

Pacific Valley School News, April 2019 Big Sur Roundup

Written into the March Issue of the Big Sur Roundup, from Pacific Valley School, was an account describing some of the educational concepts which we follow to maintain the highest level of quality learning for our students. Among them were the means of empowerment through their learning across the multiple subjects of curriculum (with acronyms such as STEM) that employ hands-on real-life ACTION! These activities achieve a REAL and positive impact on the Big Sur environment and community in which we live. Such is what the students not only learn and remember for life, but also leave a life-long legacy that will continue for years and years! Now, this article, will describe one of those real-life learning programs, taking place, RIGHT NOW, in the classes taught by faculty member, Gael Cunningham, titled "Watershed Guardians Program". In the recent past, at the Pacific Grove Museum of Natural History, Staff Researcher, Matt McConnell saw a growing need to look into the impending extinction of what he termed an "indicator species" of life in the Carmel river, the distinct subspecies of Steelhead Trout that spawn in the river's tributaries. He saw that this species of life was not only important in the danger that they will forever become extinct on this Earth, but also that they are an INDICATOR of the quality of the river as a whole and complete aquatic ecosystem. If the steelhead population is failing, so is the entire web of living things that make up the complex ecological system within the river. In turn, a closer look at the degradation of the river's ecosystem gives a warning of the negative effects that will befall humanity as well. McConnell saw that the degradation of ecosystems can start out very subtle, almost unnoticeable. And, only through very careful observation can the problems be detected. In his own words, he states, "In order to know how to fix something, you need to know what's wrong with it." Here in Big Sur, we have more than one watershed...we have many! Each watershed has its own critical contribution to the quality of all life in the Big Sur environment, and each watershed is in dire need of scientific examination in order to maintain the precious natural resources for which Big Sur is famous. Gael Cunningham, saw this need and consulted with Matt McConnell to assist with developing such a "watchdog" program at Pacific Valley School. Therefore, he invited McConnell to visit and provide training in the necessary protocol to his Advanced Placement Environmental Science class. Thus, the students received an in-class seminar about ways to carry out the protocol, including how to conduct a very thorough and careful observation that reveals the evidence, identification of the "indicator species" (which, like Carmel River, also includes unique runs of Steelhead), testing the water content for levels of oxygen, turbidity, pH (acidity/alkalinity), erosion, runoff from sources of pollution, and habitat loss (which takes a variety of scientific, mathematical and technical processes and skills of analysis). Initially, in a classroom aquarium, which Gael Cunningham especially set up to serve as an example of an aquatic ecosystem, the students "practiced" the methods and protocols for accurate water testing, effective scientific observation, analysis, and evaluation of the water quality. (Sounds familiar?- Re-read the description of Bloom's Taxonomy in the March issue!). After sharpening their skills in the classroom, they were taken outdoors into the local environment of Plaskett Creek, which adjoins our school. And on-location, up and down the creek, they conducted their practiced protocol with increasing skill, carefully recording all their observations and findings. In the process, they actually put to real use all the components of the STEM concept, Science, Technology, Engineering, and Math, in the real-world sense. They will continue their collection of data at numerous locations in the Plaskett watershed, and will develop a very valuable compilation of information about the quality of the Plaskett Creek ecosystems. As Matt McConnell states, "Students are able to observe subtle differences in

the watershed over time, giving them a rare chance to see how much this watershed changes and how it is affected by human activity". Yes, as "citizen scientists", they are taking note of the indicator species, which, like in Carmel River, is Steelhead. The students have become dedicated, motivated, and proud to become real citizen-scientists who are providing a true service to Big Sur! The products of their research become public baseline data, available for further study in the future by other scientists (uploaded to the internet). The students' work will continue on, and over time, the accumulating portfolio of data will become more and more valuable. Further ahead, the students may take on an expansion of their studies to other local watersheds, such as Mill Creek, Prewitt Creek, and the UCSC Big Creek Reserve. Again, in McConnell's words, "It is not too late to discover, study, restore, and preserve your very own river, creek, or stream for generations to come." And to answer in Gael's own words, "We will be collecting the baseline data that will be used by future researchers to measure environmental changes in the watersheds, and that is what makes this research significant." Still further, Gael's vision recognizes the possibilities of monitoring the spread of invasive species, the Monarch butterfly population, stress on local flora, and other aspects of Big Sur's local natural history. And on into the future, Gael and his students envision the inclusion of all the local community in this research and to make it a universal on-going program throughout Big Sur. How much more powerful can education get with such learning, achievement, contribution, and making a difference in REAL LIFE ...GOOD JOB!

SING WITH US!

Once again our school is participating in the Wholehearted Community Chorus. We have one student in the Children's Choir, and one student and two staff members in the adult choir. We have all been practicing hard (when the road closures don't keep us from making it to practices) and would love to have lots of friends and community members come to our concerts. The Children's Choir concert will be Friday, April 26, 2019, from 6:00-7:00 at the Veterans' Hall in Monterey. Besides singing songs with members of the chorus, the kids will be singing some songs that they have written themselves and they are quite good! The Wholehearted concerts for the adult choir or both choirs will be Friday, May 3rd at 7:00 at the Big Sur Grange and Sunday, May 5th at 3:00 at the Pacific Grove Center for Performing Arts. We will be singing several of his songs with Glen Phillips, the lead singer of Toad the Wet Sprocket, and our audiences get to join in and sing on lots of the songs. So come enjoy a musical evening!

-David Allan