



CASE STUDY - SCIENCE ACTIVITIES

How San Bernardino City Unified School District implemented Make Wonder's science activities with 4th grade students in a STEAM Lab setting.

Background

As part of its Vision 2030, the San Bernardino City Unified School District (SBCUSD) established a goal to provide equitable and inclusive STEAM experiences—ensuring every student engages in interdisciplinary learning driven by inquiry, creativity, and innovation to prepare them for college and career. To accomplish this, SBCUSD set out to embed science, technology, engineering, arts, mathematics (STEAM), robotics, and computer science across every grade level.

Extended Learning Opportunities Program (ELOP) funds and federal Title IV funds, SBCUSD created and equipped STEAM Labs in schools districtwide. Currently, the district serves approximately 44,000 K–12 students, with nearly 90% identified as economically disadvantaged. With ten STEAM Labs already operating at elementary and middle schools—and additional labs in the pipeline—SBCUSD continues to expand its capacity to engage and inspire students in STEAM-related fields.

Leveraging a combination of state-based



Giving our students exposure to these skills at a young age, while hitting the math & science standards, is invaluable! The kids love it, teachers feel like it's easy to implement.



Caitlin Arakawa
STEAM Program Specialist
San Bernardino City Unified School District





w:onder
workshop

Overview of the STEAM Lab Program

Vision and Focus

The STEAM Lab Program is anchored by a clear vision:

“To provide equitable and inclusive STEAM experiences where all students engage in interdisciplinary learning driven by inquiry, creativity, and innovation in order to prepare them for college and career.”

In alignment with SBCUSD’s broader goal to integrate STEAM, robotics, and computer science into the curriculum by 2030, the labs emphasize Next Generation Science Standards (NGSS) and engineering practices. Whenever possible, lessons integrate media arts and computer science standards to foster creativity and build essential 21st-century skills.

Current Reach

Number of STEAM Labs:

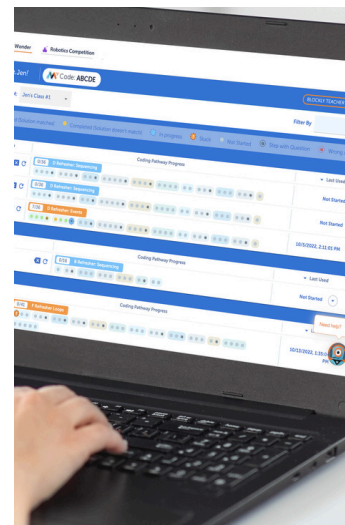
There are currently ten labs—seven in elementary schools and three in middle schools—with more in development.

Students Served:

The number of students varies by site. Each STEAM Lab often begins by serving three grade levels, adding two more classes each trimester to ensure that instructional quality and teacher training keep pace with expansion.

Equitable Access

A hallmark of the program is its equity-first approach. SBCUSD launched STEAM Labs in schools with the highest unduplicated pupil populations—including English learners, foster youth, and students experiencing homelessness—so the students most in need benefit first from the robust, hands-on STEAM experiences. With coordination at the district level, staff can align activities with the Universal Design for Learning (UDL) framework, collaborate across departments (multilingual, special education, elementary, and secondary instruction), and offer consistent, high-quality opportunities for all students.



STEAM Lab Implementation Strategy

- **Gradual Class Integration:**
Each STEAM Lab steadily expands the grade levels served, enabling teachers and resident substitutes to develop standards-aligned lessons and gain confidence in using lab materials.
- **Professional Development:**
Training focuses on lab equipment, curriculum design, and classroom management strategies.
- **Weekly Engagement:**
Students often attend the STEAM Lab once a week, ensuring regular, hands-on exposure to STEAM topics.

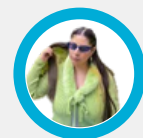
Science Activity Implementation and Observations

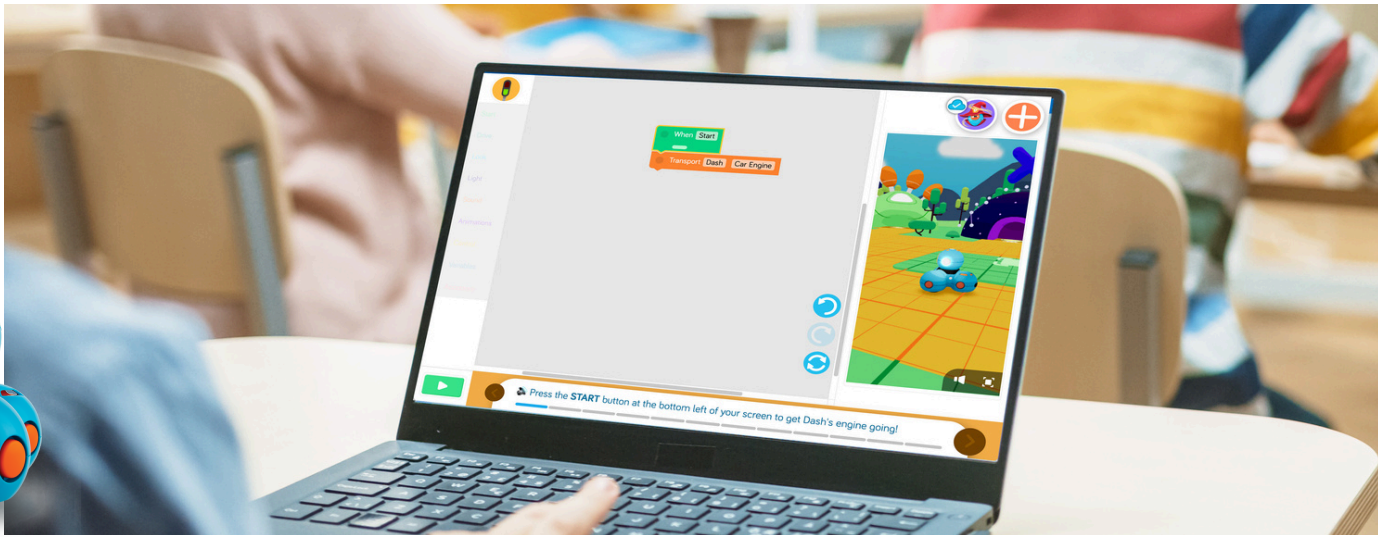
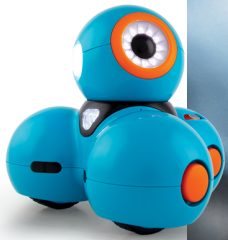
Make Wonder's NGSS Science Activities are a collection of 20 interactive K–5 activities that blend Earth & Space, Life, and Physical Science concepts with fundamental coding skills—like sequencing, loops, events, and conditionals. Each lesson begins with a real-world scenario in which students guide Dash through problem-solving challenges that reinforce key science ideas. In the Winter of 2025, Ms. Karen Campos De La Torre, STEAM Instructor at Lytle Creek Elementary School, introduced her 4th graders to the Make Wonder Science Activity: Changes to Earth's Surface, Structures and Functions while they visited the STEAM Lab during their designated instructional time.

The science content was excellent! It was an engaging and novel way to introduce students to these standardized science concepts and have them practice them.



Karen M. Campos De La Torre
SBCUSD STEAM Instructor
Lytle Creek Elementary School





Active Engagement with Virtual Dash

A feature of Blockly when connected to a full Make Wonder subscription is that a virtual Dash appears on the screen to the right of the coding interface. The Virtual Dash executes the Block commands in a rich 3-D environment. Ms. Campos observed that the Virtual Dash was very effective for her students while they completed the science activities.

It was great being able to see virtual Dash do the movements after the code was run. The students enjoyed seeing their Virtual Dash robot move on the screen.

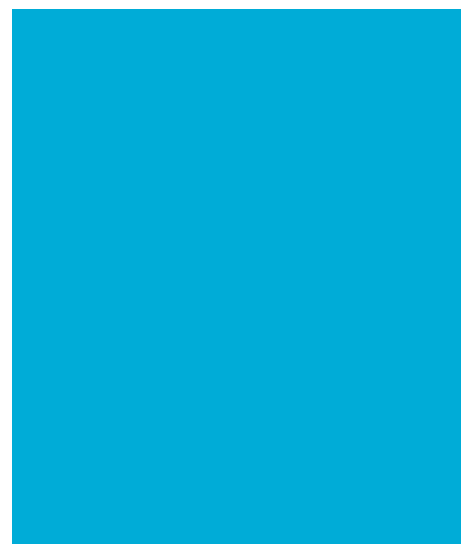
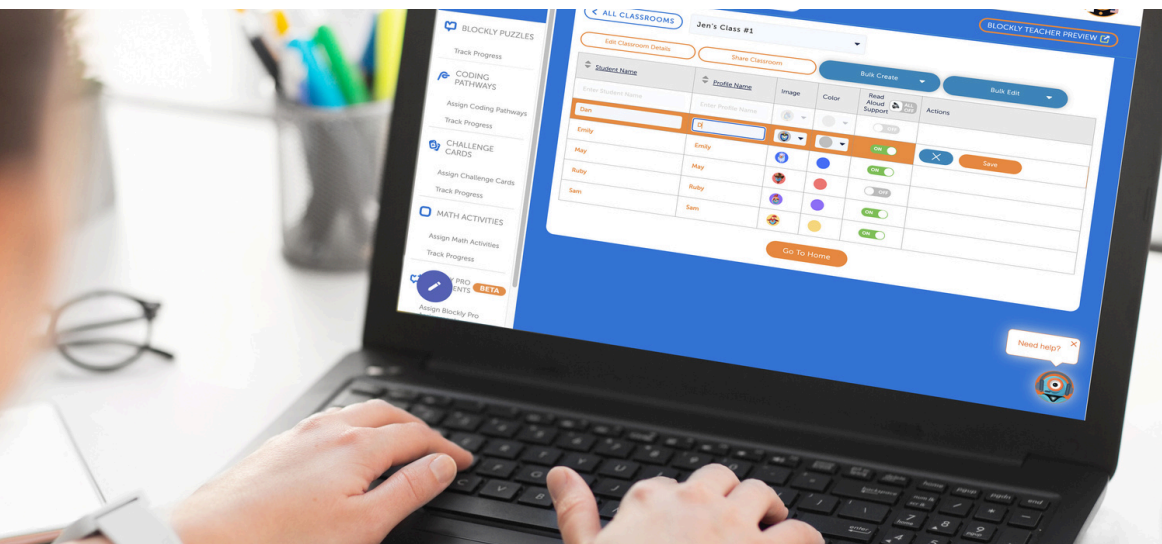
This visual, interactive element heightened student engagement, making the lessons more memorable and allowing the teacher to check for understanding of both coding concepts and underlying science content.

Assessments and Data-Driven Instruction

The Make Wonder platform administered pre- and post-assessments to measure students' grasp of the science concepts covered. The teacher reported that these activities provided an engaging way to assess student learning. By sharing this data with the regular classroom teacher, they could identify gaps in comprehension and reinforce specific concepts in subsequent science lessons. Caitlin Arakawa, the STEAM Lab Specialist who oversees the STEAM Labs across the district, commented:

I love how the STEAM lab teacher & the classroom teacher were able to collaborate to address any areas that students were struggling with.

Moving forward, the district plans to use these assessments to track student progress before, during, and after science units, making data-driven instruction a cornerstone of the STEAM program.



Fitting into the Larger STEAM Vision

The Make Wonder science activities align seamlessly with SBCUSD's emphasis on NGSS Science standards, STEAM, robotics, and computer science within their STEAM Lab settings. By 2030, the district envisions all students having integrated STEAM lessons, ensuring consistent exposure to inquiry-driven, hands-on learning. As Ms. Caitlin Arakawa, the STEAM Program Specialist and former elementary teacher noted, weaving science into lessons is critical:

As a former 3rd & Kindergarten teacher I know how precious instructional minutes are and sometimes we didn't always get to science. Finding ways to incorporate it in cross-disciplinary ways, is key to getting the most out of our time with students. These lessons incorporate computer science, robotics and science, making the time spent very valuable.

Furthermore, with science scores now reflected on the state measurement dashboard, SBCUSD is committed to "turn-key" experiences that empower teachers to integrate robust science instruction without adding undue complexity to their daily schedules. Pre-built science activities in Make Wonder are ideally suited for fulfilling this commitment.

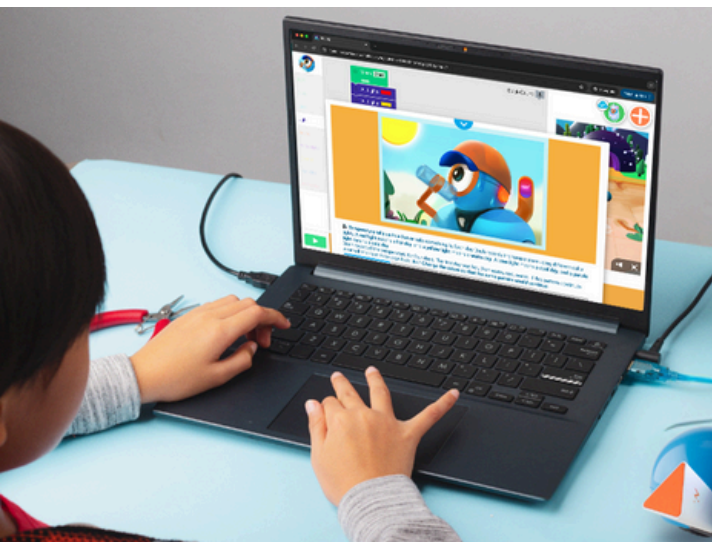
Versatility in Multiple Settings

Use of Virtual Dash vs. Physical Dash

In this pilot, students used Virtual Dash, enabling a 1:1 coding and robotics experience for students in the STEAM Lab. Students with access to a computer or iPad at home can also access Virtual Dash when they are not at school. The district is open to expanding use of the science activities with physical Dash robots as well, which are already available in the majority of their STEAM Labs.

Potential for Regular Classroom Integration

Participants unanimously agreed that the Make Wonder science content is "100% appropriate" for regular classroom use. The blend of coding, robotics, and core science standards makes it an ideal tool for teaching complex concepts in an engaging format.



Value and Plans for Expansion

Stakeholders perceive Make Wonder and its science activities to be high-value resources that align with district goals:

It aligns with our district vision 2030... We hope to truly expand this to all STEAM labs so that every student has these engaging and meaningful experiences.

As more schools across the district implement STEAM Labs, SBCUSD anticipates continuing to widen its adoption of the Make Wonder platform - to make Virtual Dash, science activities, and coding and robotics in general, available to students equitably.

Advice for Other Districts Implementing Coding and Robotics Programs

- Start Early**
Introducing coding, robotics, and algorithmic thinking in the lower grades equips students with transferable skills they will use in the future.
- Embrace Curiosity**
Teachers don't need to be the sole experts. Encourage students to "figure it out" collaboratively, which cultivates a problem-solving mindset.
- Use All of Make Wonder's Platform Features**
Platforms like Make Wonder let educators track student progress and troubleshoot challenges. These features ensure teachers feel supported, even if they're new to coding and robotics.
- Customize and Differentiate Lessons**
Take advantage of the Make Wonder platform's lesson customization options and modular activities to tailor content for diverse learners and ensure that each child gets the most out of their coding and robotics experience.



INTERESTED IN IMPLEMENTING A CODING & ROBOTICS SOLUTION IN YOUR DISTRICT?

Email us at direct-sales@makewonder.com or visit makewonder.com/request-a-demo/