

“Young Minds Know About Imaging, Water, Agriculture”

2016 STEM OUTREACH

ENGINEERING A BETTER GREEN PEPPER

The IEEE Foundation supported the program called “Young Minds Know About Imaging, Water, Agriculture” that involved the IEEE Buenaventura Section and the support of multiple advocate groups that promote the love of science, technology, engineering and math in Ventura County in Southern California. This initiative took place over two major events designed for middle school children.

EVENT 1 - On Sep 10, 2016, a field trip outing, nicknamed “Engineering a Better Green Pepper” involved 50 middle school children in workshops in the heart of Oxnard, amidst, fields of green peppers of the Terry Farms.

We organized 5 hands on experiences with IR imaging, irrigation technology, and discussions about biotech for plant optimization, and friendly bugs for pest control. A precision agriculture drone flew over the field of green peppers, controlled by an FAA certified pilot who recorded infrared images from the sky and showed how the IR images pointed to plants that needed more water or nutrients.

50 middle schoolers participated in one-of-a-kind *Introduction to Engineering* experience. Under the mentoring of 11 engineers and 7 parents, everyone arrived at 7:30 am in Thousand Oaks to take the bus to Oxnard. Credit must be given to the amazing tour de force that engineer Sherisse Hughes did to line up this experience.

This program was customized for middle schoolers: a field trip to discover cutting edge technologies and practices in the art of growing crops. Will Terry, owner of Terry Farm was the gracious host. Five scientists/engineers spent 3 hours with the children in 4 rotations. Kids (and mentors) went home with a nano-drone. This field trip was funded by an IEEE foundation grant.



Instructor **Jeremy Sifnit** show that friendly mites are used to keep away the bugs that weaken the plants. Kids are using magnifying loupes to find the bugs in the field.

Sherisse Hughes introduced the design and operations of a Precision Agriculture drone as well as **Whitney Smelser**, who is a FAA certified pilot who launched and flew the drone over the field.



Will Terry, host and visionary technologist, covered the new biotech that create high yield plants and modern watering of crops.



David Holden explained what it takes to keep a plant healthy and feed it the right nutrients.



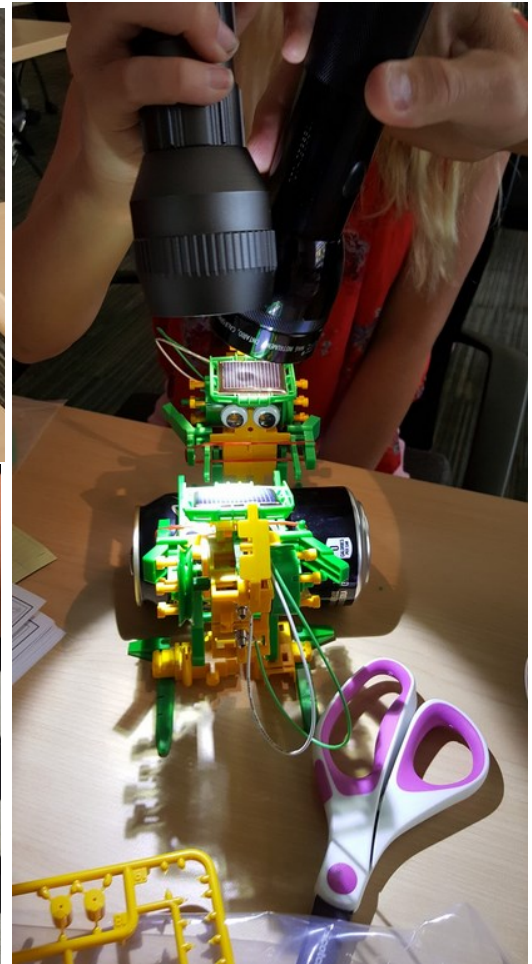
Looking at friendly mites up close and the green



pepper fields

EVENT 2 – PLAYERS OF THE LIGHT

On Oct 8, 2016, 63 female students of secondary and primary schools came from various parts of Ventura County to engage in 9 hands on workshops set up in 12 parallel rooms. 24 mentors helped the girls learn and engage in the workshops intended to teach through the use of photonics and solar based technologies how high tech can make a difference. Some of the topics covered included solar energy, smart re-use of waste, and the way to look at the world in the optical spectrum not visible to the naked eye. One of the workshops used virtual reality. The parents program included 4 different presentations intended to inspire them to anticipate the impact that their daughter will bring to society if she chooses to attend college and pursue a career in science, technology, engineering or math.



CUTTING-EDGE SCIENCE IS JOYFUL!
UNIQUE ENGINEERING WORKSHOPS FOR GIRLS

THERMAL IMAGING

Become a Photographer of the World of the Infra Red
You will use cutting edge FLIR cameras

EASY

THEMES
 ENERGY
 WASTE CONTROL
 ECO-SYSTEMS
 MODERN SENSING



MY PHONE IN 3D

Learn about Holography and turn your cell into a holographic phone

EASY

THEMES
 MOBILE TECH
 DIGITAL HOLOGRAPHY



LIGHTED WEARABLES

Create your Own Lighted Gown
(LEDs, color spectrum, and light projection equipment will be explored)

EASY

THEMES
 VISIBLE WORLD
 LIGHTWAVE
 LEDS
 BATTERIES
 LIGHT PROJECTORS



VR IMMERSION

Build Your Own Virtual Reality Goggles
 And Explore the Earth in VR
 On Your Mobile Phone

EASY

THEMES
 VR TECHNOLOGY
 VR GAME DESIGN



SOLAR RECYCLER

Build A Solar Powered Robot
 that Recycles Trash

ADVANCED

THEMES
 SOLAR TECH
 ROBOTICS
 MECHANICS

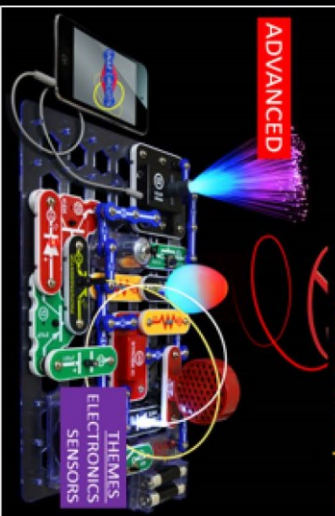


SNAP LIGHT ELECTRONICS

For the Girl Explorer

ADVANCED

THEMES
 ELECTRONICS
 SENSORS



LIGHTED GLOVES

Build the Coolest Gloves for Halloween

EASY TO ADVANCED

THEMES
 ELECTRONICS
 LEDS
 SOLDERING




SEEING BEYOND PURPLE

Build Your Own Creation in the World of Ultra Violet
(Astronomy and other fields of Engineering work in this space)

EASY

THEMES
 EXPLORING
 BLACK HOLES
 CUTTING EDGE SENSORS



MOVE IN A FLASH

Create a T shirt
 that Lights Up When You Move
 (EL technology)

MEDIUM DIFFICULTY

THEMES
 MOTION SENSORS
 ELECTROLUMINESCENCE
 ELECTRONICS

