

Our Grandchildren's Watershed

Adam Haigler

As an Early College science teacher, I strive to use a variety of researched-based approaches to teach my students. At our school, we also want to instill an optimism and activism in students that leads to a deep belief in their agency to change the world. This is especially important for our students who come from an isolated rural community and don't always believe that they can have a meaningful impact. I recently designed a project that cultivated a sense of empowerment and exemplified many of the research-based approaches Breakthrough Learning advocates for: Project-Based Learning, Competency-based Learning, Service Learning, Inquiry-based investigation and community connection.

It all started with a discussion with our local Watershed Coalition. I asked their Executive Director what my students could do during class time to make a significant difference in our watershed, then asked if she would deliver a "State of the Watershed," address to my students as an Entry Event to my Project-Based Learning unit. This dialogue led to them recommending that my students volunteer to remove invasive plants from the creek behind our school. The State of the Watershed address framed the relevance of their Service Learning by showing them how invasive plants can decrease water quality by lowering biodiversity due to their evergreen nature and inedibility by native arthropods. So, we spent 4 full class periods in November ripping out Chinese Privet and Multiflora Rose from our school's campus. The students had a blast and understood why they were doing it!

But it didn't stop there! Students also simultaneously participated in a "20 Questions" research project that began with them sitting by our creek and independently generating 20 questions about our watershed. They then used one of these questions as a springboard for individual research on such diverse topics as water quality testing, drought vulnerability in Western North Carolina, algal biodiversity and macroinvertebrate surveys. The students really enjoyed getting to study what they were interested in, rather than a teacher-led agenda. The depth of knowledge many students reached on their topics of interest was astounding and doing the Gallery Walk of presentations was a wonderful experience for their fellow classmates and me.

Their Final Product for this unit was to create a 1-minute Public Service Announcement video to share with the class. After a class vote, one video was chosen as the favorite and will be shown at a schoolwide assembly later this month. I emphasized that video production is primarily creative endeavor, but does need to address a pressing need in our watershed. One of my favorite videos was Dave the Turtle (<https://youtu.be/OLBiBBXe2P8>), which used clay-mation to cast an unlucky turtle as a mascot for the importance of Privet removal.

To ensure that students were still mastering critical content, I created a Take Home Exam that asked difficult questions which would require them to exceed state standard knowledge targets. I then used our school's Competency-Based Learning framework to assess each of their answers and start an online dialogue on the Google Doc that they submitted to Google Classroom. Only a handful of students mastered the content on their first try, so they received an In Progress that will become a Mastery once they demonstrate sufficient knowledge through a verbal or written response.

This project was a ton of fun for my students and me and was a testament to the potential potency of the varied approaches Breakthrough Learning introduced to our school. I encourage other teachers to

innovate on my project and use it in their own schools. A detailed outline is available on my website at: <http://adamhaigler.wix.com/tcec#!our-grandchildren-s-watershed/zx1u0>

At the end of the unit, I was encouraged to hear the student answers to the Driving Question, “How clean will your grandchildren’s water be if they live in Cherokee County?” Almost unanimously, they decided that it all depends on what they do to keep it clean. Sounds like empowerment to me...