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A New Wave of Future Mill Valley Engineers

In the last few weeks, our elementary school PTAs have facilitated Science and STEAM nights for families throughout the District, and students were tasked to create and demonstrate a STEAM based project of their own design. Although these projects are put together by students outside of the school day, the creative use of skills shows evidence of the strong knowledge base they have acquired in their science class learning. Board member Michele Crncich-Hodge commented, "I attended the Old Mill Steam night, and as an educator, was immensely impressed with the student creativity, self-direction and thoughtful science questions. This is the educational power of scaffolded, yet individualized projects."

The inclusion of engineering in the Next Generation Science Standards (NGSS) as a key component of K–12 science learning has supplied both challenge and opportunity for elementary teachers. The standards were developed so that science-education reflects science-practices more closely by including specific content, with the additional skills and cross cutting patterns, that ensure engineering is integrated across all grades.

This year, Old Mill 5th grade teacher, Sarah Ferner, has her students utilizing the District adopted Amplify Science curriculum, which correlates well with her science backed teaching approach, using a blend of hands-on investigations, literacy-rich activities, and interactive digital tools that empower students to think and work like real scientists and engineers. Each unit engages the students in relevant, real-world problems where they investigate scientific phenomena, engage in collaboration and discussion, and develop models or explanations to arrive at solutions.

An article co-written by Ferner entitled "Engineering The Coast" was recently published in the National Science Teachers Association's journal, "Science and Children" and highlights a set of engineering design challenges Ferner and her colleagues developed for a professional development series they led, whilst she was working for NOAA's National Estuarine Research Reserve System and San Francisco State University.

Ferner says "Although my students haven't done any coastal engineering like we described in the article, they have been engaged in science that is relevant to our location in Mill Valley. Right now we are studying how rainfall is influenced by local topography and more generally how the hydrosphere, atmosphere, biosphere and geosphere interact. Throughout the unit, we are designing and redesigning small water filtration and desalination systems."

When asked how her marine biology background translates to the classroom setting, Ferner said "I bring my perspective as a scientist and my enthusiasm for science to my teaching every day. More than anything, though, I bring the curiosity that drew me to science in the first place. The students' amazing questions keep me wondering and learning!"