

# “The Science of Rafting”

## Connecting Learning and Adventure



The Plumas Unified School District 6th-grade theme is the Year of the Watershed. Both literally and figuratively, 6th-grade is a rite of passage year for PUSD students as they earn their stripes as true mountain kids and explore the many tributaries that create the Feather River Watershed.

Throughout the year, 6th-graders are immersed in the environments that they are learning about to fully explore the scientific principles they are studying, connect to their home, and foster a deep appreciation for and stewardship of the abundant natural resources surrounding them.

While place-based, cross-curriculum learning is the foundational cornerstone of the new K-8th Outdoor Core curriculum in PUSD, this strategy has always been the focus for the 6th-Grade Outdoor Education program.

Part of what creates this multi-layered experience for the students is the focus on directly exploring and experiencing the watershed in a variety of ways - all of which tell different narratives of the waterways.

Water is not only central to life, but it is deeply woven into the fabric of our culture and community, giving students an interesting lens for cross-curriculum learning. Our local creeks and rivers tell the stories of the Mountain Maidu, gold miners and settlers, plate tectonics and erosion, agricultural irrigation, fish migration, hydroelectric power, and of course outdoor adventure and recreation, including rafting.

Eighteen years ago Rob Wade met with Rick Stock, the new Director of the Feather River College (FRC) Outdoor Recreation and Leadership (ORL) Program, to talk about getting 6th-graders rafting on the Feather River. As Rick Stock shared, "Being on a river in a raft or kayak gives you a unique view of the waterway that cannot be experienced in any other way."

Now with the partnership with the FRC ORL program, every year the Outdoor Recreation and Leadership students lead the 6th-graders down sections of the Feather River. Portola students raft portions of the Middle Fork of the Feather River, and Chester, Greenville, and Quincy students raft the East Branch of the North Fork of the Feather River.

For many students, this is their first time rafting or even thinking about such an activity. This partnership benefits both entities as the ORL students get an opportunity to put their raft guiding training and skills into practice, and the 6th-graders get an incredible opportunity to experience the river in a new way, connect different principles of hydrology and geology, and have a blast.

During the day of rafting, the students are broken up into two groups. The first group that goes rafting heads down the river, while the other group discusses and journals about hydrology principles and information specific to the section of the river the students are rafting. Afterward, the two groups switch.

Some ideas touched upon include the "science of rafting" which involves discussing all of the cycles that make rafting possible. The students also learn about the historic Maidu fish camp that historically took place at the confluence of what we now call Spanish and Indian Creeks, before the Feather River was dammed for hydroelectric power.

Wade explains that the science of rafting connects with four important cycles - the water cycle, the rock cycle, the seasonal cycle, and the daily cycle. All of these earth science cycles contribute to the flow of the river in April each year, by affecting water levels and gradient. Wade discusses that through plate tectonics and erosion, the rock cycle creates the gradient that results in rapids and makes rafting fun. Different hydraulics with cool names like wave train, standing wave, hole, and eddy, are all opportunities to understand the interplay of these cycles. Wade also shares "winter snow brings river flow" and that the daily cycle of cool mornings and hot days change the water flow throughout the day, which also affects rafting.

Additionally, Wade discusses local river features and quizzes the students on how a river is generally named at a confluence. In most cases, the larger body of water keeps the name after being met by a smaller tributary, however, in the case of Spanish and Indian Creek, which are

about equal size, a river is sometimes given a completely new name when they meet - the East Branch of the North Fork of the Feather River.

Along with getting to learn about the science of the river, the students get to experience the recreation, fun, and adventure that the river provides, work together, and for many of them face their fears. Many students confess their fear and jitters about rafting before the trip but share their excitement and love for the adventure after the run is over. For many of them, this new experience helps them realize something that they never even considered doing before, is now not only possible but available to them.

One Quincy Elementary (QES) student Quinn McMichael, reported during lunch that there was “nothing he’d rather be doing than this... except spending time with my family”, he said, “family comes first, then fun.” Another QES student Caleb Dupra shared, “ My heart is racing, I feel so much excitement and intensity, it’s so cool to be here.” Macey Peay and Mckynlee Gay shared that it wasn’t as cold or as scary as they thought it would be. Gianna Borghi shared that she loved the rapids and wished there were even more.

When asked what water means to him Quinn McMichael thoughtfully shared, “ Water is everything, water gives life, it’s helped life go on for a long time; life is entirely about water.” Quinn’s heartfelt sentiments are indeed true, life is not possible without water. And as Rob Wade likes to emphasize, as much as we need water, human life also significantly impacts and changes waterways, and aquatic habitats constantly. Every time the river is changed, there is a cost and benefit. Helping kids to explore that is core to the Watershed Year.

Wade works to connect students to the various narratives of the river, connect with the positive and negatives of changing waterways, and how we can live sustainably and in balance with the water that provides us with- our basic needs, wildlife, industry, power, and recreation in the Feather River Canyon.

While, in large part, the students are just happy to be outside, out of the classroom, and “away from school” having fun, there is a powerful thing that happens when students get curious. Even while skipping rocks into the river between rafting sessions, the students had a chance to get curious about their surroundings. One student brought, what he would discover was a basalt rock to Rob, to ask him what it was, while others pondered over various sediment deposited on the banks of the river, and chased lizards under rocks. In the outdoors, there is a learning opportunity all around, there is something all around to grab students’ curiosity. And as the Wildlife Biologist, Naturalist, and Artist John Muir Laws shared, “...if you trigger curiosity all learning becomes better.”

Thank you to Rick Stock, Saylor Flett, and all the Outdoor Recreation Leadership students who volunteer their time each year, to give our PUSD 6th-graders a chance to experience, appreciate and relate to the river in a new and exciting way.