CASE STUDY: SEASONS OF CS

Introduction
In an era where technology shapes the future, equipping educators with the skills to teach computer science is essential for preparing students for tomorrow's challenges. A key focus of the *Seasons of CS* initiative is to build educators' confidence in implementing computer science programs.

This initiative, a collaborative effort between Play Piper and Butte County Office of Education (BCOE) as the Far North Region lead in the Educator Workforce Investment Grant (EWIG) funded through the CDE Foundation, offers hands-on projects and training to help educators feel comfortable introducing CS in their schools. The ultimate goal: to ensure computer science reaches all students—*CS4ALL*.

This case study highlights the impact of the ***Seasons of CS*** initiative, detailing its objectives, implementation strategies, and the significant results achieved. By combining targeted professional development and engaging tools, this partnership not only enhances educators' confidence in teaching computer science but also promotes a positive learning environment for students.

Background
In Summer 2023, the *Seasons of CS* program launched with the goal of expanding equitable and sustainable computer science education across California. This initiative aimed to equip K-12 educators, paraprofessionals, administrators, and counselors with the skills and confidence to integrate computer science into their classrooms.

Defined as a research-backed professional learning model, the *Seasons of CS* initiative focuses on increasing the capacity for scalable and equitable computer science education. The partnership between BCOE and Play Piper facilitated four virtual orientations and one academic workshop over a 12-month period with **107 workshop participant completions that included 48 hours of training**. These programs utilized Piper Make Starter Kits and Piper Computer Kits to provide hands-on learning opportunities for educators.

Program Overview

The first two *Seasons of CS* orientations featured 90 minutes of synchronous instruction and 90 minutes of asynchronous learning, where 63 educators received a Piper Make Starter Kit and completed the program. Participants engaged in hands-on electronics projects, building circuits and programming LEDs to blink using coding sequences and loops. These sessions helped educators build confidence and learn how to implement CS programs in their schools. Educators kept their kits for continued exploration with their students.

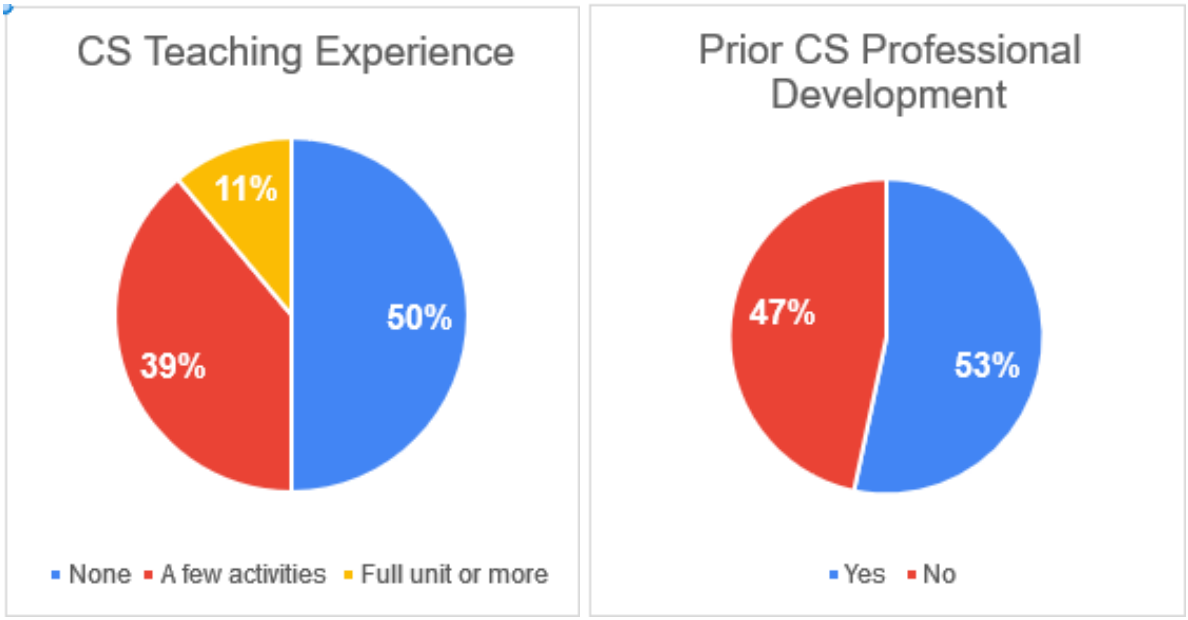
Following these initial orientations, two *Summer of CS* sessions and an Academic Year Workshop were conducted. A total of 43 educators participated, with 12 continuing into the Academic Year Workshop. Over 18 hours of instruction (both synchronous and asynchronous), participants used Piper Computer Kits for interactive activities such as a "Piper Make-A-Thon," where educators collaborated to invent their own technologies. The program also emphasized productive struggle, with educators learning to problem-solve and apply real-world coding skills.

Building Teacher Confidence

A major focus of the *Seasons of CS* initiative was to boost teachers' confidence in bringing computer science into the classroom. By providing hands-on projects and comprehensive training, the program successfully empowered educators to integrate CS into their teaching. This focus led to remarkable results in teachers' confidence levels, as highlighted below:

- Confidence in the statement "I can help my students with their CS projects" increased by 100%.
- Confidence in the belief "I am effective in helping students understand the process of problem-solving and design" grew by 56%.
- Teachers showed a 12% increase in their belief that "Working on CS problems increases students' resiliency for career advancement."
- Confidence around the belief that "CS teaches students important academic skills" grew by 12%.
- Negative confidence around the statement "I do not teach CS as well as other subjects" decreased by 14%.
- Negative confidence regarding the belief that "You have to dedicate your education and career to CS to have useful CS skills" decreased by 15%.

Experience of Summer of CS Participants



Educators who participated in the *Summer of CS* program expressed overwhelming positivity regarding the training and its impact on their teaching skills.

"The content was not easy, but I appreciate the productive struggle over the past three days, which helped me think more like an engineer and more like my students!" *- Summer of CS Participant*

Participants also highlighted the usefulness of the hands-on approach and real-world applications.

"This was the most interesting PD I've done. It has built my confidence to try more in-depth STEM and CS with my class." *- Workshop Attendee*

Conclusion

The partnership between Play Piper and the Butte County Office of Education successfully empowered educators through practical coding and electronics training. By building their confidence and equipping them with essential technical skills, the initiative helped educators introduce computer science in diverse classroom settings, fostering 21st-century skills such as problem-solving, collaboration, and computational thinking.

"I appreciated the troubleshooting tips—we'll face the same challenges with our students. The Piper Make-A-Thon collaboration was great fun." *- Workshop Participant*

Through the *Seasons of CS* initiative, this partnership is making significant strides in expanding computer science education across California, inspiring educators to nurture the next generation of innovators and problem solvers.

#CS4ALL