Chemistry Is Elementary For High School Students

Tanque Verde High School ChemClub Outreach A Hit With Third Graders

Members of the Tanque Verde High School ChemClub visited Agua Caliente Elementary and Tanque Verde Elementary on October 21 to teach third grade students about chemistry. The lesson plans were focused on interactions between polymers, but the event was as much about interactions between younger students and the older ones they look up to.

ChemClub sponsor Dr. Grazyna Zreda pitched the idea for this outreach project in a grant proposal she submitted to the American Chemical Society (ACS):

"Students in TVHS Chemistry Club will develop a set of activities for the elementary school children, teaching young students about chemistry of polymers. All our ChemClub members will participate in this event. TVHS ChemClub students will not only offer instruction but also provide supervision during the activities, assuring that the children are safely using all provided materials. The purpose of the activity, which will fit into a class period of about 60 minutes, is to propagate knowledge..."
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of chemistry in a fun way, on the level approachable by elementary-level children.”

Dr. Zreda was awarded a grant, and the ACS sent the instructional supplies for the demonstrations and experiments. Arrangements for additional materials and for enough

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safety goggles for all students were made by Superintendent Doug Price.

High school students prepared for their turn as classroom instructors in the weeks leading up to the event. They tried out all the experiments, practiced their presentations and prepared a variety of visual aids.

With all the preparations completed, the first-ever TVHS ChemClub/ACES/TVES Community Outreach took place during National Chemistry Week. Groups of ChemClub members brought their materials into the third grade classrooms.

Before the lessons began, students were instructed to put on their goggles to ensure safety. They were also taught how to use chemicals safely, and were told to wash their hands after using them. Safety was emphasized not only by ChemClub members, but by the third grade teachers as well.

Students explored the properties of polymers, chemical compounds made of small molecules arranged in a simple repeating structure. Plastics are polymers, hair, fingernails and DNA are polymers. Silly Putty is a polymer, and rubber is a polymer. Through demonstrations and guided inquiry, students became familiar with polymerization, cross-linking and absorbency.

Activities included making artificial snow, observing the absorbency of polyacrylate (the polymer used in disposable diapers) and graphing the results. Students used sodium polyacrylate and observed how it absorbs water, and were shown how the addition of NaCl (salt) causes the polymer to release water.

Polyvinyl alcohol and borax were used to make “slime”. During the slime-making activity, ChemClub students presented models of polymers made from interlocked beads to further explain the concepts. The uses of polymers in everyday life were also examined. Examples included plastic bags which hold water even if pierced with a pencil, and hospital laundry bags made of polyvinyl alcohol which dissolve in water.

By all accounts, this inaugural outreach event was an enormous hit with the third graders, with their high school counterparts and with the classroom teachers. There were some very happy scientists, and the comments Dr. Zreda collected from her enthusiastic ChemClub students tell the story well:

"The best part was seeing kids’ faces when we were doing a lab - they were so amazed with what was happening."

"I really enjoyed their excitement and their reactions – kids being alternately awestruck or grossed out, or just dumbfounded by what they were observing."

"It was really great to see that we were their role models and that they looked up to us!"

The American Chemical Association sponsored the grant program that helped make this effort possible. The American Chemical Society is the world’s largest scientific society and one of the world’s leading sources of authoritative scientific information. A nonprofit organization, the ACS is at the forefront of worldwide chemical enterprise and the premier professional home for chemists, chemical engineers and related professions.
The buzz leading up to the Fall Festival was huge, and the big carnival rides hummed all night.

There used to be a Fall Festival at Agua Caliente Elementary and another one at Tanque Verde Elementary. This year, the organizers got together to throw one really big Fall Festival at Tanque Verde High School on November 2. Proceeds from the successful event will be used to bolster our school district’s technology infrastructure.

There are nearly as many people to thank as there were wisps of cotton candy taking flight in the evening breeze. The group includes some stalwarts, as well as some very welcome newcomers.

ACES PTG President Tim Soeder was the logistical coordinator and spreadsheet guru. Shara Gerhart, PTG President at TVES oversaw vendor selection and purchasing. Past President of the ACES PTG Jamin Collins is currently the PTG Treasurer for ACES and Emily Gray, and brought in the carnival rides and handled promotions.

Superintendent Doug Price was a supportive and actively engaged planner. Doug showed up early to help set up the event and was putting away chairs and tables long after the crowd had gone home.

ACES Principal Sherri Rosalik was very involved with setup. She also took the plunge - literally - when it was dunk tank time.

TVHS PTSG President Tiffany Brock got over 60 Student Council members to run booths. Emily Gray PTSG President and ACES Secretary Kirsten Herklotz sold tickets and ran Bingo. ACES Kindergarten teacher Pat Gutierrez showed up at 9 a.m. and stayed all day with the Basket Raffle.

TVES PTG Board Members and parents Kathy Meindle, Jamie Farris, Melissa Lee, Denis Rojas and Jim Drexler all deserve thanks for their efforts, as do ACES parents Stephanie Kirk, Liz Ignatoff, Tiffany Berggren, Becky Courbrough, Rudy Saldivar and Melody Leavitt.

Emily Gray Social Studies teacher Chris Voutsas and the Emily Gray chapter of The National Junior Honor Society ran the Cake Walk, the TVHS Student Council ran the non-vendor food booths, and the TVHS Athletic Booster Club sold soda and water.

Frank Kastl and the crew from Kastl Carnival in Casa Grande set up, ran, and packed up the carnival rides. Brent Burdett, Toby Chivers and Daniel Blanchard of the band Deceptively Innocent were terrific.

Thanks to Kate and Kenney Del-Principe of Kenney D’s, Tony Terry of Grandma Tony’s, the good people at Frost and Sonoran Hot Dogs. You can practically hear the treadmills overheating.

“It was incredibly rewarding to look out over the field and see the huge turnout. We made every effort to honor both schools’ traditions and combine the best of each event,” said Jamin Collins after the dust had settled. “It was the culmination of many months of planning and hard work and we were delighted to see the school communities come together to support our technology needs.”
Make A Difference Day
Improvement Projects At All Campuses Taken On By Volunteers

For more than 20 years, USA WEEKEND Magazine and Points of Light have joined together to sponsor Make A Difference Day, the largest national day of community service. Millions of volunteers around the world unite in a common mission to improve the lives of others.

Here in the Tanque Verde Unified School District, Make A Difference Day on October 26 saw volunteers at work at each of our school campuses. There were Tanque Verde employees, students and parents, students from the Eller College at the University of Arizona and from Tucson High School who came out to pitch in along with a large contingent from area LDS churches.

At Agua Caliente Elementary School the parking lot painting and playground surface work helped make the campus safer for our students, staff, and parents. The kindergarten playground at Tanque Verde Elementary School was improved with new wood chips under the play equipment. Landscape rock was spread by hand and with heavy equipment in front of and behind the school, and has upgraded the look of the campus.

The landscape work at Tanque Verde High School is another example of the remarkable energy of volunteers. The new landscaping will direct rain runoff efficiently during monsoon storms. Pedestrian traffic around the campus will be better accommodated because of Make A Difference Day efforts.

A large landscape project undertaken at Emily Gray Junior High School will be evident for years to come. The careful planting of jasmine bushes and the expert installation of irrigation will beautify the athletic field south of the campus.

The scope of the projects undertaken this year was pretty big, the work wasn’t easy, and none of the very visible results would have been achieved without the help of the great group that came together on October 26. Thank you to everyone who came out to help out on Make A Difference Day.
Students To Study Impacts Of Invasive Plants
*Svea Anderson At Agua Caliente Elementary Wins Grant To Study & Eradicate Buffelgrass*

Agua Caliente Elementary School fourth grade teacher Svea Anderson has been approved for a grant to study and remove buffelgrass by Tucson Clean & Beautiful, Inc. The following details are excerpted from Ms. Anderson’s grant proposal. They provide an overview of the instruction to be derived from this project and of the thorough preparation involved in bringing something special to students.

Buffelgrass is growing on the campus of Agua Caliente Elementary. This presents an opportunity for students to learn about the environmental impacts of invasive plants and the benefits of restoring native habitat.

With guidance from their teacher and UA ecologists, Ms. Anderson’s students will lay out quadrats (small areas of habitat) to collect data on plant diversity and abundance, plant seeds of native plants, care for growing native plants, transplant some to a schoolyard garden, and revegetate areas infested with buffelgrass. Ms. Anderson’s approach will include the following steps:

**STEP 1**: Students will formulate predictions of how plant and insect diversity and abundance differs between the infested and non-infested quadrats. They will work in groups to create six small quadrats in an area infested with buffelgrass and an area not infested with buffelgrass. Quadrats will be marked using tape measures, a mallet, rebar stakes, some PVC pipes, and string.

**STEP 2**: Students will conduct the following procedures at the infested and non-infested quadrats:

1. Record the number, identity, location, and size of trees, cacti, and shrubs.
   a. Count trees/cacti/shrubs, give ID numbers to the trees/cacti/shrubs to be measured.
   b. Identify species (e.g. palo verde) or category (e.g. palm).
   c. Measure circumference at breast height (CBH) for trees and cacti.
   d. Estimate height and size of canopy of trees and shrubs.
   e. Identify tree/cacti/shrub species using species identification key.
2. Record the number and diversity of insects.
   a. Dig small holes spaced evenly across the infested and non-infested quadrats.
   b. Bury pit traps (18-ounce cups) in the holes so that the top of the cup is slightly below the soil surface.
   c. Leave traps alone for 72 hours, and after 72 hours, empty the traps into Ziplock® bags, using a different bag for each trap.
   d. Take the samples to the classroom for identification and use a data sheet and identification key to record the number and type of insect found in each trap.

**STEP 3**: Students will compare their data collected from the infested and non-infested quadrat with statistical and visual methods. They will communicate the results of their project in a scientific notebook and in class discussions.

**STEP 4**: Students will plant native seeds in a classroom grow lab. The grow lab will consist of two grow racks, lighting, plant trays with seedling pots, and humidity domes. Students will be responsible for caring for the native plants until they are big enough to be transplanted outside.

**STEP 5**: Students will remove buffelgrass from the infested quadrat. For small patches, students will work in groups with geopicks, which will be borrowed from UA, to remove all root nodules. For large patches, the instructors will use shovels to remove the grass from the roots and the students will help pull it out.

**STEP 6**: Students will revegetate the previously infested area with native plants grown in the classroom grow lab.

**STEP 7**: Students will also transplant native plants grown in the classroom grow lab into a schoolyard garden. They will be responsible for tending the garden and will place species identification tags next to native plants to promote school-wide learning about native plant species diversity.
High School Students Attend UA Sky School  
*Ninth Graders Get Connected To Science Atop Mount Lemmon*

The University of Arizona operates year-round residential science programs for Arizona K-12 students at the 25-acre Mt. Lemmon campus. This year, a group of students from Tanque Verde High School attended the program from October 7-11.

Programs at Sky School focus on core UA science areas such as sky island ecology, biology, geology and astronomy and have been developed in collaboration with local school districts to meet Arizona State and Next Generation Science Standards.

Days started at 7 a.m. and ended at 9 p.m., and except for a 1-hour nap time (much needed and taken advantage of, according to TVHS teacher and chaperone Terrill Meyer), students were all busy working on research projects, gathering data out in the field, analyzing it and performing studies. These activities culminated in formal presentations made to members of the group.

One of the highlights of the trip was a 3-mile hike at 9,000 feet with a visit to a fire lookout. Students got to look through telescopes into the stars during two evening sessions in a research observatory.

Based on the rave reviews from teachers and students alike, this immersive, stimulating and engaging program will become a fixture in our school district’s science curriculum. In order to help pay for it, the Sky School program was made eligible for Tax Credit Donation funding.

**State Senator Dave Bradley Visits Tanque Verde**  
*Campus Tours Part Of “Shadow The Superintendent” Effort*

On November 5, State Senator Dave Bradley took part in an outreach program facilitated by the Arizona Business And Education Coalition (ABEC) called “Shadow The Superintendent.” The idea is to afford legislators the opportunity to see how education-related decision making at the Capitol plays out at the local level in public schools.

Senator Bradley met with Superintendent Doug Price, Business Manager Marty O’Shea and Governing Board members and discussed aspects of current and prospective legislation. Following a spirited and far-ranging discussion, it was time for visits to Tanque Verde schools.
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Take A Dollar-For-Dollar Credit On Your Arizona Taxes

The State of Arizona lets you donate money to public schools - $400 for married couples and $200 for singles - which you claim on your Arizona tax return as a tax credit. It’s a better deal than a tax deduction because you get the money back dollar-for-dollar. So, if you donate $400, you subtract that amount from what you’d otherwise pay the State. You can also claim that $400 on your Federal tax return. Tax credit donations are vitally important for extracurricular programs, and the students in our district continue to count on your support to keep programs running.

Your tax credit donation will help make a tough budgetary time a little easier on projects and programs here in our schools. If you have questions about tax credit donations, please call the district’s administrative office at 749-5751, extension 4302.

Make Your Tax Credit Donation Online At TanqueVerdeSchools.org By December 31