

## Description of Mathematics Programs

A foundation of the Dana Center/Agile Mind mathematics programs is this principle: that all students, regardless of their life circumstances, need and deserve access to challenging curricula every day, and that all teachers need and deserve tools and data that help them address the changing demands of the accountability landscape and the varied experiences their students bring.

### Rigorous curricula enriched by simulations, animations, and multiple representations of central concepts

Our programs appear in a “blended” format, meaning that some essential materials are provided online and others in print. A blended format enables us to enrich our programs with interactive animations and simulations and extended explorations that deepen student understanding of central concepts and allow teachers to easily represent concepts that might otherwise be difficult to teach. Program materials are shared by teacher and students during class and then, extending learning time, used by students outside of class to reinforce their instructional experience.



### Development of concepts to reflect the rigor of next-generation standards

A deep and authentic command of mathematics is reflected in three aspects of learning: conceptual mastery, procedural skill and fluency, and application — or the ability to correctly apply mathematics in different situations. Throughout the lessons, homework, and formal assessments, students work on rich tasks that ensure their learning reflects the rigor of the standards. Lessons are designed to support the development of deep conceptual understanding, and the use of multiple representations supports differentiation for diverse learners. Strategic, deliberate practice and review — supported through print materials and online practice and assessment — enable students to attain the fluencies and procedural skills required by the standards. Throughout the programs, students have opportunities to apply the mathematics they are learning to multiple real-world situations and contexts.

Our programs equip teachers to enact a curriculum every day, for every student, in every class; to enable students to take responsibility for their own learning; to intensify interactions between teachers and learners in critical competency subjects; and to use data to inform these processes. We work to first make the most crucial big ideas transparent to teacher and learner and then to sequence them in such a way that students are able to build their understanding by making connections among and across those ideas. Integrated into the syllabus are strategies and supports indicated by research to be most effective for student learning.

### **Emphasis on problem solving and modeling**

Through problem solving and modeling approaches, our programs require students to engage with the mathematics and draw on their existing knowledge to build new understandings. Learners are supported through embedded questions and prompts to help them get started on new activities, maintain cognitive engagement, focus on key ideas and relationships, persist productively, and internalize and engage in the Standards for Mathematical Practice.

### **Supports for academic literacy**

Research on how literacy and language issues impact learning in mathematics and how to use simple strategies and tools for language and literacy development to support content learning for preadolescents and adolescents has expanded substantially in the past decade. Our programs apply this research to help students build essential academic vocabulary, comprehend and analyze key elements of mathematics problems, explicitly connect different representations of mathematical situations, and reflect upon and communicate their understandings.

### **Comprehensive tools for formative assessment, review, practice, homework, and test preparation**

Our programs contain comprehensive formative assessment resources that provide learners and their teachers with regular, targeted feedback to help them monitor progress, address sources of confusion, and build on students' mathematical strengths. Lessons provide multiple means for students to communicate their thinking, and questions and prompts in both student and teacher materials help teachers probe students' understanding and link responses to suggested next steps in instruction. Previous concepts are woven into on-grade-level content “just in time” for students to review and apply them in service of new learning—saving weeks of instructional time that can be lost to review at the beginning of each school year.

Embedded in each topic are four practice and assessment components, three of which are automatically graded. They contain next-generation items designed to engage students and to capture more authentic evidence of the progress of learning. When appropriate, hints are available to help students organize their thinking, and students get multiple tries to answer items correctly. The fourth component, *Constructed response*, includes extended tasks requiring students to connect ideas, justify thinking, and show work.

Consistently working on complex problem-solving opportunities, and on items that involve engaging and interactive visualizations, ensures that students are prepared for questions that they will face on high-stakes exams and in subsequent courses.

Practice opportunities are also available in the print materials. During classroom instruction, students use these to record their thinking, review prerequisite skills, and practice and reinforce their learning. The materials are available for purchase in books and as free printable pdfs accessible from the system.

### **Real-time data and reports on the progress of effort and learning**

Automatic grading of tasks and associated real-time reports help students and teachers focus on effort and progress rather than chasing assignments. Student reports allow learners to monitor their own progress and assume responsibility for their own learning. Teacher reports surface “what now?” questions both for individuals and groups and support use of data to inform differentiation strategies. The data make it convenient for busy educators to know how students performed on each item to identify potential challenge areas that need further instruction or address differences in learning needs early. Powerful graphics pinpoint student progress on assignments and identify which are struggling and

which are thriving. These data equip teachers and leaders to examine instructional efficacy and connect effort with outcomes.

### **Robust teacher supports**

The tools and resources that accompany each topic support teachers as professionals and reward their study. They are designed to equip teachers with strategies for presenting new content in ways that are accessible to all students, as well as to continuously review and repair misconceptions and develop mastery. Every topic is accompanied by detailed advice—built with the support of master educators—on planning each day’s lesson, including strategies for facilitating exploration of key concepts that engage all learners, for grouping students, for scaffolding and deepening student learning, and for differentiating instruction for learners with diverse needs. The scaffolding questions throughout lessons help teachers support struggling learners. Further questions extend students’ conceptual understanding and push at higher Depth of Knowledge indicators. Periodic advice to teachers highlights strategies to build students’ proficiency with the Standards for Mathematical Practice as they develop mathematical understanding.

### **A blended professional support approach to ensure effective program implementation**

Our model of professional development is designed to introduce and sustain high-yield strategies in the use of our programs to increase student engagement, achievement, and persistence in mathematics. Partner schools report significant gains in the number and diversity of students who are leaving high school ready for college and for the contemporary workplace.

To achieve those objectives with partner schools and districts while accommodating the challenges they face – preparation time for teachers, and out-of-class time for professional development, costs for resources – our services leverage next-generation technology and in-person support.

During annual face-to-face professional development Institutes, teachers, coaches, and instructional leaders learn to use and integrate Agile Mind planning, instruction, and assessment resources into their practices, gain experience in collaborating on common lessons and assessments, and learn strategies for ensuring a successful, rigorous learning experience for all students without sacrificing coverage of the syllabus. In addition to Institute attendance, most partner districts receive follow-up sessions during the academic year customized to meet presenting needs of participating faculty and students.

## Evidence of Efficacy as Reported by Districts

Achieving meaningful, lasting improvements in student success requires vision, commitment, and persistence. Yet improving achievement in science, technology, engineering, and mathematics (STEM) has never been more urgent—for individuals, for communities, and for the defense of our nation. There is a wide consensus that the quality of secondary science and mathematics instruction is crucial in preparing students for success, and equipping them for vibrant participation in postsecondary education and the 21st-century workplace.

Since our founding, Agile Mind has worked to provide the highest quality programs, tools, and services to America's middle and high schools. We partner with dedicated educators, schools, and systems to:

- Broaden student access to rigorous mathematics and science experiences
- Transform student engagement, persistence, and high achievement
- Support exemplary, sustainable teaching practices

### Farmington, NM

*Farmington Municipal Schools is a comprehensive school district in New Mexico serving over 11,000 students at 18 schools. More than 50% of students in the district qualify for free and reduced lunch.*

Farmington first enacted Agile Mind's **Algebra I** program as its core curriculum in 2015-2016. In a single academic year, PARCC performance increased dramatically – students achieving a performance level of 3 or higher increased from 37.1% to 52.6%. In addition, the percentage of students meeting or exceeding expectations on PARCC (4 or higher) nearly doubled, increasing from 12.5% to 22.1%, and significantly outpaced the overall performance of students across the state.

