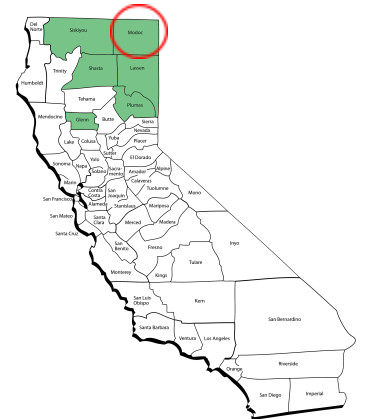


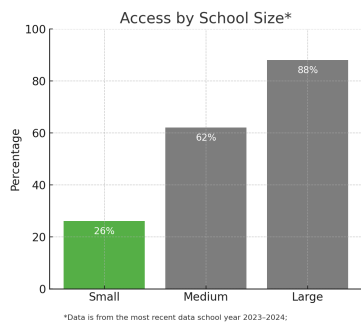
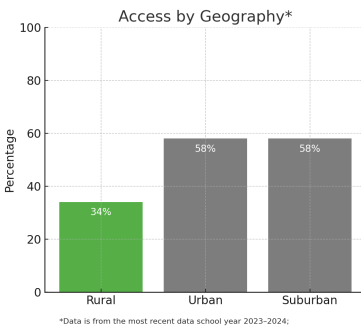
This brief shines a spotlight on Modoc County’s implementation of computer science (CS) pathways in partnership with the **Small School Districts’ Association’s** federally funded **CS4NorCal project**.



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.



Modoc County Overview

Modoc County, the 12th-largest county in the state by area, is in the northeastern corner of California -- bordering Oregon and Nevada. For context, the closest large city is Reno, Nevada, which is 171 miles from the county seat, Alturas; while bigger cities in California -- like San Francisco (358 miles), Los Angeles (688 miles) and San Diego (726 miles) -- are two to four times as distant. The county population in 2022 was just over 8,500 and is the third least-populated county in the state. Much of Modoc County’s land is managed by five federal agencies, which contribute to the local economy and services. The largest industries in the county are Agriculture, Forestry, Fishing and Hunting, Health Care and Social Assistance, and Public Administration.

"We joke that once you get to Alturas, you are so far into the middle of nowhere that when you start to leave you actually head somewhere!"

— Tara Yarberry, MCOE

Per the [US Census Bureau Profile of Modoc County](#):

- Modoc County’s median age of 47.5 years (*exceeds the California median age of 37.9 years*)
- About 11% of families in Modoc speak a language other than English (predominantly Spanish) in their homes (*compared to 44% of families in the state*)
- The county’s median income of \$54,900 (*lags behind the state’s median income of \$91,500*)
- Modoc county’s poverty rate of 17% (*exceeds the state rate of 12%*)



- About 24% of Modoc residents have a bachelor’s degree (*compared to 37% statewide*)

The [Modoc County Office of Education](#) (MCOE) serves three public school districts, Modoc, Tulelake Basin and Surprise Valley, which enroll 1,339 total students through 11 schools.

- Three schools in **Tulelake Basin** (physically located in neighboring Siskiyou County) serve 411 students in grades K-12. Nearly 75% of the students identify as Hispanic and 17% as White. The rate for households with broadband (82%) is less than state or national rates.
- Six schools in **Modoc** serve 832 students in grades K-12. Almost two-thirds identify as White, 18% as Hispanic and 7% as Native American. The rate of households with broadband (77%) is less than state or national rates.
- Two schools in **Surprise Valley**, fill a single campus, serve 96 students in grades K-12. More than 60% identify as White, 18% as Hispanic and 12.5% as Native American. The rate of households with broadband (85%) is less than state or national rates.

In 2020, prior to joining the CS4NorCal project, Modoc County high schools lacked any computer science courses ([Computer Science for California - The Data](#)). While county office of education leaders acknowledged an interest in offering CS instruction, perceived challenges included:

- Competition with existing initiatives (feeling of “just one more thing”) and expectations to meet state college-and-career readiness metrics
- Staffing (credentials, turnover/retention/hiring, stress and burnout)
- Access to high-quality professional learning (distance, travel costs, lack of subs)
- No college in county
- Access to broadband, need for tech upgrades at schools and establishing a CS vision

Modoc County Participation in CS4NorCal

As of the summer of 2024, 45 educators (including teachers, tutors, administrators and other support staff and even a couple of students) have participated in at least one CS4NorCal professional learning activity. Participants represent all but three county schools. (Only six students combined are enrolled in those three schools.) Moreover, some participants are affiliated with several non-profit organizations that support Modoc County schools, demonstrating a unique level of community involvement.

Professional Learning Experiences (note: some educators participated in more than one workshop)			
<u>Elementary Grades</u> <ul style="list-style-type: none"> • Elementary 4 Computing, Year 1 • Elementary 4 Computing, Year 2 	<u>Secondary Grades</u> <ul style="list-style-type: none"> • CS Discoveries • Exploring CS • CS Principles • Bootstrap Algebra & Data Science • Implementing 4 Impact 	<u>Other</u> <ul style="list-style-type: none"> • CS Equity for Administrators • Counselors 4 Computing • Regional CS orientation workshops 	<u>Community of Practice</u> <ul style="list-style-type: none"> • Far North Chapter of the Computer Science Teachers Association
3 participants	7 participants	5 participants	34 participants





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

It is noteworthy that all three of Modoc's school districts as well as a number of community-based organizations are involved with the development of CS pathways. In such a geographically large and sparsely populated area, this level of support is significant. A few examples of emerging best practices are highlighted below.

Implementation Approaches



In 2021, tiny (42 students) Surprise Valley Jr./Sr. High School became the first school to join the CS4NorCal project, followed by Surprise Valley Elementary School in 2022 (both part of the Surprise Valley Joint Unified School District, SVJUSD). Teacher Jenny Grove has been trained to teach computer science to elementary and middle school students and offers it for grades 4 to 7. At the elementary level, CS is integrated into core content once or twice a week with a focus on coding activities. Ms. Grove also offers computer science for students in grades 6-7 as part of an elective with a focus on coding and hands-on activities including drones, perhaps, in 2024-25. An innovative feature of this course is that it is scheduled when the regular school day ends at 2:40 and students are waiting for the arrival of the school bus at 3:30.

Maigen Scritchfield, a high school educator, integrates CS into her Ag. Mechanics course which she believes allows her to tap into the creativity and interests of *"kids who I can't get to write a sentence."* A third teacher and the school principal/superintendent also have participated in CS4NorCal's Professional Learning program. In December 2022, SVJUSD hosted a popular Family Code Night and chili feed for its small community.

In the Tulelake Basin district, a high school teacher is integrating CS into her core content. And, in the Modoc district, two Alturas Elementary School teachers are integrating CS into their core content. One teacher works with students in grades 2-5 and intends to use AI to help students create original content including music. The other teacher works with kindergartners and wants to use AI to help her Indigenous students make meaningful connections.

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.





As a result of the professional development opportunities provided by CS4NorCal, each of the three Modoc school districts employs teachers who are able to provide CS instruction at both the elementary and secondary grade levels. Moreover, Modoc features a significant **cadre of tutors and other educational support staff** -- from community organizations, the district office and the county office of education -- who are contributing to the pathway development effort in collaboration with the districts.

Modoc JUSD	Surprise Valley JUSD	Tulelake Basin JUSD	Community Organizations
14 participants: <ul style="list-style-type: none"> • Alturas ES • Modoc MS • Modoc HS • Warner HS (continuation school) • 2 years of participation 	4 participants: <ul style="list-style-type: none"> • Surprise Valley ES • Surprise Valley Jr./Sr. HS • 4 years of participation 	2 participants: <ul style="list-style-type: none"> • Tulelake Basin ES • Tulelake Jr./Sr. HS • 2 years of participation 	21 participants: <ul style="list-style-type: none"> • Advancing Modoc • First 5 Modoc • MESA • MCOE Workability I • RISE • 1 year of participation

Ms. Scritchfield in Surprise Valley values **the pathway** that is forming between the elementary school and high school. She credits her colleague, Ms. Grove, for getting students excited in CS when they are younger – *“getting that fire burning a little bit”* – helping them on-ramp to related study and projects at the secondary level. In 2025-26, SVJUSD intends to add a standalone CS course to its high school master schedule.

Non-Profit as CS Champion

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. After the first two years of the project, MCOE informed CS4NorCal that it no longer had the capacity to provide this level of service due to competing initiatives and responsibilities and suggested involving a local non-profit, Advancing Modoc, in that role.

Consequently, a distinguishing characteristic of Modoc County’s implementation of CS pathways has been the role played by **Advancing Modoc**, a non-profit cradle-to-career initiative, and its Director Tanja Ramming. In 2022, when the county office of education determined that it could no longer fulfill the role of the project’s **CS Champion, Ms. Ramming** was able to incorporate that work into her other responsibilities. This is a model that might be effective in other resource-strapped counties.





Ms. Ramming ramped up recruitment for CS4NorCal, inviting representatives from each district to serve on a local computer science planning team. The most fruitful response to her outreach has come from paraprofessionals and student service providers working for non-profits and district and county offices that embed staff on school campuses.

In 2024, Ms. Ramming hosted five chapter meetings of the Computer Science Teachers Association (CSTA) at the new community college center -- attracting nearly 40 participants. At the conclusion of each hour-long meeting, which were broadcast from Redding in an interactive hybrid format, she facilitated a 30-minute discussion among the Modoc planning team focused on improving access to educational technology and computer science instruction. Outcomes of this work include:

- Participation in a \$2.2 million Golden State Pathways grant to provide Computer Science work-based learning to 8th- and 9th-grade students and develop an Information and Communication Technology pathway for Modoc, Warner and Surprise Valley high schools.
- Deepened partnerships with the Resources for Indian Student Education, Inc., Math, Engineering, Science Achievement, First 5 and after-school programs to explore of computer science concepts with students at all grade levels
- Increased school administrator engagement in computer science education;
- Targeted outreach to students with disabilities and indigenous students;
- Complemented local upskilling outreach for paraprofessional educators who aspire to become K12 Teachers

The Modoc CS planning team has four new goals:

- Finalize a CS pathway map including a list of CS degrees and related job opportunities.
- Inform and engage parents/family members to serve as participants or professionals
- Develop an alumni network of CS professionals to use as a potential work-based learning connection
- Explore credit and non-credit CS college courses accessible to high school students through dual enrollment

Ms. Ramming envisions a future in which CS education is part of the equation that moves Modoc County from being a “boomtown to zoomtown.” Recent grant awards will help Modoc school districts, community partners and its community college resource center achieve that goal. For more information about how Advancing Modoc is serving CS4NorCal’s efforts to implement CS Pathways in Modoc County, listen to this nationally broadcast webinar, [Engaging Communities in Innovative STEM Programs](#).

In Conclusion

Modoc County’s implementation of computer science education is an example of what can be accomplished in the smallest, most remote areas. *“In a rural, agricultural area like ours, exposure to CS opens students’ eyes to different opportunities for their lives,”* according to Audra Evans, the principal/superintendent of SVJUSD. Components of Modoc Country’s success include: community organizations that support the schools, partnerships along the K-14 grade span, the vision of school





leadership and the passion of creative teachers. Even though its few small communities are geographically isolated, they share a goal for their residents: to secure living-wage, high-demand jobs -- a goal made possible with the help of computer science training. How might you do it? Teacher Jenny Grove recommends, "Just jump in. Try it. Find a group of peers to talk to. Here in the rural area, it can feel a little lonely doing it, but CS4NorCal gave me the opportunity to talk to other teachers and that's what greatly benefitted me."

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.

CS Instructional Formats (See second page for school detail)

Schools
Anderson High
Anderson Middle
Anderson New Technology H..
Big Springs Elementary
Big Valley Jr. Sr. High
Bonny View Elementary
Buckeye School of the Arts
C. Roy Carmichael Elementary
Chester Junior/Senior High
Chrysalis Charter
Diamond View Middle
Dunsmuir Elementary
Dunsmuir High
Elk Creek Elementary School
Enterprise High

