

Georgia K-12 Mathematics Standards Review

Academic Review Committee Report

January 12, 2020

Page 1

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Richard Woods, *Georgia's School Superintendent*

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Georgia K-12 Mathematics Standards Review Process

ACADEMIC REVIEW COMMITTEE

TABLE OF CONTENTS

Introduction

Academic Review Committee Members

Process

Executive Summary

Academic Review Committee Feedback (Grades K-5, 6-8, and 9-12)

- What do you like best about the proposed standards revision?
- What are your first impressions?
- Are there any clarifying questions that you have?
- How do the content statements provide clarity and coherence for all stakeholders?
- Additional Comments for Consideration

Future Considerations and Next Steps



INTRODUCTION

The Academic Review Committee convened on January 12, 2021 and was composed of 18 members appointed by the Governor and State School Superintendent, including business and industry partners, academic professionals, and leaders from K-12 schools and districts, the University and Technical College Systems of Georgia, the Department of Early Care and Learning, the Governor's Office of Policy and Budget, the Georgia Department of Education, the Georgia Association of Curriculum and Instruction Supervisors, and the State Board of Education.

ACADEMIC REVIEW COMMITTEE MEMBERS

Special thanks to the following committee members for their involvement and participation in this committee.

Academic Review Committee Members

- **Susan Adams**, Deputy Commissioner for Pre-K & Instructional Support, Georgia Department of Early Care and Learning
- **Dr. Diane W. Bales**, Associate Professor, University System of Georgia – child development and learning expert
- **Dr. Lenisera Barnes-Bodison**, Executive Director, Curriculum & Instruction, DeKalb County Schools
- **Fran Blackburn**, Elementary School Principal, Habersham County Schools
- **Tim Cairl**, Director of Education Policy, Metro Atlanta Chamber
- **Dr. Nathalie Dames**, Curriculum Program Specialist, Office of Technical Education, Technical College System of Georgia
- **Dr. Tristan Denley**, Executive Vice Chancellor for Academic Affairs and Chief Academic Officer, University System of Georgia
- **Graham Fletcher**, Mathematics Specialist, Henry County Schools
- **Andrew Gibbs**, Mathematics/STEM Representative, Valdosta City Schools
- **Justin Hill**, Associate Superintendent for Curriculum & Instruction, Georgia Department of Education
- **Jessica Johnson**, Education Division Director, Governor's Office of Planning and Budget
- **Matt Lee**, Young Contracting
- **Dr. Trent North**, Superintendent, Douglas County Schools
- **Brian Sirmans**, Chairman, Georgia Professional Standards Commission
- **Scott Sweeney**, State Board of Education Chair
- **Deborah White**, Executive Director, Georgia Association of Curriculum and Instructional Supervisors
- **Miranda Williams**, Education Policy Advisor, Governor's Office

PROCESS



The Academic Review Committee convened on January 12, 2021, from 9 a.m. to 12 p.m. to review and discuss the proposed mathematics standards. Members of the Georgia Department of Education provided a welcome and overview of the standards review process, structure of standards, key themes, response to feedback, and summary of changes for each grade band and course. Committee members were provided draft recommendations from the teacher working committees to review. Members of the Academic Review Committee shared first impressions, clarifying questions, feedback on clarity and coherence for all stakeholders, and additional comments for consideration.

EXECUTIVE SUMMARY

Several themes emerged from the feedback shared in the committee discussion. Overall, the committee indicated that the instructional supports promote understanding and alignment. Members of the committee indicated the unpacking of the key competency/standard helps to scaffold the learning for teachers and will help with providing intervention support. A district leader indicated, ***“Teachers need and will greatly appreciate the support. The evidence of student learning is impressive and can help with ensuring students are completing aligned assignments.”*** Committee members felt the statements paired with strategies and examples will help both stakeholders and new teachers who may struggle with understanding the scope of the standards.

The committee noted that the big ideas are consistent across all grade levels, including through high school. ***“Consistency is a plus for the state of Georgia with student learning,”*** noted one committee member. The big ideas provide a snapshot for educators and stakeholders to understand the main features of the standards. These big ideas also connect to the SAT, PSAT, ACT, and other standardized assessment programs. Starting statistical reasoning early is a great way to begin the foundation of understanding, representing, and using data. It is particularly relevant given the misinterpretation of data we sometimes see in the media.

A principal on the committee indicated, ***“For teachers, the progression is very helpful for them to see how the mathematical concepts grow from K-5. Nice job! Also, the standards are understandable for new and veteran teachers.”*** Another committee member indicated, ***“This vertical alignment is a great tool for all stakeholders.”*** One district leader noted, ***“It appears that the standards have maintained several concepts that are real world driven that help our students to see the world and careers such as the application of fractions, functional reasoning, the unit circle, statistics, and proportional reasoning. Such careers in aerospace, engineering, and politics can be used to apply the key competencies into meaningful strong instruction.”*** Another committee member indicated, ***“Patterns is a great addition; this leads to algebraic thinking in middle school.”***



Committee members discussed the importance of using precise and consistent academic language throughout the grade levels. The committee members recognized the efforts made by the teacher working committees to use accessible language that provides clarity for all stakeholders. Another committee member noted the importance of mathematics terminology being consistent throughout the grade levels. The committee member specifically noted the importance of acknowledging the accessible language for multiple stakeholders, and further indicated that in the implementation of these standards, precision of language is still important: ***“Diminishing the importance of math language and watering down this language for the sake of clarity opens the opportunity for misconceptions to be developed and could become an equity issue.”*** The teacher working committees ensured that terminology and examples are included for teachers under the Evidence of Student Learning column. The Evidence of Student Learning defines the skill level, terminology, and developmental level and the strategies and methods provide guidance for teachers on depth of knowledge. Overall, the committee appreciated the hard work of the teachers to maintain precision in the academic language while also ensuring that the language was accessible for all stakeholders. One leader indicated, ***“The clear and concise language ensures that teachers, students, and parents understand the content and skills to be taught/learned at each grade level.”***

Several committee members indicated teacher professional learning should emphasize clear and precise mathematical language to ensure that students are exposed to appropriate mathematics terminology. This avoids potential equity issues and creates consistency across grade levels, especially when looking vertically through progressions beyond elementary school. It will be important for teachers to dive into the evidence of student learning to make sense of the language of the standards and learning expectations. This will help teachers unpack the mathematics language that may not be explicit in the standards and learning objectives but are critically important for understanding.

The alignment to GELDS was indicated as a strong addition to the standards. ***“We have a strong Pre-K program in our district, so hearing and reviewing the alignment will continue to support our program as the students transition to kindergarten. KUDOS!!!”***

The committee discussed the amount of content presented at each grade level. The committee indicated the structure of the expectations, which provides a learning progression of concepts and skills, will help teachers prioritize learning for students. The Learning Progressions provide a clear K-12 alignment that will be a valuable resource for teachers to identify gaps in learning, students' progress and identify areas of need to provide interventions and differentiate instruction. One committee member indicated that there may be initial ***“concern with the amount of content presented at each grade level”*** and teachers will need support with clustering the concepts together. The committee members saw value in the organization of the expectations under each key



competency/standard, as they provide a breakdown or unpacking of the key competency/standard. Committee members noted a significant reduction in the number of standards included at each grade level. One committee member stated, ***“The document ‘unpacks’ the standards for educators taking the guesswork out of content to be taught and the levels of expectation.”*** Another committee member expressed that the new middle school standards offer more of a balance of concepts for each grade level. Additionally, the committee agreed with the recommendation from the teacher working committees to move to one pathway of mathematics courses in high school.

The committee indicated the importance of mathematical modeling and the mathematical practices. It was noted that these practices should be intertwined with professional learning. The committee members indicated the mathematical practices are so important. One committee member said, ***“I am so glad they stayed in the revision. It would be like having science without the Habits of Mind.”***

Another committee member indicated, ***“DO NOT dismiss the importance of the Mathematical Practices. The practices are the behaviors that we must continue to focus on while teaching the standards. They help to ensure our students are prepared to communicate their learning and demonstrate evidence. The standards paired with the practices are similar in other content areas and in the real world.”*** Committee members urged that mathematical practices, such as ***“Attend to precision”*** are practices that are critical in real-world fields, such as banking, construction, medical field, etc.

The committee members also shared suggestions for next steps as it relates to professional learning and assessment development. ***“Professional learning can focus on developing resources, best practices, and balancing procedural and conceptual instruction to promote understanding and student success. Ongoing effective professional learning is the foundation of teaching and learning.”***



Academic Review Committee Feedback

January 12, 2021

The academic review committee members provided detailed feedback and comments to the Georgia Department of Education. The feedback is included in the tables below organized by question and grade band.

What do you like best about the proposed standards revision?

K-5

"I like the Big Ideas. This grounds what students should be learning."
"That students will have the opportunity to be exposed to greater depth of concepts."
"Clear alignment K-12"
"The Learning Progressions are clean, clear understanding of what each student needs to learn and clear alignment of K-12"
"The learning progressions are clear and understandable for all stakeholders."
"More in-depth data and statistical reasoning focused on asking questions, investigating and analyzing data in kindergarten"
"Focus on coherence through progressional thinking."
"The importance of representation in fractional reasoning. Many students struggle in middle school because they were taught rules and procedures with fractions."
"The detail that was presented makes it easy for anyone to follow."
"Great job of reducing the number of standards."
"Mathematical modeling fits in for all learners-EL, SPED, STEM, Gifted"
"The reduced number of standards is a plus for teachers."
"I love that Math Modeling is everywhere!"
"The Progressions K-12 are incredibly useful for teachers. I like how the progressions transition smoothly from K-5 to 5-6 (middle school)."



“Emphasis on mathematical reasoning in general and statistical reasoning specifically. This is not addressed well in current standards.”

“Teachers need to know more than just what they teach for math in their grade level. The vertical progressions provide a scaffold for teachers to know what students learn before and after their current grade level.”

“The strong emphasis on “why.” Getting ahead of the question that students ask, “Why are we learning this?” Mathematical Modeling is a key to this!”

6-8

“I’m very impressed with the ways in which the new standards knit together the conceptual families of modern mathematics. I think this will help teacher and learner much more easily understand how ideas fit together.”

“I was very impressed to see the careful development of ideas in all of the strands... especially the Statistical Reasoning strand.”

“The new middle-school standards now play an intentional role in transitioning students from foundational ideas to the greater formality of HS in more than algebra.”

“Data and statistical reasoning-good overview to prepare students to see the overall umbrella and then break it down in the middle school.”

High School

“Maintained big ideas, kept/protected concepts (such as unit circle) that might be controversial to some. They are SAT and therefore NEED it before Pre-Calculus.”

“Great job reducing the number of standards overall”

“The progressions are accessible to parents and teachers at different grade levels (those who might be not be versed in advanced math terms).”

“Carefully aligned progression of big ideas from K through HS”

“Care to prepare students for ALL the mathematical journeys they may need in the future. Great preparation for students who go on to college.”



“The Mathematical Practices focus is an intentional strategy to improve the way in which students understand and communicate mathematically.”
“Like the heavy presence of statistical reasoning throughout all courses. Will increase the math analytical skills of students, without them even realizing it.”
“Love that the number of standards was reduced, more clear and concise”
“Breakdown of standards into big ideas”
“Clearer focus on applications through mathematical modeling.”
“Appreciate that the number of standards is reduced; like the progressions”
“Like the progressions and the evidence of student learning, more organized, clearer progression”
“Like the real-life connections”

What are your first impressions?

K-5

“The format will help teachers focus on the appropriate content on the developmental level of their students.”
“Quality work from teachers”
“Educators and curriculum experts are clearly excited about the benefits of the proposed updates”
“Great job!”
“It is obvious that these standards were written by current classroom teachers and teacher leaders with a strong focus on putting students’ educational needs first.”
“I applaud the expectations and evidence of student thinking. This provides clarification and gives teachers intervention support.”
“My first impressions were... I can see where the students will learn everything. It does seem like a lot of information just at a glance but when you look at the details it is easy to see the progressions.”

6-8

“Great coherency from the elementary to the middle school with numeracy. Progressions will definitely help out teachers from the elementary to middle school.”

“The strategies and methods provide needed guidance for teachers on depth of learning.”

High School

“Evidence of learning helps the teacher focus, and helps the parents that ‘work’ matches the ‘standard’”

“Mathematical modeling is a great way to apply real-life. Mathematical modeling can help when identifying students for the gifted program, allows students to exhibit their competencies, closes a gap”

“Much more thoroughly prepares students for various mathematics pathways without weakening any expectations.”

“Clean, clear

The progressions allow parents and students to better understand WHAT they’re learning and WHY (i.e., where it’s going).

Gives teachers a glance into what students will be learning a few years from now. They can create a plan.”

“The revisions are teacher and parent friendly, without reducing the rigor.”

“Business and industry representatives will be able to understand the standards. Less room for interpretation about what we want the students to know.”

“The thought and logic process BEHIND the expression”

“Teachers didn’t always know how deep to go into a topic, and how far was too far; especially helpful for newer teachers; Being able to look ‘back’ and see where certain topics were introduced should’ve been mastered”



Are there any clarifying questions that you have?

K-HS

"How will implementation impact students who have been enrolled under the current standards? Is there a transition plan or will recommendations be offered?"

"Although the number of standards and expectations/elements were reduced at grade levels, the number of standards and the amount of content to be taught in the number of actual teaching days (less the interruptions and testing) may be difficult for students to master the skills. Are there standards that need more focus than other standards? Skills that should be emphasized more at specific grade levels? (Identifying key standards would be helpful in planning instruction to address learning gaps resulting from the COVID pandemic.)"

"None"

How do the content statements provide clarity and coherence for all stakeholders?

K-5

"It allows all stakeholders to have a clear understanding of the learning progressions from K-12 and the expectations from all students at each grade level."

"It helps to remove the gray area of standards that tend to be interpreted in different ways by educators. This clarity will help teachers across the state understand and better implement these standards with equity."

"This document appears to offer great clarity. As a parent I can see what my students should be learning and what they should be doing to achieve the learning goals."

6-8

"Taking out the jargon will really help with all stakeholders who view the standards."

High School

"The progressions will provide schools/districts about what "acceleration" looks like. Levels the playing field (leveling-up) for all students. Helps with an equity issue. Helps teachers see where each individual student is on the progression, where they should be, and how far they need to go."

"Again, there is clarity about what is meant by communicating mathematical concepts effectively in the real world."



Additional Comments for Consideration

K-5

“Helping the public understand how students will continue to be exposed to key ideas (despite a substantial reduction in the number of standards) will be beneficial for parents/stakeholders.”

“Make sure teachers have a clear understanding that students need to be held to a high standard but at the same time these students need to understand the learning progression.”

“Professional Development key is very important. That will be the ‘selling point’ for many.”

6-8

“Professional Development has to be a selling point for these standards. The easy-to-read standards is a selling point but the PL behind this is the key.”

High School

“Ensure that assessment items match the revisions”

“PL centered around mathematical modeling and mathematical practices- these are the ways students show what they know”

FUTURE CONSIDERATIONS AND NEXT STEPS

The committee recommended that next steps include professional learning for leaders and teachers to ensure effective implementation of the standards. They suggested a heavy emphasis on helping teachers understand the intent and rigor of the standards and providing instructional support to assist them with implementing these new standards with students.

Also, a common theme was related to concerns around the alignment of assessments to the new standards. Several committee members stressed the importance of ensuring that the assessments of the future align with the standards. There were suggestions to include teachers from the revision teams to also work on assessment revision teams.

