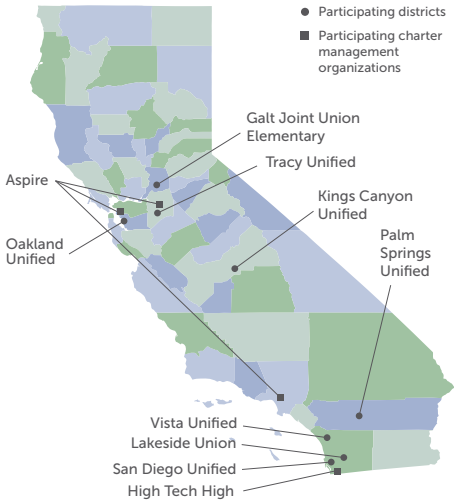
NGSS EARLY IMPLEMENTERS
WestEd

Bringing science to life as a core subject

NGSS Early Implementers are demonstrating progress and gaining experience that can benefit others.

Implementing Next Generation Science Standards

A diverse group of eight California school districts and two charter management organizations is actively implementing Next Generation Science Standards. Their progress, experiences, and lessons can inform others implementing NGSS. The NGSS Early Implementers are supported by the K-12 Alliance at WestEd, and work in partnership with the California Department of Education, the California State Board of Education, and Achieve. Initiative funding is provided by the S. D. Bechtel, Jr. Foundation, with the Hastings/Quillin Fund supporting participation by the charter organizations.



The Early Implementers initiative

The initiative spans 2014 to 2020. It focuses on NGSS implementation in grades K-8 and incorporates the integrated course model (preferred by the California State Board of Education) for middle school.

Teachers are supported with strategies and tools including an instructional framework that incorporates phenomena-based learning. This framework aligns with the NGSS three dimensions—encompassing disciplinary core ideas, crosscutting concepts, and science and engineering practices. Using science notebooks, questioning strategies, and other approaches, students conduct investigations, construct arguments, analyze text, practice descriptive skills, articulate ideas, and assess their own understanding.

Teachers engage in science lesson studies twice each year through a Teaching Learning Collaborative. In each district, the initiative is guided by a core leadership team of teacher leaders and administrators who participate in additional professional learning and coaching activities. Together, this core team and an extended group of teacher leaders are the means for scaling NGSS implementation throughout the district.

NGSS engages students and teachers in valuable ways

Participating districts are working to establish science as a core subject in grades K-8. Their early efforts are demonstrating the benefits of science instruction that is inquiry-based and student-centered. Their experience reinforces the lessons and messages generated by others active with the new science standards nationally and locally, including The California Alliance for NGSS (CA4NGSS). Early Implementers report that:

> *[I observed middle-school students] talking about particle size, particle structure, friction. I mean it was like little soil scientists in there talking about how come a mudslide happens, and I went, 'Wow this is really something!' Just the way they talked to each other … listened to each other … and questioned each other, it was like a college class.*
>
> EARLY IMPLEMENTER PRINCIPAL

- **Kids like learning science.** It taps into the natural curiosity and energy of every child. Science instruction kindles and expands this curiosity when it incorporates phenomena and connects to the life experiences of young people.
- **NGSS helps students learn *all* subjects.** When students engage with these science concepts and content it broadens their knowledge base and heightens their interest in reading and writing. It can benefit even reluctant readers and writers, and English language learners as well as native speakers.

» **NGSS helps teachers improve *all* instruction.** Teachers like this approach to science too. It facilitates active learning, providing students with rich content they can read, debate, and write about in English language arts (ELA) classes, use to solve math problems, and more. Science knowledge fuels self-driven learning across a continuum of subjects and skills.

Instructing with NGSS is doable—regardless of experience level

The experience of Early Implementers shows that teachers, schools, and districts—regardless of their relative experience with science—can instruct to the new standards. Approaches to improving science learning have been designed and tested in classrooms and schools within districts of differing sizes and demographics, and with teachers and administrators who have minimal or extensive prior experience.

> *I enjoyed incorporating science into English language arts time. The shift was easy and efficient. The students were captivated and were inquisitive.*
>
> EARLY IMPLEMENTER TEACHER

Success requires professional learning for teachers and administrators

Participating districts know that it takes time and effort to gain the content and skills needed to deliver quality science instruction. This investment is required at all levels—including district curricula leaders, school building leaders, and teachers. These parties must share a joint vision, as well as expectations, for the benefits that teaching science will generate and for the level of combined effort it will require. The results are worth it—and teachers and administrators who participate in professional learning and collaborate with colleagues report feeling energized and prepared to lead science instruction.

Evaluation and reports

The S. D. Bechtel, Jr. Foundation commissions WestEd's STEM Evaluation Unit independently of the K-12 Alliance to evaluate the initiative in the eight public school districts. This evaluation is advised by a technical working group that includes the California Department of Education and the State Board of Education.

Sample tools

Next Generation Science Standards in Practice (May 2018).
This report features tools, strategies, and processes used by early implementers of the NGSS. It includes approaches to lesson planning and instruction, as well as practices used by administrators to advance NGSS implementation.

Published evaluations

1. The Needle is Moving in CA K-8 Science (October 2016).
This report describes the initiative's early progress on three implementation goals: integrating science and ELA, integrating the sciences in middle school, and making science a core school subject.

2. The Synergy of Science and ELA (October 2017).
This report goes deeper in describing the benefits of NGSS-aligned science learning integrated with ELA. It includes information on how integration is happening, summarizes lessons used by Early Implementers, and presents recommendations for administrators.

3. Administrators Matter to NGSS Implementation (November 2017).
This report describes how school and district leaders are advancing NGSS implementation. It highlights ways teachers are benefitting from administrators' support as well as ways that administrators are empowered to provide these supports.

4. Developing District Plans for NGSS Implementation (February 2018).
This report describes lessons learned by districts using master plans for NGSS implementation. It can help other districts in their own journeys to implement NGSS and inform state policymakers regarding implementation approaches and implications.

Planned evaluations

5. Changed student interest in science (fall 2018/winter 2019)
6. What middle school science integration looks like in the classroom (fall 2018/winter 2019)
7. Teacher leadership (fall 2018/winter 2019)