

## Math Teaching and Learning Plan Report March 2021

### **Background:**

The Livermore Valley Joint Unified School District (LVJUSD) mathematics program teaches the California Curriculum Standards for Mathematics providing students the fundamental skills needed to achieve their optimum potential. We endeavor to assist them in developing the ability to understand and apply mathematics to be college and career ready. In the summer of 2019, our District created the Math Action Plan (MAP) as a guidance document to support the focus on the improvement of mathematics at all grade levels. The MAP embraces the LVJUSD Core Values for Teaching and Learning.

### **Status:**

The MAP is built around five key features: 1) Improving student achievement; 2) Enhancing the performance and professionalism of faculty; 3) Analyzing formative assessment and other data; 4) Collaborating with parents/guardians; and 5) Establishing community partnerships. The Plan is arranged into four categories to help direct the work needed to reach our goals in the following areas: Curriculum, Professional Development, Instruction, and Assessment/Other.

### Curriculum:

Crucial to the success of our Plan is the effective implementation of the core curriculum. Currently, we are in the fifth year of *Investigations 3* for our K-5 sites and the fourth year of *Big Ideas* for our secondary sites. As such, teachers have become familiar with the implementation of both curricula. Over the past three years at the elementary level, our goal has been to establish common assessments among the grade levels so that more effective collaboration around data discussions could take place. As of this year, all 2nd through 5th grade teachers are assessing their students using the unit assessments from our K-5 math curriculum program, *Investigations 3*. Thanks to the efforts of our math Teachers on Special Assignment (ToSAs), these unit assessments have been created in our data management system, *Illuminate*, which allows teachers to later pull the data. Quizzes for grades 3-5 have also been developed in *Illuminate*.

In 2019-20, our District purchased instructional materials from *Big Ideas* for our Algebra II and Geometry programs. This has enabled us to have a consistent publisher from grade 6 through Algebra II, which is helpful for both students and our math teachers. Our middle and high school students also have common end-of-course assessments across each grade level and high school math course. Further, the Algebra I final exam is the same for our middle and high school students.

In addition to the core curriculum, our District has invested in supplemental instructional materials that engage, assist, and enrich our students. For the past three years, there has been a push for teachers to embrace the work and professional development from the Silicon Valley Math Initiative (SVMI). These materials allow students to practice applying the skills learned in their math classes. In addition, several administrators and teachers currently attend the associated professional development meetings throughout the year. During 2019-20, several teachers participated in a pilot of online math programs. In 2020-21, our District purchased a district license for *DreamBox*, an online supplemental math program, for use in general education classes in grades K-8 and in Special Day Classes (SDC) in grades K-12. Monthly usage is increasing, and with that increase, more students are on track to meet grade level expectations. As of February 2021, 1st, through 5th grade levels reported each having over 50% of students logged into *Dreambox*. The anecdotal information received so far is that the students are really enjoying the time that they spend each week online in *DreamBox*.

In 2017-18, our District applied for an Alameda County Office of Education (ACOE) grant for work designed to support an effort spanning Pre-K through 3rd grade. The decision was to implement the work of the Early Learning Math Initiative (ELMI) in those grades over a three-year period. The \$10,000 grant was used to support professional development for each teacher in grades Pre-K through 3rd grade. Currently, we are completing the training and implementation at the 2nd grade level. We will meet the three-year goal and complete the training and implementation with 3rd grade in the 2021-22 school year. The ELMI program develops a student's number sense and confidence in math through the use of "Counting Collections" and "Number Talks." The emphasis is on truly understanding number patterns versus just memorizing math facts.

#### Professional Development:

Along with a strong curriculum, it is equally important to have a strong professional development focus. For each of the past four years, our Curriculum Department has deployed the Math ToSAs to work individually, with grade-level teams or site teams to help deliver targeted professional development to teachers. In addition, math professional development opportunities have been offered annually during the October Professional Development Day, as well as during Wednesday Professional Learning meetings. This year, due to the shelter in place and ongoing impact of distance learning, the Math ToSAs have sent guidance to teachers for each unit in Investigations 3 to identify priority standards and assist in pacing and planning. Other supports include the creation of "exit tickets" for grades 3-5 priority units. In addition, the Math ToSAs sent out Math Postcards as a means to share resources and Professional Development opportunities. For the 2020-21 school year, our math focus has been on Math Discourse, math language routines, and Number Talks in order to get our students to

speak mathematically and gain confidence. Math can be considered a language and as such, it is crucial to speak and listen in order to learn any language.

Beginning in the 2020-21 school year, grade-level pacing guides now include the week of Inspirational Math at the beginning of the course. This concept comes from the work of *YouCubed* and Jo Boaler at Stanford University. The weeklong activities are designed to create a math growth mindset within all of our students so that they learn to be more resilient and patient around math concepts. The *YouCubed* Week of Inspirational Math is not a new concept and many of our teachers have embraced the math growth mindset model in their classes.

Also vital to the success of the Math Plan, is the engagement and training of our site administrators. To that end, our Math ToSAs have been presenting targeted math Professional Development at the monthly site administrator meetings. It is crucial that our site administrators have a firm understanding of what they need to see happening in a math class. They have received training in the grade-span curriculum as well as Math Discourse and Number Talks. They have been shown how to disaggregate the data from the common assessments found in *Illuminate*.

Finally, it is important to train the parents/guardians in how they can help develop their child's math success beginning at the earliest of years. To that end, our District continues to offer annual Family Math Nights to the parents/guardians of our TK-2nd grade students. These nights offer training in simple, every day ways that a parent/guardian can support math instruction from going on walks and identifying shapes to talking about numbers in a grocery store. Parents/guardians can also just ask their youngster to sort and count a pile of objects like coins, rocks, silverware, etc. Studies show that developing a strong number sense at a young age will support the child in the later years of math success. For the 2020-21 school year, we offered these Family Counting Nights virtually to each elementary school. Furthermore, our math ToSAs have been submitting articles for our Superintendent's newsletter, "The Grapevine," each month.

#### Instruction:

In order to have a greater impact on learning, the way we instruct our students needs to change. As mentioned above, it is as important to teach a student to read, as it is to teach a student how to do math. The focus is no longer solely on the rote memorization of math facts. The shift is on the importance of understanding how numbers relate to one another, on how to interpret and analyze numbers or data, and be able to draw conclusions. To that end, our Math Plan emphasizes the use of Math Discourse and Number Talks to help students establish math fluency. There is a push to incorporate

the Math Language Routines from Stanford into the teaching practices in our classrooms.

In 2019-20, our District introduced the Advancement via Individual Determination (AVID) program into two elementary schools: Arroyo Seco and Jackson Avenue. AVID provides and promotes strategies that support organization, goal setting, and reading strategies specific to math word problems. Teachers trained in AVID and its philosophies develop strong routines that support equity for all of their students. Over the past two years, the number of AVID trained teachers has grown from the initial seven to more than 35 teachers, with plans this summer to expand that number and extend the reach of AVID beyond elementary schools.

In order for our students to continue to grow in math, they need to be engaged in math daily. Beginning in 2019-20, there was a district-wide commitment made to the expectation that all kindergarten students would receive a minimum of 45 minutes of math instruction per day, and students in grades 1 through 5 were expected to receive 60 minutes of math instruction per day. The pacing guides for each grade level have been adjusted to reflect this amount of daily math instruction. During the COVID-19 pandemic, the pacing guides have been temporarily modified to match the style and duration of instruction.

With regard to high school math instruction, there has been a shift in how math courses are delivered. Originally, with the implementation of the current trimester system, math courses were completed in two trimesters. There were only a few 3-trimester math courses and those were designed for students who were struggling in math and would benefit from a “pre-trimester” course in which students were front-loaded with concepts prior to taking the 2-trimester course. Over time, nearly all math courses devolved into 3-trimester courses, which did not include a pre-trimester support component. Beginning in 2020-21, our high schools have begun to shift back to 2-trimester courses. The goal is to increase the first time pass rate for students taking Algebra. Currently, the first time pass rate is around 74%. As a result, in the shift back to 2-trimester math classes, our high schools are exploring the ability for students to have the opportunity to complete additional math classes within their tenure at high school without having to take summer school courses. This will help increase the percentage of seniors who graduate having completed at least Algebra II or higher, as research shows that students who complete Algebra II or higher are more likely to successfully complete college. Last year, 69% of the seniors in the Class of 2020 completed Algebra II or higher.

### Assessment/Other:

In order to assist in knowing whether the Math Teaching and Learning Plan has been effective at improving the math ability of our students, our District uses several local assessments along with state assessment data (when available). As a result of the 2019-20 Smarter Balanced Assessment Consortium (SBAC) testing being suspended due to the pandemic, we are not able to use State data from last year. However, the SBAC testing for 2020-21 will occur this year and we will review and disaggregate the data when it becomes available.

In the meantime, we need to rely on consistent local data such as EasyCBM math data, middle & high school math grades, common final assessments (secondary), common unit finals, and the Math Diagnostic Testing Protocol (MDTP) math placement assessment given to students in grades 5 & 8.

Beginning in the 2020-21 school year, our District implemented the EasyCBM math assessment designed to be given three times per year (fall, winter, and spring) to students in grades 2 through 8. Due to the COVID-19 pandemic, a decision was made to forego the fall administration of the math assessment, and only conduct the winter and spring assessments of EasyCBM for math. The data for winter has just been entered into Illuminate and we are analyzing and disaggregating the results now. This data will be used to help identify struggling students and offer summer school and other supports.

Another point of data to consider is the number of students who take more than the required number of math credits to graduate from high school. Research suggests that students who successfully complete Algebra II prior to graduation are more likely to be successful in college. The chart below shows the last math course taken by our seniors from the class of 2020. The total number of students who took courses, including Algebra II and above, was 714 students. This indicates that 69% of the graduating class of 2020 met or exceeded this indicator. We will continue working collaboratively with our instructional staff to increase this percentage.

<b>Class of 2020 Highest Math Course Completed</b>	
Course Title	Students Enrolled
Math Academy	1
Algebra 1	114
Consumer Math	42
Geometry	159
Honors Geometry	1
Algebra II	242
Honors Algebra II	5
Precalculus	108
Statistics 1	149
AP Statistics	46
Calculus	22
AP Calculus AB	20
AP Calculus BC	92
IB Mathematical Studies SL	5
IB Mathematics HL 2	2
IB Mathematics SL 1	18
Other math course	5
<b>Grand Total</b>	<b>1,031</b>

**Next Steps:**

Our Math Teaching and Learning Plan included a timeline for activities throughout 2019-20 and 2020-21. In reviewing the items listed on each timeline, nearly 80% were addressed and/or completed in that timeframe. Those that were not addressed were modified, delayed, or redesigned due to the impact of the COVID-19 pandemic. However, as we begin to re-emerge from the pandemic and return to in-person learning, a few of the items will begin to be addressed such as the Math Scavenger Game where students move throughout our community using an app on their cell phones to seek out and solve math questions.

There is a need now to create additional timelines to cover the next three years of math teaching and learning in our District. To that end, our District will continue to engage our teachers, administrators, and community members to solicit input for what to include. There will be a continued focus on work with early learning both in math and in reading. Studies continue to show that getting all students to meet grade level

expectations by third grade will set those students up for academic success in later years. We need to continue our efforts in the following:

- Improve the math abilities of our English learners, Special Education students, Latinx/Hispanic students, and our African American students in the area of mathematics.
- Improve the first time pass rate for Algebra I
- Increase the percentage of our students graduating having completed at least Algebra II and those succeeding in even higher-level mathematics courses.
- Design and offer math courses around data science. This area of math continues to be in high demand among the labor markets.