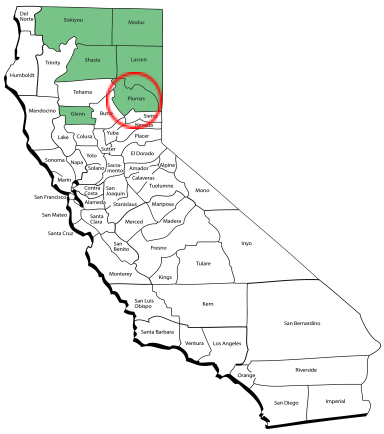
CS4NorCal
Computer Science and STEM Education Rural Implementation Project

Plumas County Spotlight Article

August 2025

In the Face of Adversity, Plumas County Persists in Growing Computer Science in Rural Schools



Authored by Kathy Hamilton, Director, CS4NorCal

Plumas, named after the Spanish Rio de las Plumas *(the Feather River)* sits in the northeastern part of California where the Sierra Nevada and Cascade mountain ranges meet. Approximately the size of the state of Delaware, Plumas County is known for its scenic beauty, outdoor recreational opportunities, heavily forested terrain with only eight people per square mile.

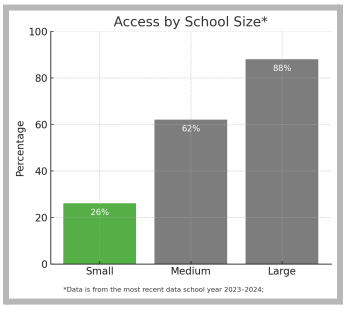
Unfortunately, the Dixie and Beckwourth Complex wildfires during the summer of 2021 destroyed approximately one million acres mostly in Plumas County – including three small towns. However in spite of these great losses and fire devastation, the Plumas Office of Education (PCOE), and its team of dedicated teachers, continue to preserve… increasing computer science education for their students.

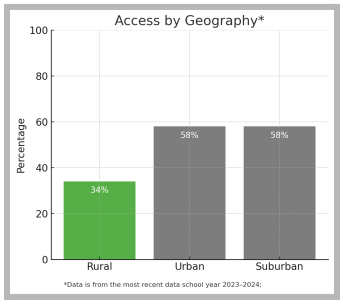
The Plumas County Office of Education serves a single county-wide public school district (Plumas Unified) that enrolls approximately 1,700 students across 11 schools; including eight traditional schools, two continuation high schools and one charter school *(hosting three learning centers*). The average school size is about 223 students.

The PCOE has seen marked growth in expanding its CS pathways in local schools since partnering with the **Small School Districts' Association's** federally funded CS4NorCal project. CS4NorCal, a professional learning and research project serving over 100 schools in Plumas, Glenn, Lassen, Modoc, Shasta and Siskiyou counties, promotes equitable access to computer science education for small and rural schools in Northern California. The project, started in June 2021, brings resources and builds capacity and partnerships to create opportunities to establish CS pathways in similar districts throughout the state. It is sponsored by the Small School Districts' Association and funded by a $4 million federal grant.

Did you know?

Rural school districts in California face challenges that urban and suburban areas cannot imagine. Limited tax bases, vast geographic areas, and higher costs of service delivery mean these districts operate on razor-thin budgets even in the best of times. One result is that these districts and their students lack access to computer science education.





Prior to joining the CS4NorCal project, **only one Plumas County school** serving grades 9-12 *(including continuation, community day and adult schools*) **offered a computer science course** (Computer Science for California - The Data); and just **2% of Plumas County high school students were enrolled in a computer science** course.

Mandated CS on the Horizon

PCOE leaders acknowledged an interest in offering CS instruction in recognition of the state's recent adoption of *CS Model Standards* -- the possibility that legislators might mandate CS as a course for high graduation. Consequently, PUSD and Plumas Charter School sent five teachers to a week-long summer workshop for the *Computer Science Principles (CSP)* course. The county's four traditional high schools and the Indian Valley campus of PCS offered AP CSP during 2019-20.

Challenges in Developing CS Pathways

Despite the strong interest in developing K-12 CS pathways, county educational leaders also perceived challenges including:

- Availability of CS-skilled, credentialed teachers coupled with transiency within the profession
- Limited, unreliable access to the internet
- Pandemic burnout among educators
- Capacity of teachers to take on new content, as well as competing initiatives
- Limited access to professional learning, given the geographic remoteness of the county, and to instructional resources – including devices compatible with CS curriculum

> ***"There are places in our county that – unless you have a ton of money – you're not going to get internet."***
>
> – Becky York-Germann, Quincy Jr./Sr. HS teacher

However, in spite of these challenges and under the direction of PCOE/PUSD Assistant Superintendent Kristy Warren, Plumas County schools incorporated CS4NorCal into its portfolio of CS professional and curriculum development resources.

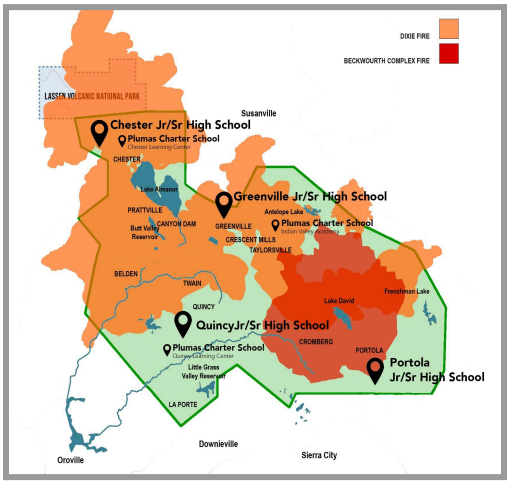
As of the summer of 2024, 21 educators *(including teachers, administrators and district office staff)* have participated in at least one CS4NorCal professional learning event. Additionally, more than 20 have participated in district-sponsored CS professional learning that was not affiliated with CS4NorCal. Participants in CS4NorCal represent six of the 11 (55%) county schools and the County Office of Education.

What is Working?

In the fall of 2020, PCOE enthusiastically joined CS4NorCal under the direction of its then-Assistant Superintendent Kristy Warren, who envisioned a robust system of multiple CS

pathways throughout the county. Four (36%) of Plumas's 11 schools sent participants to the project's inaugural cohort, the greatest in-county proportion of participating schools of any CS4NorCal county. The Plumas County contingent in Cohort 1 included five teachers, two counselors, four principals and two representatives from the COE.

Despite PCOE's initial interest, participation in CS4NorCal waned – to some degree – as a result of the 2021 Dixie & Beckwourth Complex wildfires (*map below*). In addition to destroying a school (for students 7-12 grade), the fires:



- exacerbated turnover among teachers and school and district administrators,
- snarled transit throughout the county due to year-long road closures,
- and led to an $8.7 million shortfall in 2024-25; estimated to increase threefold by 2026-27.

Consequently, PUSD has requested an emergency advance apportionment up to $20 million from the state of California entered into state receivership.

From the onset, PCOE/PUSD envisioned a breadth of professional learning and curricular options in its CS implementation plan, developed in 2021 under the leadership of Yvonne Casalnuovo, a district instructional coordinator; hence, its participation in CS4NorCal ebbed as it incorporated additional teaching resources in addition to the full suite offered by CS4NorCal. Its multiple components also featured alignment with the county's CTE and technology plans. Since then, robust CS instruction has been offered at:

> The Indian Valley Academy (IVA) campus of Plumas Charter School
> C. Roy Carmichael Elementary School
> Quincy Jr./Sr. High School

Implementation Approaches

Shalyn Goss Dunnington has been a leader in the implementation of CS at the IVA campus of Plumas Charter School. In 2021-22, Ms. Dunnington started teaching *CS Discoveries* to students in grades 7 and 8 (splitting the curriculum between the two grade levels) in order to prepare them to transition to *CS Principles* in high school -- taught by Tirrell Baum who was trained in 2019 through a different project.

A challenge Ms. Dunnington faces is that many of her students are experiencing trauma on different levels; but she has found that tapping into her students' interests, including video games, has fueled their excitement about computer science. A memorable success for her was teaching students to code their own version of a favorite video game. She has an interest in introducing VEX Robotics as another component of her course in the future. Students are amazed to learn about the careers they could enter that utilize computer science skills; and their teachers believe that by studying CS students gain a deeper appreciation for digital security and privacy.

Schools in the Plumas Unified School District also offer computer science instruction. The year

before the CS4NorCal project started, four high school teachers participated in *CS Discoveries* and *CS Principles* training; three of them and a colleague later joined CS4NorCal. Also, some high school teachers have been trained to teach Data Science as part of the districts' math pathway.

At Quincy Jr./Sr. High School, Becky York-Germann (a math teacher) has taught *CS Discoveries, CS Principles* and *Data Science* to students in grades 7-12 and integrated CS into her math courses. She has tried to make CS part of its master schedule also by including it as a component of the middle school elective wheel. Quincy HS has offered *AP CS Principles*, but there is limited student interest – in part, Ms. York-Germann said, because it is offered as an elective, which does not count toward the grade-point average that determines school academic honors. As an option, though, the school intends to offer the course every other year in hopes that enrollments will grow.

In the elementary space, C. Roy Carmichael (CRC) Elementary School has implemented *Minecraft Education*, which is not part of CS4NorCal's professional learning program. *(Nonetheless, three teachers from that school also have participated in CS4NorCal.)* The school's goal is to integrate CS and technology into other subjects to help students learn real-world problem solving strategies. As an enrichment teacher, Christine Hodge, brought CS into the classroom for grades 1-6 as a component of the school's Social Emotional Learning (SEL) program. Now, as a third-grade teacher, she and others integrate CS into math, social studies and science lessons. They appreciate that *Minecraft* provides turnkey lessons for integration into multiple core subjects and grade levels.

Emerging Multi-grade CS Pathways

California adopted K-12 CS standards in 2018 that describe concepts and practices articulated across four grade bands from pre-K to grade 12. The guidelines for the standards also stipulate that standalone CS courses for students in grades 9-12 be compatible with University of California a-g courses and Career Technical Education pathways. One of the principles underlying the development of the standards states that ***"every student should have continuous opportunities and multiple entry points to engage in computer science education."*** In service of these objectives, CS4NorCal has encouraged and nurtured emerging multi-grade pathways in its participating counties. In small, rural communities, a multi-grade continuum of CS instruction might occur in a single K-8 or K-12 school or between multiple elementary and secondary school districts.

Indian Valley Academy (IVA) administrator Ryan Schramel has been an ardent supporter of CS, as evidenced by the multi-grade pathway emerging there. *"Mr. Schramel realized that computer science is part of our future and something that our students need to experience,"* Ms. Dunnington said. IVA has instituted CS as a mandatory middle school course and a high school graduation requirement.

> ***"(Our superintendent) has been instrumental in integrating computer science into our curriculum and finding ways that it works for all of us – students and teachers alike."***
>
> – Shalyn Dunnington,
> Teacher, Indian Valley School

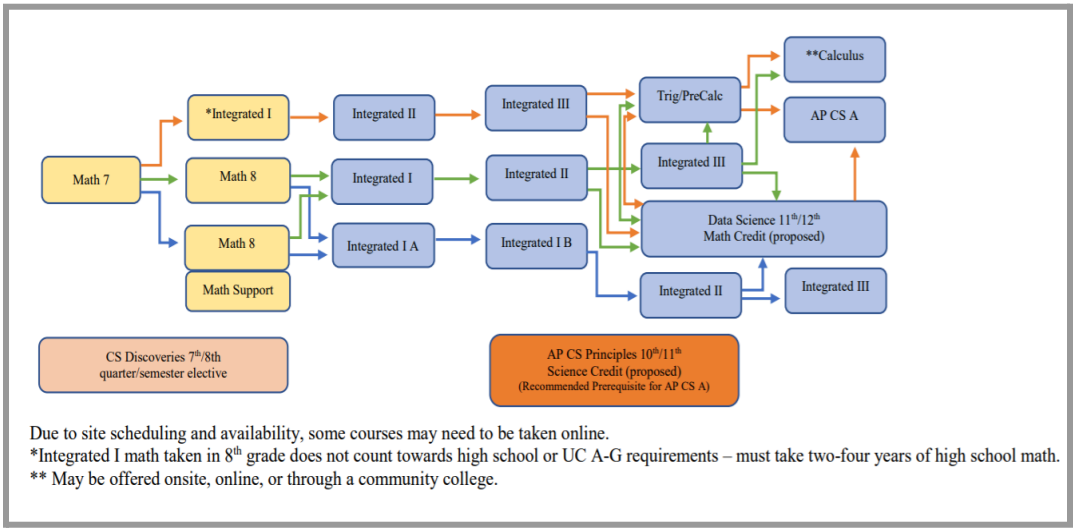
A third IVA teacher has participated in CS4NorCal's *Elementary 4 Computing* workshop, giving the school the capacity to offer CS to students across the K-12 spectrum. The CS program for students in grades 6-12 is particularly strong and includes instruction from both the *CS Discoveries* and *CS Principles* curricula. A unique feature of IVA's approach is offering *CS Discoveries* as an elective to credit-deficient high school students. Finally, trained teachers also try to integrate CS into math and science courses.

The potential for multi-grade pathways exists in PUSD also. Melissa Leal, the current Assistant Superintendent of Educational Services, is a strong supporter of offering computer science at all district schools, primarily through *Minecraft Education* housed on Clever (a secure platform for K-12 schools). *"We want to give our students exposure (to CS) so they will have more opportunities"* in the future, Ms. Leal said. Also, Quincy Elementary School teachers have been trained through CS4NorCal, while Portola High School – the partner in CRC's feeder pattern – has teachers who have been trained to offer *CS Discoveries, CS Principles* and *Minecraft Education*.

Ms. York-Germann shared that in addition to limited student interest in the AP CSP elective, a challenge to offering CS in high schools is credentialing. She noted that as a teacher with a math credential, she is qualified to teach CS. However, other district teachers who are trained to teach AP CSP have art credentials. Ms. York-Germann believes their schools have been researching how these teachers can earn a CTE credential that would allow them to teach CS. Ms. Leal concurred that recruiting and retaining qualified secondary teachers is a challenge: *"what often happens is that we hire a teacher and then they decide they don't want to live in the mountains after a wildfire or a really long hard winter."*

CS Champions

In order to develop local capacity to sustain CS pathways, CS4NorCal targeted County Offices of Education (COE) to serve as the hub of activity for computer science education – including representation on the project Steering Committee and Professional Learning (PL) Task Force. Each COE was asked to identify one person to serve as its CS Champion. Fulfilling this role has been challenging in Plumas; its first CS Champion retired in 2022 while the second one moved away.



Due to site scheduling and availability, some courses may need to be taken online.
*Integrated I math taken in 8th grade does not count towards high school or UC A-G requirements – must take two-four years of high school math.
** May be offered onsite, online, or through a community college.

Nonetheless, both CS Champions contributed to the development of a CS vision for county schools and preparation of teachers for implementation. In 2021, Plumas County's Planning Committee established a vision statement**:** ***We believe in CS for ALL students in order to gain knowledge, experience, and skills necessary to contribute to innovation and problem solving in a digitally and socially complex and changing world.*** The CS Champion developed a detailed CS implementation plan ***(above)*** based on the Strategic CSforALL Resource and Implementation Planning Tool (SCRIPT) developed by CSforAll, which included a math pathway that featured computer science.

Persistence in Plumas County

Plumas County's implementation of computer science education is an example of what can be accomplished in the smallest, most remote areas – even during times of great adversity. Educators and school leaders have been able to persist in their implementation of Computer Science instruction, in part, because of efforts at the county level to develop a detailed vision and plan. Despite subsequent turnover at the highest leadership level – including three superintendents within five years – the resiliency of individual teachers and their passion to teach CS has prevailed. Meanwhile, leadership at IVA and within the Plumas Charter School system has remained steady.

Plumas County computer science teachers encourage peers at other small, rural schools to embrace computer science… realizing it is great college and career preparation for students, and CS is likely to become a state mandate shortly. *"Just being ahead of the game and having the mindset that it's coming, it's probably a good idea to just jump in,"* Ms. Baum said.

> ***"We are very lucky to be a part of a school district that supports 21st-century thinking, using technology in the classroom to support learning."***
>
> – Christine Hodge, 3rd-Grade Teacher, C. Roy Carmichael Elementary School

Ms. Dunnington shares the advice she gives to her students: *"I try not to be afraid to fail; and I try to not get frustrated… We're all on the 'struggle bus' together and the greatest feeling of all is when it all finally clicks!"* From the district perspective, Ms. Leal advises to "*grow from within. It's about getting to know your staff and what they love and then providing them with professional development so they can share it with others."*

CS4NorCal will continue to collect and analyze data from participating teachers and schools in other participating counties. Project leaders will share that information via future editions of Project Highlights. In the meantime, to learn more about how schools are providing CS instruction, visit CS4NorCal's interactive Implementation Dashboard at: https://lookerstudio.google.com/reporting/90b34553-bb57-4969-84fe-7af0d3a9c6e4/page/5iGT
