

# BUILDING INNOVATIVE PRACTICES AND SUSTAINABLE PROGRAMS

PLTW at Bakersfield  
City School District



PLTW

## What does it take to have a sustainable Project Lead The Way (PLTW) program?

**According to Bakersfield City School District (BCSD) in California, it begins and ends with the district mission.** For BCSD, that mission is to “educate all students at the highest levels of academic excellence to become collaborative, creative, and critical thinkers.” <sup>1</sup>

“We are allowing [students] to **find their unique passion**, and, when they do find it, we continue to foster [it],” said Brandon Ware, the former Coordinator of Curriculum at BCSD and now a Vice Principal at Chipman Junior High. He noted that ultimately this focus prepares students to compete in a global economy.

PLTW’s unique learning approach places students in the driver’s seat of their education by providing hands-on activities, exploring real-world problems, and fostering deeper interest in science, technology, engineering, and math (STEM). This approach to instruction builds the transportable skills that BCSD highlights in its mission: collaboration, critical thinking, and problem solving. This natural alignment between PLTW and the BCSD mission is why **PLTW is a critical part of BCSD’s strategy** to ensure students are prepared to successfully enter high school, careers, and post-secondary education.





Problem Solving



Critical and  
Creative Thinking



Collaboration



Communication



Ethical Reasoning  
and Mindset

**Transportable skills like communication, problem solving, collaboration and critical thinking are among the top skills requested by employers.<sup>2</sup>**

This alignment between PLTW and the district mission is the backbone to BCSD's successful and sustainable PLTW program. **BCSD has formed the district-level structures required to sustain their program, such as defined program outcomes, funding streams, and teacher support.** This profile serves as an overview and springboard for those looking to discover methods for ensuring PLTW program longevity in their own districts.

### **Focus on the District Mission**

Every program at BCSD must fit within the district mission. Principals, teachers, and district leaders emphasize the importance of **PLTW's alignment with the district's mission.** "[PLTW] lends itself to having

students be collaborative, creative, and critical thinkers,” said Lisa Elisondo, the district-level Instructional Coach supporting PLTW teachers. This is a sentiment echoed by PLTW teacher Kerri Muniogzuren, who adds, “During PLTW, [there is] a lot of collaboration, which is part of our mission and values. It’s creativity; it provides critical thinking, equity, and, of course, innovation.”

According to Ware, once you find the mission alignment, “you really have to figure out what you want” from your PLTW program. Before adopting PLTW, BCSD observed that their students were less engaged, suspension rates were high, and attendance was low. To meet their mission, the district needed to **show students that school can be different** and provide them with various pathways to their life after BCSD.



## Focus on the District Mission

How does the program align with the mission?



## Create District-Level Structures

Who will lead the program?



## Provide Teachers & Schools with Support

What resources do teachers need?



## Meet the Mission

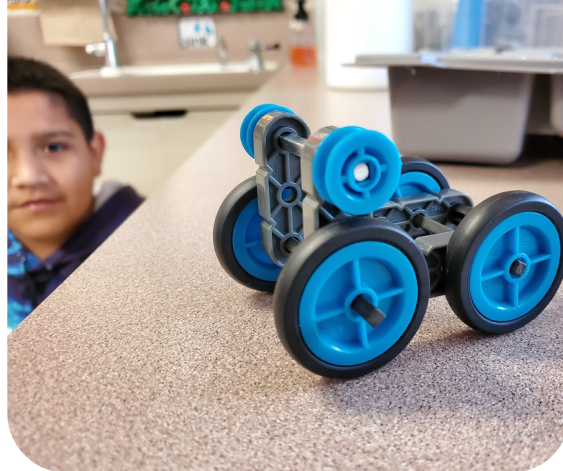
Are students learning important skills?



District leaders, principals, and teachers all shared the same desired outcomes of adopting PLTW: **provide students with opportunities** to engage with STEM, increase confidence, and prepare them for high school, the workforce, or post-secondary education. And, research suggests that PLTW students are more likely to attend college, major in STEM and, among those that directly enter the workforce, earn more than their non-PLTW peers.<sup>3, 4, 5</sup> The process of outlining these desired outcomes provided the framework for **the district level structures needed to sustain PLTW.**

### **Create District-Level Structures**

When developing a PLTW program in your district, **“the systems and structures at your central office [have] to be solidified first,”** Ware explained. He suggested that a district look at their mission and desired outcomes, then build from there, starting with a plan for rolling out the program.



**“The knowledge that they’re gaining, and the skills and the experiences, are providing students with that foundation to meet the district’s vision.”**

*- Lynn McEntire, Principal,  
Downtown School*

### **Establish a Plan for Roll Out**

“Any district that is thinking about PLTW needs to think of a three-to-five-year strategic implementation plan,” Ware recommends. At BCSD, it is a **fully collaborative process**, “from our board, down to our [educational] services team, to our fiscal team, to our human resources team, and ultimately our curriculum instruction team who implements and oversees [PLTW],” said Ware. They create their plan every three years when they write their Local Control and Accountability Plan (LCAP). “We plan all fiscal and instructional components includ[ing] current practices, expansion of the program as well as the...alignment to the district’s mission, vision and values,” Ware said.

The current LCAP is being used for PLTW District Transformation Training, coaching, and the integration of Apple devices into the classroom with the goal **of helping teachers be innovative** while teaching PLTW.

Ware also advises that districts can expand offerings to fit the needs and the mission of the district. BCSD initially started by



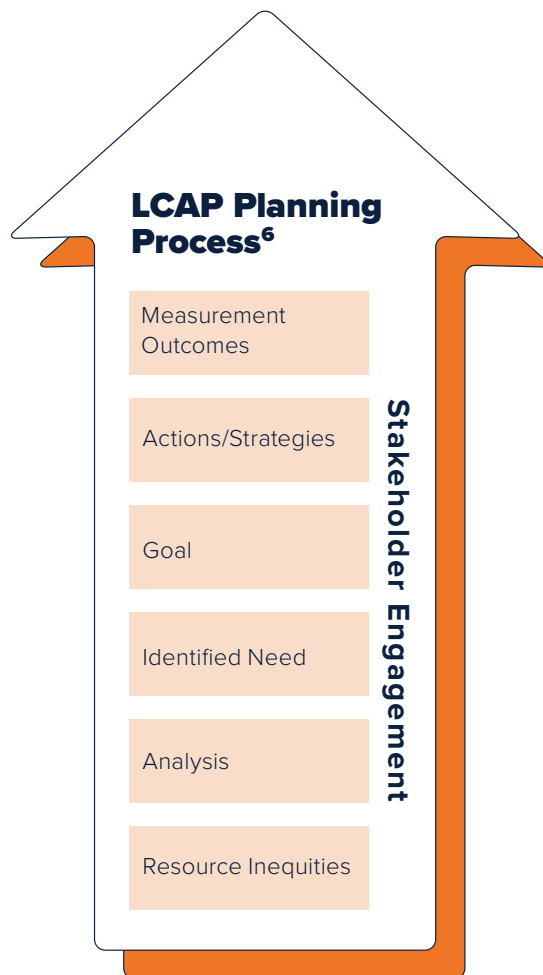
**“We are really opening up the pathways for all of our students... either career pathways or the pathways into college.”**

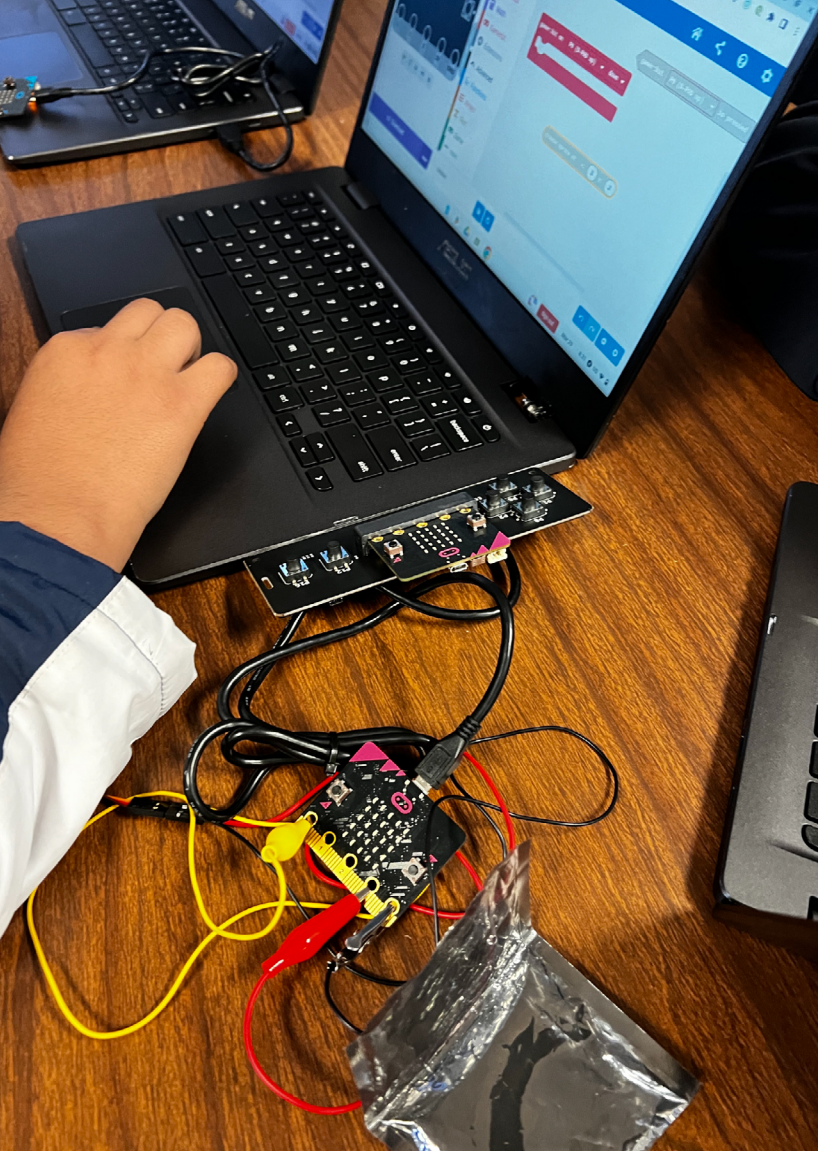
*- Lisa Elisondo, Instructional Specialist, BCSD*

offering PLTW Gateway in just two of their ten junior high schools and PLTW Launch at three of their 33 elementary schools. District and school leaders worked together to select PLTW teachers, starting with those trained in teaching math and science. Principals were asked to select teachers they thought would flourish as PLTW teachers.

Consistent with its mission to educate all students, BCSD **prioritized access and inclusion as PLTW expanded.** BCSD's goal is to make PLTW available to as many students as possible and to ensure

**PLTW District Transformation Trainings (DTTs) provide world-class professional development to larger groups of teachers and education professionals with flexible schedule options ideal for scalable department, school, and district wide implementation of PLTW programs.<sup>7</sup>**

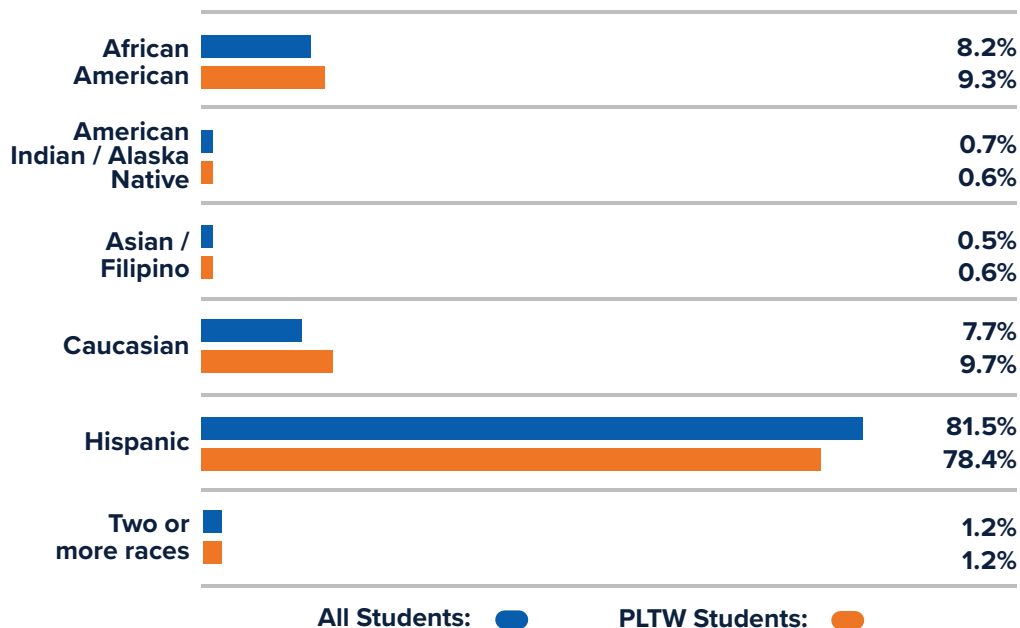




that students have access to a wide variety of courses leading down multiple pathways. For example, after realizing that the process for selecting PLTW teachers could reduce the availability of math and science teachers for core subjects, BCSD **opened the opportunity** to teach PLTW to any interested teacher. This included training special education teachers to increase access for students receiving special education services. Further prioritizing access, the district modified their enrollment approach to allow students to self-select into PLTW after initially requiring students to be selected by teachers.

Finally, to sustain student access to PLTW, BCSD implemented a “plus one model” at all middle and junior high schools. The model creates teacher backup by having

## Race & Ethnicity - PLTW Gateway Students



Note: \*Disaggregated groups with less than or equal to 10 students have been suppressed.

teachers trained in several PLTW Gateway courses based on each school's pathways. By expanding the number of teachers trained in PLTW, BCSD ensures that the program can run consistently in case of a teacher vacancy or for program expansion. Working in tandem with principals and teachers, **BCSD now offers PLTW in 25 of its 43 schools.**





### **Establish and Refine Funding Structures**

In addition to starting small and gradually expanding access to PLTW, BCSD needed to plan its **PLTW funding structures**. BCSD's primary funding source comes from its Local Control and Accountability Plan (LCAP), with supplemental funding provided through Title I and Title II as needed.

#### **1st Semester (2021-22 school year)**

<b>PLTW Gateway Unit</b>	<b># of Sections</b>	<b>Total Unit Enrollment</b>
Automation and Robotics	12	311
Computer Science App Creators	6	157
Computer Science of Innovators and Makers	2	55
Design and Modeling	32	1033
Energy and the Environment	3	107
Flight and Space	4	102
Magic of Electrons	-	-
Medical Detectives	11	313
Science of Technology	1	36
<b>Total</b>	<b>71</b>	<b>2,114</b>

#### **2nd Semester (2021-22 school year)**

<b>PLTW Gateway Unit</b>	<b># of Sections</b>	<b>Total Unit Enrollment</b>
Automation and Robotics	13	346
Computer Science App Creators	6	132
Computer Science of Innovators and Makers	6	155
Design and Modeling	24	676
Energy and the Environment	3	97
Flight and Space	3	85
Magic of Electrons	1	23
Medical Detectives	8	175
Science of Technology	-	-
<b>Total</b>	<b>64</b>	<b>1,689</b>

# “There’s a lot of good resources for me as a teacher.”

- Marissa Gentry, PLTW Teacher, Stella Hills Elementary School



Ware emphasized that a district must continue to work with senior leadership to review the overall district plan and **ensure the same quality of program year after year**. At BCSD it took approximately 4 years to create and develop a sustainable funding structure after the initial cost of establishing the program.

Part of ensuring financial security is reflecting on how resources are being used, while keeping the mission and students at the center of any decision. One result of BCSD’s reflection on its PLTW funding was the addition of a PLTW instructional specialist at the district level, which BCSD added to **increase the support available to teachers**. Lisa Elisondo, a former PLTW teacher, stepped into this role and brought her classroom experience and program knowledge to the district level. Her understanding of the required PLTW class supplies helped BCSD make more

## Funding Resources<sup>8</sup>

Several funding sources are available for PLTW participation, professional development, and equipment and supplies. These include Title I, II, III, and IV, as well as Perkins V funds.

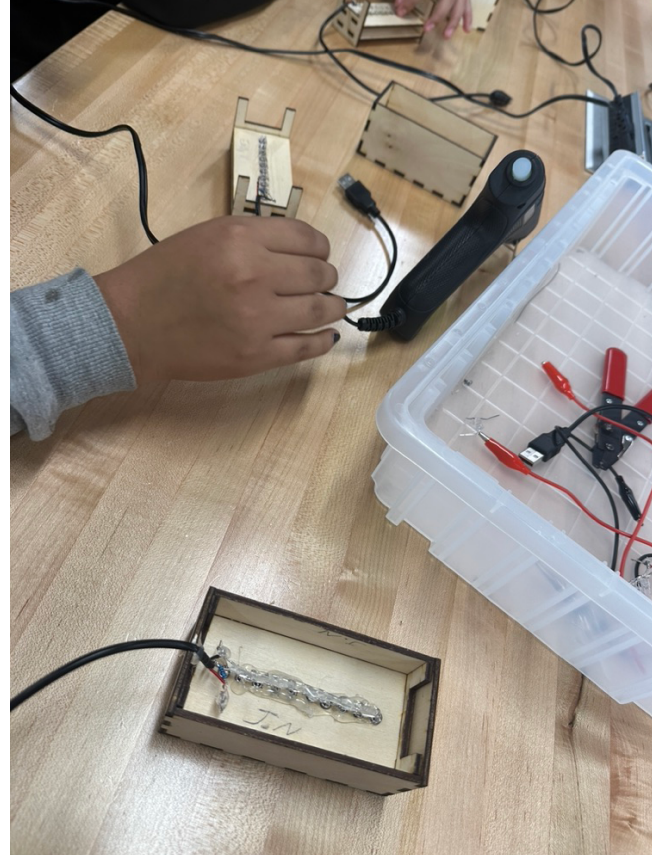
*The PLTW website’s Resource page provides additional documents and links to informational videos.*

<https://www.pltw.org/experience-pltw/resources>

efficient supply purchases, which then helped to make space in the budget for other important aspects of their PLTW implementation plans, like the “plus one model,” **increasing student access, and providing robust supports for teachers.** Elisondo, in collaboration with Ware, also provides teachers, schools, and students with the support they need for a successful PLTW program.

### **Provide the Supports**

Teachers need the right skills, support, and professional development to be successful.<sup>9,10</sup> BCSD has two dedicated district-level positions to accommodate the range of support needed for the district’s 71 PLTW Launch and 23 PLTW Gateway teachers, as well as the more than 3,500 PLTW students. The roles are the district-level Coordinator of Curriculum, formerly a role occupied by Ware and a district-level Instructional Specialist, a role currently held by Elisondo.



Ware, when he served as the Coordinator of Curriculum, maintained the PLTW budget and described his role as that of a servant leader where he helped **remove barriers** and, with Elisondo, ensured that teachers had the appropriate resources. This was achieved in part by **ensuring open communication channels across schools to share resources**.

“Our district is really good at collaborating,” said PLTW teacher Brenda Mayer, noting that schools shared supplies when items were temporarily out of stock or missing.

Elisondo describes her role as **coaching teachers**, assisting with lesson plans, providing professional development, and supporting the district’s robotics competitions. For example, Elisondo provided substitute teachers for a day so that PLTW Gateway teachers could gather and prepare for several weeks of lessons. Additionally, BCSD participates in frequent meetings and summer training institutes, **including professional learning communities** by grade level. These learning communities are designed to assist teachers in their implementation of PLTW into their instructional schedules and guide their pedagogical practices. Elisondo also models the teacher-as-facilitator approach to provide clarity for the

### **BCSD Coordinator of Curriculum:**

This role is responsible for keeping the PLTW program a continued success by maintaining a budget, ensuring district level support, and being an accessible support for teachers.

### **BCSD Instructional Specialist:**

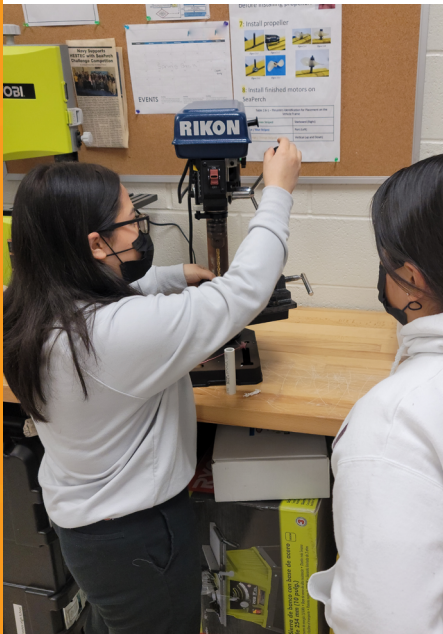
This role is responsible for coaching teachers, providing professional development, assisting with lesson planning, and forming additional supports for teachers as needed.

educators who will be teaching the content, allowing them to see that the process is not a one-size-fits-all model.

The feedback from teachers has been positive. PLTW Teacher Brenda Mayer credited Ware and Elisondo for providing on-demand support. “We have absolute support from [them],” she said. “They’re very open and available for anything,” added PLTW teacher Marissa Gentry.

According to Lynn McEntire, a principal in the district, this type of leadership is critical for teacher buy-in. However, it is not just the district that supports teachers. School-level leaders also provide important resources and support.

Ware trained principals and school leaders to provide the PLTW-specific feedback teachers need. Muniogzuren noted support from school leaders, such as flexibility in the school schedule to better fit



**In a 2023 survey of PLTW Core Training participants, 80% of respondents indicated that PLTW will have more of an impact on their teaching practices compared to other professional development they have participated in.**





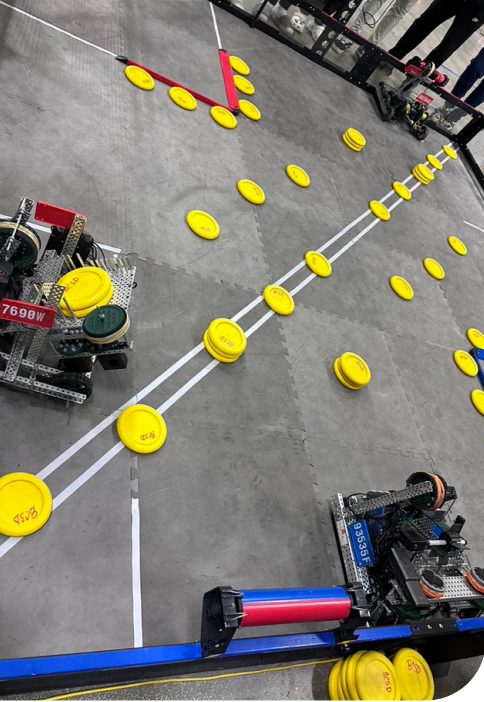
**[PLTW is] student-centered, so it's about the kids becoming the critical thinkers; the kids becoming the problem solvers; the kids collaborating.**

*- Kerri Muniogzuren, PLTW Launch Teacher, Leo G. Pauly Elementary School*

PLTW into the school day, as crucial to her success as a PLTW teacher. Marilyn Strongin, a school principal, considers herself as a cheerleader and a “supply-getter” for PLTW teachers. Principal McEntire supports teachers by giving them time and space to plan for instruction and encouraging ongoing professional development. Ware noted that while the district supports PLTW teachers, PLTW teachers also support and mentor other PLTW teachers.

“We’re all very supportive of each other,” said Mayer.

These structures and supports ensure that students get the **best instruction possible** through PLTW so that the district can meet its mission.



## Monitor Progress Towards Meeting the Mission

BCSD tracks student outcomes, including more than 60 sections of PLTW Gateway offered each semester, the outcomes for more than 3,500 K-8 grade students engaged in PLTW, grade point averages, and test scores. **Tracking outcomes is a significant** factor in justifying the continued funding of a PLTW program and planning for the future.

Teachers and principals supplement the quantitative data with their own experiences with students. Several principals and administrators talked about the prevalence of learned helplessness among students (i.e., the tendency for students to swallow and regurgitate material from class, be disengaged, and to have less confidence in their abilities). Moreover, teachers and principals spoke to the negative impact of the COVID-19 pandemic on both

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**[PLTW is] a bonding experience where you get to discuss things, have agreements, and sometimes have disagreements.”** - PLTW Student, BCSD

learned helplessness and social skills. **They credited PLTW with helping to combat learned helplessness and students' lack of confidence in their abilities.** “[Students] gain confidence in their ability to solve problems,” Strongin said.

However, it’s not just administrators and teachers that see PLTW as beneficial—it’s students too. “I always tell my friends you should join PLTW because **it’s really fun and engaging**,” said one PLTW student. Students don’t just enjoy PLTW classes, but also recognize that they’re learning important skills. One student said, “I feel that working in groups **helps us improve our social skills...** because we’re able to **communicate our ideas**, and when it comes to a task we’re not sure of, we...use our knowledge to find the answer.” Another student referred to PLTW as **“a bonding experience”** where “you get to discuss things, have agreements, [and] sometimes have disagreements.”

**Over 2/3 of PLTW Launch 3rd-5th grade students say that PLTW improves their understanding of science and their ability to use technology.**

according to a 2023 survey of Launch students

## Looking to the Future

**BCSD has created a successful and sustainable PLTW program** by focusing on the alignment with the district's mission, strategically allocating funds, and ensuring that structures are put in place to support teachers and expand access for students. However, BCSD's work doesn't end there. For BCSD, the future holds more opportunity: specifically, **the integration of PLTW and the PLTW approach into the whole classroom.**

"The integration of the PLTW principles not only increases the sustainability of PLTW in BCSD but...also increases student agency and are good teaching practices for every teacher," said Elisondo. "Having the teacher be a facilitator of learning and using project-based learning as a guide for all instruction are key approaches to differentiation and allow students to think deeper about any content that they are learning."

"As we are beginning to shift instruction, we want to work to take some of the principles of PLTW Core Training such as teacher as a facilitator and the design process across content," Ware added. Muniogzuren hinted to this already happening. "Because of PLTW, collaboration and critical thinking, has really shown in other cross curricular subjects," she said.

**“PLTW  
principles...are  
good teaching  
practices for  
every teacher.”**

*- Marissa Gentry, PLTW Teacher,  
Stella Hills Elementary School*



**Embedding PLTW into the fabric of instruction is BCSD’s next step in utilizing PLTW to achieve its mission of providing students with the skills needed to thrive in the 21st century.**



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## **ABOUT BCSD<sup>1</sup>**

Located in the southern end of the San Joaquin Valley in the county of Kern, the Bakersfield City School District (BCSD) is the largest elementary school district in California, serving approximately 30,000 students across 44 schools. The district operates on an annual General Fund Budget of over \$400 million with approximately 3,000 personnel. Of the district's approximate 30,000 students, 79% are Hispanic with 9% white and 8% African American. The remaining 4% are primarily Asian, Filipino, and American Indian/Alaskan. Almost 30% of the district's students are classified as English Language Learners and almost 90% of the district's students receive free or reduced lunches.



### **Mission**

To educate all students at the highest levels of academic excellence to become collaborative, creative, and critical thinkers.

### **Vision**

To be the model of educational excellence, equity, inclusion, and innovation.

### **Values**

Equity, Integrity, Caring, Collaboration, Personal & Collective Accountability

### **NUMBER OF SCHOOLS**

Elementary: 33

Middle: 6

Jr. High: 4

Children's Center: 1

Community School: 1

Wellness Centers: 4

### **SOCIOECONOMIC DISADVANTAGE**

Count: 25,132

Percentage: 85.2%

### **SPECIAL EDUCATION**

Count: 3,432

Percentage: 11.6%

### **PERSONNEL COUNT**

Certificated: 1,720

Classified: 2,077

### **ENROLLMENT**

Overall: 29,489

Elementary: 22,067

Jr. High / Middle: 7,422

### **ETHNICITY OF STUDENTS**

Hispanic: 81.1%

White: 8.2%

African American: 7.7%

Other: 3%

### **MIGRANT**

Count: 1,095

Percentage: 3.7%

### **ENGLISH LEARNERS**

Count: 7,911

Percentage: 26.8%

### **FOSTER YOUTH/UNHOUSED**

Count: 1,419

Percentage: 4.8%

# PLTW

**Empowering students to thrive in an evolving world**

[pltw.org/impact](https://pltw.org/impact)

