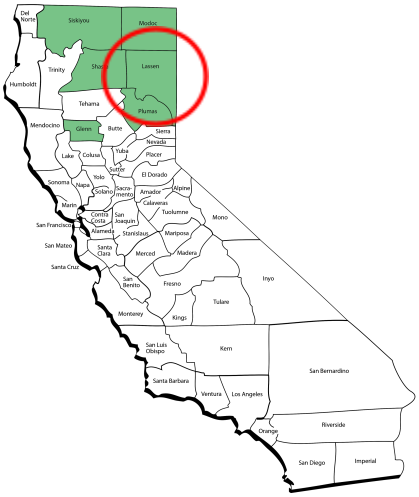
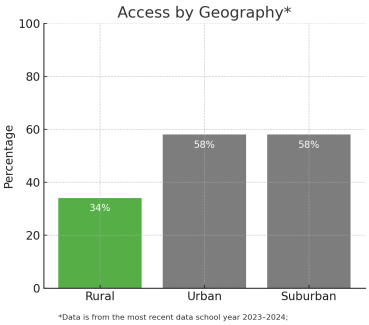
CS4NorCal
Computer Science and STEM Education Rural Implementation Project

Project Highlights:
Spotlight on Lassen County
January 2025

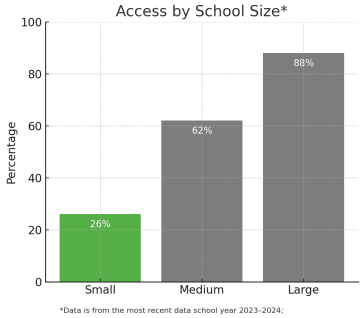
This brief shines a spotlight on Lassen County's implementation of computer science(CS) pathways in partnership with the **Small School Districts' Association's** federally funded CS4NorCal project.





About This Project

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**.



CS4NorCal, a professional learning and research project serving over 100 schools in Glenn, Lassen, Modoc, Plumas, 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.

Lassen County Overview

Lassen County was formed on April 1, 1864, from parts of Plumas and Shasta counties following the Sagebrush War, a four-hour round of volleys between contestants representing the California county of Plumas and the now-defunct Nevada county of Roop over the jurisdiction of Lake Honey Valley and the town of Susanville. The root of the conflict was taxation. Two Honey Lakers were slightly wounded, although it was evident that neither side actually wished to inflict injury. This episode lasted until citizens of the town arrived with a white flag in an effort to negotiate a truce.

The construction of the Nevada-California-Oregon Railway and the Fernley & Lassen Railroad in the late 19th- and early 20th-centuries facilitated economic growth. The area has a rich Native American history and was a seasonal meeting point for at least four Native American Indian groups: Atsugewi, Yana, Yahi, and Maidu. The county's vast and rugged terrain contributes to its remoteness and is home to parts of four national forests and Lassen National Park.

A former farming, mining, and lumber area, Lassen County's recent economy has been dependent on employment at one federal and two state prisons. However, in 2022, the

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California governor authorized the closure of one of the two state prisons. That same year, more than 45% of workers in the county were employed by federal, state or local government agencies, including the prisons. Other major industry sectors in the county include health care and social services, retail trade, agricultural and natural resources and utilities and energy production.

As of the 2020 census, the county population was 32,730, a decline of more than 6% since 2010, and the population density is just under seven people per square mile. More than half of the residents live in the small city of Susanville, which is also the county seat and only incorporated municipality. Per the US Census Bureau, Lassen County, California - Census Bureau Profile, Lassen County's median age of 37 years is lower than the California median age of 38 years, although due to the prisons, the population of male residents skews disproportionally to the range of 20-44 years old. Furthermore, for every 100 females age 18 and over, there were 171 males. Also,

- Sixty percent of the population identified as White and 23% as Hispanic in 2020.
- About 18% of families in Lassen speak a language other than English (predominantly Spanish) in their homes, compared to 45% of families in the state.
- The county's median income of $59,515 lags behind the state's median income of $95,521 and the poverty rate of 15% exceeds the state rate of 12%.
- Approximately 12% of Lassen residents have a bachelor's degree, compared to 37% statewide.

The Lassen County Office of Education serves ten public school districts, which enroll approximately 3,740 students across 21 schools. The districts are Big Valley, Fort Sage, Janesville, Johnstonville, Lassen, Ravendale-Termo, Richmond, Shaffer, Susanville, and Westwood. The schools include 16 traditional schools, one continuation high school, one community day school, and three charter schools. The districts range in size from six students (Ravendale-Termo) to 1,266 students (Susanville). The households of only three districts (Janesville, Richmond and Shaffer) have a broadband rate commensurate with the state's (91.5%), while in three other districts (Big Valley, Fort Sage and Westwood), the broadband rate is below 80%. (Source: National Center for Education Statistics.)

In 2020, prior to joining the CS4NorCal project, two of seven Lassen County schools serving grades 9-12 (including continuation, community day and adult schools) reported offering a computer science course (Computer Science for California - The Data). Four percent of Lassen County high school students enrolled in a computer science course. While county office of education leaders acknowledged an interest in offering CS instruction, perceived challenges included:

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- A general lack of interest in or knowledge about CS at the district level, coupled with limited technological capacity
- Competing initiatives
- Weak Internet connectivity away from schools.
- No history of COE-led professional learning or instructional initiatives
- Lack of community partners to drive a CS-related initiative
- A disconnect between high school districts and their feeders
- A spate of retirements at the leadership level in the near future

Lassen County Participation in CS4NorCal

As of the summer of 2024, 35 educators (including teachers, administrators, and other support staff) have participated in at least one CS4NorCal professional learning activity. Additionally, nearly half have participated in two or more PL events. Participants represent 13 county schools (65%), seven districts (70%) and the county office of education, local community college and a state-funded preschool program, indicating broad support for computer science education

Professional Learning Experiences (note: some educators participated in more than one workshop)			
Elementary Grades • *Elementary 4 Computing, Year 1* • *Elementary 4 Computing, Year 2*	Secondary Grades • *Computer Science Discoveries* • *Computer Science Integration* • *Exploring Computer Science* • *Bootstrap Algebra & Data Science* • *Equity-Minded Computer Science Instruction* • *Implementing 4 Impact*	Other • *CS Equity for Administrators* • *Regional CS orientation workshops*	Community of Practice • *Far North Chapter of the Computer Science Teachers Association*
7 participants	**16** participants	**18** participants	**16** participants

What is Working? What are the Promising Practices in Lassen County?

Despite the challenges of competing initiatives and changing staff, Lassen County has demonstrated progress toward increasing access to CS instruction in many of its schools and across its large geographical expanse. A few examples of emerging best practices are highlighted below.

Implementation Approaches

Two schools – Diamond View Middle School and Long Valley School – have been active participants in CS4NorCal since 2021 and offer examples of how computer science can be

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integrated into the regular school routine.

Diamond View's principal Dede Heimbigner was an early and enthusiastic proponent of the project. Rather than adding a single standalone CS course to the master schedule, she envisioned a variety of applications and invited four teachers to join the project. After the first summer of training, CS became a component of the technology lab that is part of each student's schedule. Teachers also offered CS as part of an elective wheel, integrated CS into math, offered it as enrichment to GATE students or a club, and incorporated it into weekly WIN (What I Need) periods. It didn't all stick, but CS remains a key element of the school's tech lab program.

Diamond View's Technology Specialist, David Zavala, offers CS instruction twice a week to over 300 students a year in the Tech Lab. In his fourth year of implementation, he finds that AI and machine learning-related content seem to have high student interest. "Computers are used more and advance further each year," he said, "so I want to teach my students the skills they will need to be successful with technology -- not just as a job skill, but also a life skill."

> ***"It's great when my CS classes ignite a passion for technology that may lead to a possible career for them before or after college."***
>
> *– David Zavala, Diamond View MS*

David and Christina Zavala

Long Valley School, an independent study school in the tiny community of Doyle serves students in grades K-12. Lori Alexander, a CS4NorCal participant since 2021, is "piloting" the school's CS implementation. Initially, she offered a weekly elective course for grades 6-8 based on the *CS Discoveries* curriculum. When Ms. Alexander moved to the high school level in 2024-25, two colleagues continued to offer the middle school CS elective she had developed. This year, she wants her students to complete a robotics unit. Last year, Jaclyn Fisher Herbert used *CSD* with students in grades 6-12, focusing on web design, app design and beginning AI work, but in 2024-25 she moved to grades TK-5 where she is introducing the basics of coding with a variety of curricula. All of this is part of Ms. Alexander's vision for a TK-12, "grade-level appropriate," continuum of CS instruction, replete with a high school course that meets math requirements for graduation and dual enrollment opportunities with Lassen Community College.

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

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school districts. There are two examples in Lassen County where multi-grade CS pathways are emerging.

> ***"With CS4NorCal…, student exposure to CS has increased by 10 fold."***
>
> *– Jacob George, Janesville ES*

Teachers from six of the eight feeder schools to the Lassen Union High School District are participating in CS4NorCal. Diamond View Middle School may have been the pioneer, but now a TK-2 school and a 3-5 elementary school, along with three single- school TK-8 districts have joined the CS fun! Two Janesville ES teachers and two Shaffer ES teachers joined the project in 2022; a teacher and principal from the Susanville Elementary District joined in 2023, followed by three more teachers in 2024; and, a teacher from Johnstonville ES joined in 2024. Finally, teachers from both Lassen HS and Credence Continuation HS participated in a 2023 orientation workshop.

Forty miles to the south and five miles from the Nevada border, Fort Sage Unified School District offers multiple opportunities for students in Herlong and the surrounding high desert community to learn computer science. In addition to the Long Valley School, which is chartered by Fort Sage, four teachers and the principal from Mt. Lassen Charter and one teacher from Herlong HS, have participated in CS4NorCal.

CS Champion and COE Involvement

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 Task Force. Each COE was asked to identify one person to serve as its CS Champion. LCOE has fulfilled this commitment with the involvement of a current and a retired assistant superintendent and two district support coordinators.

LCOE has provided steady representation to CS4NorCal throughout the life of the project despite competition for their time from other priorities. The assistant superintendent has served on the project's Steering Committee; two district support coordinators have served as joint CS Champions, primarily focused on disseminating information about CS4NorCal to their schools. The CS Champions have participated in summer workshops and some CS4NorCal community of practice meetings. In 2024-25, they became members of the county's implementation team for the state Math, Science and Computer Science grant and they continue to support schools' CS efforts.

Nonetheless, LCOE has experienced barriers to extensive participation that often are evident in counties with small populations. For example, county districts emerged from COVID with an evident need for qualified educators and, in Lassen County, a cohort of approximately 50 new educators were hired between 2022 and 2024. The two COE district support coordinators serving as CS Champions became the leaders of this new cohort, including individuals who were in various stages of preparation to become fully certificated teachers, which impacted time they could dedicate to CS support.

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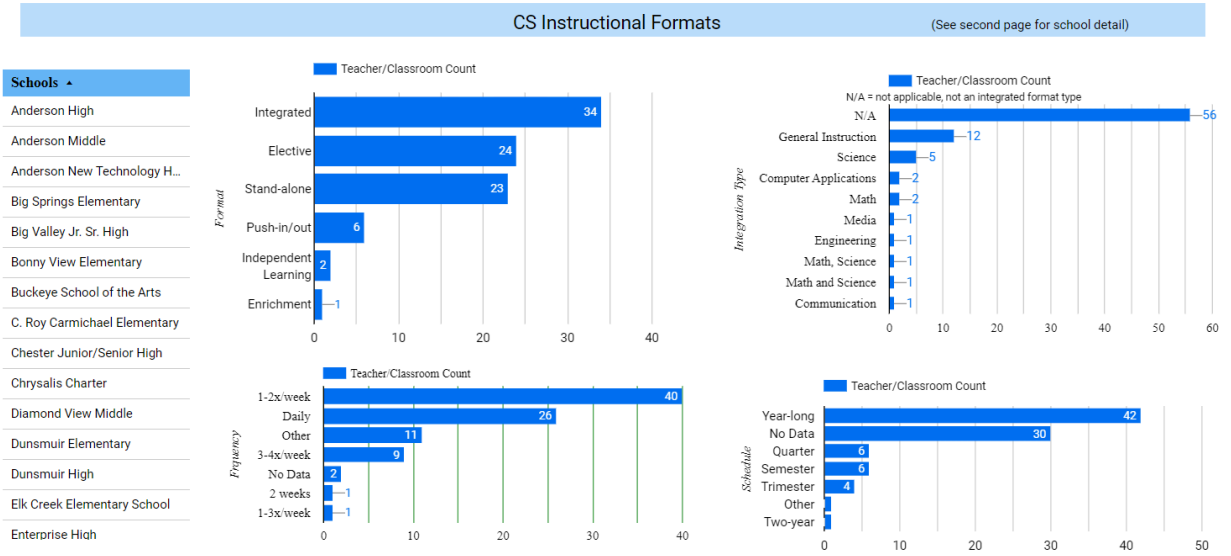
In Conclusion

Lassen County's implementation of computer science education is an example of what can be accomplished by creative teachers and school leaders in remote locales. Comments from two teachers exemplify both the "why" and "how" for bringing CS instruction to small, rural schools. "Kids from rural communities often don't see themselves going to college or getting a career in tech. CS opens doors for them. This project has made a tremendous impact on our kids," said Long Valley's Lori Alexander. Jacob George, a middle grades instructor at Janesville Elementary School, echoed her, "Kids think coding might be something related to math and they shy away from it, but we need to expose this to them as a possible career pathway...huge demand...jobs going unfilled here in this county." How might one start teaching instruction? Ms. Alexander enthusiastically explained, "Embrace it. You don't know what you are capable of or what your students are capable of unless you give yourself an opportunity."

> ***"Start with baby steps and learn alongside your students. It's Ok to make a mistake. Kids love it!"***
>
> *Lori Alexander, Long Valley CS*

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 implementing CS instruction, visit CS4NorCal's interactive Implementation Dashboard by clicking on the linked graphic below.



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