

# LEADERSHIP FOR MATHEMATICS

ULEAD Effectiveness and Innovation  
Working Summits  
Fall 2020 and Spring 2021

October 2021  
ULEAD Education

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# Overview and Introduction

Utah Leading through Effective, Actionable, and Dynamic (ULEAD) Education was established by legislative action during the 2018 General Session of the Utah State Legislature. Sponsors of the bill envisioned the creation of a research clearinghouse and development of accessible electronic resources designed to improve practices in the public schools of the state. An emphasis is placed on innovative, effective, and efficient practices that can be shared and replicated in comparable schools. Further, an understanding that these resources need to be dynamic and actionable is at the heart of the ULEAD Education mission.

This report includes lessons learned from two mathematics summits, individual school profiles with multiple teacher perspectives, and related resources about evidence-based practice. While the ULEAD Education initiative supports K-12 education practices, the *Leadership for Mathematics Summits* focused on grades 3-6 where the state has consistent student achievement data for mathematics.

The team responsible for the summits, this report, and related resources included mathematics specialists and staff from the Utah State Board of Education (USBE), the Utah Education Policy Center at the University of Utah, and the Center for the School of the Future at Utah State University, as well as the Regional Educational Laboratory West.

In fall 2020, the ULEAD Education team and collaborative partners invited educators from diverse high-performing grade-level teams (grades 3-6) to respond to a survey about their instructional practice and then participate in a working summit, *Leadership for Mathematics*. The initial purpose of the summit and the associated data collection was to understand what schools are doing to improve mathematics learning outcomes; provide opportunities for schools to share promising practices, collaborate, and learn from each other; identify and provide access to evidence-based resources; and share these learnings and resources across the state.

This first teacher survey and summit prompted questions about how school and district systems can support mathematics teaching and learning, resulting in the development of a second Leadership for Mathematics virtual summit and survey in spring 2021 with mathematics leaders across the state, including mathematics coordinators and supervisors, and award-winning math teachers.

The ULEAD team also developed these evidence-based practices and resources to support a coherent and systemic K-12 effort:

- *A Guiding Vision for K-12 Mathematics Instruction in Utah (see Appendix A)*
- *A research synthesis of actions states and districts can take to improve mathematics achievement (see Appendix B)*
- *A Mathematics Program Profile Inventory (see Appendix C)*

The development of these resources was guided by USBE staff, bright-spot teachers and mathematics leaders at the summits, survey data from these practitioners, and follow-up questions and consultations. These data, reflective conversations, and resources provide a rich collection of both common and unique factors central to mathematics success.

## Identifying “Bright Spot” Teams and Teachers

ULEAD investigated statewide mathematics achievement data (RISE/SAGE) to identify positive grade-level learning outcomes, which led to identifying over 300 potential bright-spot mathematics teachers in grades 3–6 across the state. The team identified students who were improving in mathematics achievement over time (five-year trend) and/or demonstrated unique improvement for the 2018–19 school year (top 2 percent of grade-level cohorts in the state). Eighty grade-level teams from 77 schools (approximately 250 teachers) were initially identified for their five-year positive trend, and 52 grade-level teams from 50 schools (approximately 150 teachers) were identified for their uniquely positive mathematics improvement for the 2018–19 school year. From this group of nearly 400 teachers, only 84 were teaching at the same school and grade level in the fall of 2020. All 84 were invited to respond to the survey and attend the virtual summit. Thirty-one of these 84 teachers responded to the survey. Twenty of these respondents attended the summit, representing 16 elementary schools.

## Launching Two Working Summits on Elementary Mathematics

The central focus for the summits was to identify and explore the explanatory factors surfaced by the participants that contributed to their improving mathematics achievement. In addition to the ULEAD team members mentioned above, the working summit process also received support from ULEAD Education sponsoring legislators, Utah State Board of Education members, state superintendent of public instruction and staff, Utah governor’s office education coordinator, and ULEAD Education steering committee members.

Prior to both summits, participants responded to surveys seeking information relative to their experiences with math achievement. Convening conversations at the summits were then structured to “excavate” those insights while anchoring discussions around evidence-based practices associated with mathematics achievement. During the summits, survey themes were shared, barriers and solutions were discussed, and participants learned from each other as a group and in thematic breakout sessions.

Additionally, after the summits, invitations were extended for participants to continue collaborating; to provide additional clarifications, reflections, and feedback on this report and the school profiles; and to consider ways to assist similar schools across the state.

# High-Level Themes and Lessons Learned from Surveys

Prior to the first summit in October 2020, ULEAD sent a survey to 84 Utah teachers in grades 3 through 6, who were identified as positive outliers based on improving student test scores over five consecutive years and/or demonstrated unique improvement for the 2018–19 school year on the state standardized math assessment, as described above. Teachers were asked to report on the types of mathematics instructional practices they employed in their classrooms and the systems of support at their school, such as coaches and grade-level professional learning communities.

Collectively, teachers who responded reported that the following practices and processes contributed to student success in mathematics:

- Focusing on teaching the state standards
- Using collaboration, discussion, and concrete activities to engage students in learning
- Implementing the same instructional processes and lesson sequences within a grade-level team
- Using common formative assessments within a grade-level team
- Monitoring student progress to guide the use of interventions
- Collaborating with other teachers—within grade level and across grade levels

Prior to the leadership summit in April 2021, ULEAD sent a survey to mathematics leaders, which was informed by the teachers’ responses, insights, and guidance and the broader context of K–12 mathematics. Leaders were asked to report on system supports for math teaching and learning, including how the math curriculum is provided and supported, what supports are provided for teacher learning, and what roles coaches play.

In regard to curriculum, leaders collectively reported that math curriculum is provided and supported in a range of ways. For example, leaders reported the following:

- A district formally adopts and provides curriculum or
- A school/principal within a district chooses curriculum and teachers select tasks to implement or
- A district develops a curriculum and teachers select tasks to implement

In regard to the role of coaches and other supports provided for teacher learning, many of the leaders reported the following:

- Districts provide clear curriculum guidance to support teachers' practice (e.g., district frameworks, common essential standards, common scope and sequences, pacing guides, and curriculum maps)
- Teacher professional learning supports include: district institutes on specific topics (e.g., mathematical discourse, guided inquiry, high-quality tasks, questioning, place value, fluency), summer professional learning, online courses, math endorsement courses, specific programs, and vendor-provided workshops
- Districts with math coaches provide targeted support to teachers in a variety of ways (e.g. observing lessons, modeling lessons, sharing data and coaching through Professional Learning Communities (PLCs), providing "whisper" coaching, unit planning, and one-on-one coaching)

## Guiding Vision for K–12 Mathematics Education in Utah

The goal of this initiative was to identify practices and resources that could help schools in the state improve math achievement. The following visual, A Guiding Vision for K–12 Mathematics Instruction in Utah, and the associated resources, references, and tools, were developed collaboratively by the ULEAD team, in consultation with USBE. The Guiding Vision, informed by the research base and wisdom of practice, is designed to help facilitate discussions to foster a systematic approach to mathematics achievement in Utah by providing focused attention to four key areas: evidence-based instruction, thoughtful selection of high-quality curriculum with aligned instruction and assessment, multilevel support and intervention systems, and community and family engagement.



The Math Resources page (page 2 of Guiding Vision, Appendix A) aligns with the necessary components for successful literacy instruction identified in the [Leadership for Literacy report](#) released in April 2020 (Instructional Leadership, Instruction and Intervention, Assessment and Feedback, Professional Learning, Supportive Culture). The genesis for the vision and resources documents emerged from the reflective analysis of the content of the most common resources shared by math leaders across the state.

To help support discussions and reflection, a Mathematics Program Profile Inventory (see Appendix C) was developed and supported by REL West’s Research Synthesis: Key Actions for States and Schools to Support K–12 Mathematics Achievement, to assist school and Local Education Agency (LEA) leaders to consider each aspect of the Guiding Vision in their own contexts (see Appendices A and B). These resources—the Guiding Vision, inventory, and research synthesis—can support improvement in K–12 mathematics outcomes. While the bright-spot/positive outlier voices of identified teachers are focused on 3rd through 6th grade mathematics, the input from the identified statewide mathematics leaders, as well as the evidence-based successes in mathematics outcomes across the country, speak to the need for a coherent systemic approach to K–12 mathematics teaching and learning.

## School Profiles

The school profiles featured in this report were based on information from summit artifacts, survey responses, notes, and additional information provided by the participants after the events. While there were many schools represented by teachers participating in the survey and/or summit, the five schools included in this report had more than one teacher participating, which offered a more complete view of the grade-level efforts in mathematics that could be shared with similar schools across the state. ULEAD Education staff, and its partner organizations, analyzed these data to identify themes, conditions, and resources that were central to the schools’ approaches to mathematics instruction. These themes were informed by the elements of—and sub-bullets within—the Guiding Vision for K–12 Mathematics Instruction in Utah.

# School Profiles

**Backman Elementary**

URBAN

Salt Lake City School District | *Principal:* Heather Newell, [heather.newell@slcschools.org](mailto:heather.newell@slcschools.org)  
601 N 1500 W, Salt Lake City, UT 84116 | (801) 578-8100

Grade span:  
PreK through 6th



**Teachers:**

Laleh Ghotbi (4th)  
Kaylie Heier (5th)  
Caitlin Jones (6th)  
Emily Langdorf (5th)

2019–20 Student Demographics

91%

Economically  
Disadvantaged

50%

English  
Learners

20%

Students with  
Disabilities

15%

White

61%

Hispanic

24%

Other

Math Proficiency

Backman (2018–19 Uniquely Positive; .50 or higher)<sup>1</sup>

	4th Grade	5th Grade	6th Grade
2018–2019	.9734	.1611	.2877

Three most important  
factors contributing to the  
math teams’ success

- Commitment to student learning and creating a learning environment that views math through a positive lens
- Staff collaboration focused on the use of student assessment data to inform classroom instruction and intervention strategies
- Teachers’ commitment to improving their own learning around effective math instruction

Evidence- and Strengths-Based  
Instructional Practices and  
Supportive Learning Environments

**Create social learning contexts for problem solving and mathematical explorations**

Backman Elementary’s efforts to strengthen and increase opportunities for engagement for teachers and students has helped them to improve mathematics achievement for students. Through the implementation of Kagan Structures—a set of classroom management structures that support cooperative learning—teachers support students in taking on an increasingly active role in their learning. This active role is evidenced through students collaborating in pairs and in small groups and feeling confident to share how they might arrive at the same conclusion with different problem-solving methods. Teachers prioritize creating a supportive learning environment where students take initiative in their learning and collaborate with each other as they learn.

<sup>1</sup> See the [ULEAD website](#) for an explanation of the Positive Outlier Metric.

## Systems for Professional Learning

### **Provide time and structures for job-embedded professional learning and collaboration**

While teachers at Backman are supported in their autonomy within their individual classrooms, of particular note at Backman is the extent to which teachers collaborate with each other to share their expertise. Whether through regular grade-level team meetings for data discussions and the planning of interventions, or through the sharing of best practices, teachers support each other, and share responsibility for every student, while also respecting each other's autonomy when making decisions that work best for their classrooms. Evidence of Backman teachers' unified approach to meeting their students' needs can be found in the way they utilize their time together. For example, PLC time might be dedicated to reviewing exit tickets or analyzing district interim assessments. In addition, Backman has structured its leadership to ensure ongoing support from math content coaches. At Backman, not only are math content coaches involved in faculty, team lead, and grade-level meetings, but they also provide support and feedback during curriculum planning and student assessment data analysis.

For example, math content coaches support a 6-week planning process with daily objectives and success criteria for every lesson. This support and frequent collaboration ensures that each team member masters the key skills necessary to improve student achievement.

Laleh Ghotbi, 4th Grade:

I love it when my students raise their hands to say, 'Ms. Laleh, I solved the problem different from the way you did it but got the same answer.'

Cedar Ridge Elementary

SUBURBAN

Alpine School District | *Principal:* Kyle Hoopes, [kylehoopes@alpinedistrict.org](mailto:kylehoopes@alpinedistrict.org)  
4501 W Cedar Hills Dr, Cedar Hills, UT 84062 | 801-610-8103

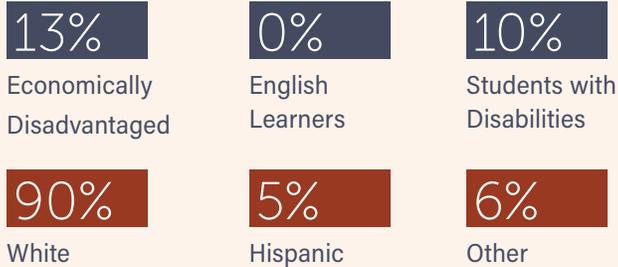
Grade span:  
PreK through 6th



Teachers:

Jean Marie Earl (4th)  
Mary Ellen Jeppson (4th)  
Amanda Spencer (6th)  
Reed Willmore (6th)  
Ashley McDonald (6th)

2019–20 Student Demographics



Math Proficiency

Cedar Ridge (5-Year Positive Metric)<sup>2</sup>

	2015	2016	2017	2018	2019
<b>4th Grade</b>	.1574	.2647	.2251	.0297	.2835
<b>6th Grade</b>	.5944	.0910	.0515	.0563	.5254

Three most important factors contributing to the math teams' success

- A school culture that builds student confidence where students are encouraged to ask questions and learn from mistakes
- A curriculum that promotes student understanding of math concepts in real-world contexts
- Extensive use of both vertical and horizontal teacher collaboration for all aspects of classroom instruction, including preparation of common assessments and sharing best practices

Evidence- and Strengths-Based Instructional Practices and Supportive Learning Environments

**Build upon experiences and knowledge of learners using all types of representations (e.g., numeric, symbolic, graphic, verbal, contextual, and models: pictorial, visual, physical)**

**Pose purposeful questions and facilitate meaningful mathematical discourse**

The teacher teams at Cedar Ridge have an established culture of learning that supports risk-taking in the classroom, builds teacher and student confidence in mathematics through the implementation of the Launch-Explore-Debrief model, and leverages math programs. The Launch-Explore-Debrief model requires that teachers are aware of multiple different strategies for math problem solving in order to serve as an effective facilitator of their students' math understanding and to scaffold students taking ownership of

<sup>2</sup> See the [ULEAD website](#) for an explanation of the Positive Outlier Metric.

their work. Teacher collaboration at Cedar Ridge supports this approach, particularly when teachers are implementing new strategies in the classroom. Teachers aim to strengthen students' foundational knowledge so that they can engage in deep thinking and explain their work and have observed their students' confidence increase as they create models and use words and numbers to describe their thinking.

## Focused, coherent, and rigorous and standards-aligned math content

### **Focus on high-quality, coherent Tier 1 tasks and sequences with rich contexts for problem solving**

Of particular note at Cedar Ridge is the use of math programs not only to build a solid foundation for students, but also to ensure integration with other content areas, such as science or language arts. Teachers described some of the ways in which they integrate math with other content areas by providing the following examples: using origami shapes to demonstrate congruence, symmetry, and transformation; identifying and measuring angles by developing flight plans and maps for a geography lesson; using an ExploreLearning GIZMO STEM simulation to plan cross-country trips in which students must calculate mileage rates,; and learning about space by having students investigate the size and scale of the solar system. The more students are able to apply math to different areas of their understanding, the more their confidence increases as they work to better understand and apply math concepts.

Reed Willmore, 6th Grade:

My bright spot every year is introducing, and then watching students embrace, the concept of 'pictures, words, and numbers.' Teaching students that each problem can tell a story and have a visual representation and can be expressed with an equation or expression is powerful for them. It really helps build their confidence level as they approach new math problems.

# Spotlight on Cedar Ridge

## Using Launch-Explore-Debrief to support student learning

One factor key to their success at Cedar Ridge Elementary School is the implementation of the Launch-Explore-Debrief Model. Used primarily as a differentiation strategy, Launch-Explore-Debrief also works to encourage students to take ownership over their learning as they increase their understanding of how to apply math to real-world problems. Fourth and 6th grade teachers at Cedar Ridge utilize Launch-Explore-Debrief together with concrete activities, all in service of helping students build bridges from what they've previously learned to learning new content.

During the **Launch** phase, students are introduced to a real-world application of the mathematics lesson through a variety of methods, through short videos or field trips to encourage them to connect the lesson to their own experiences. For example, to introduce geometric figures a teacher might begin the Launch phase by introducing students to geometric angles. Students first identify angles around them in order to begin to understand how to classify them, measure them, compare/contrast them, and construct them. In 4th grade, this might begin with walking through their school and finding quadrilaterals (rhombuses, rectangles, and squares) in their school environment. In 6th grade, the Launch phase might begin with students bringing in boxes and discussing how the different boxes are pieced together.

In the **Explore** phase, students are provided with time to work on geometric angles with their peers in strategically grouped small groups or partnerships to further explore, for example, the concepts of symmetry and congruence of angles. To facilitate their exploration, students are provided with a progressively challenging series of tasks, questions, or problems to collaborate on, and they test their strategies to determine which ones worked best. Throughout the exploration phase, the teacher serves as a guide to students, posing questions and encouraging them to demonstrate their understanding, through pictures, words, or numbers, emphasizing the importance of justifying their thinking. To explore geometric angles, a 4th grade teacher might incorporate art and have students create origamis reflective of their favorite quadrilateral shape. A 6th grade teacher might ask students to work together to create a "net" of their boxes, draw models of the boxes, compute the area of each 2D shape, and find the total area of the net.

During the final **Debrief** phase, students come together as a large group to present and discuss their strategies. During this phase, students share their ideas and thinking with their peers, with the teacher asking probing questions and providing clarification on math content when needed. The debrief phase may also include assignments where students write about and reflect upon the strategies they learned or work on additional problems to apply their learning. For example, 4th graders might discuss which quadrilaterals they preferred to work with, explaining why some were more difficult than others. In 6th grade, the Debrief time might be used for groups of students to share and discuss how they found the area of each shape. The whole class would then come up with the algorithm for finding the surface area of a rectangular prism.

Cedar Ridge teachers plan their yearly curriculum map to revisit concepts in different subject areas. For example, teachers teach the size and scale of the solar system when they teach ratios and unit rates, and students build thermal houses to test insulator effectiveness when they are studying surface area, volume, and averages. This integration of math standards creates coherence for students and for teachers.

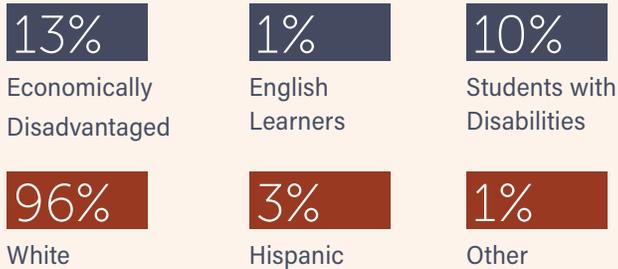
Students take ownership over their learning as they increase their understanding of how to apply math to real-world problems.

Grade span:  
PreK through 5th



Teachers:  
Jamie Pollei (4th)  
Michelle Belliston (4th)

### 2019–20 Student Demographics



### Math Proficiency

Crimson View (2018–19 Uniquely Positive; .50 or higher)<sup>3</sup>

	4th Grade
2018–2019	.7489

### Three most important factors contributing to the math teams’ success

- A shared mindset and school culture where both teachers and students engage in concrete math activities and strategies for learning new math concepts
- Teacher collaboration and safe environments for teachers to learn, implement, and provide each other with feedback around new instructional strategies
- Timely and meaningful communication between families, para-professionals, and administration to support intervention efforts

### High-Quality and Aligned Curriculum, Instruction, and Assessment

#### Provide focused, coherent, and rigorous math content

At Crimson View, teachers look beyond curricular programs to ensure any gaps in student understanding are addressed. Supported by their administrators as they work to ensure “every child is accounted for and given the necessary instruction for their continued success,” teachers supplement with external resources, such as Daily Mountain Math and Rocket Math, while maintaining alignment with the MyMath core curriculum. As a STEM school, Crimson View works hard to instill a love of math, which is facilitated through integration of math into other content areas, so that students are exposed to math in different formats year-round. Students experience a variety of learning strategies and curricular resources and are able to show their work and demonstrate their mastery using different methods.

<sup>3</sup> See the [ULEAD website](#) for an explanation of the Positive Outlier Metric.

## Systems for Data Collection, Monitoring, and Intervention

### **Conduct monitoring and intervention, within Multi-Tiered Systems of Support**

Teachers at Crimson View work to establish vertical alignment with other grade levels, and use weekly PLCs to identify, discuss, and plan student interventions. Teachers record all assessment scores on Google Docs that are shared with the grade level and administration and review these data during weekly PLCs. Intervention groups are made to help students who are struggling with certain concepts, and activities are developed to target those specific needs. Teachers also form groups for students who have mastered the concepts and need enrichment activities.

## Systems for Community Engagement

### **Cultivate a supportive school culture, including parents and caregivers as partners in learning**

Students at Crimson View are aware of the school's high expectations and supported every step of the way by both teaching staff and families through the use of RISE benchmark assessments to practice test-taking and reduce anxiety and through clear communication between teaching staff, students, and families. Any instance in which a student is struggling to meet benchmarks is met with an established system in place wherein teacher staff and families come together to formulate an intervention plan that will reinforce needed skills. This plan often includes the parent working at home with their child to provide one-on-one support on specific skills. Students succeed with support in the home from their families and timely and meaningful interventions through school day intervention blocks and after-school math camps.

Michelle Belliston, 4th Grade:

My bright spot is having a coworker who is committed to math as much as I am, as well as having students work together to solve problems.

George Washington Academy

RURAL

George Washington Academy (Charter School) | *Principal:* Blake Clark, M.Ed.,  
[bclark@gwacademy.org](mailto:bclark@gwacademy.org) | 2277 South 3000 East, St. George, UT | 435-673-2232

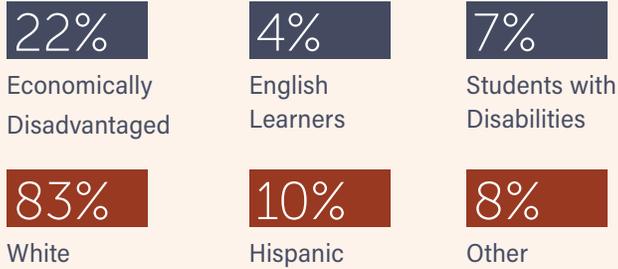
Grade span:  
K through 7th



Teachers:

Patti Marshall (3rd)  
Jocelyn Larkin (3rd)  
Tiana Schoney (3rd)

2019–20 Student Demographics



Math Proficiency

George Washington (5-Year Positive Metric)<sup>4</sup>

	2015	2016	2017	2018	2019
<b>4th Grade</b>	.2614	.0604	.5256	.2666	.0826

Three most important factors contributing to the math teams' success

- Effectively implementing Tier 2 instruction, with clear expectations for students
- Using formative assessments informed by Utah essential standards and unit essential standards
- Encouraging student investment in their learning through data tracking and active engagement with data notebooks

Systems for Data Collection, Monitoring, and Intervention

**Conduct monitoring and intervention, within Multi-Tiered Systems of Support**

George Washington Academy's (GWA) teaching staff credits a strong understanding of their math programs and vigorous Tier 2 processes as crucial to their success in math. Their approach to math relies on planned interventions and strengthening foundations already in place—for example, through the use of math camps for remediation and reteaching, benchmark assessments, and strengthening curricular programs that are aligned with Utah's state standards. Staff encourage students to take ownership of their work, establish individual learning goals, and understand real-world application of math. In addition, GWA uses curricular programs to establish vertical alignment across grade levels, so that gaps in understanding are easily identified and readily addressed and retaught/remediated as necessary. Through the intentional and strategic use of Tier 2 instruction, wherein students

<sup>4</sup> See the [ULEAD website](https://schools.Utah.gov/ULEAD) for an explanation of the Positive Outlier Metric.

are carefully monitored as they work their way up through foundational math lessons around multi-step multiplication, for example, students are supported in meeting their goals. At GWA, teachers create an environment where math is not a subject to be feared, but rather a method to problem solve puzzles in different ways until students reach their “lightbulb” moment.

## Systems for Professional Learning

### **Provide time and structures for job-embedded professional learning and collaboration**

Teachers at GWA feel supported through their administration’s efforts to provide them with the time needed to analyze data to inform decision-making in their classrooms with days built into their schedules, instructional aides for one-on-one interventions, and also time to work in collaboration with each other through multiple PLC and professional learning activities. Such opportunities focus on instructional strategies, assessments and data analysis, peer observations, and sharing best practices.

Jocelyn Larkin, 3rd Grade:

A bright spot in my teaching is I like to have my students take ownership of their learning. When we take an assessment, we graph their progress and write a goal for the next assessment.

Northridge Elementary

URBAN

Alpine School District | *Principal:* John LaBare, [jlabare@alpinedistrict.org](mailto:jlabare@alpinedistrict.org)  
1660 N 50 E, Orem, UT 84057 | 801-610-8114

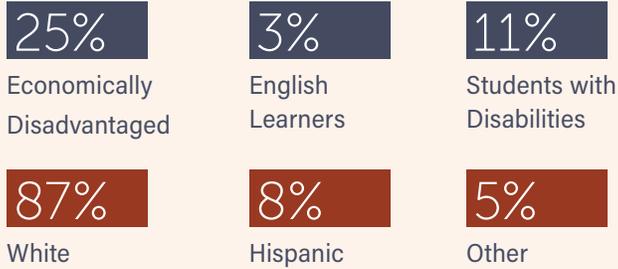
Grade span:  
PreK through 6th



Teachers:

Jeanne Harris (3rd)  
Stephen Bunker (3rd)  
Ruth Iman (3rd)

2019–20 Student Demographics



Math Proficiency

Northridge (2018–19 Uniquely Positive; .50 or higher)<sup>5</sup>

	3rd Grade	4th Grade	5th Grade	6th Grade
2018–19	.6213	(-.1485)	.2030	.0542

Three most important factors contributing to the math teams’ success

- A supportive school culture where teachers learn about effective PLC practices and are supported in their implementation on a weekly basis
- Effective use of small group math instruction time
- Development of instructional plans (e.g., curriculum maps, spiral reviews) through grade-level collaboration

High-Quality and Aligned Curriculum, Instruction, and Assessment

**Provide focused, coherent, and rigorous math content**

Guided by an understanding that depth is better than breadth, Northridge teachers make intentional choices and selections as they implement their math curriculum to facilitate effective application of the Utah state standards, allowing them to hone in on those standards most relevant to their students. For example, the third grade team selected multiplication/division, adding and subtracting within 1,000, and fractions as essential standards.

Northridge engaged in a year-long rigorous spiral review program and developed curriculum maps to help sequence and integrate curriculum. Teachers make extensive use of supplemental, adaptive math resources including Freckle, XtraMath, Big Brains, and Imagine Learning—all in an effort to meet their students’ math needs.

<sup>5</sup> See the [ULEAD website](https://schools.Utah.gov/ULEAD) for an explanation of the Positive Outlier Metric.

In addition to providing a curriculum coach, Northridge leverages its school schedule to support teachers, beginning with grade-level meetings during the summer and utilizing a modified extended-day model throughout the regular academic school year. Within the modified extended-day model, teachers can leverage small group time with other classes as needed for the younger grades depending on a student's need and informed by consistent benchmark testing through SAGE/RISE.

## Systems for Professional Learning

### **Provide time and structures for job-embedded professional learning and collaboration**

Teachers at Northridge are also provided with multiple opportunities for professional learning, such as summer institutes, week-long Core Academies, and attendance at state/national conferences, such as the Utah Council of Teachers of Mathematics and the National Council of Teachers of Mathematics. Northridge's administration's commitment to supporting their teachers also extends to weekly grade-level PLC meetings, with teachers receiving training in PLC practices to implement on a weekly basis, in addition to the opportunity to share best practices both within and across grade levels.

Stephen Bunker, 3rd Grade:

Bright Spot: I post weekly math puzzles on the wall. We do Sudoku, Number Block, Kakooma, and the 24 game. Some are easy and some are challenging.

# Appendices



# Appendix A: A Guiding Vision for K-12 Mathematics Instruction in Utah

## Teachers use evidence- and strengths-based instructional practices and foster supportive learning environments

### Use evidence-based instructional practices:<sup>1</sup>

- » Build upon students' knowledge, skills, and understandings
- » Support fluency with procedures on a foundation of conceptual understanding
- » Build upon experiences and knowledge of learners using all types of representations (e.g., numeric, symbolic, graphic, verbal, contextual, and models: pictorial, visual, physical)
- » Pose purposeful questions and facilitate meaningful mathematical discourse

<sup>1</sup> National Council of Teachers of Mathematics. (2014). Principles to actions: Ensuring mathematical success for all. Reston, VA.

### Foster a supportive learning environment:

- » Create social learning contexts for problem solving and mathematical explorations
- » Promote positive mathematical beliefs, productive struggle, and growth mindsets
- » Explore, appreciate, and honor cultural differences among learners
- » Create equitable opportunities for learning

## Schools and districts provide high-quality and aligned curriculum, instruction, and assessment

- » Provide focused, coherent, and rigorous math content that aligns to: Utah's Math Standards, Core Guides concepts and skills, Major Works, grade-level progressions, and vertical articulations
- » Focus on high-quality, coherent Tier 1 tasks and sequences with rich contexts for problem solving
- » Provide formative assessments with opportunities for reflection and feedback based on strengths and areas for improvement

## Students develop...



Conceptual Understanding



Procedural Fluency



Strategic and Adaptive Mathematical Thinking



Productive Dispositions

## A Guiding Vision for K-12 Mathematics Instruction in Utah

## Community partners support educators and families in math learning and leadership

- » Families engage with students around math at home
- » University research-practice partners provide professional learning and leadership supports
- » Community organizations collaborate to develop programs and experiences focused on math

## USBE, Districts, and Schools support systems for data collection, monitoring, intervention, professional learning, and community engagement

- » Conduct monitoring and intervention, within Multi-Tiered Systems of Support
- » Provide time and structures for job-embedded professional learning and collaboration
- » Build capacity for instructional leadership and coaching
- » Cultivate a supportive school culture, including parents and caregivers as partners in learning

Contributors: USBE Mathematics Specialists, Utah Leading through Effective, Actionable, and Dynamic (ULEAD) Education, Utah Education Policy Center at the University of Utah, the Center for the School of the Future at Utah State University, Regional Educational Laboratory West (April 2021)

## Math Resources



### Math Instruction

- » [Elementary Mathematics Endorsement](#)
- » [National Council of Teachers of Mathematics \(NCTM\) Effective Teaching Practices](#)
- » [Teaching Works High-Leverage Practices](#)
- » [Achieve the Core Instructional Practice Guide](#)
- » WWC Practice Guide: [Teaching Math to Young Children](#)
- » WWC Practice Guide: [Improving Mathematical Problem Solving in Grades 4 Through 8](#)
- » WWC Practice Guide: [Developing Effective Fractions Instruction for Kindergarten Through 8th Grade](#)
- » WWC Practice Guide: [Organizing Instruction and Study to Improve Student Learning](#)
- » WWC Practice Guide: [Teaching Strategies for Improving Algebra Knowledge in Middle and High School Students](#)

### Equity, Culturally Responsive Teaching, and Social-Emotional Learning

- » [Bringing a Culturally Responsive Lens to Math Class](#)
- » [SEL Competencies](#)
- » [Culturally Responsive Teaching: What You Need to Know](#)
- » [A Pathway to Equitable Math Instruction](#)

### Family Engagement in Math

- » Toolkit: [Growth Mindset Kit for Parents](#)
- » Toolkit: [Building an Understanding of Family and Community Engagement](#)
- » Video: [Two Strategies to Help Your Child Learn to Love Math](#)
- » Article and resources: [Count on Families! Engaging Families in Math](#)

### Standards and Curriculum

- » [Utah Core State Standards for Mathematics](#)
- » [Utah Core Guides](#)
- » [Utah Major Works](#)
- » [Utah Core Standards for Mathematics Curricular Resources](#)
- » [Utah's Recommended Instructional Materials System \(RIMS\): Searchable Database](#)
- » [EdReports](#)
- » [Achieve the Core Instructional Materials Evaluation Tool](#)

### Assessment

- » [Utah Formative Assessment Tools](#)
- » [RISE benchmark modules](#)
- » [Grades 1-2 Mathematics Assessment Items](#)
- » [Achieve the Core Mathematics Assessments](#)
- » [Brilliant-Daily Problems](#)
- » [Desmos Classroom Activities](#)
- » [Achieve the Core Student Work Protocol](#)

### Intervention

- » [Utah Multi-Tiered System of Supports](#)
- » [Mathematics Intervention Resources](#)
- » WWC Practice Guide: [Assisting Students Struggling with Mathematics: Intervention in the Elementary Grades](#)

Contributors: USBE Mathematics Specialists, Utah Leading through Effective, Actionable, and Dynamic (ULEAD) Education, Utah Education Policy Center at the University of Utah, the Center for the School of the Future at Utah State University, Regional Educational Laboratory West (April 2021)

# Appendix B: Research in Brief: Recommendations to Support K-8 Mathematics Achievement

This research synthesis addresses the question, “*What are key recommendations that support K–8 mathematics achievement?*” It is based on a review of the literature cited in three REL West Ask A REL reviews<sup>1</sup> as well as research on K–8 mathematics achievement discussed in What Works Clearinghouse (WWC) practice guides, and recommendations from the National Council of Teachers of Mathematics (NCTM, 2014). Additional content is based on literature from searches of ERIC and Google Scholar.<sup>2</sup> The findings are organized into the following five recommendations to support K–12 mathematics achievement:

- Implement and align research-based standards, curriculum, and assessments.
- Provide evidence-based instruction that includes timely feedback to students.
- Meet the instructional needs of *all* students through appropriate interventions.
- Provide professional learning opportunities and ongoing support to teachers.
- Plan for alignment, collaboration, and communication at all levels of the system.

## **Implement and align research-based standards, curriculum, and assessments.**

Improved mathematics achievement is associated with implementation of research-based standards, curriculum, and assessment centered around learning progressions, and supports college and career preparation (Riordan & Noyce, 2001; NCTM, 2014; Takanishi, 2012). Furthermore, alignment between standards, curriculum, and assessment (both within a school and across successive years) is required to establish what students should be learning, and to accurately capture the relationship between what is taught and what is learned (Martone & Sireci, 2009).

<sup>1</sup> Ask A REL is a collaborative reference desk service provided by the 10 Regional Educational Laboratories (RELs) and functions much in the same way as a technical reference library. It provides references, referrals, and brief responses in the form of citations on research-based education questions. The three Ask A REL questions relevant to this brief were: [What does research say about characteristics of high-performing districts in elementary math in the U.S.?](#); [Can you provide research on aligning math assessments with curricula in schools and across schools within districts?](#); and [What does research say about state-level actions to support K–12 student achievement in mathematics?](#) Methods for the Ask A REL reviews are provided at the end of each Ask A REL document.

<sup>2</sup> This included a search of the WWC practice guides related to the key word “mathematics”; ERIC and Google Scholar searches included the following keywords: (“math” or “mathematics”) AND (“align”) AND (“standards” OR “curriculum” OR “assessments”); (“math” or “mathematics”) AND (“curriculum” OR “instruction” OR “intervention”); (“math” or “mathematics”) AND (“professional development” OR “PD”).

**Provide evidence-based instruction that includes timely feedback to students.**

Mathematics teaching and learning experts recommend that K–12 teachers consistently implement rigorous, explicit, and systematic mathematics instructional practices that are likely to influence learning (Ball & Forzani, 2011; Gersten et al., 2009). Examples of these practices include the eight *Teaching Practices* designed by the National Council of Teachers of Mathematics (2014) that are echoed in several WWC practice guides (Frye et al., 2013; Siegler et al., 2010; Star et al., 2015; Woodward et al., 2012). The eight practices are (NCTM, 2014):

- Establish mathematics goals to focus learning
- Implement tasks that promote reasoning and problem solving
- Use and connect mathematical representations
- Facilitate meaningful mathematical discourse
- Pose purposeful questions
- Build procedural fluency from conceptual understanding
- Support productive struggle in learning mathematics
- Elicit and use evidence of student thinking

Students develop mathematical understanding through experience and feedback from teachers, including posing purposeful and deep questions to students (Donovan & Bransford, 2005; Lester, 2007; NCTM, 2014; Pashler et al., 2007). Feedback that is timely and emphasizes areas of mastery and areas for improvement can help students move forward in the direction of their learning goals (McDaniel & Fisher, 1991; NCTM, 2014; Pashler et al., 2007).

**Meet the instructional needs of *all* students through appropriate interventions.**

Despite developments in the field of mathematics education, there are still marked differences in mathematics achievement between some groups of students. This is exemplified in the gap in NAEP scores between White students and their Black and Hispanic peers (NCES, 2019) as well as in the mathematics achievement gap between children from low-income backgrounds and their higher-income peers (Reardon, 2011).

However, mathematics learning is malleable and can be supported through targeted instruction. Studies demonstrate that students from historically underserved groups make achievement gains when educators meet their learning needs through targeted mathematics intervention. For example, a randomized controlled trial with Alaska Native second-grade students found that particular modules of a culturally based curriculum known as Math in a Cultural Context (MCC) resulted in improved mathematical performance for students that

received the program compared to those that did not (Kisker et al., 2012). Similarly, studies of early elementary interventions have shown results for children from low-income families. For example, Dyson and colleagues (2013) completed a kindergarten number sense intervention with low-income children and found positive effects on children’s measures of early numeracy and calculation as compared to the control group. The literature on mathematics interventions for English learners (ELs) is limited, but one randomized controlled trial found a paraphrasing intervention successful for third-grade ELs solving math word problems (Swanson et al., 2019). Specifically, EL children who rephrased relevant information related to the mathematics problem in question had improved accuracy with word problem solving relative to children in the control condition. These effects were stronger for EL children who were not at risk for math learning difficulties as compared to those who were at risk.

All students need access to an evidence-based mathematics curriculum and the instructional supports required to meet their learning goals, regardless of their current proficiency levels. Accurate identification of students at risk for mathematics learning difficulties or disabilities is the first step in addressing individual learning needs. Universal screening is a method utilized in Response to Intervention (RtI) (Gersten et al., 2009) or Multi-Tiered Systems of Support (MTSS) (Fuchs et al., 2021) to identify students who are at risk for or experiencing mathematics learning difficulties or disabilities. Screening results identify those students who require systematic interventional supports beyond what is provided in K–12 general Tier 1 classroom instruction (Gersten et al., 2009). An individual student’s response to any intervention can be observed via progress monitoring to inform subsequent tiered decisionmaking, such as: 1) when to discontinue intervention in favor of Tier 1 evidence-based classroom practices, 2) when to process with or continue with targeted Tier 2 interventional supports, and 3) when to proceed with more intensive measures in Tier 3 (Gersten et al., 2009), which may include placement in special education (Berkeley et al., 2009).<sup>3</sup>

A recently published WWC practice guide on evidence-based elementary mathematics interventions for students with mathematics learning difficulties or disabilities provides six intervention practice recommendations and accompanying “how-to” guides for each suggestion (Fuchs et al., 2021). These recommendations include using systematic instruction, supporting students’ use of mathematical language, using concrete mathematical representations, as well as using number lines, word problems, and timed activities to build fluency. Moreover, “explicit instruction” has been identified as effective for special education (McLeskey et al., 2017; Fuchs et al., 2008; Kroesbergen & Van Luit, 2003).

<sup>3</sup> Special education is defined as “specially designed instruction, at no cost to the parents, to meet the unique needs of a child with a disability...” (Individuals with Disabilities Education Act, 2004).

### **Provide professional learning opportunities and ongoing support to teachers.**

Professional development (PD), training, coaching, and collaboration afford educators the opportunity to improve instructional strategies with the goal of impacting student achievement. A report by the Learning Policy Institute (Darling-Hammond et al., 2017) reviewed studies<sup>4</sup> that examined mathematics PD programs that positively influenced student math outcomes (i.e., Akiba & Liang, 2016; Campbell & Malkus, 2011; Carpenter et al., 1989; Desimone et al., 2013; Kutaka et al., 2017; Newman et al., 2012; Polly et al., 2015; Saxe et al., 2001). Of these six studies, one focused on PD with middle-school math teachers (Akiba & Liang, 2016), one spanned mid-upper elementary to middle school (e.g., Newman et al., 2012, 4th–8th graders), and the remaining focused on elementary school math. The following features were identified as critical features of math-focused PD:

- Focuses on content.
- Incorporates active learning strategies.
- Engages teachers in collaboration.
- Uses models and/or modeling.
- Provides coaching and expert support.
- Includes time for feedback and reflection.
- Is of a sustained duration (Darling-Hammond et al., 2017, p. 23).

Some research demonstrates that coaching teachers can improve math outcomes for students (Campbell & Malkus, 2011). However, attention must be paid to the features of coaching that appear effective as well as for whom they are effective. Campbell and Malkus (2011) found a positive effect of teacher coaching on elementary students' math learning between 3rd and 5th grade. Coaches completed coursework to develop high levels of content expertise, including mathematics pedagogy, and coaching/leadership, and participated as study coaches for two years. The positive impacts of coaching on student mathematics achievement were not evident during the first year but were in the second year as coaches gained experience and as both teachers and administration staff worked together.

### **Alignment, collaboration, and communication at all levels of the system**

Communication and alignment among the different tiers of the education system facilitate a shared understanding of mathematics learning-related goals among teachers, schools, and

<sup>4</sup> Darling-Hammond and colleagues (2017) excluded two of the eight studies from this evaluation due to the lack of descriptors of the PD program, but the studies were included in the overall report due to their reported effectiveness.

districts and state education agencies (Kaufman et al., 2019; Sawyer et al., 2008). For example, the Louisiana Department of Education facilitates communication with leaders and educators across different levels for planning and reporting (Kaufman et al., 2019). In a similar vein, a study of six Southeast states' rollout of the Response to Intervention (RtI) approach, which included mathematics interventions, noted that state leaders recognized the importance of collaboration and a common vision of the initiative shared between the state education department and any external partners (Sawyer et al., 2008). At the district level, Fox Chapel Area School District in Pennsylvania attributes its consistently high levels of student mathematics achievement to alignment of classroom, school and district systems, and clear communication through a multistakeholder strategic plan that relies on collaboration between administrators and teacher leaders (McCommons, 2014).

Similarly, several California districts focused on collaboration and communication upon the adoption of the Common Core State Standards in Mathematics (National Governors Association Center for Best Practice & Council of Chief State School Officers, 2010; Perry et al., 2019). Evaluators found that many of these districts fostered multi-level coherence and alignment by: forming teams composed of staff from the district and school levels to produce a common vision for the standards implementation, and designating school-level leadership to bridge communication between district staff and teachers regarding the new standards (Perry et al., 2019). However, the sheer size of some states and school districts can challenge alignment, collaboration, communication, and leadership (Cobb & Smith, 2008).

### **Future Research**

While there is a body of evidence supporting what we know about mathematics, there is still additional work needed to refine our understanding of the many complex factors driving student math outcomes. The gold standard in research for investigating causal links, randomized controlled trials (RCTs), can be challenging to implement in educational settings at the state and district levels. However, more RCTs are needed to produce the strongest evidence and make definitive claims about what practices, programs, and policies propel changes in student learning. In the absence of rigorous studies, researchers must rely on the best information available. Recent efforts to increase the body of empirical evidence for rigorous educational programs can be seen through initiatives such as Investing in Innovation (i3) (e.g., Boulay et al., 2018) and Education Innovation and Research (EIR) grants. In addition, additional research is needed linking alignment, collaboration, communication, and professional development directly to student mathematics outcomes.

### Limitations of this Brief

This brief is not intended to be a comprehensive review of the full body of literature related to actions states and districts can take to support K–12 mathematics achievement. Instead, it is meant to provide an overview of the evidence base for improving K–12 student mathematics achievement, in response to the three key questions in the three Ask A REL memos.

Furthermore, the research on instructional practices and interventions focused on elementary school mathematics, and the recommendations that concern instructional practices and interventions for elementary school may not be appropriate for other age groups.

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# Appendix C: Mathematics Program Profile Inventory



## Mathematics Program Profile Inventory

The *Mathematics Education Program Profile Inventory* is a list of indicators of four research-based characteristics of districts and schools that support high levels of students’ mathematics achievement.<sup>1</sup> Characteristics of districts and schools include the following: (1) alignment of standards, curriculum, and assessment, (2) evidence-based instruction, (3) instructional needs of all students, and (4) professional learning opportunities.

The purpose of the inventory is to provide a tool for reflection among district and school administrators, coaches, and teachers about what indicators are present, somewhat present, or not present at their district and/or school levels. The process for using the Mathematics Program Profile Inventory is intended to be completed with district and school-level administrators, instructional coaches, and teachers and includes the following four steps:

- Step 1** – Rate each indicator individually as present, somewhat present, or not present. Include notes about evidence for the rating.
- Step 2** – Dialogue about the findings with other educators in the group.
- Step 3** – Identify the strengths/areas to strengthen of the current mathematics program.
- Step 4** – Consider actions to take to strengthen the current mathematics program.

Characteristics of Districts and Schools That Support Students’ Mathematics Achievement	Mark what best reflects your school or district	Evidence of rating:
<b>Alignment of Standards, Curriculum, and Assessment</b>		
The district/school mathematics curriculum and assessments are aligned with Utah Core Standards.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
The district/school has an assessment system in place to identify students’ current proficiency with mathematics concepts and procedures.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
The district/school mathematics curriculum focuses on the development of conceptual understanding and students’ use of mathematical practices.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
The district/school supports a set of aligned assessments to the Utah Core Standards.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
The district/school communicates with schools and teachers about best practices in alignment of standards, curriculum, and assessments.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	

<sup>1</sup> Beliakoff, A. (in press). *Research in brief: Key actions for states and schools to support K–12 mathematics achievement*. Regional Educational Laboratory West at WestEd.



Characteristics of Districts and Schools That Support Students' Mathematics Achievement	Mark what best reflects your school or district	Evidence of rating:
Standards, curriculum, and assessment are coherent and centered around mathematics learning progressions.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
The district/school evaluates the quality of alignment of standards, curriculum, and assessments.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
The district/school provides communication and alignment among the different tiers of the education system.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
<b>Evidence-Based Instruction</b>		
The district/school communicates clear expectations for implementing rigorous, explicit, and systemic mathematics instructional practices that influence student learning.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
Effective instructional routines are evident in math lessons daily.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
Each teacher uses one or more of the following mathematics teaching practices daily during mathematics lessons: <ol style="list-style-type: none"> <li>1. Establish mathematics goals to focus learning</li> <li>2. Implement tasks that promote reasoning and problem solving</li> <li>3. Use and connect mathematical representations</li> <li>4. Facilitate meaningful mathematical discourse</li> <li>5. Pose purposeful questions</li> <li>6. Build procedural fluency from conceptual understanding</li> <li>7. Support productive struggle in learning mathematics</li> <li>8. Elicit and use evidence of student thinking</li> </ol>	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
The district/school communicates clear expectations for how mathematics teachers implement mathematics teaching practices during math lessons.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
Each teacher demonstrates sufficient mathematics content knowledge about mathematics.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	



Characteristics of Districts and Schools That Support Students' Mathematics Achievement	Mark what best reflects your school or district	Evidence of rating:
Each teacher demonstrates understanding of how each student learns the Utah Core Standards for mathematics.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
Each teacher differentiates instruction through scaffolding and support for how a student's mathematics knowledge grows across the grade levels.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
<b>Instructional Needs of All Students</b>		
The district/school uses universal screening in RTI or Multi-Tiered Systems of Support (MTSS) to identify students at risk for learning grade-level mathematics.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
The district/school observes each student's response to intervention via progress monitoring.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
The district/school determines each student's instructional tier level and monitors through progress or other type of monitoring.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
Each teacher uses systematic instruction, the process of breaking down a skill into individual components, to address each student's specific needs.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
Each teacher supports the use of mathematical academic language during math lessons.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
Each teacher uses concrete mathematical representations, such as number lines, and word problems to depict standards, concepts, and skills.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
Each teacher uses explicit instruction to address each student's math needs.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
Each teacher uses targeted interventions with students.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
Student performance is consistently monitored to assess proficiency with grade-level standards.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	



Characteristics of Districts and Schools That Support Students' Mathematics Achievement	Mark what best reflects your school or district	Evidence of rating:
<b>Professional Learning Opportunities</b>		
Each teacher has opportunities for capacity building to increase mathematics content and pedagogical knowledge through highly effective professional learning opportunities.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
Each teacher has continuous support for implementing highly effective instructional strategies through collaboration, coaching, access to resources, and external consultants.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
Each teacher has access to feedback targeted to instruction that is given and shared in a meaningful way.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
The district/school has an established communication link among district leadership, school leadership, partners who provide professional learning, and mathematics educators in the school.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	
Mathematics educators/coaches collaborate with classroom teachers to build capacity for increasing teachers' knowledge or skills.	<input type="checkbox"/> Present <input type="checkbox"/> Somewhat Present <input type="checkbox"/> Not Present <input type="checkbox"/> Not Sure	



# LEADERSHIP FOR MATHEMATICS

ULEAD Effectiveness and Innovation  
Working Summits  
Fall 2020 and Spring 2021