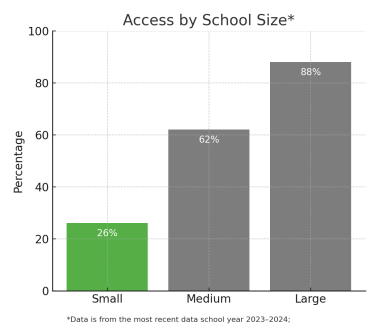
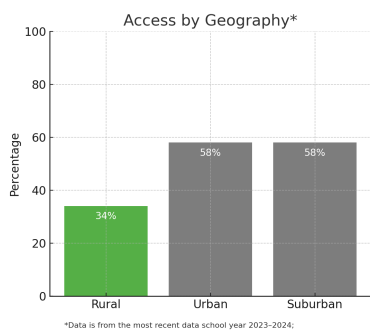


This brief shines a spotlight on Glenn County’s implementation of computer science (CS) pathways in partnership with the **Small School Districts’ Association’s** federally funded CS4NorCal project.



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.

Glenn County Overview

[Glenn County](#) was incorporated on March 5, 1891, from the northern portion of Colusa County and named after Dr. Hugh J. Glenn – the largest wheat farmer in the state during his lifetime. It is located in the central portion of the Sacramento Valley, midway between the cities of Sacramento and Redding, CA. While most of the county lies on the valley floor, the western portion includes the Snow Wilderness of California’s Coastal Range. The [county’s economy](#) is heavily influenced by agricultural activities, including food processing, which support local businesses and contribute to the overall economic stability. Other industries include natural resources, education, health and social services, and retail trade. As of the 2020 census, the population was [28,917](#), about half of whom live in the small cities of Willows and Orland, CA. Most of the county is rural with a population density of eight people per square mile.

Per the US Census Bureau, [Glenn County, California - Census Bureau Profile](#), Glenn County’s median age of 36 years is lower than the California median age of 38 years. Almost half of the population (48%) identifies as White and 43% as Hispanic. About 37% of families in Glenn



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 \$64,033 lags behind the state's median income of \$95,521 and the poverty rate of 15% exceeds the state rate of 12%. Approximately 15% of Glenn residents have a bachelor's degree, compared to 37% statewide.

The [Glenn County Office of Education](#) (COE) serves eight public school districts which enroll approximately 6,500 students across 27 schools. The districts are Capay, Hamilton, Lake, Orland, Plaza, Princeton, Stony Creek and Willows, and include 17 traditional schools, three continuation high schools, three community day schools, three charter schools and one adult school. The districts range in size from 71 students (Stony Creek) to 2,242 students (Orland). The households in one school district (Plaza) have a broadband rate commensurate with the state's (91.5%); however, in three of the districts (Hamilton, Princeton and Stony Creek), the broadband rate is below 80%.

In 2020, prior to joining the CS4NorCal project, only two Glenn County schools serving grades 9-12 (including continuation, community day and adult schools) offered any computer science course ([Computer Science for California - The Data](#)), which were introductory courses taught by math teachers. At that time, just 5% of Glenn County high school students were enrolled in a computer science course. County Office of Education leaders acknowledged an interest in offering CS instruction, but noted that *"the community is ag-driven and would need exposure to CS in the classroom"* in order to build interest.

Glenn COE identified several challenges to implementing Computer Science *(at the onset of working with CS4NorCal)*:

- Burnout from the COVID pandemic impact and the shift to remote teaching
- Limited understanding about computer science and a hesitancy to use technology
- Availability of teachers qualified to teach CS
- A shortage of substitutes to cover for teachers attending professional learning opportunities

Offsetting those challenges, though, were such assets as participation in coding and cybersecurity grants and a "Girls Who Code" club.

Glenn County Participation in CS4NorCal

As of the summer of 2024, 27 educators (including teachers, administrators and district office staff) have participated in at least one CS4NorCal professional learning event. Additionally, nearly half have participated in two or three PL events. Participants represent nine county schools and five districts as well as the County Office of Education. There is evidence of a growing commitment to integrating computer science education in Glenn County: Its schools first joined the project in the summer of 2022 – a year later than other participating counties – with just four participants and since then, 23 have joined.



Professional Learning Experiences <i>(note: some educators participated in more than one workshop)</i>			
<u>Elementary Grades</u> <ul style="list-style-type: none"> Elementary 4 Computing, Year 1 Elementary 4 Computing, Year 2 Elementary Computing for All Elementary for Computer Science 	<u>Secondary Grades</u> <ul style="list-style-type: none"> Computer Science Discoveries Exploring Computer Science Computer Science Principles Computer Science Integration Implementing 4 Impact 	<u>Other</u> <ul style="list-style-type: none"> CS Equity for Administrators Regional CS orientation workshops 	<u>Community of Practice</u> <ul style="list-style-type: none"> Far North Chapter of the Computer Science Teachers Association (CSTA)
12 participants	7 participants	12 participants	11 participants

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

Glenn County started CS4NorCal in 2022, a year later than other participating counties, and implementation is having the greatest impact at the TK-8 level in seven schools. One K-12 charter school is exploring how to offer CS to high school students.

Implementation Approaches

Led by the drive of middle school science teacher Garrett Edwards (right), Lake Elementary School is an exemplar of computer science implementation in Glenn County. Serving just under 200 students in grades TK-8, Lake is located amid farmland in the northern part of the county. Mr. Edwards joined CS4NorCal in 2022 and integrates CS into science for students in grades 5-8. He values how computer science offers a hands-on, experiential element to a variety of content within the science curriculum. *“It’s more about solving problems and testing your ideas,”* he explained. His approach to incorporating CS into science lessons is to wonder *“how can I collect data and use student-centered data to make kids more interested in science?”* Students use simple and affordable tools like Micro:bits and LED lights to measure real-world phenomena – such as soil moisture. :)



“Once we start making connections and having kids think about how they can really use a computer to do cool things, then it becomes something fun for them to do!”

Garrett Edwards, Teacher,
Lake Elementary School

Mr. Edwards’ has brought his enthusiasm for technology to his classes and the entire Lake Elementary School as a whole. For example, he has helped develop a STEM-elective where more students can experience coding by using Micro:bits and the Circuit Playground – and provides hands-on computer activities for Lake’s afterschool program. *“I think computer science is such a big part of education’s moves in the future,”* he said. Mr. Edwards may be having a Pied Piper-effect at Lake: Two colleagues from grades K-5 joined the CS4NorCal professional





learning program in Summer 2024. Finally, he will continue to have an impact on expanding the CS teacher corps when he serves as a statewide facilitator of the *CS Integration* workshop.

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 (CTE) 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.

In Orland, the largest community in Glenn County with 7,200 residents, a K-5 CS pathway is emerging in the Orland Unified School District. In 2023, nine teachers from Mill Street Elementary (grades K-2) and Fairview Elementary (grades 3-5) participated in CS4NorCal. Mill Street teacher Rosio Zamora-Marin provides CS in English and Spanish to her kindergartners by incorporating computational thinking and pattern blocks in her math instruction. *“Students can see that computer science is really everywhere!”* she says. Two of her peers, meanwhile, are offering CS to students in transitional kindergarten, and a third-grade teacher at Fairview is incorporating coding into visual arts.

In combination with the four teachers at Lake, this cadre of instructors could be preparing quite a demand for computer science instruction at Orland High School in the near future!

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 (PL) Task Force. Each COE was asked to identify one person to serve as its CS Champion. The current Glenn County CS champions are Anna Lane (*Library Media Coordinator*) and Darren Massa (*Assistant Superintendent of Educational Services*). They credit the establishment of CS pathways in Glenn County to their strong relationships with schools, teachers and understanding the capacity of each district to take on a new initiative. *“My big role (in the district) is to be the disseminator of information about the opportunities,”* Ms. Lane said.

Both Ms. Lane and Mr. Massa have observed a change in the local landscape when it comes to computer science education. *“It’s talked about a lot more than it was, like in regional CISC meetings and even in our science sub-committee meetings.”* They are committed to sustaining the development of CS pathways in Glenn County. *“We owe it to our kids,”* Mr. Massa said. *“They are going to live in a world that is much more computer science-oriented.”*



In Conclusion

Glenn County's implementation of computer science education demonstrates that slow and steady effort can have a positive result. Coming out of the pandemic, the first CS champion, Phillip James (*Educational Services Coordinator*) knew that his county's schools needed a year to build awareness about computer science – before schools and teachers would be able to participate in CS4NorCal. During that time, he was able to find educators who could become local leaders. His successor, Ms. Lane, endorses that approach: *“Find the teachers with the passion for computer science who can be a model for others,”* she said. *“And, make regional connections – learn from peers in other counties.”*

As for the individual who has been the subject matter expert for Glenn County, Garrett Edwards strongly encourages other teachers to take a chance on computer science. *“I know some teachers might find it intimidating, learning something new like computer science, but I like how we all become students at that moment.”*

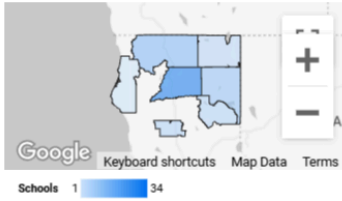
CS4NorCal will continue to collect and analyze data from participating teachers and schools in other participating counties. Project leaders will share that information via future editions of Project Highlights. In the meantime, to learn more about how schools are providing CS instruction, visit CS4NorCal's interactive Implementation Dashboard by clicking on the linked graphic

below <https://lookerstudio.google.com/reporting/90b34553-bb57-4969-84fe-7af0d3a9c6e4/page/5>
[iGTD](#)

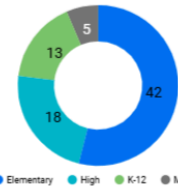




Glenn Highlights (cont.)



County	Schools
Shasta County	34
Siskiyou County	15
Lassen County	11
Glenn County	7
Plumas County	6
Modoc County	5
Humboldt Cou...	1



Schools
78
Teachers
121

CS Instructional Formats

(See second page for school detail)

Schools ▾

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

