



Hello Science Education Leaders,

I hope you're surviving and finding ways to share some joy! I really look forward to the coming holiday break. Please, let me know if I can help with some resources or a facilitated discussion, like a brief after-school dig into virtual science teaching ideas. Send me an email.

Below are a few science and STEM education resources I've heard about. As always, if you have announcements to share about science or STEM-related professional learning and resources, please send them my way for the next edition. A record of these emails can be found on my website: dpi.wi.gov/science/social-media.

Cheers,
Kevin

Learning Opportunities

- [Monthly Book Study and Equity work](#) - next on Jan 18.
- [KEEP and STEMhero](#) - webinar on real data-driven inquiry at home - Dec 17 at 4pm

Resources

- [Equity resources](#) - recent articles
- [Computer Science Resource](#) - CSTA - WiDairyland
- [Tyto Online Interactive Science Games](#) - grants and anti-racist learning opportunity
- [How do you teach vocabulary?](#) Up front isn't the best...
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- [Open access NGSS-aligned high school or early college physics course](#)
- [LEAF School Forest Awards](#) - nominate an individual or organization

Student Opportunities

- [Lake Sturgeon Bowl](#) – quiz competition for high school students Mar 6-7
- [Native Skywatchers](#) - student/family events and teacher resources
- [Virtual Wisconsin KidWind Challenge](#) - Mar. 6th 2021

Details

Learning Opportunities

- Monthly Book Study on Equity work - next discussion on Jan 18 at 4pm

<https://forms.gle/ChkVDbzgGBm82yge6> - you can still register at this link! This monthly book study focuses on equity and access in science education. In January we'll be digging into Doug Larkin's book, *Teaching Science in Diverse Classrooms*. I plan to listen to Doug's podcast where he reads the book - [Larkin book podcast - Teaching Science in Diverse Classrooms](#) - and our facilitator, Sarah Adumat, suggests at least the intro through chapter 4. Dr. Larkin will be joining us for the conversation!

- KEEP and STEMhero - webinar on real data-driven inquiry at home - Dec 17 at 4pm

Looking to supplement your energy units? STEMhero and KEEP will be sharing the inner workings of [MeterHero](#), an online curriculum and platform students use to collect real-world utility data. With MeterHero, students investigate resource use and consumption to develop strategies for making an impact in their household usage. On December 17 they will walk through how to use MeterHero, describe benefits of this program for your classroom/virtual learning space, and give you time to explore your own account. It's best for middle and high school Science, with an AP Environmental Science version available. This presentation is part of KEEP's Energy and Climate Resource Expo and is free to Wisconsin schools. [Register here](#).

Resources

- Equity resources - recent articles

Here are a series of equity related articles or stories I've come across recently - 1) [stories from underrepresented graduate student scientists](#) at UW-Madison from WSJ; 2) an [NPR story](#) on teaching students (and teachers) about the history of racism in science; 3) a [detailed listing of justice-based language](#) for use when working with and discussing minoritized groups.

- Computer Science Connections

The NGSS include a practice of computational thinking – even if you're not a “computer science teacher,” it's useful to connect with the CST Wi-Dairyland group. They have monthly sharing sessions – next on Jan 20 at 7pm - [Join Zoom Meeting](#). Amy Fetherston ([email](#)) can share further info. Marquette has a computer science competition in April (science simulation?). Want to add a CS license? [Free practice for the Praxis CS Exam from CompuScholar](#). Join CSTA: <http://csteachers.org> and click on Membership tab at the top (free membership continues to be available).

- Tyto Online Interactive Science Games - grants and anti-racist learning opportunity

Grant Opportunity: Due Friday, December 18th! Middle-school focused science game Tyto Online is offering STEM Gaming Microgrants which provide free access to the game + PD/coaching for the Spring semester. The grants will cover 5,000 student licenses, distributed across a number of organizations — applications can be individual teachers to whole districts. Learn more and apply: <https://tytoonline.com/STEMmicrogrants>. Tyto is also looking for district-level partnerships with a few select districts to explore anti-racist teaching

in science in a game-based environment. Contact [Lindsay Tروف](#) to discuss district partnership options with that.

- How do you teach vocabulary? Up front isn't the best...

https://www.youtube.com/watch?v=qm85NqofaUI&feature=emb_title - in this short video by Stanford Professor Bryan Brown, he shares his research on having students explore ideas first in their community languages and then layering the technical language onto that. That links well with [my blog post a while back](#) on students hiding their lack of understanding behind vocabulary words and definitions, and with this recent [STEM Teaching Tool](#).

- What is "essential" learning in elementary science? Ideas from WA

In response to the question, "Which are the essential standards?" Washington is suggesting teachers instead wrap around supporting students in learning what they need to answer essential grade-level questions listed in the NGSS Topic Arrangement front matter. To that end, the resource [K-5 Science: Essential Question Units and Resources](#) provides conceptual unit guidance from the NGSS Topic Arrangement with a variety of freely available resources listed for each PE, many of which may be used or adapted for learning from home.

- Further thoughts on effective learning, distance or in-person

<https://wisdpiscience.blogspot.com/2020/12/effective-virtual-and-in-person.html> - I shared this article in the latest WSST Newsletter and thought I'd share it here too. I see some "NGSS-aligned" curricula and instructional plans that connect content learning and science practices, but it's still the teacher directing and framing all the learning, with students not being asked to do any real, deep learning. In this blog I share a few ideas on how to tweak a few typical lessons and activities to attempt to make them more student-centered rather than teacher-centered.

- Open access NGSS-aligned high school or early college physics course

<https://www.curiosityinaction.net/> - Dr. Rachael Lancor and her husband Brian Lancor, who both teach at Edgewood College, re-designed the typical physics course to be based on case studies or issues that are interesting to students. They then layered in the physics learning necessary for students to solve those problems. For example, a unit on solar panels teaches students about circuits, solar energy, semiconductors, and the photoelectric effect. It's designed for an introductory physics course, and can work at either the HS or college level. They decided to make it open access, so that more people could use the materials. Their website has lessons, a teacher's guide, etc.

- LEAF School Forest Awards - nominate an individual or organization

Nominations are now being accepted for the 2020 School Forest Awards. These awards recognize individuals and organizations that have provided leadership for local school forests registered through Wisconsin's School Forest Program. LEAF (Wisconsin's K-12 Forestry Education Program) will recognize individuals and organizations that have made significant contributions to a school forest program(s) over a period of years. To nominate a candidate [click on the nomination form](#). For more information and to see nomination categories visit [LEAF's website](#). Nomination deadline is January 22, 2021

Student Opportunities

- Lake Sturgeon Bowl – quiz competition for high school students Mar 6-7

Looking for a way to engage your students in science this winter? The [Lake Sturgeon Bowl](#) is going virtual for 2021. A regional competition of the National Ocean Sciences Bowl (NOSB), the Lake Sturgeon Bowl is an academic competition for teams of four to five high school students. Celebrating its 20th Anniversary, March 6-7, 2021, this quiz bowl type competition will test their knowledge of the marine and aquatic sciences including biology, chemistry, physics, and geology. Hosted by the UW-Milwaukee, School of Freshwater Sciences, the Lake Sturgeon Bowl is a great opportunity for students who excel in math and science and who are interested in broadening their awareness and understanding of the oceans and Great Lakes. To get involved contact Liz Sutton at emsutton@uwm.edu.

- Native Skywatchers - student/family events and teacher resources

<https://www.nativeskywatchers.com/> - The *Native Skywatchers* initiative seeks to revitalize indigenous star and earth knowledge and communicate the knowledge from the sustainable lifestyles that indigenous people practiced. There is a live, virtual event on Th, Dec 17 at 8:30pm, focused on Mayan knowledge - it's relevant to K-12 learners, families, and educators - it's about bringing together Indigenous Astronomy, NASA Moon and Mars missions, and STEM on the ISS.

- Virtual Wisconsin KidWind Challenge - Mar. 6th 2021

[Registration](#) - UW-Madison's Energy Research Center is offering a virtual KidWind challenge this year. Any group of students in grades 4 to 12 is eligible to enter as a team, which could include public and private schools, home schoolers, after school clubs, Boy Scout and Girl Scout troops, etc. You just need a coach and team members. If you need gear, limited numbers of Renewable Energy Education Kits are available for Wisconsin Teachers who'd like to bring a team of students to the Challenge, but don't have the means to purchase gear. Please contact outreach@energy.wisc.edu.

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“Science is not a body of facts, [it] is a method for deciding whether what we choose to believe has a basis in the laws of nature or not.” – Marcia McNutt