

What's Happening with Classrooms that are a Missouri Stream Team?



As part of WQM Team #5221, students from Lindbergh High School AP Environmental Science Class collect and submit water quality data along Gravois Creek in Saint Louis. A long-term study is now becoming the main focus as data collection has yielded results that make students ask "Why?"

Stream Team Highlight

Featuring: Barry Marquart, AP Environmental Science at Lindbergh High School, Stream Team volunteer

Barry Marquart has been a volunteer with Missouri Stream Team for nearly 20 years, beginning at McCluer High School in the Ferguson-Florissant School District and now at Lindbergh High School in Saint Louis, Missouri.

How long have you been using Stream Team in your classroom? *I have been using Stream Team in my classroom for the past eight years.*

In what way does curriculum help support your science classroom and the standards? *I teach AP Environmental Science (APES) at Lindbergh High School. The cornerstone of my Aquatic Pollution Unit is a multi-day water quality field lab on Gravois Creek at Whitecliff Park in South St. Louis County. I begin by teaching watersheds including how different land uses can impact both ground and surface waters which in turn impacts downstream water quality and biodiversity. I divide the visual surveys, water chemistry and macroinvertebrate surveys into smaller parts. These tasks are then assigned to my various lab groups. In small groups of four, students practice by viewing their specific sections of the Stream Team PowerPoints and videos. These resources are essential for the lab to be successful. During the class period before our big field lab, I bring in pond water for each group to test mainly to give students experience using the various chemical testing kits and equipment. For the lab I rely heavily on supplies provided for free by the Stream Team program. Stream Team curriculum is also helpful in understanding important APES concepts such as ecological tolerance, point and nonpoint sources of pollution, human impacts on ecosystems, eutrophication, thermal pollution, bioaccumulation, sewage treatment and pathogens. These concepts are an important part of APES objects.*



Describe your top three most impactful moments while your students were conducting Stream Team activities.

Over the years, the impact of getting students out into the community to conduct authentic research is quite evident.

Probably the most impactful aspect of our water quality lab is the pure excitement students show on the days we go to the creek. Seeing students work collaboratively in groups communicating ideas and problem solving is very impactful. Later in the year we do environmental choice projects that I call

“Action Projects” and students regularly choose to return to our site to do trash pick-ups along the creeks. I see students taking ownership of their local environment which is hugely impactful.

Another impactful moment occurred this year when my students seemed to have determined the reasons why Gravois Creek has low biodiversity. While Gravois Creek at our location is aesthetically beautiful, it consistently has low biodiversity. Over the years we get very good chemistry results, but our macro tests yield mainly pollution tolerant species indicating poor water quality. I finally believe, with the help of the students, that we have figured out why our creek has such little biodiversity. At the conclusion of our lab students use the Claim, Evidence, Reasoning (CER) model for their lab reports. This year with my guidance, students focused on the impacts of impervious surfaces on flood events. The upper watershed of Gravois Creek has a large amount of old parking lots and other impervious surfaces where runoff is sent straight to our creek which combined with more large rain events from climate change is destroying habitat with sheer force as it moves through the creek. This conclusion was student generated and was quite impactful to our findings this year.

I am so fortunate to have many former students who have moved on to pursue environmental college and career pathways. When I hear back from them, they frequently cite our APES class and the impact the outdoor experiences had on them serving as inspiration for their chosen path.

If you knew it was someone's first time conducting Stream Team activities, what advice would you give them?

Make sure you have all the necessary permissions needed to take your students off campus to conduct water quality studies. Also make sure your students are dressed appropriately for doing stream studies, kids will get wet. Set clear expectations reminding students that they are still at school and school rules apply even when you are outside in nature. Stress that you are collecting real scientific data that will be used for years to assess the water quality of your adopted stream. This usually excites the students and elevates their level of seriousness and enthusiasm. For the actual stream team activities, divide and conquer. Not all students have to do every part of the water quality and macroinvertebrate test. Have student do the same water quality testing they learned about and practiced on pond water in the classroom. Explain to the students that they will be the experts for their given tests and tasks.

Lastly, don't go on the field trip alone. If possible, bring along



another teacher or even better yet, find someone in your community who already conducts water quality testing. Having a second set of eyes is extremely helpful in keeping students focused and engaged. I can't possibly supervise them all. Be sure to bring trash bags and gloves. When students have down time, have them collect trash.

Check out student work provided from Barry's AP Environmental Class, including complete Claim, Evidence and Reasoning rubric and student conclusion [here!](#)



How can you make an impact just like Barry's High School AP Environmental Science class? Join Stream Team today!

[Start a Missouri Stream Team](#)

[MDC Discover Nature Schools](#). (2023, June). What's Happening with Classrooms that are a Missouri Stream Team?. *Discover Nature Newsletter*.

Find school resources through the Teacher Portal at <https://education.mdc.mo.gov/>