

AUTHENTIC INQUIRY WITH STUDENTS OWN DATA

Aligned Curriculum, Accessible Software, Professional Development

Hands-On STEM Skill & Career Readiness

Project-based exploration at school and at home centered on and motivated by student's own utility data.

All students participate: apartments & houses, all income levels, any municipality, smartphone and tablet ready -- but not required.



Motivate Learning - Exceed Standards

Schools implement the program because its flexible, cross-curricular, technical by nature, and an ideal unit-enhancement aligned with critical standards in:

- Human Impacts (climate, water, energy)
- Non-fiction literacy
- Engineering design
- Functions / statistics



Cross-Curricular Professional Development

In-person or virtual professional development training sessions are available. Participants come away with not only confidence to immediately incorporate STEMhero into their classroom, but also exposure to the design thinking principles behind the curriculum.

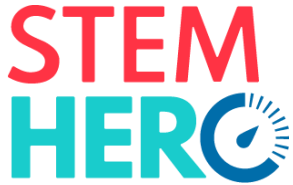
| | | | | | |
|---|---|---|---|---|---|
| : course met the stated objectives. | 5 | 4 | 3 | 2 | 1 |
| : instructor skillfully presented the material. | 5 | 4 | 3 | 2 | 1 |
| : instructor was well qualified and knowledgeable. | 5 | 4 | 3 | 2 | 1 |
| : materials provided were useful for improving instruction. | 5 | 4 | 3 | 2 | 1 |
| : materials were appropriate for the subject. | 5 | 4 | 3 | 2 | 1 |
| : facilities were appropriate for the program. | 5 | 4 | 3 | 2 | 1 |
| : overall program was excellent. | 5 | 4 | 3 | 2 | 1 |

Comments for improving the workshop:
Very interesting - Thank you! I learned a lot.
 return to: Archdiocese of Seattle

THANK YOU PARTNERS

Built With Help From Trusted Innovation, Industry, Curriculum Leaders





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TEACHER TESTIMONIALS

“The kids loved it and are super excited. Before I even opened my door this morning a student from Cheryl’s class came up to me to tell me about her water meter.” – Kelley

“An environmentally sound integrated math-science service-learning curriculum that meets state standards!” - Pat

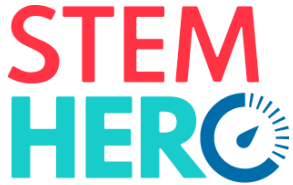
“This required very little prep time, and that was great! I could’ve had a sub do it because it was that complete. I will use it again, and that is what it comes down to.” – Kathy

“The way this project started ‘at home’, or locally, and then opened to worldwide was fantastic. I loved the way doing small things at home could make a difference. The students felt like they were important, and yet of service.” – Lori

“When I started teaching, the idea of how to make science authentic and purposeful was tough to wrap my head around. The STEMhero project helps to accomplish those goals in my classroom.” – Katherine

“Aligned beautifully with Next Generation Science Standards!” –Alison

“Love it! Innovation, education, and engaged citizenship...three things that should be combined more often.” - Petra



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HOW ALL STUDENTS PARTICIPATE

Options For Students Who Do Not Have Access To A Meter Because:

- Their home gets water from a well without a meter;
- They live in a multi-family apartment or duplex in which the meter is in a locked maintenance room;
- They are navigating homelessness or home instability of some kind.

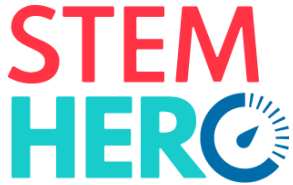
Option (1): Track The Type Of Meter They Do Have Access To (Electricity And/Or Gas Are Usually Accessible For All Students).

Electricity and/or gas meters are usually accessible for all students (located in a visible place on the outside of the building) and often are metered for individual units within a multi-family building.

STEMhero is most interesting when students track multiple types of meters at the same time. However, students can fully participate even if they only have access to one or two types of meters.

Option (2): Read The Teachers Meter(S)

Share with students photos of your home meters and let the students read them as if they were their own. Students will LOVE to examine their teacher's consumption!



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Option (3): Track The School's Meter(S)

Elevate students without access to meters at home to be the owners of tracking the school's consumption.

- **Tip:** Let the facility director know that only a pair of students will need supervised access to take a quick picture of the school's water meter (not forever, but just during the few weeks of the unit)
- **Tip:** If student access to schools meters is absolutely not possible, partner with the facility person to have them snap a photo of the meter once a day and email it to you.

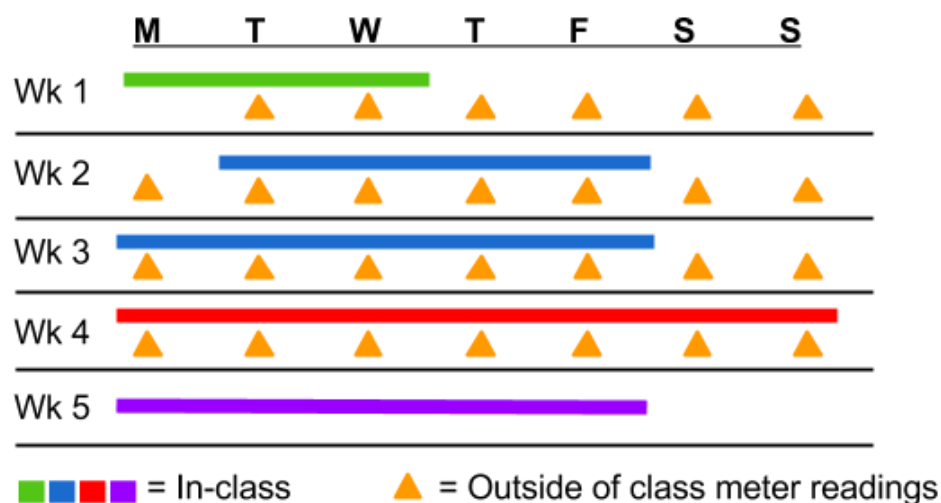
Option (4): Track Meters Where They Are Staying Or Where They Work/Intern/Volunteer

In the past students have tracked meters at the restaurants where they work, at the Boys and Girls Clubs where they go after school, and could even track meters at a shelter, motel, or at a friend's house (with permission, of course).

Option (5): Read Virtual Meters

We've built a set of [virtual meters](#) that act like a "typical" single family home water meter. Students can be given one page each week to take readings from the images.

SUGGESTED PACING GUIDE



Stages (students will...):

- I. **Identify and learn to read utility meters:** water, gas, electric
- ▲ II. **Gather consumption data** from utility meters: at home, school, or a local business
- III. **Model and analyze the data** to interpret their direct connections to, and impacts on, natural resources
- IV. **Conduct data-driven experiment:** design, test, evaluate
- V. **Demonstrate applied learning:** argue, engineer, perform

■▲ 1) **Basic Implementation: Read, Gather Data** Total Stage Days: 2-10 Cross-curricular Topics: *Measurement; Nonfiction literacy*

Missions: A, *B (Assessment), C, *D (Estimated vs. Actual Use), E, *F (Log In & Record a Reading). Total Readings: At least 3-7/wk

Aligned Standards: **CCSS ELA-Literacy.RST** (6-8.3; 6-8.4); **ISTE** (3b, 4c, 5, 6a)

■▲ 2) **Full Implementation: Read, Gather, Model** Total Stage Days: 7-15 Cross-curricular Topics: *Human Impacts; Functions & statistics*

Student Missions: G, *H (Home/School Audit) Total Readings: At least 3-7/wk

Aligned Standards: **CCSS ELA-Literacy.RST**(6-8.7); **WHST**(6-8.7) **Math.Content.7.RP.A**; **NGSS** (MS-ESS3-1,3-3,3-4); **ISTE** (3d, 5)

■▲ 3) **Extended Implementation: Read, Gather, Model, Experiment, Demonstrate** Total Stage Days: 10-25+

Cross-curricular Topics: *Human Impacts, Engineering Design* Student Missions: I, *J(Challenge), K, **B (Assessment)

Aligned Standards: **CCSS ELA-Literacy.W** (6-8.1B, 6-8.7) **Math** (7.EE.3); **NGSS MS** (ESS-3-3, ETS1-1,1-2,1-3,1-4)(HS-ESS3-4); **ISTE** (3a, 4a, 4c)

*Highly Recommended

Total Readings: At least 3-7/wk