Franklin science teacher Anne McHugh keeps focus on students and student choice

In Anne McHugh's Franklin High School classroom, students are always looking for answers – and McHugh wouldn't have it any other way.

"I run my classroom like a research lab," says McHugh, this year's Pacific Northwest regional winner of the EPA's Presidential Innovation Award for Environmental Educators. "The focus is on students and student choice drives what we investigate."

Within a framework such as "How do we feed 10 billion people in 2050?" students undertake an authentic scientific process to answer questions that relate directly to this large-scale problem within environmental science. The Franklin Environmental Science students set up and examined the structure and function of desktop aquaponics systems to understand how conditions for the fish affect the microbes in the water, and in turn how these impact plant growth. This aquaponics research is being done in collaboration with NASA researchers, who want to understand how to better engineer life support systems for future Moon and Mars missions.

Environmental Science student Vanessa Pizzuto explained that "I prefer hands-on experiences. I can say '*I* did this. *I* kept the fish alive! Next I'd like to look more at the algae.'" Ilham Noor chimed in with "We should *always* have hands-on experiences." The Environmental Science classes are now preparing to present their findings remotely to their collaborating scientists at NASA's Ames Research Center.

I n addition to answering important questions, McHugh says that students learn crucial skills that will prepare them for post-secondary studies or for a career right out of high school. Industries are looking for people with lab tech skills and experience in data collection and analysis and bioinformatics. One of McHugh's dreams is to create a three-year biotechnology pathway focused on environmental science and solutions.

"If you anchor the skills in an engaging science storyline, students will remember," says McHugh.

When asked if this is how she learned science in high school, McHugh laughs and says “No way! It was all about repeating past experiments and following recipes. My view of science changed at Lewis & Clark College, whose biology department framed labs as investigations in which the professor did not yet know the answer to the question.” McHugh believes in centering novel scientific questions, anchoring student experiences in discovery through citizen science.

Junior Amanita Stewart loves the approach McHugh employs in Environmental Science, saying “The class is really change oriented and I am passionate about that. We’re working on solutions to problems like climate change that could literally save our world.” \

By centering problems and solutions, McHugh aims to empower students to learn the tools necessary to make decisions throughout their lives.

“A belief I hold strongly is that every student in my classroom can be successful,” says McHugh. “I teach them skills-based science and give them multiple opportunities to demonstrate what they’ve learned. There are so many points of entry that everyone can be engaged – and even contribute to NASA research.”

--Tullan Spitz