

ACOE Math Development Center: Supporting AUSD's Math Initiative

Report on AUSD's Math Focus Spanning Grade K to Algebra 1

March 8, 2011

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AUSD Math Initiative

Components:

- Coaching
- 5-day Summer Institute for teachers (SIMI 2 or ACCLAIM)
- Saturday session professional development (2x/year)
- Summer math camp for 4th graders entering 5th grade
- MAA (Math Achievement Academy) support targeting 8th graders who were unsuccessful in Algebra 1
- K-5 administrator presentations and discussion during AUSD Instructional Leadership meetings
- Professional development for K-2 teachers
- Middle school Math Support class

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Component 1: Coaching 2010-2011

- ❖ **Elementary Schools: 3rd, 4th and 5th grade teachers have an ACOE trained Math Coach.**
- ❖ **Middle Schools: 6th, 7th and Algebra 1 math teachers have a math coach. Some support is also provided to middle school Geometry teachers.**
- ❖ **High School: Algebra 1 teachers have a coach.**

Coaches collaborate on lesson planning and provide feedback after classroom visits, demonstrations of model lessons and materials support. Coaches also help by working on and monitoring pacing guides, proofing math benchmarks and creating study guides before assessments.

Elementary School Coaching

2008-2009: Fifteen 4th and 5th grade teachers who attended the SIMI 2 Summer Institute were supported by one coach.

2009-2010: Thirty 4th and 5th teachers who attended the SIMI 2 Summer Institute were supported by two coaches.

2010-2011: ALL AUSD 3rd, 4th and 5th grade teachers are currently supported by 4.5 coaches.

Elementary School Coaching

Positive outcomes from the ACOE Math Initiative based on anecdotal evidence:

- 1. Many elementary teachers who did not have an assigned coach openly expressed a desire to be matched up with one and wanting access to the best practices the coaches were sharing.**
- 2. Information from coaches and professional development was shared during the first two years through grade level planning sessions and demonstration lessons so that often teachers without an assigned coach were using the same instructional practices as their colleagues.**
- 3. K-2 teachers have been requesting coaching support and professional development.**

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Criteria for Program Evaluation

This year AUSD used the following criteria for evaluation of ACOE Math Initiative effectiveness:

- **Growth of elementary school math CST percent proficient over four years.**
- **Growth of grades 2-5 math CST (over four years) percent proficient with focus on 4th and 5th grades where coaching has been most intensive.**
- **Comparison of student scaled score growth whose teachers received coaching and implemented practices or who attended multiple SIMI 2 or ACCLAIM professional development. Growth was analyzed comparing 2009 and 2010 testing and comparing those numbers to growth between 2008-2009.**
- **Middle school math CST growth over 4 years.**
- **Percent proficient by grade for Algebra 1.**
- **Percent of 8th graders taking Algebra 1 and General Math CSTs compared to state and county.**
- **Growth on pre and post tests for students participating in summer programs in AUSD.**

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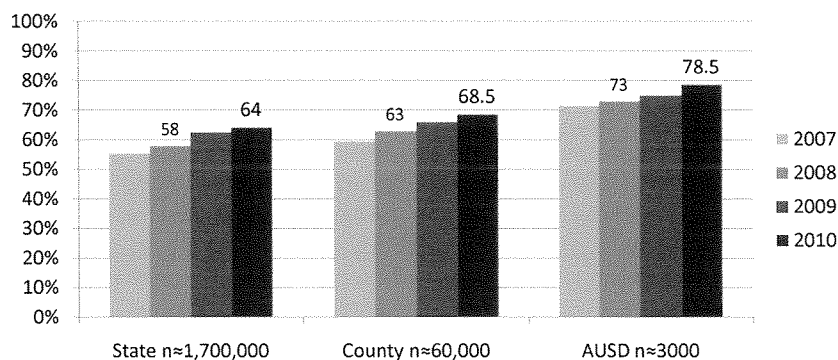
Criteria for Program Evaluation (continued)

Next year AUSD will augment this quantitative data set with a qualitative data set to help AUSD further gauge effectiveness. Added evaluation criteria will include:

- Survey of teachers, administrators and students to elicit their perceptions of AUSD's math initiative, satisfaction levels, and benefits to professional practice and student achievement
- ACOE report to California Department of Education on SIMI 2
- Analysis of math benchmark tests, K through Algebra 1
- Continued analysis of CST scores

ES CST Math 2007-2010: 2nd – 5th Grade

Growth by Grade Level over 4 years

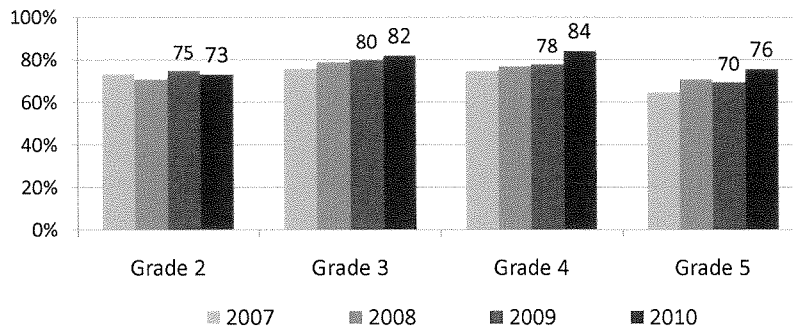


Key Point: AUSD continues to be ahead of the State and County averages in math performance on the CSTs. 2008-2009 was the first year of the SIMI 2 grant.

AUSD CST Standards Math by Grade: 2007-2010

Percent Proficient in Elementary School

n≈700 per year per grade level



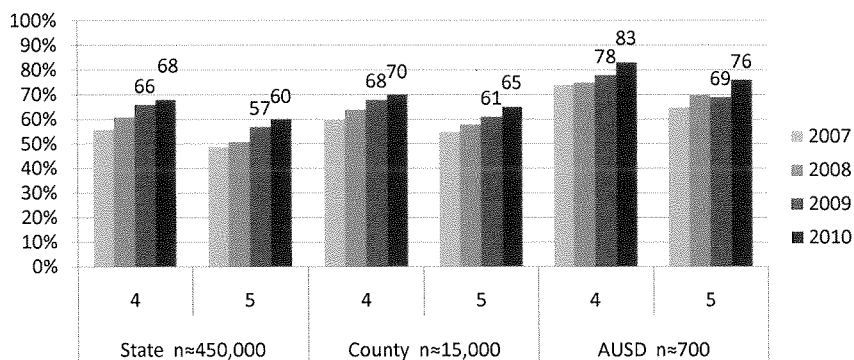
Key Point: Elementary school math CST scores have been on the rise, especially in the upper elementary grades where teachers have received more coaching. An afternoon professional development session was offered by ACOE through ES math coaches to K-2 grade teachers this year, and more coaching support for primary grades would reinforce consistent teaching practice in the district.

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CST Math 2007-2010: 4th & 5th Grades

Comparing Percent Proficient in State, County & AUSD



Key Point: Last year, AUSD began a renewed focus on professional development in math for elementary school, especially for 4th & 5th grade teachers. While at state and county, 4th graders increased proficiency by 2%, AUSD 4th graders improved by 5%. 5th graders improved by 3% at the state and 4% at the county levels, compared to 7% in AUSD.

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Gain in Scaled Points

Average points gained by students whose teachers were involved in either the coaching model last year or participated in ACCLAIM/SIMI conferences 3 or more times in the past 5 years:

- 16.5 point average scaled score gain for students taking CSTs in both 2009 & 2010 whose teachers received coaching for 2009-2010 school year
- 32 point growth when comparing average student gains in scaled scores between 2008-2009 and 2009-2010 for teachers who participated in ACCLAIM or SIMI 2 three or more times in the last five years

Three schools had an increase in average scaled scores of over 20 points. The percent proficient data is included below to generally show how these two measures are related.

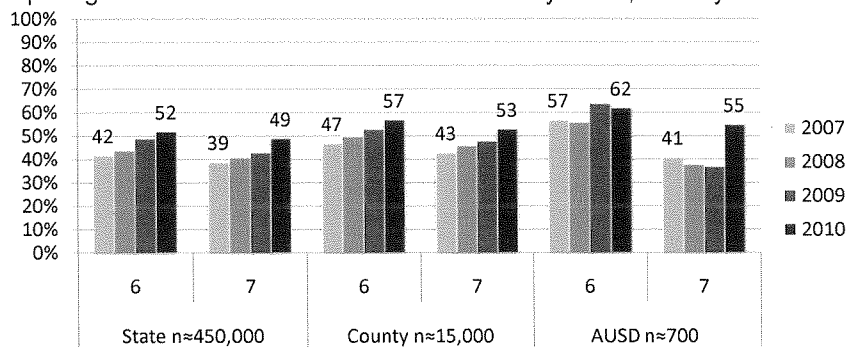
- Earhart: 27 point increase (90% to 93%)
- Haight: 22 points increase (59% to 63%)
- Ruby Bridges: 21 point increase (61% to 65%)

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CST CA Standards Math: Middle School

Comparing 6th and 7th Grade Percent Proficient by State, County & AUSD



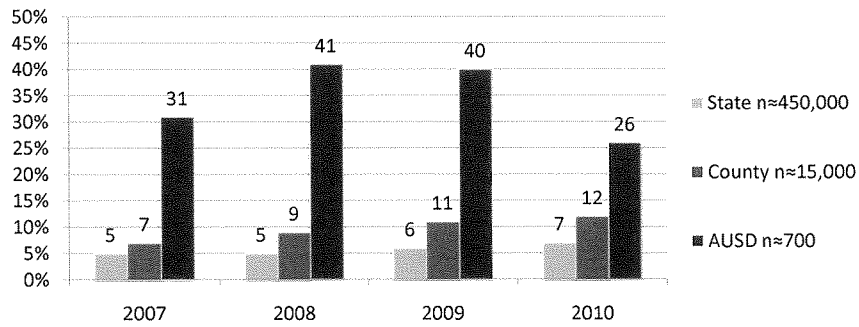
Key Point: AUSD has consistently performed ahead of the state and county on CSTs. Last year, AUSD reinstated coaching for middle school math teachers and showed positive results in 7th grade which historically has had statistically lower scores because so many AUSD 7th graders take Algebra 1. This percent may have increased because fewer 7th graders were accepted into Algebra 1.

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7th Graders taking Algebra 1: Percent of Total

State, County & AUSD Comparison



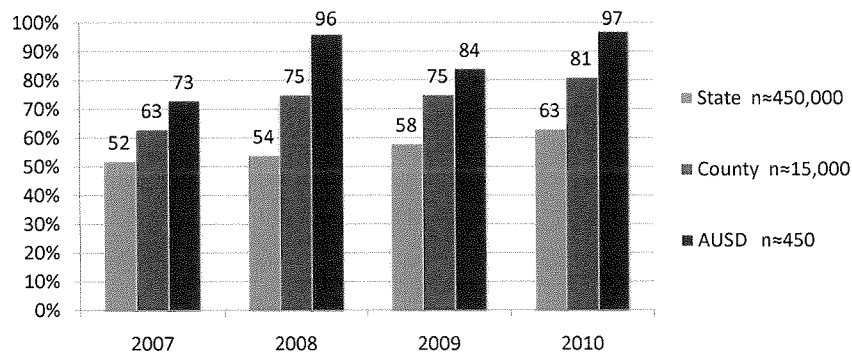
Key Point: AUSD accelerates prepared and motivated 7th graders into Algebra 1 at a much higher rate than is achieved in the state and county. We have tightened up the matrix for 7th grade Algebra 1 placement to make requirements rigorous and ensure success for advanced students not only in Algebra 1 but also in future math classes.

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The Results of SIMI 1 and Articulation

Percentage of 8th Graders taking Algebra 1 CSTs



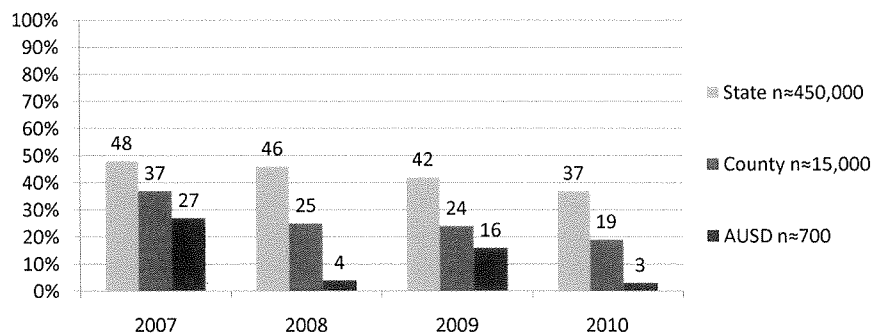
Key Point: AUSD has a far greater percentage of 8th grade students taking Algebra 1 than our state and county counterparts. Last year, all but 3% of AUSD 8th graders not taking Algebra 1 in 7th grade took the course.

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The Results of SIMI 1 and Articulation

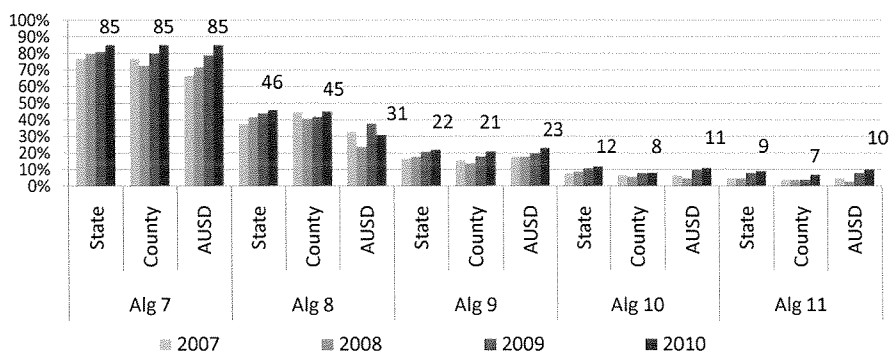
Percent of Total 8th Graders taking CST General Math instead of Algebra 1



Key Point: AUSD has a much lower percentage of 8th grade students who take an alternative class as their grade level standards based math class and do not meet the criteria to take the CST for Algebra 1. AUSD 8th graders taking CST in General Math: 2007 n=155, 2010 n=15.

CST in Algebra by Grade

Percent Proficient from 2007 to 2010



Key Point: AUSD Algebra 1 performance is mostly in step with the state. However, our 8th grade scores are inconsistent and lower than the state or county. This can be partly explained because so many of our strongest 8th grade math students take Geometry instead of Algebra 1.

Coaching and Summer Institute Work

While challenging to control for all variables to get data reflecting true effect of coaching, our focus on coaching and professional development in math has yielded positive growth for students whose teachers have participated, especially in elementary school.

- Some preliminary results show that ES teachers who received coaching averaged 10 point higher gains in student scaled scores over 2 years of CST testing and had fewer negative averages (an average loss) than their peers.
- Growth was highest for teachers who participated in either SIMI 2 or ACCLAIM for multiple years in addition to receiving coaching.
- The number of students who are proficient on the CSTs has risen over the last four years, and is especially evident for those whose teachers have received coaching.

Ongoing commitment is key to ensuring AUSD reaps most benefit from the initiative. Teacher participation over multiple years has resulted in the most student growth. Our focus is thus professional development and coaching.

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Coaching & Summer Institute Work (cont'd)

- AUSD has a far higher number of accelerated 7th grade math students and far fewer 8th grade students taking the General Math test. Much of this is due to work previously done with ACOE and SIMI 1 which focused on middle school teachers developing a multiple measures Math Matrix and articulating best practices from 6th grade through Algebra.
- AUSD 8th Grade Algebra CST scores are at a lower percent proficient than state and county. This is partly because of so many accelerated AUSD 7th graders taking Algebra 1 and moving to Geometry in 8th grade.
- AUSD still has a lot work ahead to ensure that ALL 8th graders taking Algebra are successful the first time they take it and to cut down on the numbers of students repeating at the high school level. Our focus is on improving teaching practice throughout the grades (especially in grades 3-5 and in middle school) and articulating practices between grades to maximize student learning and depth of understanding.

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Coaching & Summer Institute Work (cont'd)

Next Steps:

- Evaluating the math work is complex because teachers who have not received coaching or gone to summer PD are planning and collaborating with teachers who have received additional supports. Also, in AUSD elementary schools, teachers with multiple subject credentials have a wide and variable range of comfort/expertise in teaching math, thus requiring our focus on continuous improvement in this core subject area.
- Augmented evaluation criteria will be established in months ahead for use in 2011-12: this criteria will be brought back to the Board on May 24th.
- Surveys and focus group protocols for both teachers and students will be developed to quantify levels of satisfaction and to identify areas for further support and professional development as part of ongoing efforts to gauge effectiveness and provide feedback for continuous improvement.

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Component 2: 5th Grade Summer Institute

Two one-week summer math camps of incoming 5th graders offered, taught by the SIMI 2 math coach. 47 students total attended.

Students were chosen based on a review of multiple measures (including STAR test results, proficiency grades and math benchmarks). They were identified as needing extra support to be successful in the coming year, including a preview of skills and concepts not covered in 4th grade.

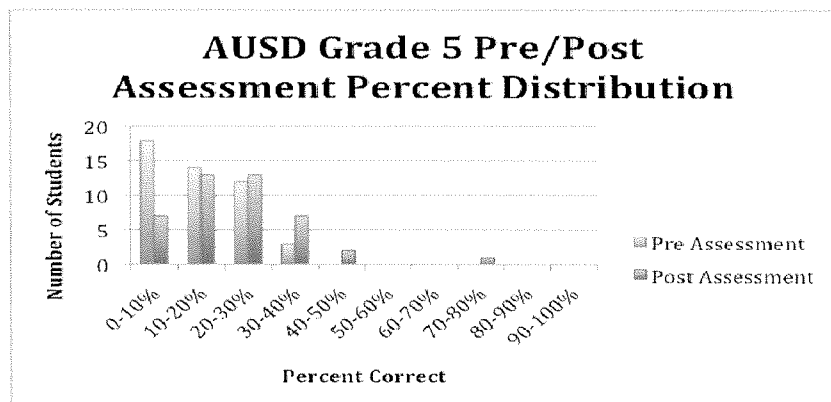
The mathematics content focused on developing fraction sense and operations with fractions as fundamentals for math advancement.

The Mathematics Development Center at ACOE contributed the funding for the AUSD Grade 5 summer 2010 mathematics camps, bringing significant added value to AUSD at no additional cost.

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5th Grade Summer One Week Math Camp



Key Point: Students showed good progress in their ability to work with fractions. More analysis will be done to see if the summer program supported these students in being successful with 5th grade fraction standards.

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MAA (Math Achievement Academy)

- Cohort I was composed of 40 AUSD incoming 9th grade students. They completed the 5-week summer 2010 Algebra Institute.
- These sessions served students who were leaving middle school and entering high school; participants were scheduled to repeat Algebra 1 in 9th grade or identified as needing additional skill development to be successful in math.
- The AUSD MAA program is provided at no cost to the district, providing added value to AUSD.

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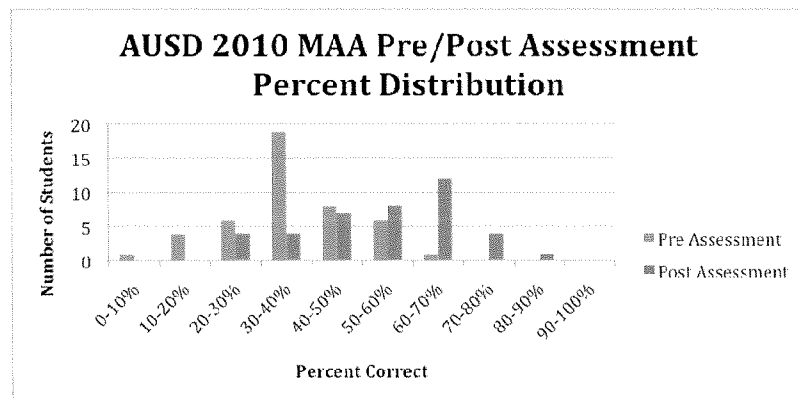
MAA (continued)

Upon CSU East Bay approval, MAA college mentors will provide monthly after-school tutorial support for 2010-11 AUSD MAA participants beginning in March.

Summer 2011 AUSD MAA plan:

- Continue work with Cohort I to provide 4-week Geometry summer institute to continue support
- Recruit up to 50 AUSD MAA Cohort II participants and provide a 4-week Algebra summer institute

Mathematics Achievement Academy



Key Point: Students showed significant gains on the Post Assessment after completing the 5-week MAA. Before the classes, the majority of students answered 30-40% of the questions correctly. After the class, many of the students were at or approaching mastery of crucial Algebra 1 concepts and skills.

Presentations to AUSD Principals

During instructional leadership meetings, Phil Gonsalves and Drew Kravin from ACOE Math Development Center have given presentations to increase administrator understanding of math best practices and the role of coaches in AUSD. Sessions have included the following:

- Content: Phil has led administrators through a review and/or refresh of some foundational math concepts at different grade levels.
- Pedagogy and Best Practices: Phil has demonstrated multiple methods for solving math problems and other best practices.
- Review of Benchmark Test Data: Phil demonstrated best use of test data, including Distribution Summaries shown in the elementary presentation.
- Phil and the AUSD coaches also presented an informational session with Q & A so elementary principals had a better understanding of what to expect with regard to coaching expectations and processes.

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Middle School Math Support Classes

Math Support is an additional math class for students requiring extra help to be successful in grade level standards-based math classes.

- Phil Gonsalves of the ACOE Math Development Center met with middle school principals and Math Support teachers to determine a district-wide grading policy, facilitate focus on key standards at each grade level, determine pacing, review resources and materials, and create formative benchmarks.
- Teachers will have a second follow-up meeting with Phil to continue this work and to collaborate on best practices around key concepts and standards required of math interventions.
 - ACOE MDC has added real benefit by offering this support at no additional cost to the district, thus helping AUSD improve and standardize its middle school math intervention platform.

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Summary

- AUSD students, teachers and administrators continue to benefit from our ongoing focus on mathematics. This work has improved awareness of math grade level standards, has helped teachers with effective and innovative instructional techniques, and has supported a culture of math collaboration and success.
- The heart of the AUSD math initiative is its practitioner-based coaching model that encourages active collaboration between teachers while providing structures to guide the conversation about implementing best practices in mathematics.
- The ACOE Math Development Center model emphasizes that adults increase their understanding of mathematics while incorporating multiple methods for student learning and articulating best practices across grade levels and schools.

BOARD AGENDA ITEM

F-6

Meeting Date: March 8, 2011

Item Title: Evaluation of Alameda Unified School District Math Initiative

Item Type: Information

BACKGROUND: The Alameda Unified School District mathematics initiative aims to develop and strengthen mathematics instruction districtwide. Phil Gonsalves and Drew Kravin are Math Coordinators from Alameda County Office of Education who have helped AUSD realize its theory of action of a practitioner-based math professional development model that integrates coaching and intervention to improve math instruction in AUSD. Tonight's presentation will provide both an overview and an evaluation of the AUSD math initiative as it is currently operating.

Several components make up the presentation's description of the initiative tonight:

- Coaching
- 5-day Summer Institute for teachers (SIMI 2 or ACCLAIM)
- Saturday Session Professional Development (2x/year)
- Summer math camp for 4th graders entering 5th grade
- MAA (Math Achievement Academy) support targeting 8th graders who were unsuccessful in Algebra 1 and who need additional support in mathematics
- K-5 Principal presentations/discussion at Instructional Leadership meetings
- Professional Development for K-2 teachers
- Middle School Math Support Class

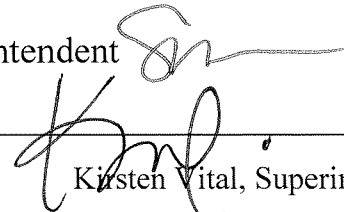
FISCAL IMPLICATIONS: State/Federal Categorical grant funds support this district initiative.

RECOMMENDATION: Receive the report as submitted.

AUSD Guiding Principles: 1. All students have the ability to achieve academic and personal success. 2. Teachers will challenge and support all students to reach their highest academic and personal potential. 3. Administrators have the knowledge, leadership skills and ability to ensure student success. 6. Allocation of funds will support our vision, mission and guiding principles.

Submitted by: Sean McPhetridge, Assistant Superintendent

Approved for Submission to Board of Education


Kirsten Vital, Superintendent