COLORADO
Department of Education

H.B. 23-1231
Improving Mathematics Outcomes
2024 Report

Submitted to:

Senate Education Committees of the Colorado General Assembly

By:

The Colorado Department of Education

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Introduction and Background

The Colorado General Assembly passed House Bill 23-1231 (HB23-1231) in April 2023, and it was signed into law on May 15, 2023. The legislation seeks to improve outcomes in pre-kindergarten (PK) through 12th grade mathematics by implementing supports to accelerate achievement. Through this legislation, Colorado Department of Education (CDE) is charged with empowering educators with resources and practices that foster excellence in teaching mathematics through top-tier materials, supporting high-quality instruction and offering grants and funding opportunities to elevate math education across the state.

CDE must implement several pieces of HB23-1231 beginning in the 2023-2024 school year, namely contracting for training in mathematics for elementary and secondary educators, identifying and publishing evidence-informed curricula, assessments and interventions, providing technical assistance for rural local education agencies, creating a grant program to accelerate learning, amending the existing Ninth-Grade Success Grant Program to prioritize mathematics and adding requirements for licensure endorsements in mathematics.

Per 22-2-146.5(6)(a) C.R.S., this report focuses on two areas of implementation: professional development (training) and technical assistance.

Implementation Activities

Mathematics Professional Development

HB23-1231 requires CDE to make available free, optional trainings in evidence-informed practices in mathematics, including a training specifically designed for elementary school educators and a training specifically designed for secondary school mathematics educators. Each training must include interventions to help students below grade level or struggling in mathematics, children with disabilities and multilingual students. The training will be available to relevant staff of school districts, related administrative units, district charter schools, institute charter schools, boards of cooperative educational services (BOCES) and community-based organizations.

Scope and Objectives of Professional Development

CDE contracted with TNTP (formerly The New Teacher Project), a PK to 12th grade education nonprofit, to develop an online, asynchronous course at no-cost to interested Colorado education providers. The course, named "Powerful Practice: Evidence-Informed Math Teaching," (Powerful Practice) consists of 14 individual modules, each taking about one hour to complete and ending with an assessment. The overall concepts in Powerful Practice are consistent for all participants regardless of their role in the Colorado education system and include topics such as intervention strategies, the impact of task choice for struggling students and the importance of language and use of sentence stems for students who are multilingual learners. Specifically, Table 1 below details the title and objectives of each of the 14 modules.

Table 1: Learning Modules within the Teacher Training1

Module Title	Objectives
How the Brain Learns Math: An Overview	• Unpack what we know about how the brain develops mathematical generalizations and how this science guided the development of the Common Core Standard for Mathematics. • Consider how these shifts in math instruction disrupt narratives about who can learn mathematics and opens doors to multilingual learners and students with learning and thinking differences.
Rigor: Let your standards be your guide	• Explore how the three aspects of rigor – conceptual understanding, procedural skill & fluency and application – allow students to make sense of and be able to use math. • Determine which aspect(s) of rigor are called for in grade-level standards, why and how this should influence instructional decisions.
Procedural Fluency and Conceptual Understanding: Two sides of the same coin	• Unpack how conceptual understanding leads to procedural skill & fluency. • Explore the pitfalls of starting with procedural fluency instead of conceptual understanding.
Fluency: It's more than speed	• Define fluency in math by exploring what it is, what it is not, why it matters and how we can support students' building fluency. • Experience the Contemplate Then Calculate instructional routine and reflect on how this routine can support fluency in your classroom.

Learning Goals: Focus on the math not the trick	• Identify "tricks" in mathematics instruction and explore how replacing these with mathematical generalizations yields deeper learning. • Explore how students develop mathematical generalizations.
Learning Goals: What's language got to do with it?	• Explain how language and mathematics are interdependent. • Unpack how language routines serve to define how language learning supports mathematics learning. • Explore how Math Language Routines can support multilingual learners and students with thinking and learning differences.
Math Tasks: What's in a task?	• Select math tasks that align with the aspect of rigor called for by the standard. • Explore how "low floor/high ceiling" tasks give access to *and* challenge students with diverse linguistic and learning needs.
Representations: Opening the doors to mathematical ideas	• Understand how the five types of representations help multilingual learners, students with thinking and learning differences and *all students* make sense of mathematical concepts. • Experience the Compare and Connect instructional routine and describe how this routine can support students in connecting representations.
Word Problems: The problem with key words	• Discuss the pitfalls of teaching students to identify "key words" in word problems. • Explore strategies for launching a task including the Three Reads instructional routine.
Discourse: Look who's talking now	• Identify strategies and instructional routines, such as Stronger & Clearer Each Time, to increase student voice in the math classroom. • Explain the role math discourse plays in supporting multilingual students and students with thinking and learning differences.
Questioning: Assessing and Advancing Student Understanding	• Understand the role that advancing and assessing questions play in deepening mathematical understanding. • Use question stems to write strategic questions.
Expectations: Power of asset-based language	• Unpack what the research says about how our expectations influence student achievement. • Reflect on how to build an asset-based mathematics culture in our classrooms.
Just in Time Supports: Moving beyond remediation to accelerate learning	• Explore the science behind how to support learners who need it the most. • Identify what just-in-time supports look like for grade-level content.
Putting it all together	• Create a vision for excellent mathematics instruction in your classroom. • Write goals and an action plan to help you move closer to your vision.

Integrated throughout each module, participants can choose examples that demonstrate the overall concepts at an elementary or secondary level. This structure allows for all participants, regardless of their focus on either elementary school, secondary school, or both, to connect the concepts directly to their sphere of influence while maintaining access to applications at all levels.

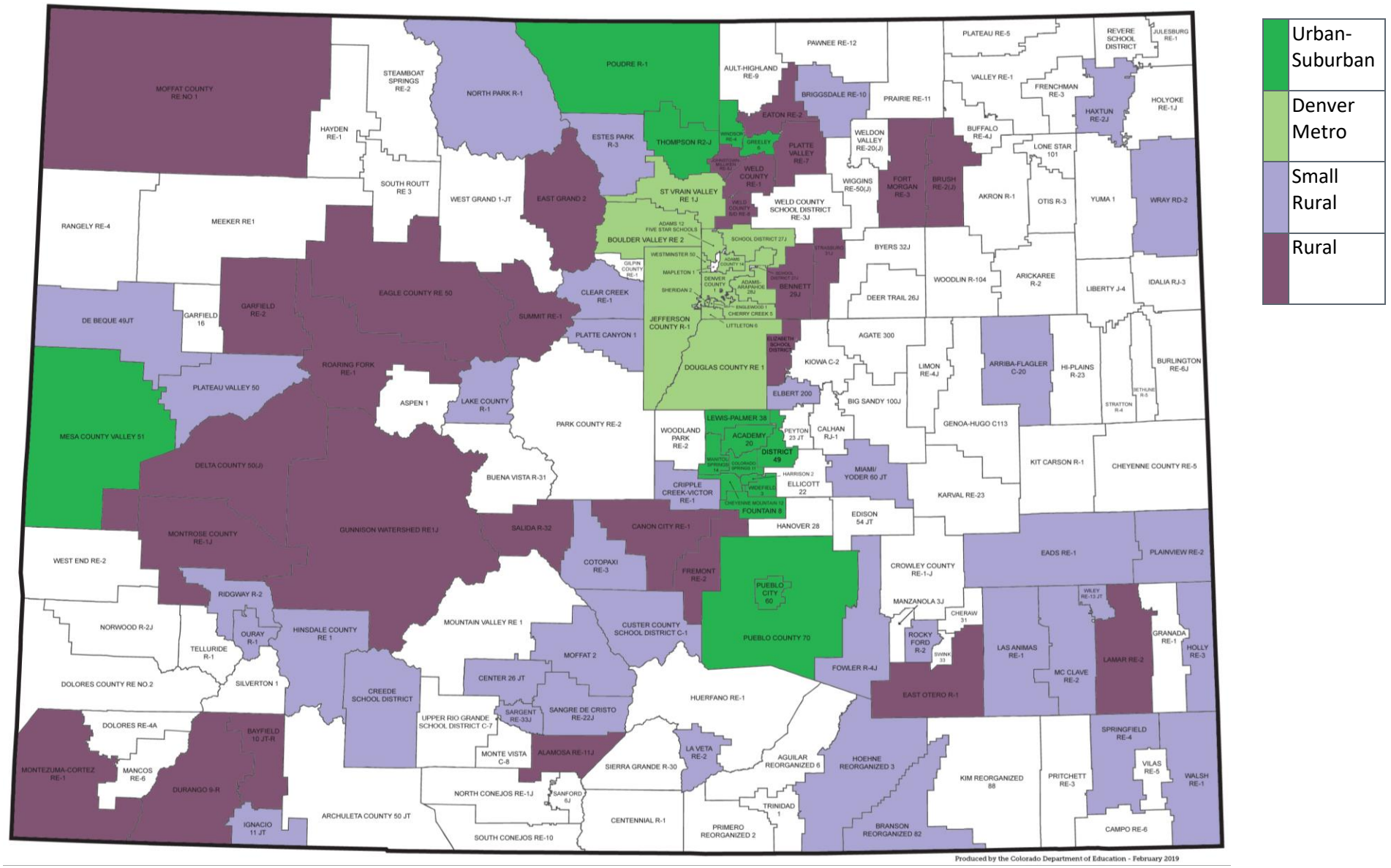
Professional Development Implementation Plan

The professional development will begin with the first cohort on June 4, 2024. All 750 enrollments allotted for the first cohort were filled by the start of May 2024, representing over 90 different LEAs across the state. Participants for the second cohort, set to begin the course in July 2024, began pre-registering immediately after the first cohort filled. All participants will have access to the course for 12 months from their initial log-in.

To encourage participants to further engage in the curriculum material, facilitation guides were created to structure synchronous meeting times for participants to discuss and reflect on their learning. As different groups throughout the state collaborate in these synchronous meetings, CDE plans to host a variety of additional meeting times to help accommodate any individuals who are remote or do not have the opportunity to connect with a group in their local region. Through these discussions, CDE intends for a train-the-trainer model of information dissemination to develop organically through the spread of the concepts where participants in one cohort could lead the facilitation of the next cohort.

Figure 1 (next page) shows the geographic location of the first 750 registrants and the district designation.

Figure 2: Location and District Designations for Registrants in Teacher Training



Mathematics Technical Assistance

Under HB24-1231, CDE must provide technical assistance to local education providers with an emphasis in providing comprehensive support to educators in rural areas upon request. Assistance must include best practices in mathematics, including interventions to assist students below grade level or struggling in mathematics, students with disabilities and multilingual learners. CDE Math Specialists leverage their expertise to collaborate with local education providers to improve math instruction through individualized consultation and action plans. This technical assistance includes direct communication through phone calls and email, connecting educators with relevant resources and offering troubleshooting assistance regarding academic standards in math, interventions and evidence-informed instructional practices. Additionally, the specialists provide in-person professional development upon request, equipping K-12 educators with effective teaching strategies and deeper understanding of mathematical concepts. To ensure professional development addresses the diverse needs and preferences of districts, the math team offers professional development in both in-person and virtual formats. The overarching goal of this tailored approach is to shift system and classroom practices, ultimately improving student learning outcomes. Technical assistance in the 2024-2025 school year will incorporate newly developed CDE resources including the virtual Powerful Practice: Evidence-Informed Math Teaching course, curriculum and assessment resource bank and intervention toolkits. Elevating these additional resources will provide districts and individual educators with valuable tools and ongoing support for their practice.

Technical assistance was provided to school districts and BOCES over the 2023-2024 school year as shown in Table 2.

Table 2: Districts and BOCES Receiving Technical Assistance in Mathematics in 2023-2024 by District Setting and Congressional District

District	Rural or Non-Rural	Congressional District(s)
Academy 20 - 1040 - COLORADO SPRINGS	Non-Rural	5
Adams 12 Five Star Schools - 0020 - THORNTON	Non-Rural	7, 8
Adams-Arapahoe 28J - 0180 – AURORA	Non-Rural	6
Alamosa RE-11J - 0100 - ALAMOSA	Rural	3
Aspen 1 - 2640 - ASPEN	Rural	3
Bayfield 10 JT-R - 1530 – BAYFIELD	Rural	3
Boulder Valley RE 2 - 0480 - BOULDER	Non-Rural	2
Centennial R-1 - 0640 - SAN LUIS	Rural	3
Cherry Creek 5 - 0130 - GREENWOOD VILLAGE	Non-Rural	1, 4, 6
Creede School District - 2010 - CREEDE	Rural	3
Delta County 50(J) - 0870 - DELTA	Rural	3
Denver County 1 - 0880 - DENVER	Non-Rural	1
District 49 - 1110 – FALCON	Non-Rural	3, 5
Dolores RE-4a - 2055 - DOLORES	Rural	3
Douglas County RE 1 - 0900 - CASTLE ROCK	Non-Rural	4
Fountain 8 - 1000 - FOUNTAIN	Non-Rural	5

District	Rural or Non-Rural	Congressional District(s)
Greeley 6 - 3120 - GREELEY	Non-Rural	8
Gunnison Watershed RE1J - 1360 - GUNNISON	Rural	3
Harrison 2 - 0980 - COLORADO SPRINGS	Non-Rural	5
Jefferson County R-1 - 1420 - GOLDEN	Non-Rural	7
Johnstown-Milliken RE-5J - 3110 - MILLIKEN	Rural	8
Lamar RE-2 - 2660 - LAMAR	Rural	4
Littleton 6 - 0140 - LITTLETON	Non-Rural	6
Mesa County Valley 51 - 2000 - GRAND JUNCTION	Non-Rural	3
Moffat 2 - 2800 - MOFFAT	Rural	3
Monte Vista C-8 - 2740 - MONTE VISTA	Rural	3
Mountain Valley RE 1 - 2790 - SAGUACHE	Rural	3
Northeast BOCES - 9040 – HAXTUN	Rural	4
Park (Estes Park) R-3 - 1570 - ESTES PARK	Rural	2
Poudre R-1 - 1550 - FORT COLLINS	Non-Rural	2
Pueblo City 60 - 2690 - PUEBLO	Non-Rural	3
Pueblo County 70 - 2700 - PUEBLO	Non-Rural	3
Salida R-32 - 0500 - SALIDA	Rural	7
Sargent RE-33J - 2750 - MONTE VISTA	Rural	3
School District 27J - 0040 - BRIGHTON	Non-Rural	8
Sierra Grande R-30 - 0740 - BLANCA	Rural	3
South Central BOCES - 9060 - PUEBLO WEST	Rural	3
South Conejos RE-10 - 0580 - ANTONITO	Rural	3
Thompson R2-J - 1560 – LOVELAND	Non-Rural	2, 4, 8
Widefield 3 - 0990 - COLORADO SPRINGS	Non-Rural	5

Figure 2 provides a breakdown of the technical assistance provided in 2023-2024, showing the percentages of each district designation supported out of the total districts served.

Figure 3

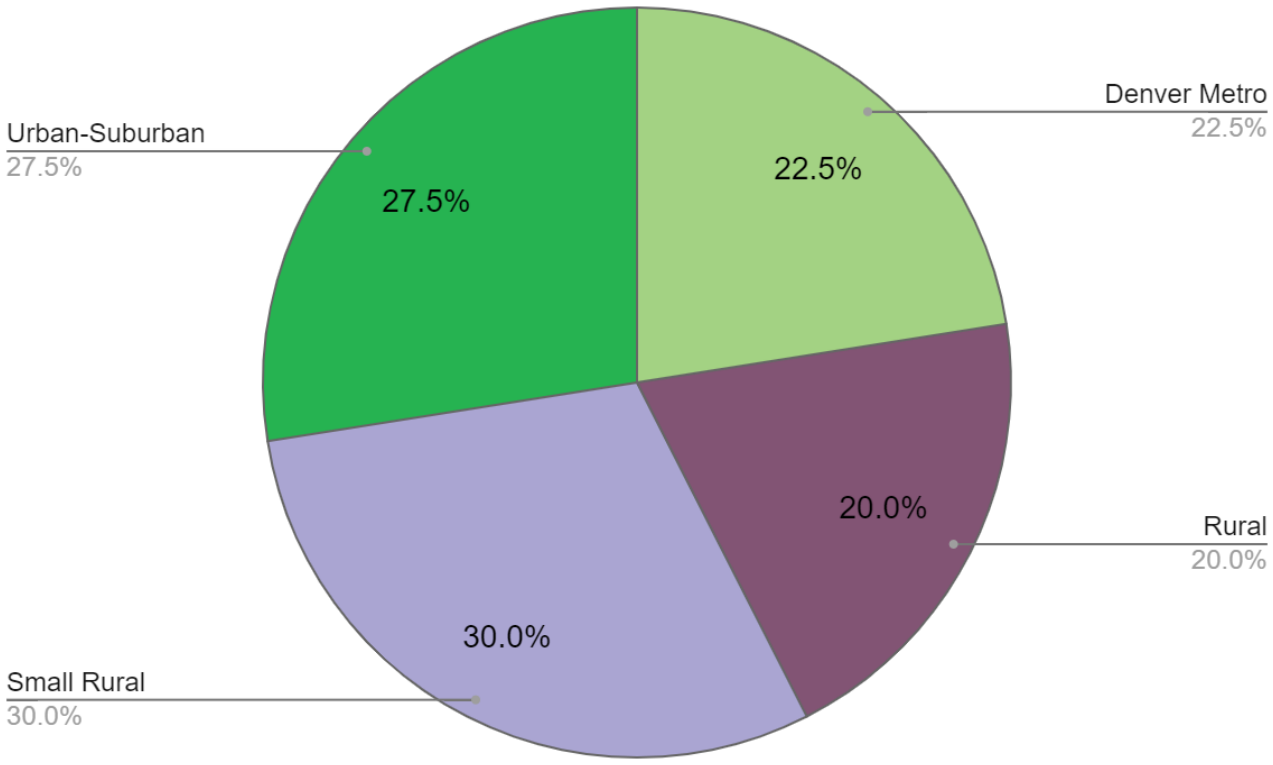
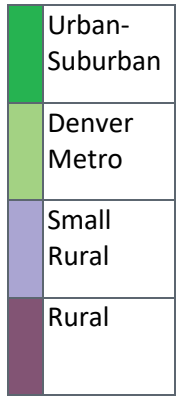
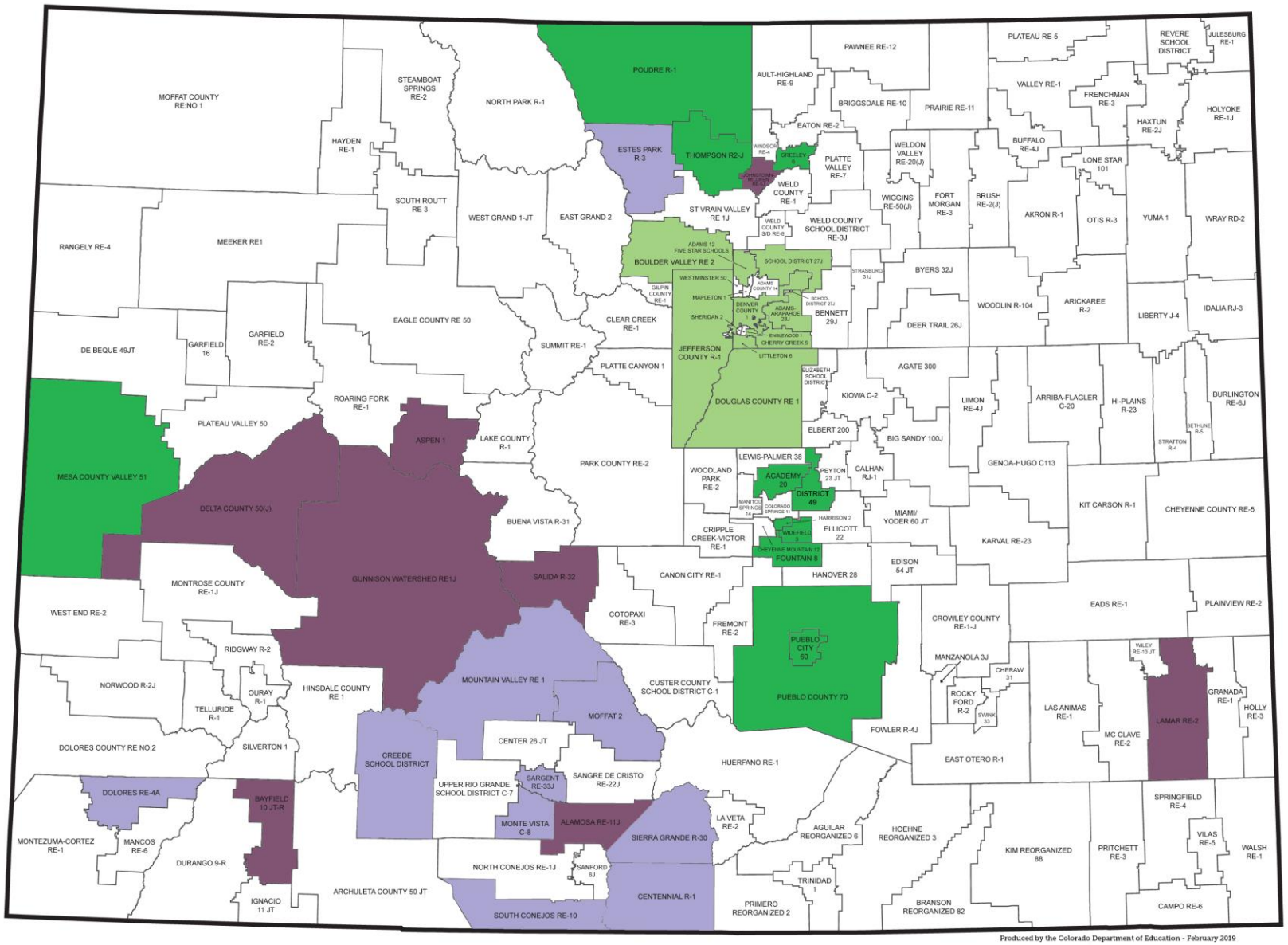


Figure 3 (below) provides the geographic location and district setting for the technical assistance provided in the 2023-2024 school year.

Figure 34: Colorado Department of Education Technical Assistance by District Setting




MOFFAT COUNTY RE:NO 1
STEAMBOAT SPRINGS RE-2
HAYDEN RE-1
NORTH PARK R-1
POUDRE R-1
ESTES PARK R-3
THOMPSON R2-J
AULT-HIGHLAND RE-9
PAWNEE RE-12
PLATEAU RE-5
REVERE SCHOOL DISTRICT
JULESBURG RE-1
BRIGGSDALE RE-10
PRAIRIE RE-11
VALLEY RE-1
FRENCHMAN RE-3
HOLYOKE RE-1J
HAXTUN RE-2J
EATON RE-2
WINDSOR RE-4
GREELEY 6
PLATTE VALLEY RE-7
WELDON VALLEY RE-20(J)
BUFFALO RE-4J
LONE STAR 101
SOUTH ROUTT RE 3
WEST GRAND 1-JT
EAST GRAND 2
WELD COUNTY RE-1
WIGGINS RE-50(J)
FORT MORGAN RE-3
BRUSH RE-2(J)
AKRON R-1
OTIS R-3
YUMA 1
WRAY RD-2
RANGELY RE-4
MEEKER RE1
ST VRAIN VALLEY RE 1J
WELD COUNTY S/D RE-8
WELD COUNTY SCHOOL DISTRICT RE-3J
ADAMS 12 FIVE STAR SCHOOLS
BOULDER VALLEY RE 2
SCHOOL DISTRICT 27J
STRASBURG 31J
BYERS 32J
WESTMINSTER 50
MAPLETON 1
GILPIN COUNTY RE-1
ADAMS COUNTY 14
DENVER COUNTY 1
SHERIDAN 2
ADAMS-ARAPAHOE 28J
BENNETT 29J
SCHOOL DISTRICT 27J
ENGLEWOOD 1
CHERRY CREEK 5
LITTLETON 6
JEFFERSON COUNTY R-1
DEER TRAIL 26J
WOODLIN R-104
ARICKAREE R-2
LIBERTY J-4
IDALIA RJ-3
DE BEQUE 49JT
GARFIELD 16
GARFIELD RE-2
EAGLE COUNTY RE 50
SUMMIT RE-1
CLEAR CREEK RE-1
PLATTE CANYON 1
ELIZABETH SCHOOL DISTRICT
DOUGLAS COUNTY RE 1
AGATE 300
KIOWA C-2
LIMON RE-4J
ARRIBA-FLAGLER C-20
HI-PLAINS R-23
BURLINGTON RE-6J
STRATTON R-4
BETHUNE R-5
ROARING FORK RE-1
PLATEAU VALLEY 50
ASPEN 1
LAKE COUNTY R-1
ELBERT 200
BIG SANDY 100J
GENOA-HUGO C113
MESA COUNTY VALLEY 51
PARK COUNTY RE-2
LEWIS-PALMER 38
WOODLAND PARK RE-2
ACADEMY 20
PEYTON 23 JT
CALHAN RJ-1
DISTRICT 49
MANITOU SPRINGS 14
COLORADO SPRINGS 11
DELTA COUNTY 50(J)
BUENA VIEW R-31
HARRISON 2
WIDEFIELD 3
ELLICOTT 22
CRIPPLE CREEK-VICTOR RE-1
CHEYENNE MOUNTAIN 12
FOUNTAIN 8
MIAMI/ YODER 60 JT
KIT CARSON R-1
CHEYENNE COUNTY RE-5
KARVAL RE-23
GUNNISON WATERSHED RE1J
SALIDA R-32
CANON CITY RE-1
HANOVER 28
EDISON 54 JT
MONTROSE COUNTY RE-1J
WEST END RE-2
COTOPAXI RE-3
FREMONT RE-2
CROWLEY COUNTY RE-1-J
EADS RE-1
PLAINVIEW RE-2
PUEBLO CITY 60
RIDGWAY R-2
MANZANOLA 3J
WILEY RE-13 JT
NORWOOD R-2J
OURAY R-1
TELLURIDE R-1
HINSDALE COUNTY RE 1
MOUNTAIN VALLEY RE 1
CUSTER COUNTY SCHOOL DISTRICT C-1
PUEBLO COUNTY 70
CHERAW 31
ROCKY FORD R-2
SWINK 33
LAS ANIMAS RE-1
LAMAR RE-2
GRANADA RE-1
HOLLY RE-3
DOLORES COUNTY RE NO.2
SILVERTON 1
CREEDE SCHOOL DISTRICT
MOFFAT 2
CENTER 26 JT
HUERFANO RE-1
FOWLER R-4J
EAST OTERO R-1
MC CLAVE RE-2
DOLORES RE-4A
BAYFIELD 10 JT-R
UPPER RIO GRANDE SCHOOL DISTRICT C-7
SARGENT RE-33J
SANGRE DE CRISTO RE-22J
MONTE VISTA C-8
ALAMOSA RE-11J
LA VETA RE-2
AGUILAR REORGANIZED 6
HOEHNE REORGANIZED 3
SPRINGFIELD RE-4
MONTEZUMA-CORTEZ RE-1
MANCOS RE-6
DURANGO 9-R
SIERRA GRANDE R-30
NORTH CONEJOS RE-1J
SANFORD 6J
TRINIDAD 1
KIM REORGANIZED 88
PRITCHETT RE-3
VILAS RE-5
WALSH RE-1
IGNACIO 11 JT
ARCHULETA COUNTY 50 JT
CENTENNIAL R-1
SOUTH CONEJOS RE-10
PRIMERO REORGANIZED 2
BRANSON REORGANIZED 82
CAMPO RE-6
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Conclusion

Local education providers have responded positively to the creation and implementation of free, optional professional development. The June 2024 cohort for Powerful Practice reached capacity 30 days prior to the course's launch. Pre-registration continues to be open and will allow educators access to the July 2024 course cohort. Training opportunities in partnership with local education providers will continue with the CDE's Math Specialists offering collaborative planning for school districts and BOCES to provide targeted technical assistance in the 2024-2025 school year.