

## **Margaret Landell Elementary School Model Programs and Practices**

### **School Information**

CDS (County District School) Code: 30664806027858

County: Orange

District (Local Educational Agency): Cypress Elementary

School: Margaret Landell Elementary School

### **Demographics**

Enrollment: 752 students

Location Description: Suburban

Title I Funded: No

School Calendar: Year-Round

Charter: No

### **Overview**

Margaret Landell is a neighborhood school located in Cypress, California. We serve 752 students in transitional kindergarten (TK) through sixth grade. Our population is primarily comprised of students with Korean, White, and Hispanic backgrounds. The major primary languages spoken by our students include English, Korean, Mandarin, Spanish, and Vietnamese. Landell has a history of exceptional student achievement, with the vast majority of our students either meeting or exceeding standards on local and state assessments. We place great value on student learning and achievement, but we also place great emphasis on instilling a growth mindset in our students. Thomas Edison stated, "I have not failed. I've just found 10,000 ways that won't work." This quote embodies our approach to education, in that we want students to be willing to take risks and grow from each of their attempts at learning. Our expectation, as stated in our mission statement, is that our students will be the leaders of the 21st century. We couple that expectation with the awareness that we need to prepare our students today for the STEM careers of tomorrow. This marriage of ideas gave birth to our model program, simply referred to as STEM. Our greatest asset in developing our model program is our human capital. We employ the strategy of bringing our entire community

together to determine how to best utilize the resources available to create the strongest STEM program possible. The practice of cultivating strong partnerships among parents, students, staff, and the community yields many benefits for our students. Parent and community members often volunteer their time and talents to work alongside our teachers to provide unique learning opportunities in the area of STEM. As of March 1 of this year, we've logged 2,509 volunteer hours at our school. In addition to volunteer hours, the deep commitment to our partnership is evident in our successful fundraisers, high rates of attendance at parent education offerings and Family Nights, and the student participation rates in before and after school learning opportunities. It is further demonstrated in the many hours teachers dedicate outside of the instructional day to attend voluntary professional development opportunities, plan STEM learning experiences, write grants, and collaborate with colleagues. We each embrace the question, "what if..." which has led to the purchase of coding devices, the development of an outdoor classroom, a renewed commitment to our school garden and recycling efforts, and the creation of an annual STEM FEST. We constantly work together to refine our model STEM program and the offerings currently in existence, and work to implement new offerings to further equip our students to be leaders in the STEM careers of tomorrow.

## **Model Program and Practices**

Name of Model Program/Practice: STEM - Growing Tomorrow's Leaders Today

Length of Model Program/Practice: 2–4 years

Target Area(s): Parent, Family, and Community Involvement, Professional Development, Science, Technology, Engineering, and Mathematics, Use of Technology

Target Population(s): Asian, Hispanic, White, Two or More Races, Socioeconomically Disadvantaged, English Learners

Strategies Used: School Climate, Small Learning Communities, Parent Engagement, Data-Driven Decision Making, Professional Development, Implementation of Academic Standards Basics (Teachers, Instructional Materials, Facilities)

## **Description**

The district program provides hands-on learning experiences in the real-world context of STEM. Students in TK through sixth grade participate in age-appropriate units of study throughout the year in the areas of engineering and environmental science. These locally developed lessons are designed to support the grade level concepts, practices, and performance expectations outlined in NGSS. Landell enthusiastically implements all units provided by the district, but we go above and beyond to "Landellize" and enhance our students' STEM experiences. One strategy we employ is to place heavy emphasis

on developing each student's problem solving skills and computational thinking by helping them become independent learners. We design activities that encourage students to "fail" multiple times, and to articulate how and why their attempt did not work. Our practice is to integrate all parts of STEM to provide students with valuable learning experiences that allow them to see how big ideas connect to one another, thus allowing them to make deeper connections. Knowing that being able to collaborate and articulate are crucial to success in the workplace, our model STEM program employs the strategy of cross grade level partnerships to enhance STEM learning opportunities for students. For example, a fifth grade class and a kindergarten class paired up to build the tallest marshmallow structure. Fifth grade students were challenged to assist by only asking questions, and kindergarten students had to critically think about their approach. Other activities occurring as part of these buddy partnerships include students working in the school garden to bring the district STEM modules to life, using coding devices, constructing feats of engineering, and interacting with math projects. We also employ the strategy of vertical articulation, which has yielded many positive results. Second and third grade teachers created a typing continuum that has resulted in more than 90% of students being proficient with basic typing skills by the spring of their third grade year. We know typing is an essential skill to future success, but we also know the ability to proficiently type allows students to engage at a higher cognitive level when completing online assignments and assessments since they are not having to search out keys. Recently one of our fourth grade teachers adopted a blended learning approach to math, and her successes became known to other grade levels through informal conversations among teachers. As a result, teachers wanted to observe in her classroom, so we rearranged schedules to allow all third through sixth grade teachers to go in teams to observe in her classroom. Vertical articulation has led to the practice of an open door policy and a commitment to examining our approach to instruction. Our formal and informal conversations have enabled us to create a model STEM program that both challenges and excites our students.

## **Implementation and Monitoring**

In December 2015, the Board of Trustees made the financial commitment to construct dedicated science labs at every school. Each STEM lab includes multiple display monitors, laptops, electronic microscopes, and other equipment and supplies to support hands-on learning. Units of study and professional development are provided to support implementation. Teacher survey data is collected to monitor program implementation and make adjustments as needed. This investment of resources has provided Landell an excellent foundation to build upon, and has allowed us to focus our energies on the strategy of technology integration to demonstrate mastery of STEM standards. For example, given specific constraints, students must engage in activities that use their knowledge of coding to collaboratively achieve desired outcomes. In kindergarten, students code Beebots to travel from a tile with the ordinal number, to the number word, and finally to the number of objects. In grades 1–3, students use their knowledge of distance and multiplication to program Dash robots to navigate a maze, perform motions, and light up in a specified manner. In grade 4, students use Lego WeDo robots to design a floodgate to control water, based on precipitation patterns. Students in grades 5 and 6 apply their knowledge of angles and velocity to navigate Sphero through

courses that include sharp turns and ramps. Though teachers provide support by asking guiding questions, the practice is to hold students responsible for meeting the challenges by applying their knowledge of engineering, math and technology. We monitor their learning by evaluating both process and product. Another way we utilize technology to monitor learning is the use of Chromebooks and iPads. Teachers routinely create differentiated learning experiences that allow all students to experience success. One activity might have an English Learner or struggling student engaging with a prompt in Google that contains sentence frames, challenging them to fill in words and phrases to communicate their understanding of a science concept, while an on grade level student is given a prompt requiring supporting statements from one source, and the above grade level student is asked to use several sources to support their statement. All students are responding to the same topic, but the activity has varying levels of application based on need. While technology is a main focus area at Landell, we do continue to value and provide other STEM interactions. Students have opportunities to try out for the school's Math or Science Team, complete a project for our annual STEM FEST, or participate in after school offerings like Chess Class, Mad Science, and Build It Workspace. Sixth grade students can be part of Landell TV, Dishing the Dirt, or Science Explorations. Landell's STEM program offers many opportunities above and beyond what the district provides, and we feel these opportunities truly develop a passion in our students for STEM.

## **Results and Outcomes**

Cypress School District closely monitors student achievement through local and state assessments, and Landell students routinely perform well on these assessments. The state five-by-five placement report for math shows Landell students achieving 61.9 points above level 3, and maintaining a very high achievement this year. Landell students are able to consistently apply content knowledge learned through STEM experiences to class assignments and projects. While this is one of the goals of our model STEM program, we feel our program's impact extends far beyond assignments and assessments. The program we've created has generated a true love of STEM in our students and staff, and has encouraged them to be innovative in their approach to learning. Students are able to confidently and competently use devices to successfully create presentations, collaborate to complete projects, and independently research information. Throughout the day, students take the initiative to research on the internet, visit websites to improve their presentations, check the shared documents in Google as part of the collaboration process, visit websites to practice basic skills, and work to complete required assignments to earn extra time doing optional activities on coding devices or computers. STEM is part of their everyday learning, and many indicators show the deep love both staff and students have toward STEM. Students chose to use their school economy dollars to buy admission to science experiments that are offered during their lunch period, rather than buy items from the student store. Each year we have more students try out for the Science and Math teams than spots available, and each year we take home more gold, silver, and bronze medals than in prior years. Participation rates at our annual STEM FEST increase each year, as does teacher attendance at professional development offerings during their breaks. Teachers have initiated partnerships with local Eagle Scouts to construct an outdoor classroom, and

with a local engineering firm to provide project based learning experiences to third graders. Our local junior high, colleges, and community members conduct interactive presentations at our annual STEM FEST. Teachers have written, and been awarded, grants that bring science assemblies to Landell. They have written grants to procure additional technology in their classroom, get supplies for engineering and science experiments, and get more supplies for their math centers. The results of our STEM program have been high student achievement and engagement, continual commitment by our teachers to provide the very best instruction, a better articulated continuum of the offerings we provide our students, and strengthened partnerships with parents and the community. We have created a true model STEM program that is propelling us toward our ultimate goal of successfully equipping our students to be the leaders in the STEM careers of tomorrow.