



STEP IMPACT REPORT

2024

www.stepconference.org



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FINANCIAL SPONSORS



25 YEARS *Thank you!*

In celebration of the 25th Anniversary of STEP, it is with immense gratitude of the STEP Board, and the greatest appreciation of tens of thousands Inland Empire students and educators, that we acknowledge our sponsors and partners who make our STEP programs possible. With our sponsors' steadfast commitment to supporting our STEM outreach programs, we are able to excite our young people about good careers in a variety of STEM fields.

MOLECULAR SPONSOR



ATOM PLUS SPONSORS



ATOM SPONSORS



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PROTON SPONSORS



Louis & Teri Goodwin
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Gordon & Jill Bourns

NEUTRON SPONSORS



IN-KIND SPONSORS

Special thanks!

We also thank our many In-Kind Sponsors who provide numerous volunteer hours, delicious meals, and educational resources. Your support adds depth to our programs as we showcase good career opportunities for all the young people who participate in our programs.



STEP Program OVERVIEW

The Mission of STEP is to inspire K-12 students to pursue STEM educations and STEM careers. STEP achieves its Mission by providing at no cost for any of our participants a variety of hands-on STEM education experiences and interaction with professionals who use STEM to improve their job safety and effectiveness. STEP achieves its Mission through multiple programs, which we are pleased to highlight for you:

STEPCon STUDENTS,

held each October, provides STEM experiences to K-12 students and their teachers, which include a STEP Science Show, STEM exhibit booths, presentations, and small-group workshops.

STEPCon EDUCATORS,

provides teachers and administrators with tools to make STEM subjects more interesting and relevant for their students.

STEPCon COUNSELORS,

which was added in 2023 at the suggestion of local employers and college educators, is dedicated to providing counselors with STEM education roadmaps to guide students in preparing for STEM educations, focused on math, the “language of STEM.”

STEM SUMMER LEARNING LABS

are week-long STEM summer camps, which provide extended learning experiences for ninth grade to twelfth grade students to learn

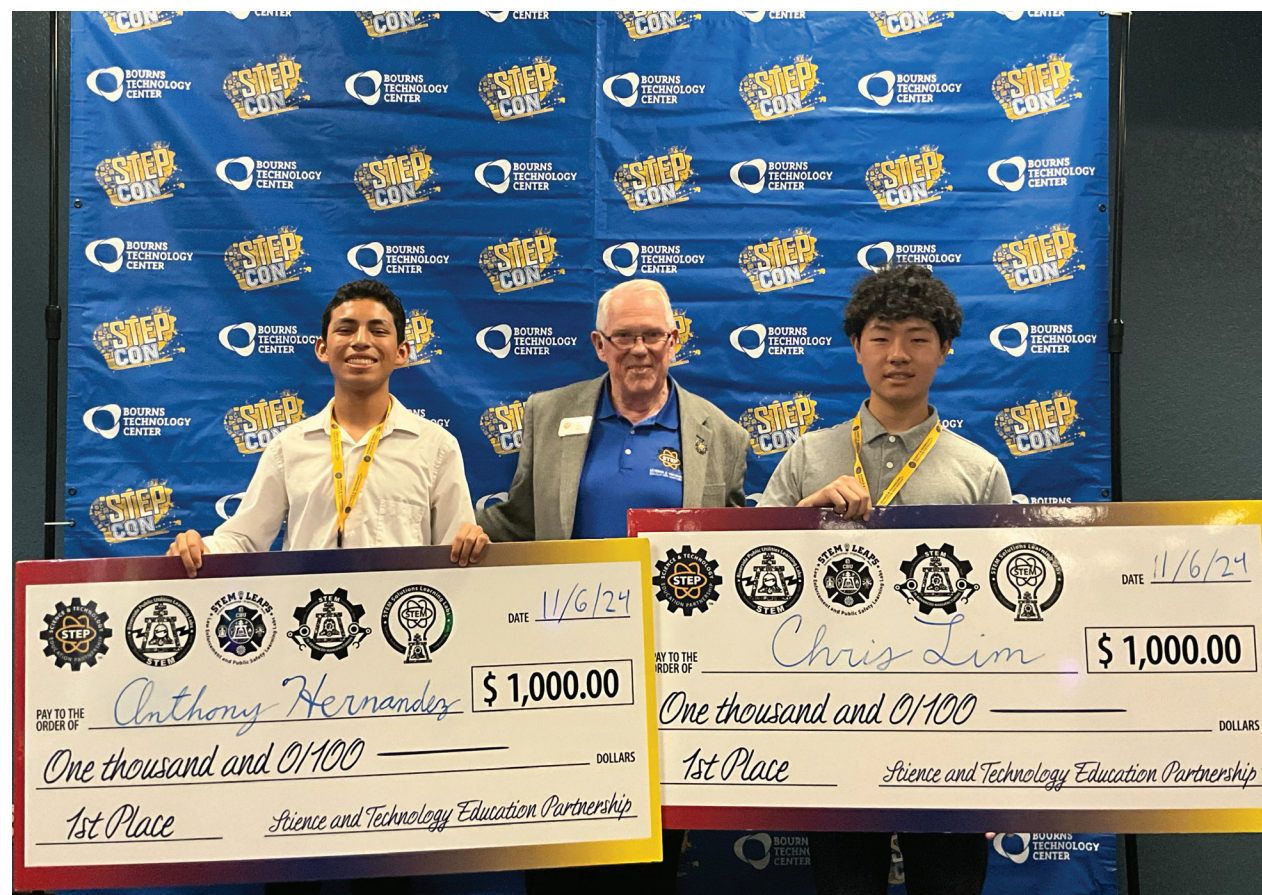
about STEM careers in their community in the areas of policing, fire-fighting, public utilities, manufacturing, and the R&D needed to produce solutions to community problems. In 2023 we added another STEM Summer Learning Lab, STEM IN DEFENSE (STEM ID) dedicated to engaging students in information technology, artificial intelligence, 3D imaging/printing, and the use of drone technologies.

STEM ACADEMIES,

also recommended and introduced in 2023 to create a „STEM learning pipeline“ for younger students. PATTERNS, PUZZLES, & PRACTICES (P³) is dedicated to 5th & 6th grade students and focuses the students on inventing games using math. STEM FUNdamentals is dedicated to 7th & 8th grade students to teach them the skills they will use in the STEM Summer Learning Labs, when they are high school students, especially the relevance of math for STEM educations.



Student STEPCon24, Hands-On Exhibits, Riverside, CA



Educator STEPCon24, Scholarship Recipients, Riverside, CA

STEP Program HISTORY

For 25 years, the STEP Conference has provided K-12 students with exciting opportunities to engage with STEM professionals and learn about various careers available in the Riverside and San Bernardino Counties of Southern California, the Inland Empire. The STEP Conference (now branded as STEPCon - STUDENT) includes a STEP Science Show conducted by engineers from General Atomics located in San Diego. The Science Show demonstrates many fundamental scientific principles and engineering applications in a way that reaches audiences of all ages. In addition, students experience a variety of exhibit booths showcasing various STEM careers, including in the Navy, Police Department, Fire Department, Public Utilities, Engineering, Manufacturing, Environment, Education, Medicine, and Technology. At these booths students interact with STEM professionals and learn how STEM skills are used in various careers.

Pre-COVID, the STEP Conference was held in person over a two day period for 2,500 students per day from throughout Riverside and San Bernardino Counties. Pivoting during COVID-19 isolation in 2020, the STEP Conference transitioned to STEPCon20 -- STUDENT, providing an entirely online virtual experience for the students and their teachers. This required significantly more investment in an on-line platform, archiving on YouTube, on-line production time and significant AV equipment and technical operations experts. We were extremely pleased with the results -- we saw our attendance triple to almost 15,000 students and their teachers, reaching throughout the Inland Empire, and beyond! Post-COVID, we have adopted a single day of broadcast-technology-intensive hybrid programming, to include many more under-served students and districts throughout the two very large counties of the Inland Empire.

In 2017, the long-standing, half-day STEP Educator Conference was expanded to a full-day to provide more outstanding STEM education tools and professional development for educators. It was not conducted during COVID-19, in 2020 or 2021, because of the in-person and hands-on nature of our STEP Educator Conference. Post COVID-19, in 2022, we re-introduced STEPCon22 - EDUCATOR, with good attendance by educators eager to resume meeting together. At the recommendation of local employers and college educators, STEPCon 23 -- COUNSELOR was introduced. It is focused on providing K-12 counselors course roadmaps to help students plan their classes depending upon their career interests. The STEPConXX -- EDUCATOR and COUNSELOR conferences are intended to inspire educators and counselors to further develop their knowledge of best practices for advising their teachers and their students on how to make the best use of time invested in students' education. Keynote speakers from throughout the country, along with local educational professionals provide inspiration and information. The highlights of these conferences are the STEP Student Scholarship winners, who share how they have been guided and inspired by educators and counselors in preparing for their STEM college degrees.

Beginning in 2017, the STEM Summer Learning Labs were developed in partnership with the Riverside Police Department and Riverside Fire Department, with the first program being STEM in Law Enforcement and Public Safety, (STEM LEAPS). Since then, we have developed the many additional week-long experience-based programs: STEM in Public Utilities (STEM PULL), STEM in Advanced Manufacturing (STEM I AM), STEM In Advanced Manufacturing (STEM I AM), STEM In Defense (STEM ID), and STEM Solutions focused on using STEM tools to develop solutions to challenges including health, availability of food, quality of life, and sustaining our environment. These programs provide high school students with 40 hours of hands-on learning focused on STEM educations and careers. During each week, teams of students use an engineering design process called "We Are All Designers" to develop and then present a STEM project based on the information they learned. Student teams are awarded cash scholarship prizes for each program's top three teams. These programs provide excellent opportunities to "test drive" prospective STEM careers while they develop valuable professional skills.



Student Research Showcase, Student STEPCon24, Bourns Technology Center, Riverside, CA

OUR TARGET COMMUNITY & BEYOND

The Inland Empire (IE) is a region in Southern California; an urban and metropolitan area centered around the cities of Riverside and San Bernardino. The Inland Empire is located east of Los Angeles County. The Inland Empire is sometimes considered as the federally-defined Riverside-San Bernardino-Ontario metropolitan area, which covers more than 27,000 square miles (70,000 km2) and is part of the Greater Los Angeles area.

Home to over 4 million people, the metropolitan area consists of Riverside County and San Bernardino County, making it the 12th most populous metropolitan area in the United States and the third largest in the state of California.

At the end of the 19th century, the region was a major center of agriculture, including citrus, dairy, and wine-making. Agriculture declined through the 20th century, and since the 1970s, a rapidly growing population, fed by families migrating in search of affordable housing, has led to more residential, commercial, and industrial development.

Educational attainment in the Inland Empire remains lower than in neighboring regions. Approximately 32.61% of the Inland Empire's population holds an associate degree or higher, and 82.54% have at least a high school diploma. Preschool enrollment is lower than in nearby counties, with only 37% of 3- and 4-year-olds enrolled. The region faces challenges in high school graduation rates, and post-secondary enrollment remains below the state average.

The Inland Empire area has one of the lowest average annual wages in the country. A 2024 study of salaries ranked the Inland Empire below many other major metropolitan areas, though economic expansion continues. The region's Purchasing Managers' Index (PMI) has remained above 50 in recent months, indicating growth. While urbanization continues to cut into agricultural lands, the Inland Empire still produces substantial crops. Additionally, innovative institutional support networks and affordable land prices have attracted some small businesses and technology startups into the area.

Recent data indicates that educational attainment in the Inland Empire has seen modest improvements, yet challenges persist.

These statistics underscore ongoing efforts to enhance educational outcomes in the Inland Empire, focusing on increasing graduation rates and expanding access to early childhood and higher education.

HIGH SCHOOL GRADUATION RATES

San Bernardino County: The high school graduation rate decreased from 86.6% in the 2021-2022 academic year to 85.5% in 2022-2023, slightly below the statewide average of 86.2%.

As of the 2022-2023 academic year, Riverside County's high school graduation rate stands at 91.4%, surpassing the California state average of 86.2%.

POST-SECONDARY EDUCATION

Degree Attainment: Less than 30% of adults in the Inland Empire hold an associate degree or higher, compared to 38% to 48% in neighboring Los Angeles and Orange Counties.

PRESCHOOL ENROLLMENT

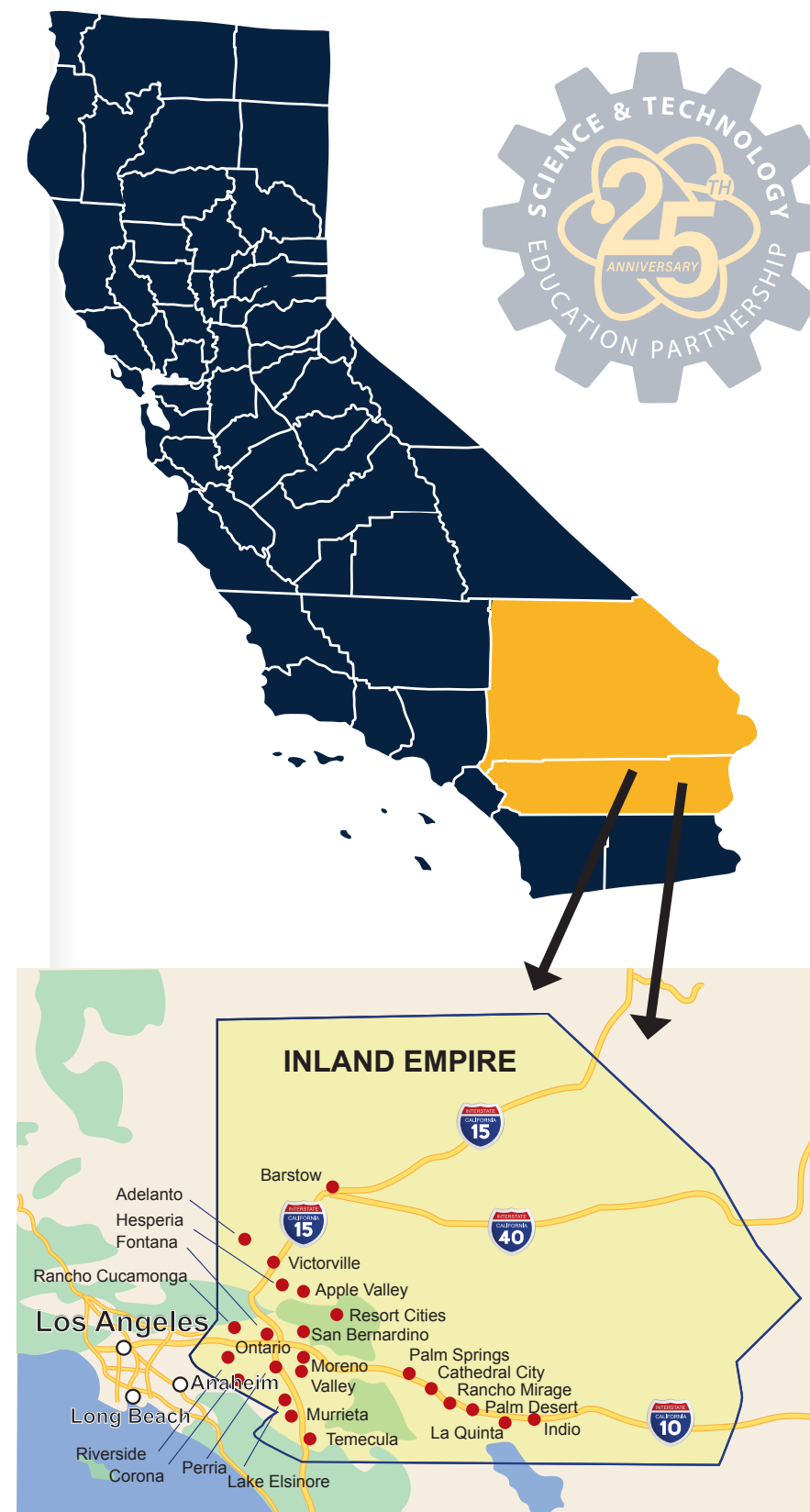
Enrollment Rates: Approximately 37% of 3- and 4-year-olds in the region are enrolled in preschool, indicating a need for increased early childhood education opportunities.

While these statistics are discouraging, there are many rays of light. The City of Riverside is very fortunate to have four institutions of higher education, the University of California, Riverside; California Baptist University, La Sierra University and the Riverside Community College District. Similarly, the San Bernardino area has California State University, San Bernardino, San Bernardino Valley College, Loma Linda University, Crafton Hills College and the University of Redlands. STEP appreciates the opportunity to partner regularly with many of these colleges and universities for its programs. Many of our students have not set foot on a college campus, but when they visit them for a STEP program and have lunch in the cafeteria, they can get a first-hand impression of the campus and sense what it feels like to be a student there. These experiences are very helpful to students as they plan their education pathways.

The Inland Empire is further blessed with supportive city governments and agencies. We could not have started the STEM in Law Enforcement and Public Safety Summer Learning Labs without the encouragement and support of the Riverside Police and Fire Departments and the leadership of Gina Perez from the Riverside Fire Department and Jennie Pauli from the Riverside Police Department. The success of STEM LEAPS encouraged Riverside Public Utilities to join with STEP to create our STEM in Public Utilities Learning Labs (STEM PULL), bringing the talent to create our online programs by Riverside Public Utility's Sharon Gutierrez and Damaris Velez.

STEP brings together leaders in Education, Business and Government to create innovative education solutions to encourage Inland Empire students to explore career paths and learn about the education required for their careers of interest. We are thankful that Yamileth Shimojyo, Administrator for STEM Education in Riverside County serves as Vice President for STEP and Kim Terry, STEM Coordinator for San Bernardino County is on the STEP Board. Yamleth and Kim together with our Board provide valuable direction for our STEP programs.

The STEP Board and Program Planning Committees are pleased to share with you highlights of our achievements in 2024 and look forward to your continued support in 2025.



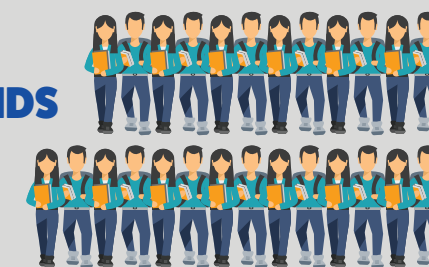


Our Overall IMPACT



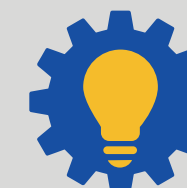
SCIENCE & TECHNOLOGY
EDUCATION PARTNERSHIP™

7,184 KIDS
Participated in our
hybrid STEP programs



355
EDUCATORS
Engaged in
STEP Experiences

14
STEM
Opportunities



300+
Sponsors - Partners
Exhibitors - Volunteers



Inspiring students to pursue careers in STEM

STEP Board CHAIRMAN



Gordon Bourns

Bourns Inc., CEO

Gordon Bourns serves as the Chairman and CEO of Bourns, Inc., a family-owned electronic components manufacturing company headquartered in Riverside which also promotes STEM education. Bourns was co-founded in 1947 by Gordon's parents, Marlan and Rosemary Bourns, in their Pasadena, California garage. Marlan was the inventor and builder while Rosemary was the administrator and bookkeeper.

Gordon enjoys taking students on tours of the exact replica of his parents' garage located in the courtyard of the company's Worldwide Headquarters in

Riverside. It houses the drafting table Marlan made and used to design the aerospace sensors used by many of the aircraft companies. Beside it is the desk Marlan and Rosemary made from a shipping crate, where Rosemary kept the books and typed up the product information and invoices on a manual Underwood typewriter.

Across from Rosemary's desk is the kitchen's oven they used together with their refrigerator to do the hot and cold temperature testing of their early aircraft instruments. On a workbench to the left of the oven are several of the original linear motion potentiometers they designed and manufactured, which indicated to the pilot the position of the rudder and elevators. Beside them are two accelerometers which indicated the aircraft's acceleration and an angle of attack transducer, which measured the aircraft's position in relation to the air it is flying through.

After seeing and touching the history of the company, Gordon concludes the tour by telling students, "My parents were delighted when, in July of 1969 the Apollo 11 astronauts landed on the moon using the landing control made by Bourns and as they walked on the moon, the air they breathed and filled their space suits was controlled by three pressure regulators made by Bourns right here in Riverside. This is an example of how, with good ideas, hard work and an excellent team, you can go from a garage to the moon in 22 years." Link to tour of Bourns Garage: <https://seekbeak.com/v/KNj9907YjxB>

In addition to serving as the President of the STEP Board, Gordon serves on the UCR Foundation Board, the Cal Baptist University Board of Visitors, the STEM Academy Foundation Board and the Woodcrest Christian School System Board. Gordon and his wife, Jill, have been married for 45 years and are blessed by their four children, a daughter-in-law, three sons-in-law, and eight grandchildren. Gordon says he is really a kid at heart when it comes to STEM.

STEP Board

EXECUTIVE OFFICERS & DIRECTORS



Yamileth Shimojyo
Riverside County
Office of Education



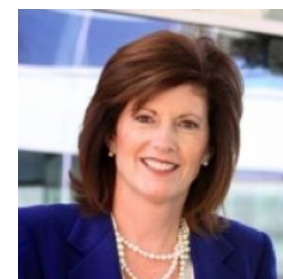
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PICTURE OUR PROGRAMS



STEM SUMMER LEARNING LABS, 2024

Participants during STEM-In-Defense (STEM ID) engage in a hands-on activity with partners at the Naval Surface Warfare center, Corona, 2024.



STEM SUMMER LEARNING LABS, 2024

High School student participants during STEM-in-Public-Utilities (STEM PULL) at the Gordon and Jill Bourns College of Engineering, California Baptist University, Riverside, 2024.



STEM SUMMER LEARNING LABS, 2024

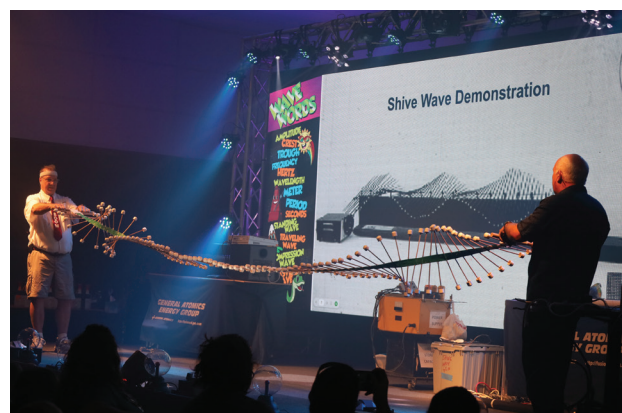
Mentors and participants of STEM Solutions, STEM I AM and STEM FUNdamentals, Riverside, 2024.

STUDENT STEPCon24

As the premier student STEM conference in the Inland Empire, we held a hybrid event on October 10, 2024. A hybrid event allowed for participation either in person or virtually so that students from throughout the Inland Empire could engage. We had a total of 6,921 students and their teachers attend either the in-person or virtual event. 1,279 attended in-person and 5,642 on-line students throughout the 30 day on-demand viewing period.

Students continue, through their comments, to express the following beliefs:

- “Attending college is important.”
- “Science, technology, engineering and mathematics are more interesting than before.”
- “A STEM Career would be rewarding.”



Science-on-Stage, Student STEPCon24, Bourns Technology Center, Riverside, California



Riverside Fire Department Exhibit at Student STEPCon24, Riverside, 2024



SCIENCE SHOW HIGHLIGHTS

During its twenty four-years of entertaining tens of thousands of students, the STEPCon Science Show has been updated to be “Science-On-Stage,” (SOS), by providing a live show for about 500 students per show, simultaneously with online same-day interactive broadcasting and on-demand viewing for 30 days following the Show. Over the years, Rick Lee and Alex Nagy from General Atomics have developed a variety of STEM themes, with this year’s theme “The World of Waves,” showing students experiments related to light, sound and even water waves. “Science-On-Stage,” included special lighting and stage effects, a huge 12’ by 40’ LED display wall and 8 cameras, including one mounted on the ceiling, to capture close-up pictures of the exciting SOS experiments. This enhanced the experience for the in-person students and for thousands of students throughout the Inland Empire who participated in their classrooms.

“Science-On-Stage” also provided the students who attended in-person with trading cards related to the science of waves, which provided fun facts and principles of wave science. The trading cards were very well-received by the students and their teachers.

EXHIBITOR HIGHLIGHTS

Over 40 exhibitors participated in the hybrid Exhibitor event held under the solar panels in the Bourns parking lot. They represented various STEM careers including Engineering and Manufacturing, Environment, Education, Medical, and Technology. Students had the opportunity to engage directly with STEM professionals at the in-person event while virtual attendees interacted through engaging videos and interactive presentations. Our roundtable presentations were conducted with industry experts from NASA/JPL, the Navy, and UCR Master Gardeners. The E-Sports Hall and the Escape Room continue to be student favorites for our in-person event.



E-Sports Hall Demo for Congressman Mark Takano, STEPCon- STUDENT, Bourns Technology Center, Riverside, 2024



Trading cards for the Science on Stage show: Spectrum, Amplitude, Frequency and Waves, Student STEPCon24, Riverside, 2024.

EDUCATOR STEPCon24

This marked our seventh year hosting a full-day conference for educators in the Inland Empire. Educator STEPCon24 took place on Wednesday, November 6, 2024, at the Bourns Technology Center, bringing together over 150 attendees for a day of professional learning and collaboration.

The conference provided educators, administrators, and education staff with opportunities to explore innovative teaching strategies and gain practical tools to inspire students and prepare them for future STEM careers. Attendees engaged in insightful keynote sessions, dynamic workshops, and valuable networking opportunities.

Featuring speakers from a diverse range of STEM disciplines, Educator STEPCon24 reinforced the critical connection between education and industry, equipping educators with knowledge and resources to better support their students in an evolving STEM landscape.

The Robotics Industry Panel at Educator STEPCon brought together industry experts to discuss the evolving role of robotics in the workforce and the essential skills students need to succeed in STEM careers. Moderated by Dr. Phil van Haaster, Dean of the College of Engineering at CBU, the panel featured Bart van Kooten (Sorenson Engineering), Andrew Pilarski (Brenner-Fiedler, Inc.), and Jonathan Curl (Robotis, Inc.).

Panelists shared insights into how robotics is shaping industries, the technical and problem-solving skills they seek in future employees, and the educational pathways that best prepare students for careers in automation, manufacturing, and engineering. They also highlighted real-world applications of robotics and provided valuable guidance for educators on how to align classroom instruction with industry needs.

A highlight of Educator STEPCon is the recognition and awarding of scholarships to outstanding high school students from San Bernardino and Riverside Counties. The STEP Student STEM Impact Scholarship honors students who have demonstrated the profound influence of STEM education in their lives. Applicants submit a three-minute video showcasing their STEM journey, including how STEM will shape the future, challenges they have overcome, and the role of an educator in their success.

This discussion reinforced the importance of STEM education and the role of teachers in preparing students for the rapidly growing demand for robotics and automation professionals.

“ I love ideas and resources I can use right away in my classroom. ”



EDUCATOR STEPCon24

This year, STEP awarded \$1,000 scholarships to two exceptional students:

Anthony Hernandez, 11th grade
Riverside STEM Academy

Chris Lim, 11th grade
Los Osos High School
Chaffey Joint Union High School District

These students' stories stood out among a competitive pool of applicants, resonating with our scholarship committee and inspiring educators across the region. As part of their recognition, they had the opportunity to share their experiences with conference attendees, reinforcing the vital role of STEM education and educators in shaping future innovators.

The STEP Scholarship Review Committee evaluated applications using a structured rubric that assessed the impact of STEM in the student's life, the clarity and quality of their video submission, and the strength of their storytelling. This process ensured that the most compelling and inspiring voices were recognized and celebrated.

Through this scholarship, STEP continues its commitment to encouraging students to pursue STEM careers and empowering educators to make a lasting impact in the lives of future STEM leaders.



UCR Professor Carlos Gonzalez Moderates the interviews of STEP Scholarship Recipients, Chris Lim on the left and Anthony Hernandez on the right.

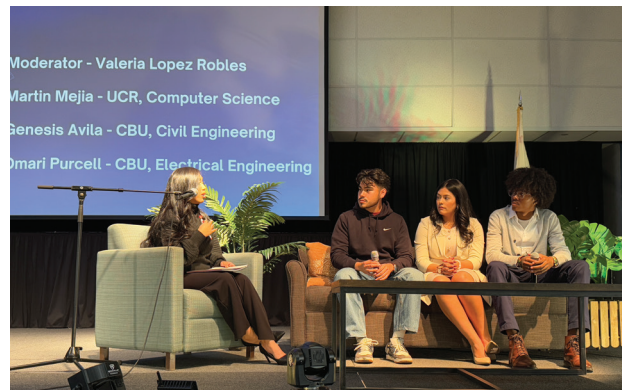
LINKS TO VIDEOS: <https://youtu.be/zjKzFgTvPP8> (Anthony's)
https://youtu.be/_VNktHifwZs (Chris's)

COUNSELOR STEPCon24

Counselors are key to creating a STEM workforce “tree,” however, many counselors have not learned about the education paths that students will need to take toward success on the wide range of branches of the STEM career tree. In its second year, STEPCon24 - COUNSELOR was held on Thursday, November 7, 2024 at the Bourns Technology Center in Riverside.

The day started with a very compelling presentation by Doug Henderson, Val Verde USD, demonstrating why calculus is a gatekeeper to STEM jobs for many students. He demonstrated that if students successfully complete a year of calculus prior to graduating from high school, they have a valuable head start toward graduating in four years with a STEM degree. Educational system-wide support is needed to ensure that students graduate from our K-12 schools with the foundational mathematics knowledge to be successful in college level Calculus courses.

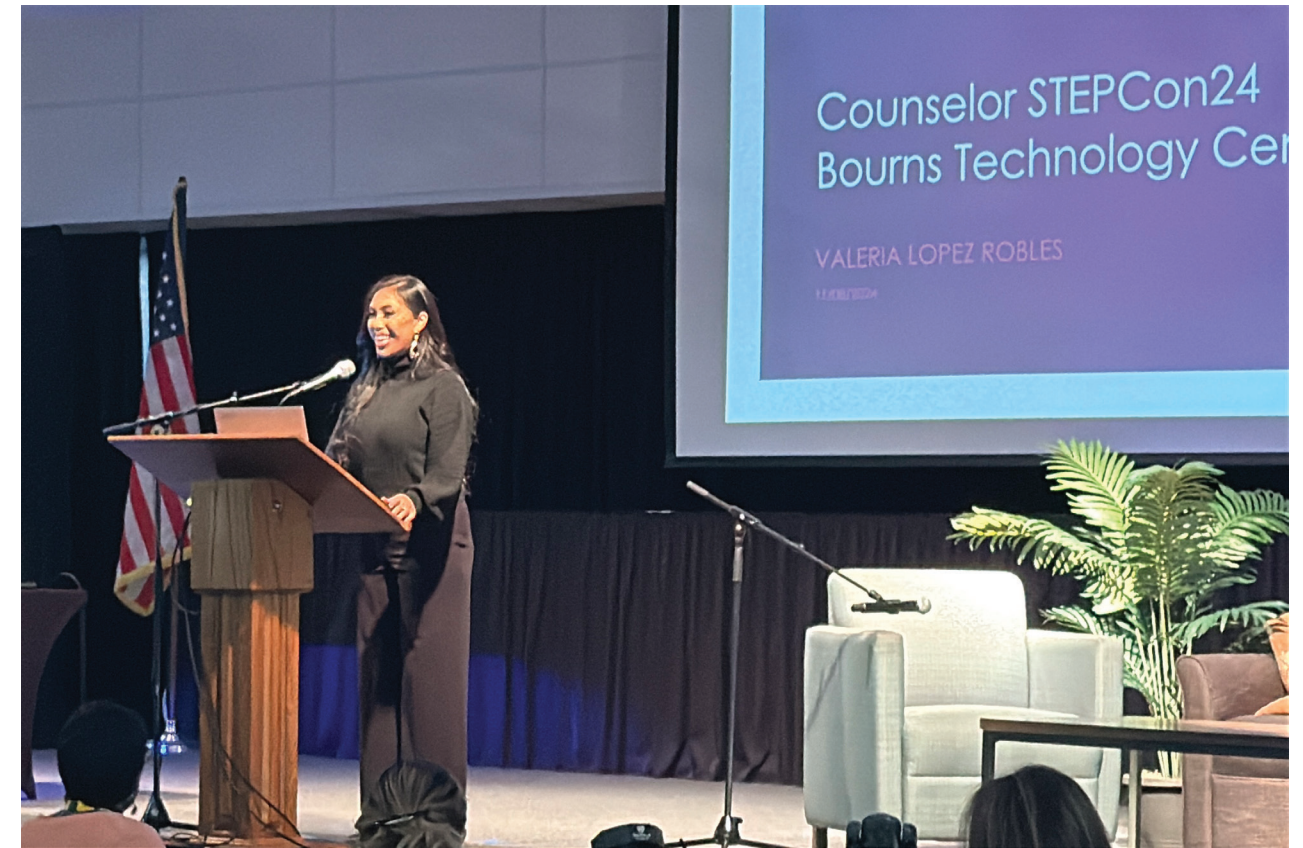
We were all thankful to have as the STEPCon24 - Counselor Keynote Speaker, Valeria Lopez-Robles, a Val Verde High School graduate,. She had the room in tears when she told her story about how she was homeless for several years during high school and decided to become an engineer. Valeria is building her career at NASA where she works with robots on Mars.



A highlight of the Counselor Conference was the College Student Panel, moderated by Valeria Lopez-Robles of, from left to right, Martin Mejia - UCR, Computer Science, Genesis Avila - CBU Civil Engineering and Omari Purcell - CBU, Electrical Engineering.



The breakout sessions focused on Inland Empire STEM careers and the educational institutions that students will need to attend in order to attain those STEM jobs. The sessions were lead by community colleges, universities, military branches and local trade unions in providing multiple roadmaps to STEM careers. The STEM career sessions included engineering, allied health, cybersecurity, computer science, construction, medical, and advanced manufacturing. The content of each session provided counselors with guidance from each organization on the prerequisites needed for students to continue in their STEM career journey.



Valeria Lopez-Robles, STEPCon24 - Counselor Keynote Speaker, a Val Verde High School graduate.



Above left, Rhonda Clement, CBU College of Engineering, Director of Strategic Initiatives, points to the starting salary range of \$80K - \$130K Engineering graduates can look forward to, and on the right, a Cal State University, San Bernardino Student Recruiter demonstrates an RC tank robot, which plays a role in their nationally recognized Cyber Security program. STEPCon - Counselor is a key program in supporting K-12 school counselors as they guide their students effectively along education paths toward their chosen STEM careers.



SUMMER LEARNING LABS 2024

For the past nine years, STEP has conducted its STEM Summer Learning Labs for students from grades 9 to 12. Based upon the Kaizen Week process (Kaizen means good change in Japanese) used at Bourns, Inc., an electronics company headquartered in Riverside, students participated in up to four one-week long programs starting on Monday, June 24, 2024 and lasting until Friday, July 26, 2024. Over half of the students participated in all three weeks of the 2024 STEM Summer Learning Labs, with the ratio of girls to boys being about 50/50 each week.

During the first day of each week, the students are divided into teams of four to six students and then are taught methods for gathering information, analyzing it and developing it into a project proposal that they will present to a panel of professional judges that Friday. On the second and third days, they meet with professionals in their work environment to see how they utilize STEM in their jobs as they follow their chosen career paths. The students then brainstorm and develop their project proposals to improve the safety or effectiveness of the professionals through the better utilization of STEM. The students may choose to contact their professional resources to gather more information and ask for feedback about their ideas for their project. On Friday of each week, all the teams present to a panel of professional judges in the aptly named “STEM Design Challenge Competition.” The first place team shares \$1,000 in scholarship funds, the second place team shares \$750 and the third place team earns \$500 for their efforts.

STEM ID

Beginning Monday, June 24, 2024, STEM IN DEFENSE (STEM ID) provided 20 school students a hands-on learning experience focused on exciting and high-paying career opportunities in cyber security, data science and defense. The students were „embedded“ for one week in the innovative new TechBridge facility, the NAV SEA Naval base in Norco, the Norco College STEM Center, and the Data Visualization Laboratory at the University of California, Riverside.

Activities included interactive meetings with civilian and military resources about the role STEM plays in the defense of the infrastructure of our communities and our nation from cyber threats and inferior data science capabilities. At NAV SEA, the students learned how military research is key to the development and commercialization of new technologies and systems that benefit educational institutions and industry while providing excellent military and civilian careers. The new UC Riverside Data Visualization Laboratory immersed the students in sessions on the Power of Python Learning, Astrophotography, Data Visualization, Virtual Reality and the use of Drones to gather data.



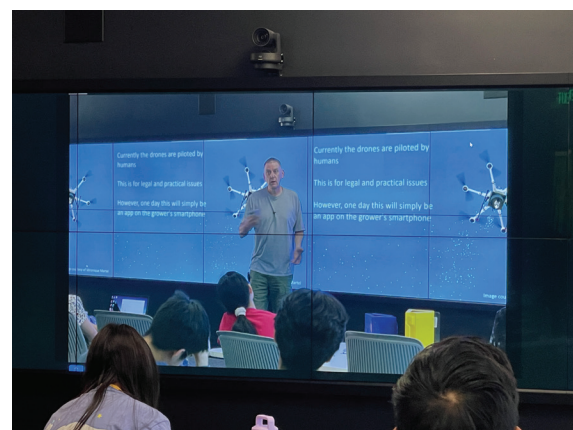
Troy Clark, Inland Empire Tech Bridge Director / Strategic Advisor, Naval Surface Warfare Center, Corona, welcomes the 2024 Class of STEM In Defense students. Troy was the Founding Chairman/President of STEP, beginning in 2000



Jason Asariah, Cal Baptist University, Electrical Engineering Student, who served as the Lead College Student Mentor, outlines the key objectives for the STEM ID week.



STEM ID students learn from the very large UC Riverside Data Visualization Wall about the use of drones in data collection prior to going outside to each practice flying high performance drones.



STEM ID students learn from the very large UC Riverside Data Visualization Wall about the use of drones in data collection prior to going outside to each practice flying high performance drones.

STEM PULL

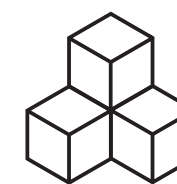
Beginning Monday, July 8, 2024 through July 12, STEM Public Utilities Learning Labs (STEM PULL) was conducted for 50 students by STEP in partnership with Riverside Public Utilities, and Elsinore Valley Municipal Water District. Riverside Public Utilities Education Team, Sharon Gutierrez and Damaris Velez welcomed the 2024 STEM PULL Students to the California Baptist University, College of Engineering. This was followed by the introduction of the College Student Mentors, each of whom was assigned to a team for the entire STEM PULL week.

Riverside Public Utilities Education Team, Sharon Gutierrez and Damaris Velez welcomed the 2024 STEM PULL Students to the California Baptist University, College of Engineering. This was followed by the introduction of the College Student Mentors, each of whom was assigned to a team for the entire STEM PULL week.



The week was focused on the careers of our public servants and the STEM tools they use to keep our water and power safe and secure. Activities included touring the Riverside Energy Resources Center (Peaker Plant), water supplies and facilities of EVMWD.

We were privileged to tour the Riverside Public Utilities Training Center to learn about the tools and training our RPU crews are given when they work on repairing damage to our power lines, for example, after a Santa Ana wind storm. The students also toured the Elsinore Valley Municipal Water District’s sewage treatment plant, which recycles sewage to replenish Lake Elsinore.



A highlight was the creation of a mini power distribution grid by the student teams, which they learned they could power using the windmill they had designed and created the day before. Above left, CBU College of Engineering Dean, Phil Van Haaster, inspects a team’s assembly of a windmill to power the team’s mini grid. Above on the right, a STEM PULL Team presents their Design Challenge proposal for recycling water.



STEM LEAPS

The week of July 15, 2024 to July 19, we conducted STEM Law Enforcement and Public Safety (STEM LEAPS) with two programs in parallel to increase the breadth of students who could participate. In its 7th year, our STEM LEAPS - Riverside program was conducted for 55 Riverside students in partnership with the California Baptist University Colleges of Engineering and School of Nursing, the Riverside Police Department and the Riverside Fire Department. In partnership with the Riverside County Sheriff's Department, CAL FIRE and Riverside Community College District, a pilot program for 45 Riverside County students from as far away as the Coachella Valley at Moreno Valley College's Ben Clark Training Center. In both programs, students worked in teams to learn about how STEM is used by law enforcement officers, firefighters and emergency medical technicians to improve their safety and effectiveness as they perform their lifesaving duties in service to their communities.

With the leadership of STEM Coordinator, Debra Johnson, Sgt. Michael Heath and Program Manager, Ben Nunnally, students experienced first-hand for one week, career opportunities as first responders. They worked in teams to develop and present on Friday, their Design Challenge project presentations to a panel of Police, Fire and EMT judges, their peers and their parents.



STEM SOLUTIONS

The last week of the STEM Summer Learning Labs was July 22, 2024 to July 26, during which we conducted STEM Solutions for 55 students, focused on sustainability of our food chain, the prevention of food insecurity and the creation of new medicines. Dr. Lorelee Larios, from UCR's Botany and Plant Science department, opened the week with a keynote speech about the importance of plant research, the development of new varieties of crops to improve the productivity of our food production and the development of new medicines. The week highlighted for the students the many areas of research work being done by UCR to improve our quality of life. During the week, the student teams gathered information from UCR students and professors to develop their plant science or agriculture improvement project they presented on Friday of that week. This process provided experience in working together as a team to develop a compelling proposal to present to the panel of judges on Friday of that week.



STEM Solutions participants engaged in the Neil A. Campbell Lab's Dynamic Genome Program at the University California, Riverside, July of 2024 where they extracted DNA from plants. Dr. Lorelee Larios, engages a STEM Solutions Team at the Bourns Technology Center in Riverside, 2024.

STEM I AM

In parallel with STEM Solutions, Rialto Unified School District conducted STEM In Advanced Manufacturing (STEM I AM) at their Meyers Elementary School's STEM Center. In STEM I AM, 26 students learned core principles of effective manufacturing through hands-on experience. On Monday, after learning about key business principles, the three teams of students played a business simulation game. The teams made decisions over eight quarters of play including product pricing, how much to invest in engineering and quality improvement, whether to build more production capacity and hire additional salesmen and the amount of dividends to pay to their investors.

On Tuesday and Wednesday, the students went on tours of manufacturing companies including Niagara Water, Phenix Technology, the leading manufacturer of fire helmets Martinez and Turek, a tool and die manufacturer of heavy equipment, and the Bedding Industry of America, where they saw how manufacturing principles were being applied. On Friday the students competed in the Design Challenge Competition for cash prizes in presenting their project proposals for making a product or improving a process they saw on the plant tours.

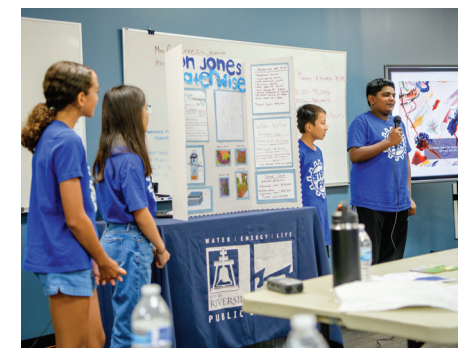


STEM I AM tour of Niagara Bottling in Rialto, where robots move pallets with millions of bottles of water each week followed by a tour of Phenix Technologies in Riverside, where fire helmets are made by hand, one at a time.

STEM ACADEMIES

This past summer, we expanded our STEM Summer Academies after our successful 2023 pilot programs for 5th/6th grade student program entitled, Patterns, Puzzles and Problems and a 7th/8th grade student program entitled, STEM FUNdamentals. The intent of these academies is to ensure that students as young as 5th grade have the opportunity to explore STEM concepts and to evaluate a wide variety of STEM career opportunities. We discuss education pathways for the students to consider as they navigate through the complexities of middle school.

A focus of the education pathways we discuss is math, the "language of STEM." We advise students that if they have an interest in pursuing a STEM career, they can get an excellent head start in college by taking Advanced Math in 7th grade and Algebra by 8th grade which paves the way for Calculus by 12th grade. Highly motivated students on an accelerated route will want to take Calculus by 11th grade and Statistics in 12th grade. Students in the summer academies will have daily opportunities to learn from STEM professionals and ask vital questions to develop their own unique STEM pathway. Then as 9th grade students, they have the opportunity to attend our STEM Summer Learning Labs and continue to develop their chosen STEM pathway toward the career they find to be most interesting.



A Patterns, Puzzles and Problems (P³) team presents their Design Challenge Project, a game using mathematics. After all the teams presented, they all received their P³ Academy Certificates of Completion. The P³ program was held at the Bourns Family Youth Innovation Center in Riverside. Participating Middle School students with their High School Mentor engaged in a hands-on project at STEM FUNdamentals, Riverside, 2024. Participating Middle School students with their High School Mentor engaged in a hands-on project at STEM FUNdamentals, Riverside, 2024. First, second and third place winning teams at the STEM FUNdamentals Academy, Riverside, 2024.

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PLANNING COMMITTEE MEMBERS

Thank you.

A SPECIAL THANK YOU TO ALL OF OUR PLANNING TEAM MEMBERS WHO SUPPORT THE BUILDING OF A STEM CULTURE IN THE INLAND EMPIRE BY BRINGING OUR STEM PROGRAMS TO LIFE FOR OUR COMMUNITIES.

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THANK YOU FOR 25 YEARS OF IMPACT!

Below are members of various planning committees. Several were unavailable and are not pictured here.



Counselor STEPCon24 Planning Committee



Educator STEPCon24 Planning Committee



Student STEPCon24 Planning Committee



STEM P³ Planning Committee



STEM LEAPS, Coachella Planning Committee



STEM LEAPS, City Planning Committee



STEM I AM Planning Committee



STEM FUNDamentals Planning Committee



STEM Solutions Planning Committee



STEM Programs Executive Committee