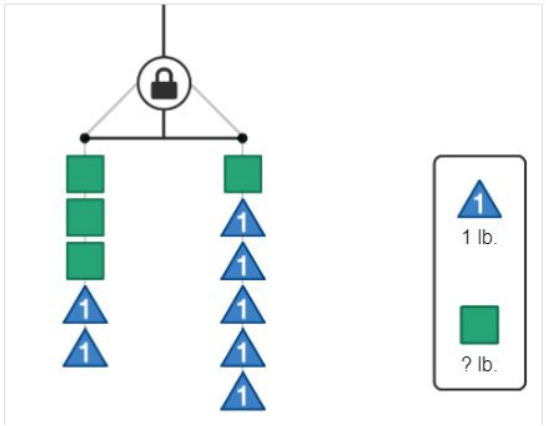
Check My Work



Make true equations by dragging and flipping the cards.

Try to use as few flips as possible.

DESMOS SAMPLE ACTIVITY - GR 8

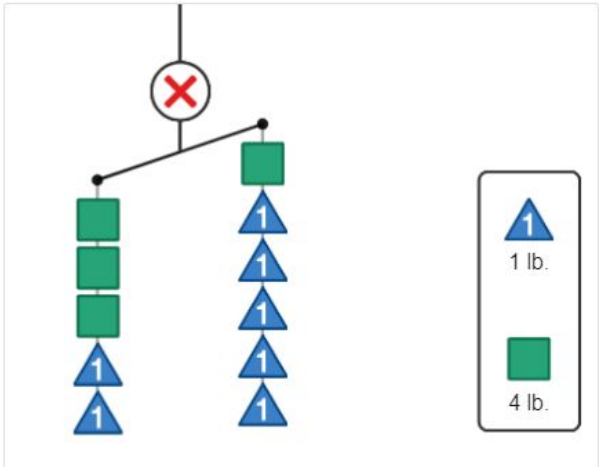


Find the weight of the square.

Press "Try It" to see if the hanger is balanced.

Weight of Triangle	Weight of Square
1 lb.	

Try It



Press "Try It" to see if the hanger is balanced.

Weight of Triangle	Weight of Square
1 lb.	4 lb.

Reset

2020-2021 SCHOOL IMPROVEMENT PLAN GOAL

Goal: Conduct a review of the accelerated ELA and math classes and make recommendations that provide rationale for maintaining, altering, or eliminating these offerings.

1. Collect input and insights from grade 7 and grade 8 ELA and math teachers about their experiences with teaching these classes
2. Identify distinguishing characteristics and features of accelerated and standard paced classes
3. Review research on leveling in middle school
4. Examine the process for determining placement in accelerated level classes
5. Communicate with the school community about the challenges and opportunities related to the accelerated level of ELA and math classes

THREE-PRONG REVIEW PROCESS

- Site Council Working Group
  - Parents (5), Curriculum Coordinators (ELA & Math), Principal

- Three-prong review process
  1. Quantitative Data
  2. Qualitative Data
  3. Studies & Articles

QUANTITATIVE DATA

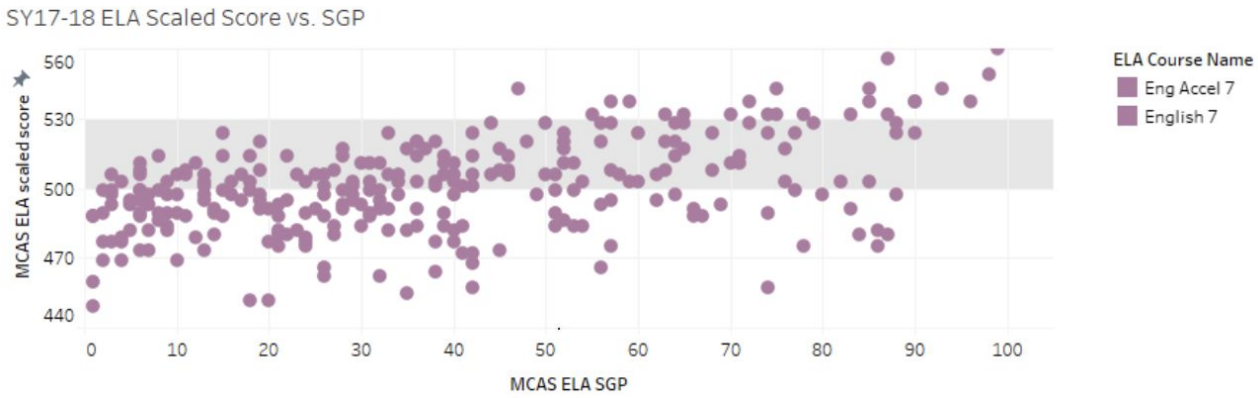
- Examination of MCAS data from two most recent years of administration (2017-2018 & 2018-2019)

- Grade 6 (heterogeneous grouping) and Grade 7 & 8 (leveled)

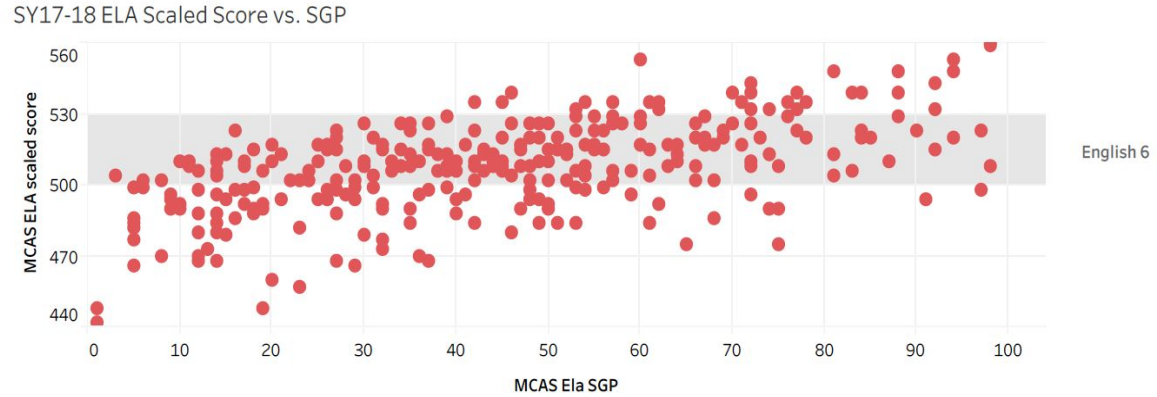
- Some guiding questions
  - What observations can we make about the data?
  - Do we see any trends?
  - What, if any, inferences can we make?

QUANTITATIVE DATA - ELA (2017-2018)

Grade 7 Distribution (ELA)

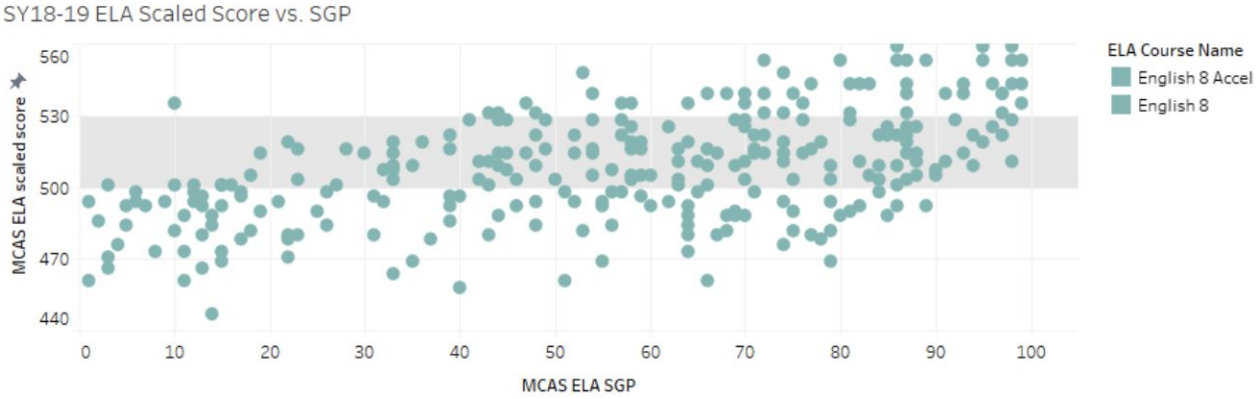


Grade 6 Heterogeneous Distribution (ELA)

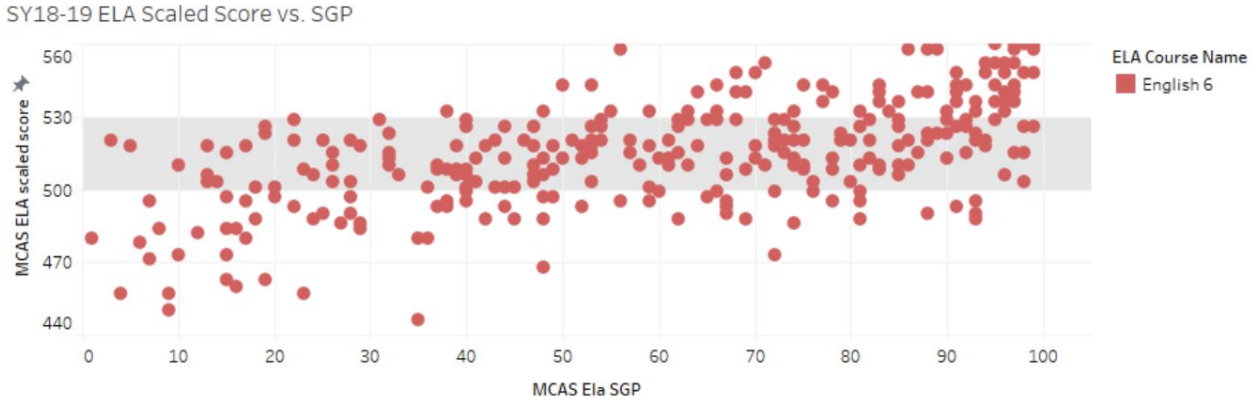


QUANTITATIVE DATA - ELA (2018-2019)

Grade 8 Distribution (ELA)



Grade 6 Heterogeneous Distribution (ELA)

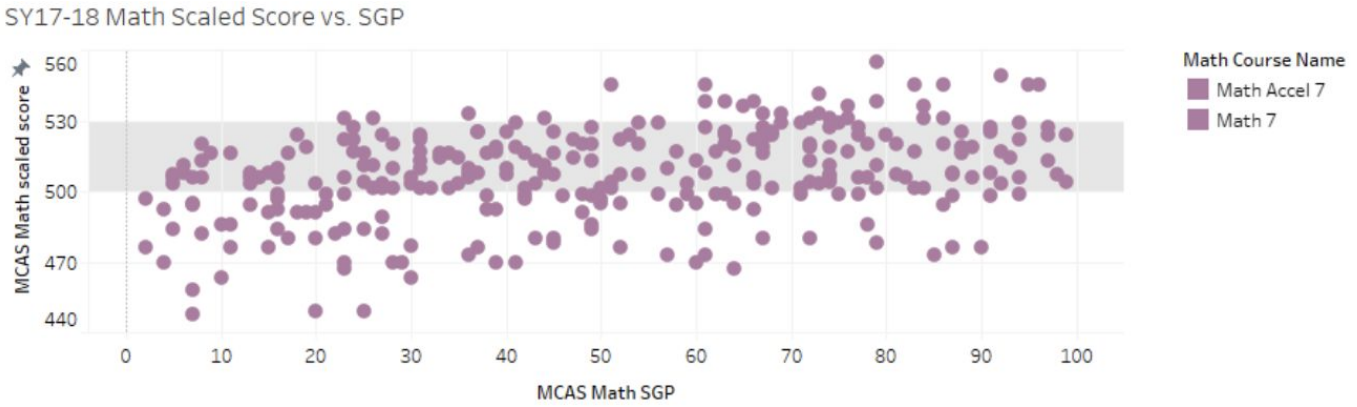


QUANTITATIVE DATA - ELA

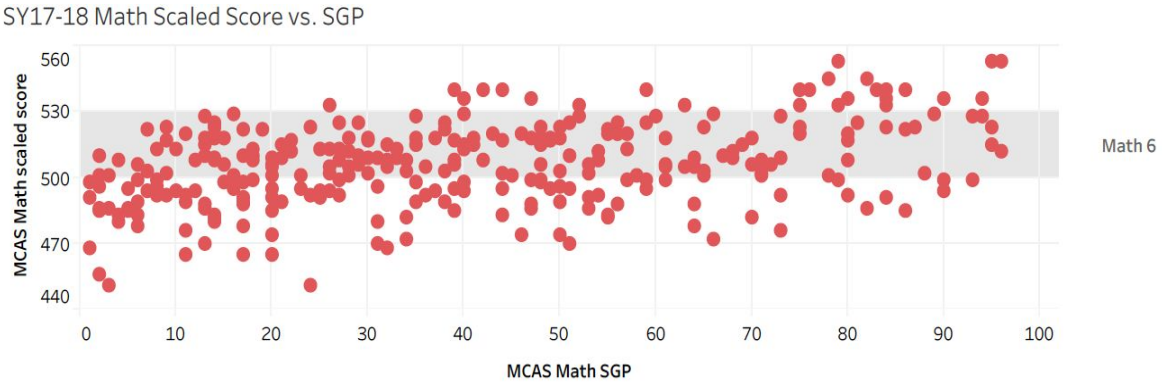
- What observations can we make about the data? Do we see any trends? What, if any, inferences can we make?
  - 6th grade unleveled distributions closely matches the 7th grade distributions and 8th grade distributions
  - The pattern of performance (scaled scores) and growth (SGP) is very similar across the grade levels in both the unleveled model and the leveled model.
  - What can we infer from this observation?
    - Students in unleveled 6th grade ELA classes in 2018-2019 and 2017-2018 achieved and grew in the same range as the students in 7th and 8th grade where leveling occurred

QUANTITATIVE DATA - MATH (2017-2018)

Grade 7 Distribution (Math)

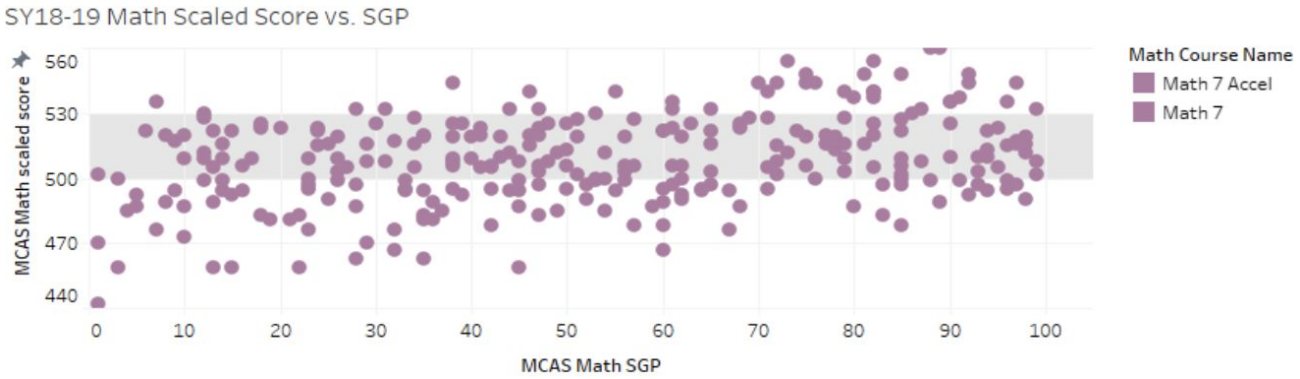


Grade 6 Heterogeneous Distribution (Math)

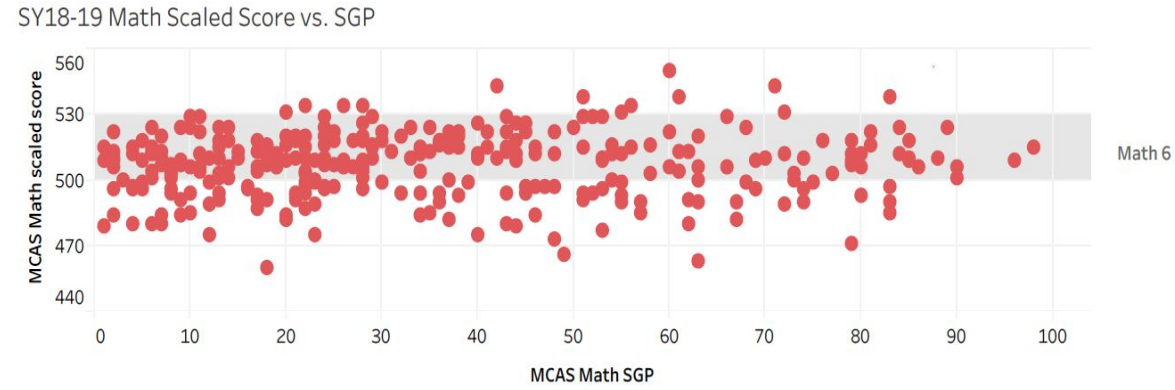


QUANTITATIVE DATA - MATH (2018-2019)

Grade 7 Distribution (Math)



Grade 6 Heterogeneous Distribution (Math)



QUANTITATIVE DATA - MATH

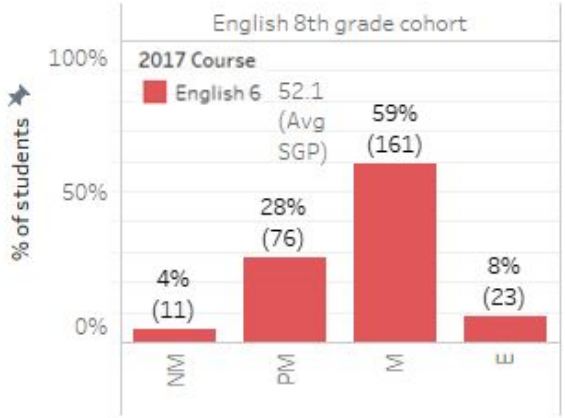
- What observations can we make about the data? Do we see any trends? What, if any, inferences can we make?
  - 6th grade unleveled distribution closely matches the 7th grade distribution and 8th grade distribution
  - The pattern of performance (scaled scores) and growth (SGP) is very similar across the grade levels in both the unleveled model and the leveled model.
  - What can we infer from this observation?
    - Students in unleveled 6th grade Math classes in 2018-2019 and 2017-2018 achieved and grew in a range similar to the students in 7th and 8th grade where leveling occurred

COHORT ANALYSIS

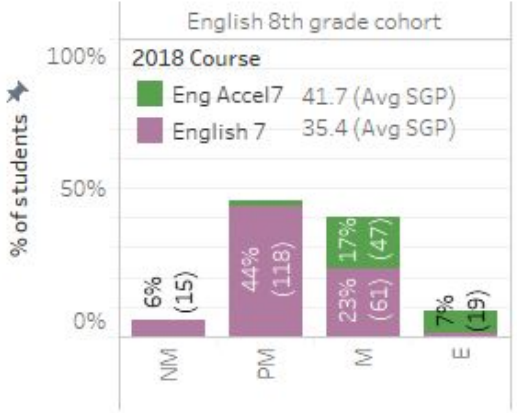
The following cohort analysis looks at the achievement of the group of students who attended Pierce for grade 6-8 (2016-2019) as well as the group of students who attended Pierce for grade 6 and 7 (2017-2019).

2019 8th grade cohort

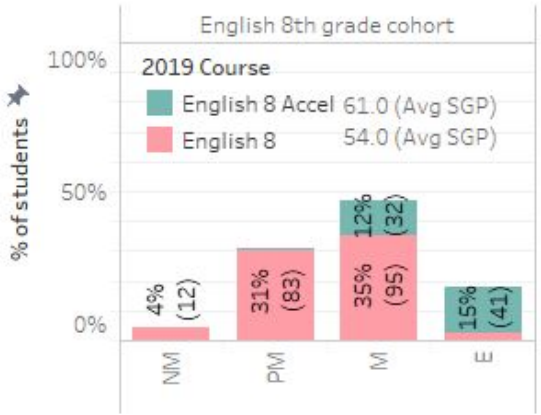
ELA 6th grade (2016-17)



ELA 7th grade (2017-18)

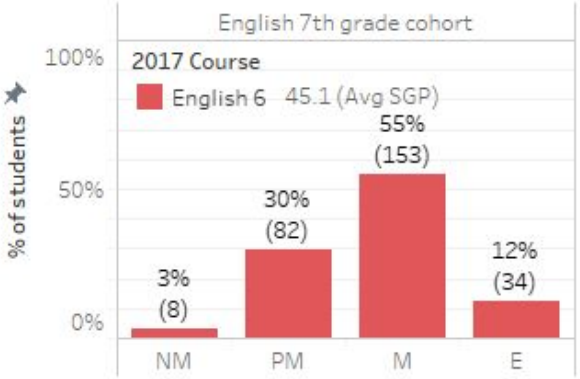


ELA 8th grade (2018-19)

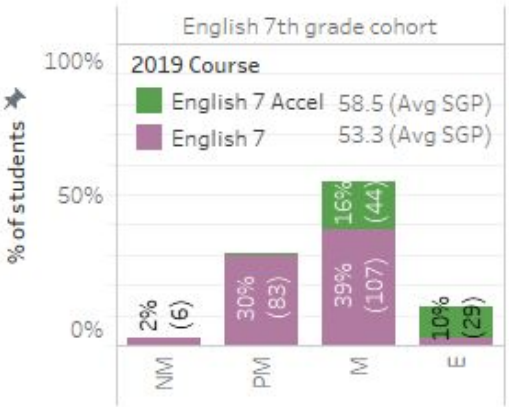


2019 7th grade cohort

ELA 6th grade (2017-18)



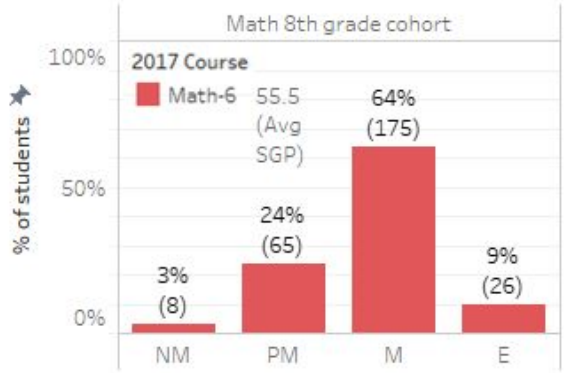
ELA 7th grade (2018-19)



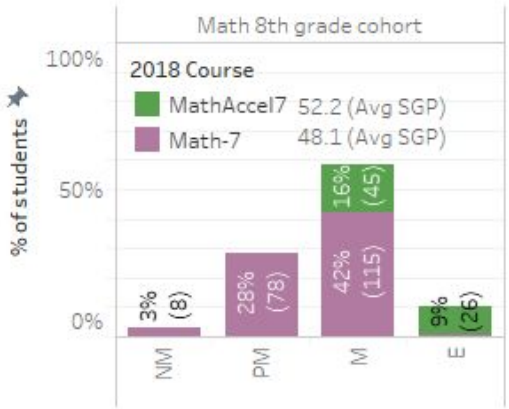
This cohort analysis looks at students who have been at PMS for all their three or two tested years. The unleveled model in 6th grade produces more students meeting or exceeding expectations than the leveled models in later grades.

2019 8th grade cohort

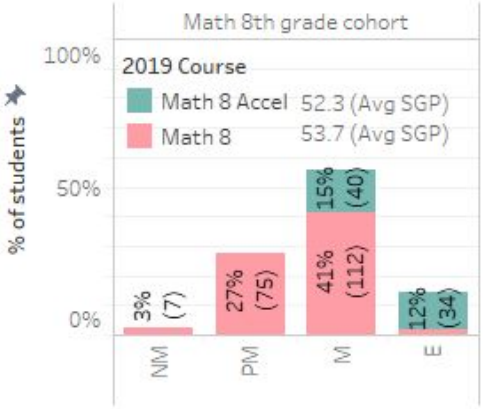
Math 6th grade (2016-17)



Math 7th grade (2017-18)

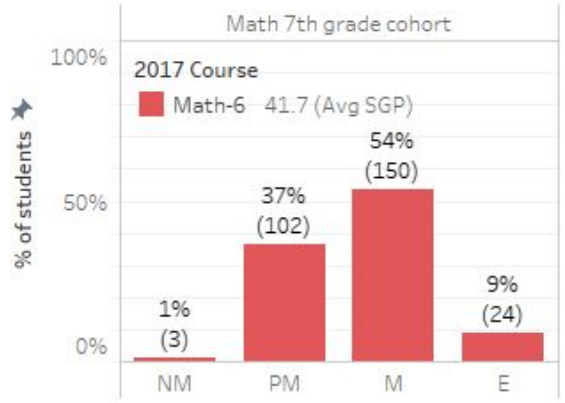


Math 8th grade (2018-19)

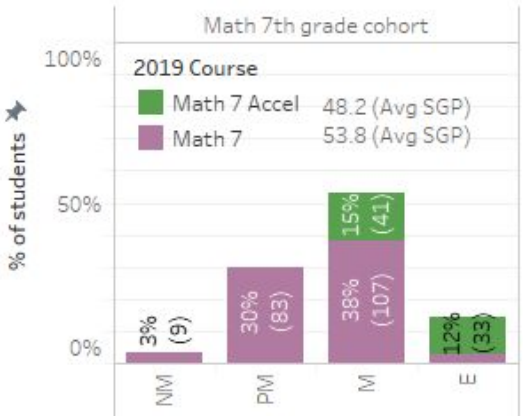


2019 7th grade cohort

Math 6th grade (2017-18)



Math 7th grade (2018-19)



For the 8th grade cohort, the unleveled model at PMS in 6th grade produces more students meeting or exceeding expectations. For the 7th grade cohort, there are more students meeting or exceeding in the leveled model.

COHORT ANALYSIS - ACCELERATED STUDENTS

2019 8th Grade Accelerated Cohort - SGP

	6th Grade (16-17)	7th Grade (17-18)	8th Grade (18-19)
ELA	59.25	46.43	61.88
Math	61.03	53.86	54.22

2019 7th Grade Accelerated Cohort - SGP

	6th Grade (17-18)	7th Grade (18-19)
ELA	58.72	58.50
Math	48.46	48.26

QUALITATIVE DATA - TEACHERS' PERSPECTIVES

- Guiding Questions
  - What distinguished your teaching of accelerated classes from standard paced classes?
  - What was gained by students who took the accelerated level classes?
  - What are the strengths and drawbacks of a leveling system for students?
  - Now that classes are heterogeneously grouped, what are you seeing?

QUALITATIVE DATA - TEACHERS' PERSPECTIVES

- ELA Teachers
  - Mixed thoughts, pluses and minuses; accelerated classes may benefit the students in those classes but heterogeneous classes benefit more students
  - Independence is biggest distinguishing feature of accelerated vs. standard; pace was a little faster; sometimes left time for an additional novel
  - This year we're not seeing students hindered by heterogeneous mixing

QUALITATIVE DATA - TEACHERS' PERSPECTIVES

- ELA Teachers (continued)
  - Having a broader range of learners in one class is good for everyone
  - New curriculum (Amplify) has created higher expectations and outcomes around complex writing (e.g., deeper analysis, more sophisticated transitions)
  - Differentiation: using grouping and assessment data; able to differentiate the output/expectations

QUALITATIVE DATA - TEACHERS' PERSPECTIVES

- ELA Teachers (continued)
  - Perception among families that accelerated is better and if your child isn't in accelerated classes then they're not getting what they need
  - There is so much growth during the middle school years that leveling is hard to get right
  - Message sent to students that one group is better than the other
  - Choice [an elective class] would be ideal

QUALITATIVE DATA - TEACHERS' PERSPECTIVES

- Math Teachers
  - The curriculum was the same for accelerated and standard level courses
  - Our math curriculum is appropriate for all achievement levels; differentiation for all learners
  - Differentiation is built into the curriculum

QUALITATIVE DATA - TEACHERS' PERSPECTIVES

- Math Teachers (continued)
  - It benefits all students to be heterogeneously mixed
  - Previous model of two on-level and three above-level classes was a "disaster"; demographics of on-level vs. above level; curriculum was the same, conversations may have been deeper but would've had the same impact if accelerated students were spread out
  - Previous "above level class" is the current 8th grade class that all students take

QUALITATIVE DATA - TEACHERS' PERSPECTIVES

- Math Teachers (continued)
  - Math identity is a real thing; having a "special thing" is damaging to both groups
  - No benefit [of accelerated level] except bragging rights; perpetuates sense of elitism
  - It's not about higher level math, it's about the status of being in an accelerated class

STUDIES & ARTICLES

- The working group engaged in an exploration of research articles and studies related to practices of leveling in middle school

- Keywords of these inquiries included: leveling, deleveling, tracking, detracking, heterogeneous grouping, differentiation, school wide enrichment

STUDIES & ARTICLES

National Association of Secondary School Principals

- High achievement is a goal for all students
- While tracking was originally intended for practical pedagogical purposes, its unintended consequences make it an obsolete practice in the context of high expectations for all.
- Organize students in heterogeneous learning groups; diversity can help students learn from each other.
- Provide focused professional development for teachers to enable them to acquire the skills and dispositions needed in detracked schools; these include high expectations for all, differentiated instruction, cooperative learning, and complex instruction.

STUDIES & ARTICLES

"Is it Time to Detrack Math?" (Berwick, 2019)

- The article explores schools that detracked secondary math classes
- Argues that lower track students receive a less rigorous and rich math curriculum
- Cites research that suggests that math tracking is not an effective practice for improving student performance; refers to a 2016 meta-analysis of nearly 100 years of research found that between-class grouping, or tracking, did not benefit students at either the high or low ends of achievement
- Urges schools to focus on supporting teachers to implement curriculum that focuses on deeper rather than faster learning

STUDIES & ARTICLES

"What's Wrong with Tracking Students by Math Ability?" (Coe, 2020)

- Reference to a study on the impact of tracking in a district when educators noticed it didn't appear to be working to anyone's benefit
- Cites NCSM position paper: "Overall, tracking does not improve achievement but it does increase educational inequality. In light of this, NCSM calls instead for detracked, heterogeneous mathematics instruction through early high school, after which students may be well-served by separate curricular pathways that all lead to viable, post-secondary options."
- Recommends heterogeneous grouping; this form of grouping requires meeting individual students where they are and supporting them with the high-quality instruction they need to develop powerful habits of thinking.
- Not tracking may not be the easiest path, but it will very likely be the best one for students.

STUDIES & ARTICLES

"Only the Names Have Been Changed: Ability Grouping Revisited" (Worthy, 2010)

- A study of 25 sixth grade teachers of "regular" and "honors" language arts classes in a large urban district
- Conclusion: Attitudes and practices similar to those that existed when tracking was more openly acknowledged in the US were evident in the words of most teachers in the study
- Conclusion: Ability grouping may be more insidious and damaging than earlier incarnations, when harmful attitudes were not so deeply buried under euphemistic labels
- Alternatives to ability grouping: heterogeneous rather than leveled classes; focus on providing a rigorous academic curriculum for all students
- Detracking efforts in schools serving racially and economically mixed areas have had more tenuous results because middle class parents, whose children are more likely to be in higher tracks, are often resistant to heterogeneous grouping, even though achievement levels of high SES students did not decrease

STUDIES & ARTICLES

"5 Strategies to Ensure Student Learning" (Nobori, 2011)

- Article highlights strategies for teaching a range of learners in the same classroom
- "Reteach and Enrich"
    - Reteach: Teachers reteach objectives using different lessons for students who need additional time for mastery.
    - Enrich: Teachers expand on objectives for students who have mastered the basics.
- Key elements: a common curricular calendar, dedicated time, collaboration, formative assessments and data analysis, involved and informed leadership

STUDIES & ARTICLES

"Integrating Classrooms and Reducing Academic Tracking" (Potter, 2019)

- Schoolwide Enrichment Model (SEM) is an approach to teaching and learning that draws from the pedagogy of gifted education to enhance opportunities to all students in a school
- SEM creates opportunities for all students to be engaged in some type of enrichment, in which students with shared interests engage in investigative learning and explore real-life problems
- Example: Enrichment clusters of students who share a broad common interest—such as math, athletics, or social action—guiding students in developing specific topics and projects to undertake within that umbrella theme
- Example: Schools develop topics for enrichment clusters by leveraging staff's skills, experiences, or hobbies they have that could form the basis of a cluster, and then matching those with student interests

SUMMARY OF FINDINGS

Summary of Findings

1. Quantitative analysis suggests that the distribution of student achievement and growth scores are similar in heterogeneous and leveled groupings
2. Cohort analysis for ELA MCAS shows that the unleveled model in 6th grade produces more students meeting or exceeding expectations than the accelerated models in later grades.
3. Cohort analysis for math MCAS shows that the unleveled model in 6th grade produces more students meeting or exceeding expectations than the accelerated models in later grades with the exception of the 2018-2019 7th grade cohort that had slightly more students exceed expectations.

SUMMARY OF FINDINGS

Summary of Findings (continued)

4. Analysis of students in the accelerated level classes showed that students demonstrated no growth or a decline in growth as measured by student growth percentile (SGP).
5. Analysis of input solicited from teacher focus groups suggests educator skepticism around the practice of leveling
6. A review of articles and studies around leveling, differentiation, and enrichment models suggests that a broad spectrum of students' learning needs can be met in heterogeneous learning environments
7. Pierce's recent curriculum adoptions and enhancements in ELA and math have the capacity to provide rich and rigorous learning experiences inclusive of all students

NEXT STEPS

Next Steps

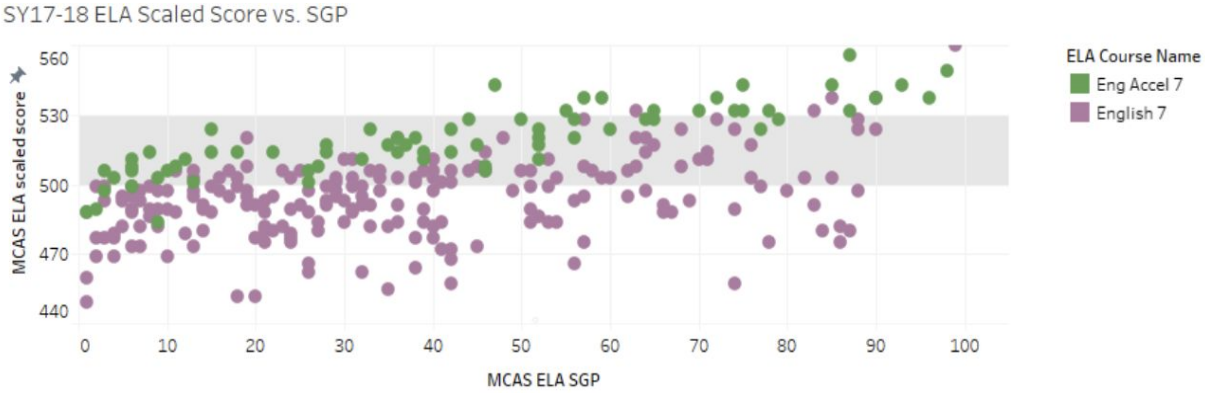
- Communicate curricular updates and the findings of the accelerated level review with the school community
- Refine ELA and Math intensive study (IS) course offerings
- Define and secure continued professional development experiences for ELA and math teachers

APPENDIX A

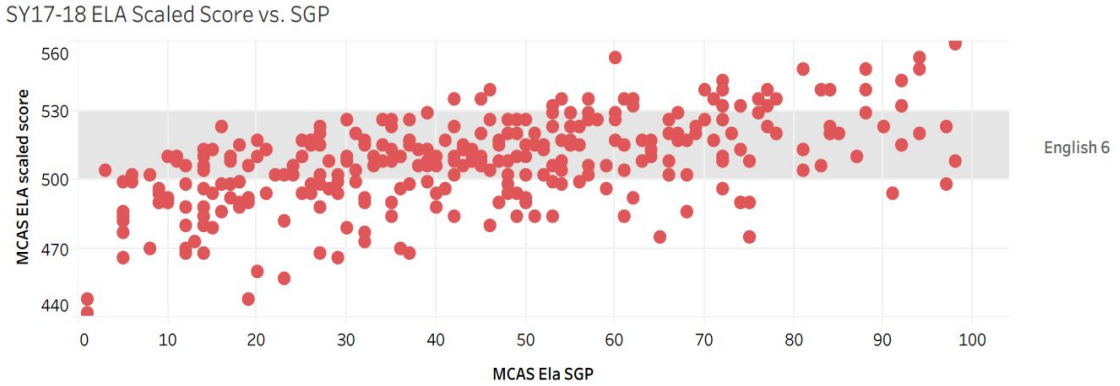
Appendix A includes a number of additional scatterplots

QUANTITATIVE DATA - ELA (2017-2018)

Grade 7 Distribution (ELA)

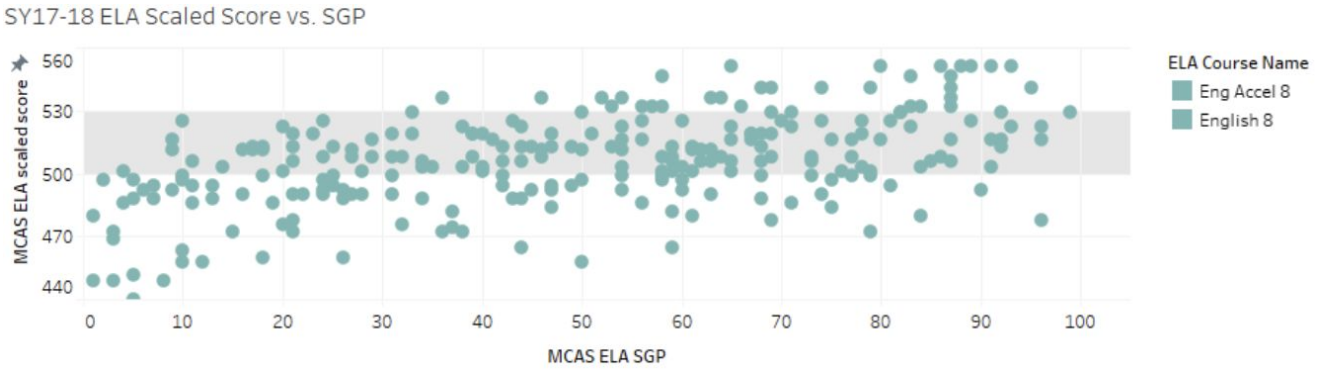


Grade 6 Heterogeneous Distribution (ELA)

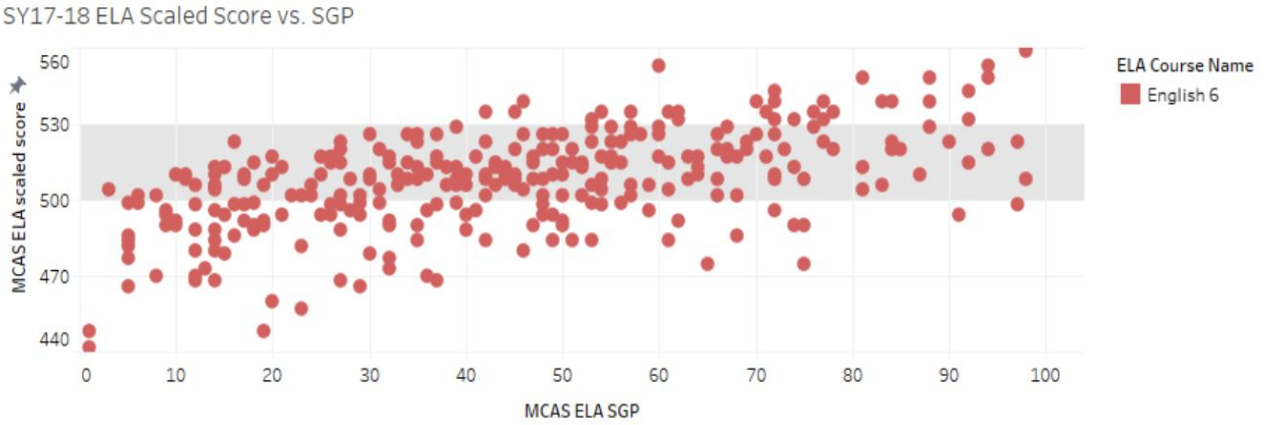


QUANTITATIVE DATA - ELA (2017-2018)

Grade 8 Distribution (ELA)

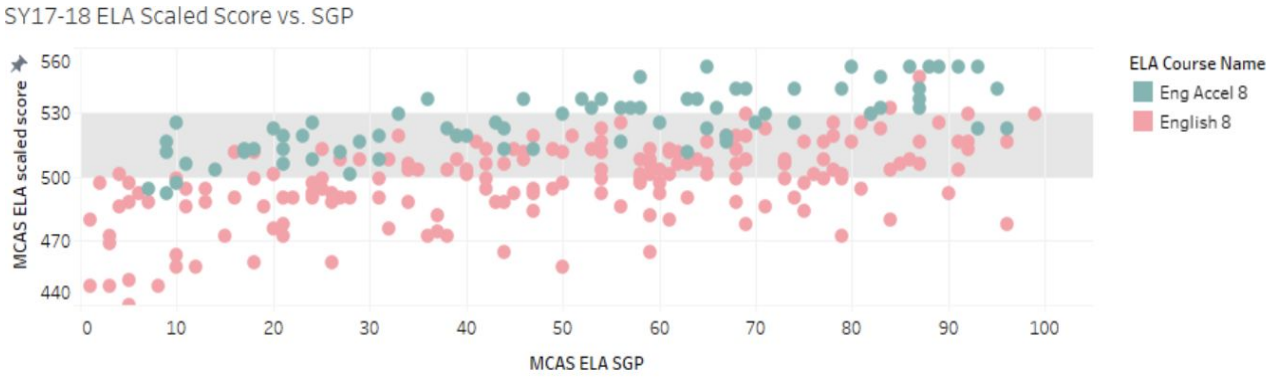


Grade 6 Heterogeneous Distribution (ELA)



QUANTITATIVE DATA - ELA (2017-2018)

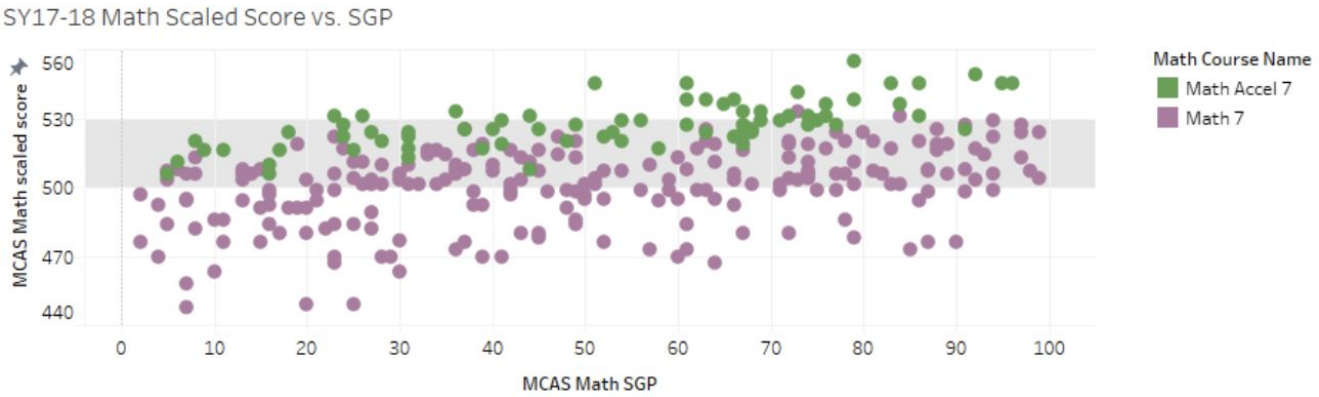
Grade 8 Distribution (ELA)



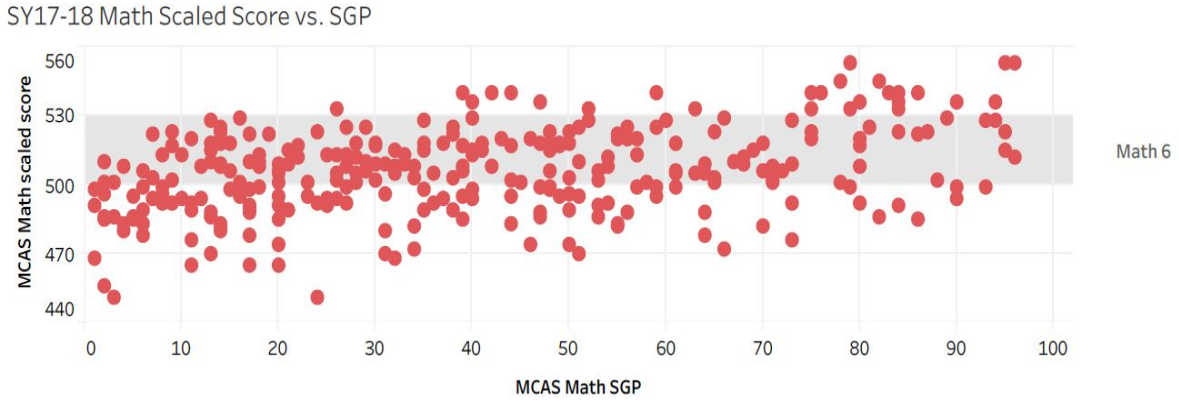
Grade 6 Heterogeneous Distribution (ELA)

QUANTITATIVE DATA - MATH (2017-2018)

Grade 7 Distribution (Math)

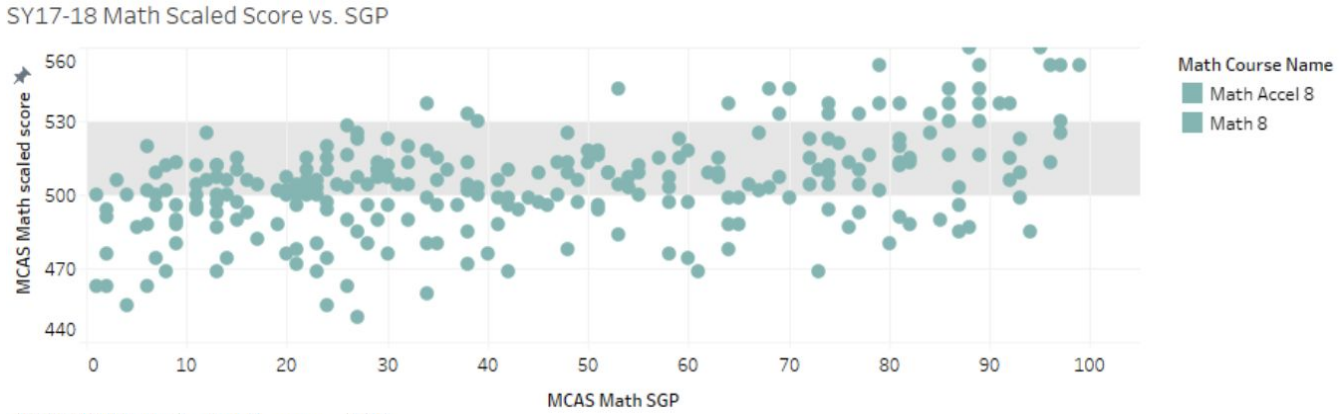


Grade 6 Heterogeneous Distribution (Math)

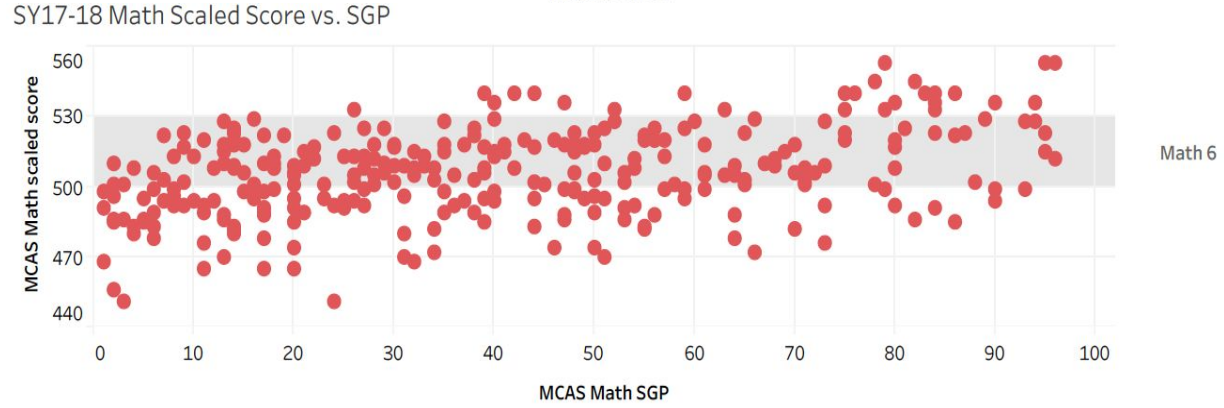


QUANTITATIVE DATA - MATH (2017-2018)

Grade 8 Distribution (Math)

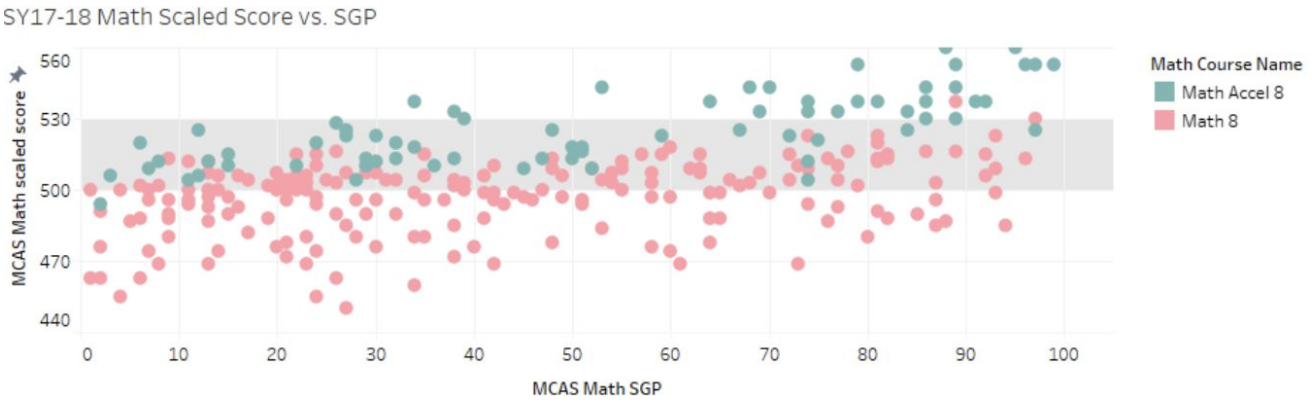


Grade 6 Heterogeneous Distribution (Math)

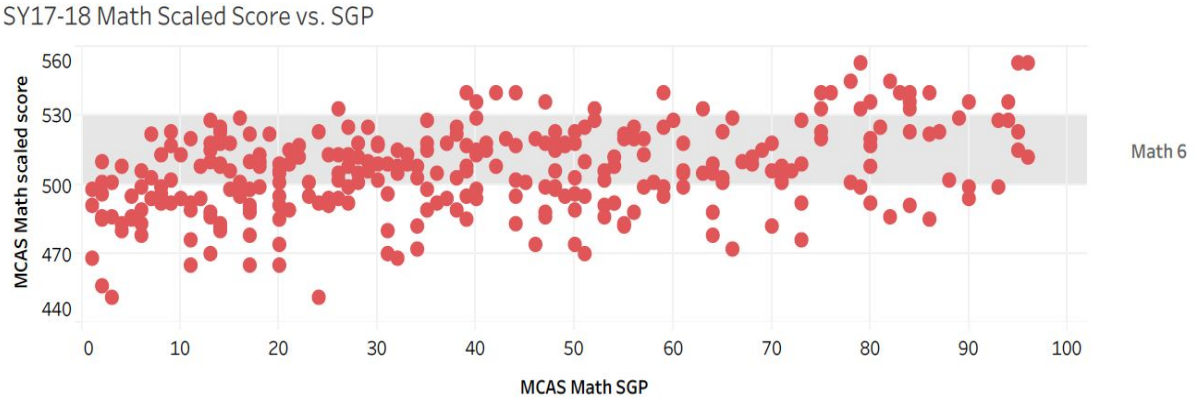


QUANTITATIVE DATA - MATH (2017-2018)

Grade 8 Distribution (Math)

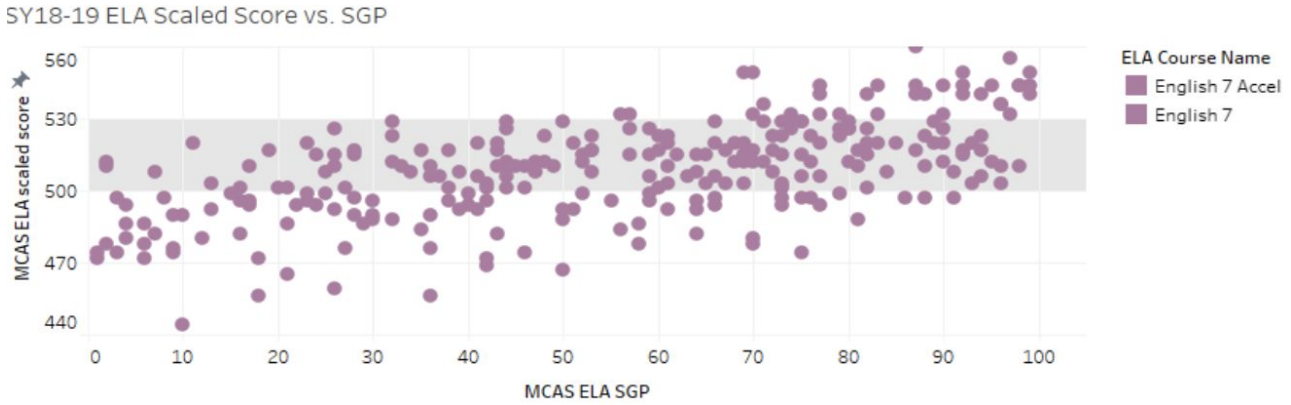


Grade 6 Heterogeneous Distribution (Math)



QUANTITATIVE DATA - ELA (2018-2019)

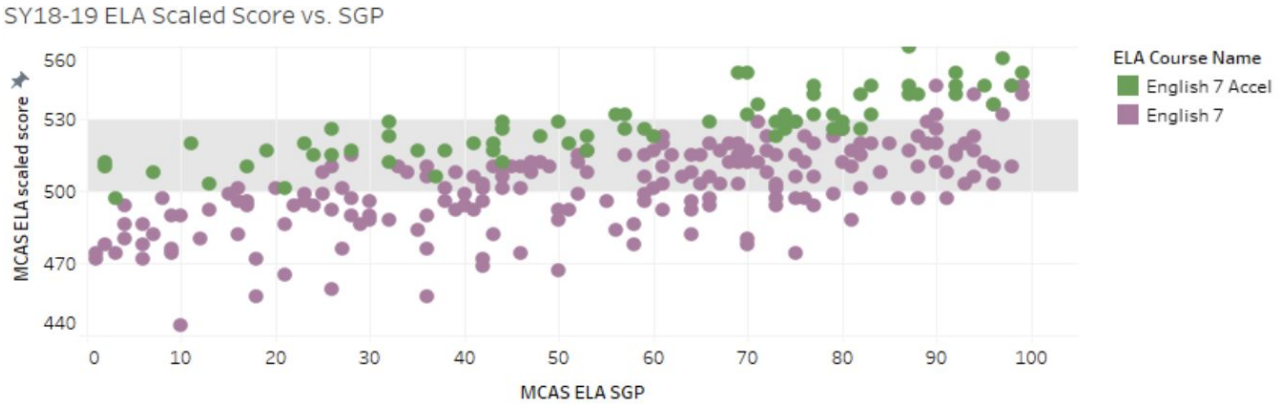
Grade 7 Distribution (ELA)



Grade 6 Heterogeneous Distribution (ELA)

QUANTITATIVE DATA - ELA (2018-2019)

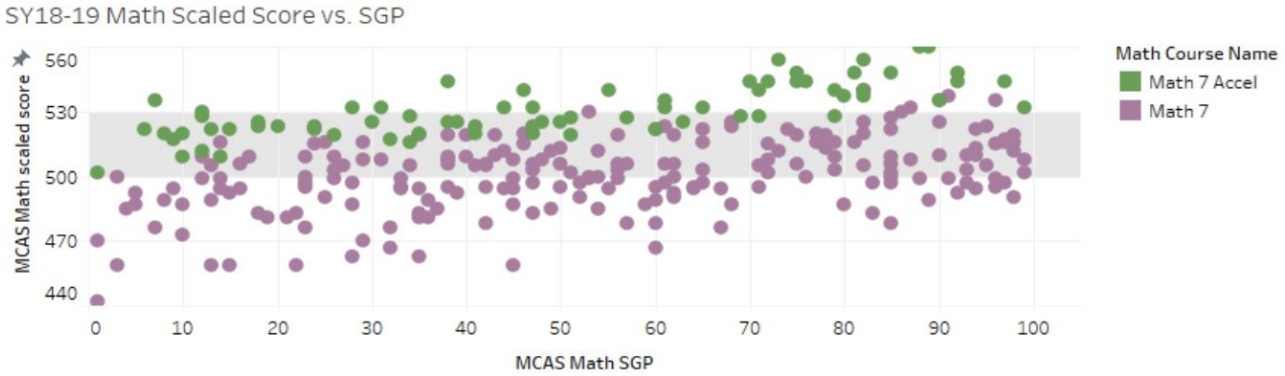
Grade 7 Distribution (ELA)



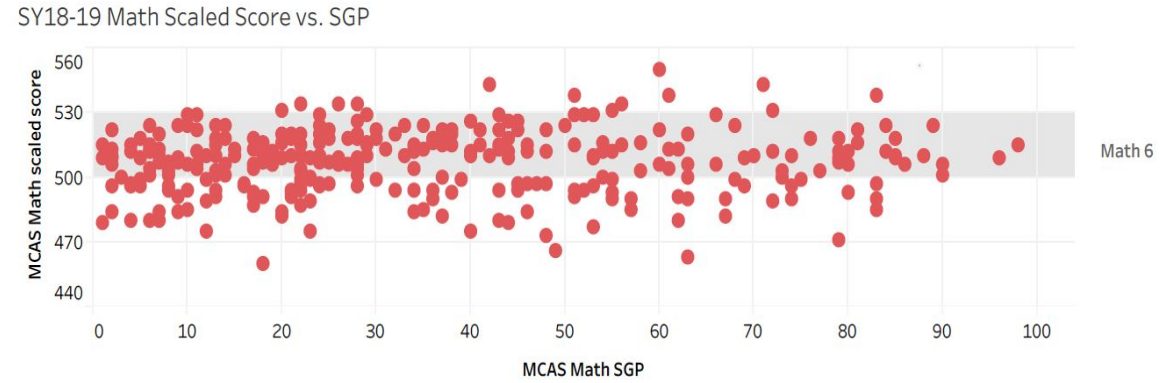
Grade 6 Heterogeneous Distribution (ELA)

QUANTITATIVE DATA - MATH (2018-2019)

Grade 7 Distribution (Math)

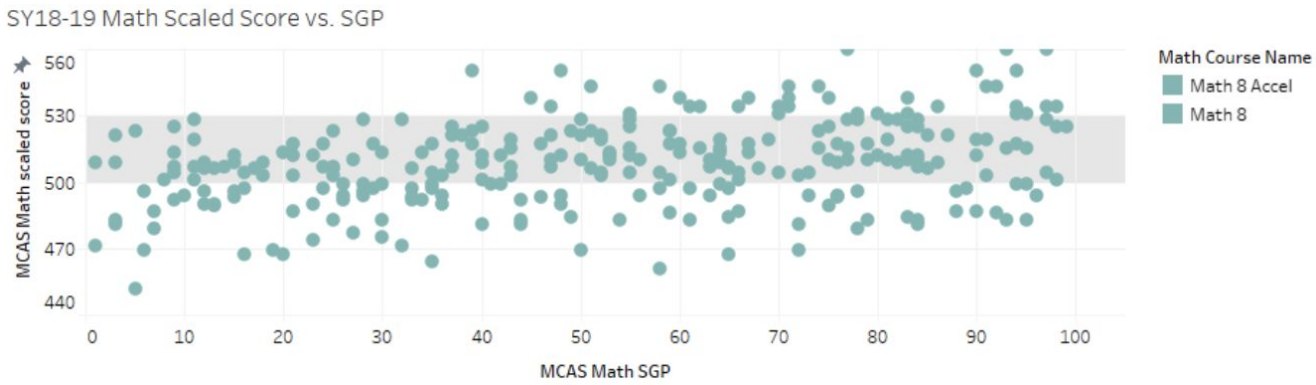


Grade 6 Heterogeneous Distribution (Math)

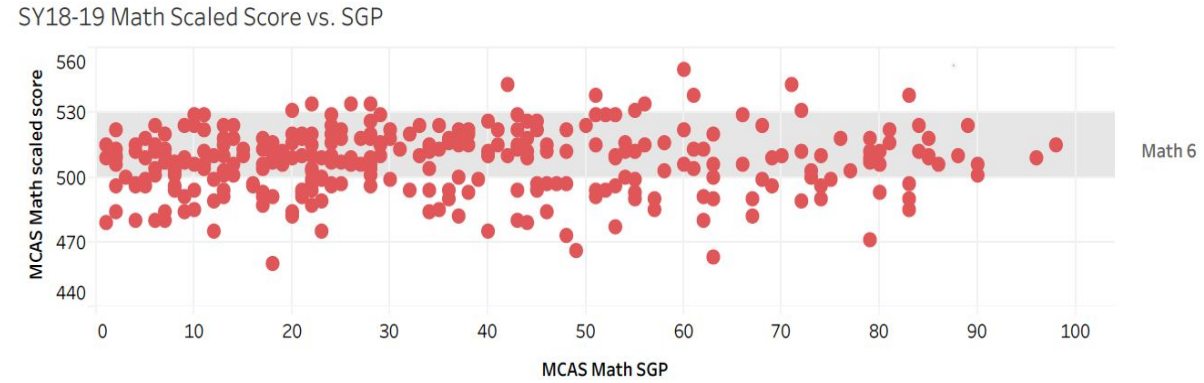


QUANTITATIVE DATA - MATH (2018-2019)

Grade 8 Distribution (Math)

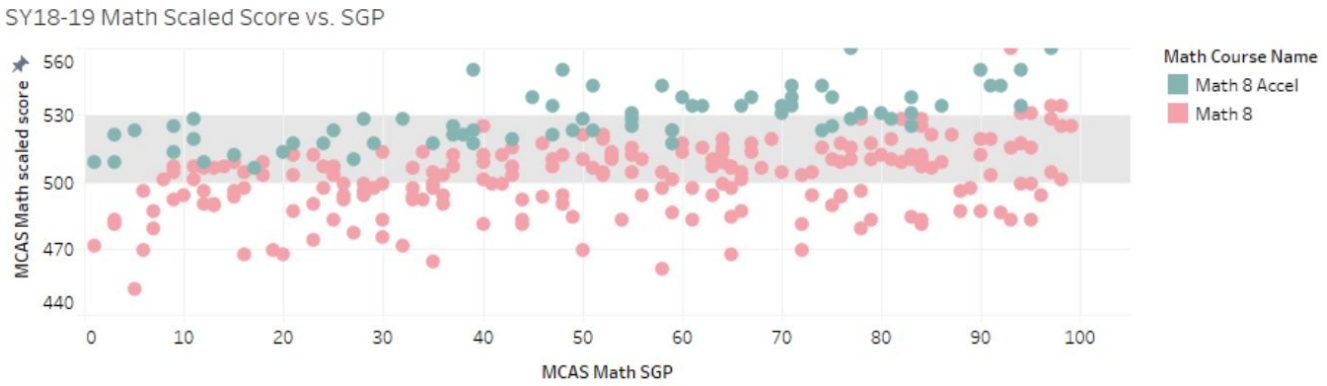


Grade 6 Heterogeneous Distribution (Math)

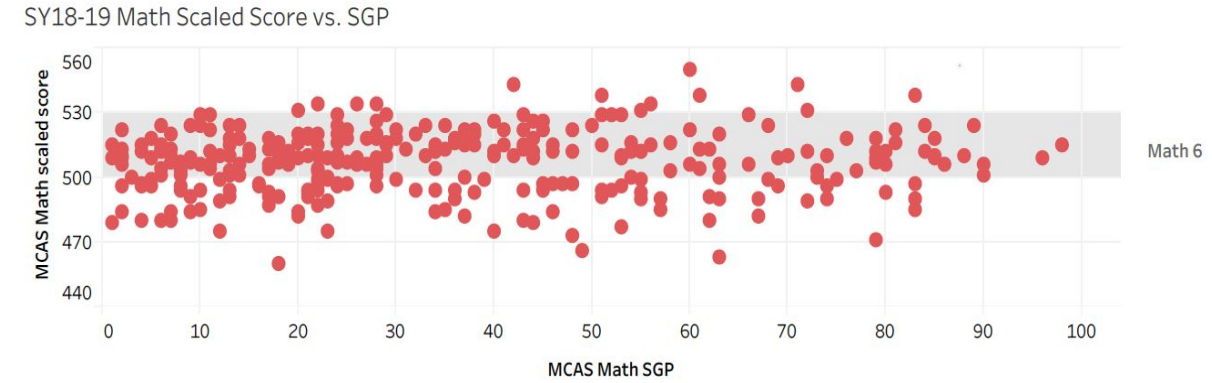


QUANTITATIVE DATA - MATH (2018-2019)

Grade 8 Distribution (Math)



Grade 6 Heterogeneous Distribution (Math)



APPENDIX B

Link to full set of notes from teacher focus groups

APPENDIX C

Link to articles reviewed by the working group