



NEWS BLAST

Fall 2021

Greetings to all!

Welcome to this Fall edition of the NGSX News BLAST. This issue will bring you up to date on upcoming professional learning opportunities with NGSX. You will enjoy a thoughtful reflection by **Martha Inouye** who works with in-service education at the University of Wyoming. Martha drew upon her NGSX experiences in the **Oceans, Climate Science & Big Data pathway** to develop a workshop for teachers, offered this past summer. We are pleased to provide an update on the creation of the **MI NGSX Facilitator Network** in Michigan, which was officially launched in September. And you will have the opportunity to read about the ongoing development work of **TJ McKenna and Chris Zieminski** in creating Virtual Science Notebooks for two of our NGSX pathways: Oceans, Climate Science & Big Data, and a new pathway module – not yet completed – that we are working on with a team from the **Nāwahī immersion school** in Hawaii.

With our best wishes for good health and gratitude for your excellent work, whether in person, remote or perhaps both. Thank you!

— **Jean Moon, Sarah Michaels, and the entire NGSX team**

YES, IT TAKES A VILLAGE

Martha Inouye

Research Scientist & Professional Development Specialist, University of Wyoming

Imagine: you walk into a classroom and all students are engaged in deep conversations with each other, trying to make sense of why they saw so many vibrant sunsets this summer. You see hand-drawn models, computers with data tables and figures lighting up the screens, and papers with sentence starters to support argumentation. You hear lively chatter, ideas being considered, and connections being made. Students are clear about what they are doing and why they are doing it. A village at work learning and growing together.

In my role as a science education professional development facilitator, this is the type of classroom I want to support. I live in Wyoming and work with K–12 science teachers across the state. We adopted NGSS-like standards back in 2016, and I have been lucky enough to spend much of my working days providing professional learning to teachers in many of our 49 districts. In my efforts to support teachers in phenomenon-based, 3-dimensional science instruction, I came across an NGSX announcement for their first **Virtual Pathway for Becoming a Next Generation Science Teacher**. I jumped at the opportunity to engage in PD as a participant and am so glad I did. The facilitators built a community, or village, of learners, artfully embedding strategies that aligned with best practice as they took us through learning sequences that helped us build schema for what this type of learning feels and looks like.

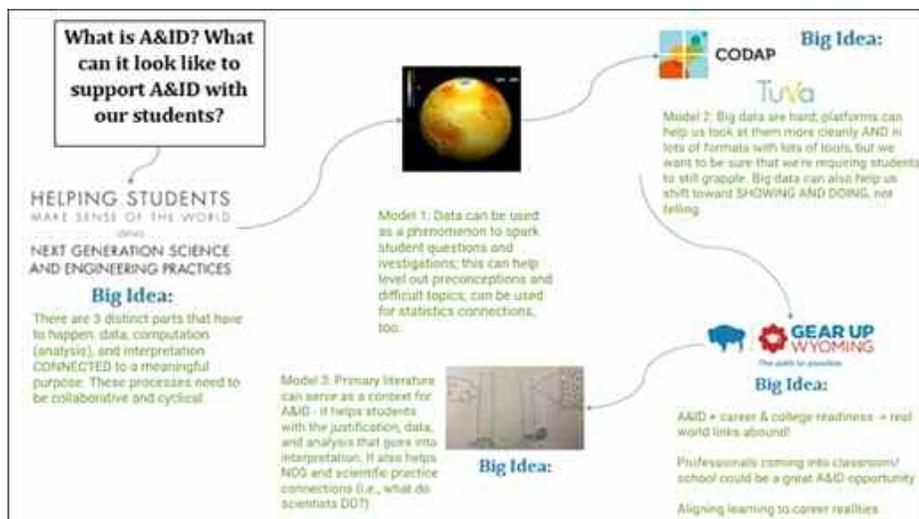
In Spring 2021, I saw that NGSX had developed a pathway called **Oceans, Climate Science, and Big Data (OCSBD)**. This pathway intrigued me because in my own work, teachers had been requesting support in engaging their students in specific Science and Engineering Practices, like Analyzing and Interpreting Data. As I participated in OCSBD in June 2021 and reengaged with this village, I began seeing possibilities for how some of the ideas and data used in OCSBD could

support the teachers with whom I work in Wyoming. Throughout the OCSBD pathway, facilitators guided us through data exploration to support making sense of phenomena connected to oceans and climate. They wove classroom examples (big thanks to Ben Lord) with learner experiences for participants and opportunities to debrief those experiences. My head was buzzing with ideas. When the workshop ended, my work began: how could I adapt aspects of OCSBD to support teachers in the practice of **Analyzing and Interpreting Data (A&ID)**?



In addition to other materials my team and I develop, I drew from my experiences in OCSBD to bolster a workshop sequence with the guiding questions: What is A&ID? What can it look like to support A&ID with our students? Drawing from my OCSBD experience enriched the sequence by providing classroom examples and examples of data that could support the materials my team and I had developed. Three major components of the sequence, in which I drew from OCSBD were:

- ◆ **Using data as your phenomenon:** incorporated Ben Lord's (NGSX Senior Facilitator and Pathway Designer) high school example showing Earth's temperature increase
- ◆ **Students making sense of big/small, messy/cleaned data:** incorporated CoDAP (Common Online Data Analysis Platform – developed by the Concord Consortium), ocean temperatures and chlorophyll A data
- ◆ **Primary literature as a source of data:** incorporated Eunice Foote's article on the heat of the sun's rays and accompanying sensemaking



It takes a village to create a world of scientifically literate citizens. It takes a village to provide rich learning experiences for our students. It takes a village to support each other in this journey. We cannot go it alone. I am lucky to be able to consider NGSX a part of my village.

Thank you to all the NGSX community, facilitators and participants alike, for providing engaging and meaningful professional learning opportunities and for creating spaces to learn and grow with colleagues across the country.

P.S. And thank you, Martha. You are a part of our NGSX village, to be sure!



MICHIGAN LAUNCHES A STATE-WIDE NGSX FACILITATOR NETWORK

Among the many states across the country engaging with NGSX, Michigan is one of the largest (both in terms of size but also depth of engagement). To date approximately 6,500 teachers, coaches, principals, and administrators have participated in NGSX pathways. Over 100 Michigan science leaders have been certified to facilitate NGSX.

This fall, Michigan took a bold step, and launched the **MI NGSX Facilitator Network**, with funding from the Michigan State Legislature (with Mi-STEM Advisory Council Grant funds). The purpose is a sustainable, equitable mechanism to support and expand high-quality NGSX Facilitation across Michigan.

After several months of planning by a team of expert MI NGSX facilitators, state and district science leaders, higher ed faculty, and NGSX staff, the Network was officially launched on September 27th, with over 30 NGSX facilitators attending. In the first session (via Zoom), the group engaged in:

- ◆ an ice breaker and norm setting;
- ◆ collaborative “visioning” work;
- ◆ a structured, interactive “inquiry into facilitator practice” with video and transcript analysis;
- ◆ working breakout sessions for updates on new NGSX Pathways and new facilitator resources; and
- ◆ brainstorming for a “network communication platform” and other needs – ensuring that MI Regional Directors, facilitators, and local teachers and instructional leaders can get the science support they need.

We’re excited about this new initiative and hope that the MI model might become something for other states and districts to “think with” in promoting collaborative knowledge building, equity, and scale – so that the new NGSS vision of science teaching and learning becomes a reality for all teachers and students. We’ll keep everyone in the NGSX family posted on how this evolves.

If you’d like more information about the Michigan NGSX Facilitator Network, please contact **Debbie Swanson** (Convener of the MI Facilitator Network Design Team) at debbieswanson2@gmail.com, or **Andrea Wells** (NGSX Director of Facilitator Learning) at andreadwells@gmail.com.

Founding Goals of the MI NGSX Network

1. Create a community of learners to support collaboration between and amongst all Michigan NGSX Facilitators
2. Make explicit connections to other “science” learning programs and literacy practices
3. Ensure there is a system in place for facilitators to grow and maintain their facilitation skills
4. Expand the reach of NGSX statewide
5. Build the Network by, with, and for facilitators

NGSX INTRODUCES VIRTUAL SCIENCE NOTEBOOKS (VSN)

Over the past few years our NGSX pathway designers have introduced new technologies intended to expand the capacity of all pathways. By capacity we mean enhancing pathway tools for both participants and facilitators. In this issue of the News Blast we want to share a recent tool just introduced into two of our pathways.

First, we need to provide a bit of context. With the onset of the Covid pandemic and the call to design pathways that were virtual, much of our work became focused on the challenges of making virtual pathways as interactive and accessible as possible. The NGSX pathway designers did so by creating different types of digital tools that could be used in a Zoom-based pathway session. Our goal was to develop tools that could be integrated into a virtual pathway to enrich the experiences of participants as well as support the work of NGSX facilitators. Also important was to design tools which participants could take with them to their classrooms after completing a series of pathway sessions.

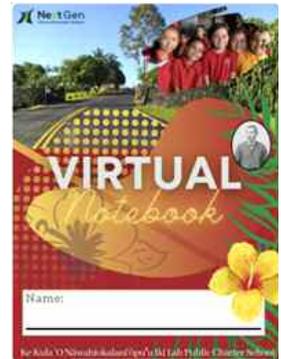
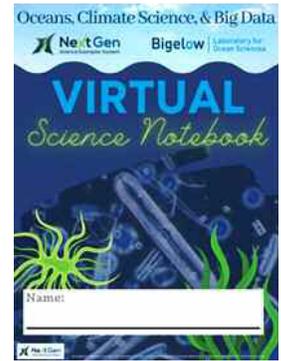


In this article we want to share one of these newly developed tools – **Virtual Science Notebooks or VSNs**. They allow participants to capture their ideas, work products and questions as they move through a pathway. As a participant you can take screenshots of your work, make a record of questions prompted by steps in a pathway or prompted in small group discussions. You might also want to include ideas you've figured out or not yet figured out completely, capture images showing live data or models you might want to save for later, and quotes from videos. Yes, participants can save postings from a driving question board as a way of documenting the evolution of their own thinking about a phenomenon. The ability to save artifacts from pathway experiences is not only a remarkable advancement but of significant help to participants in creating a collection of resources and ideas they can call upon many months after completing a pathway.

NGSX senior facilitators **TJ McKenna** and **Chris Zieminski** developed the NGSX Virtual Science Notebook. Both have been leading PD workshops on science “notebooking” for years, having previously spent more than 10 years in the field using notebooks for scientific research. They were also guided in their work by the **Triple E Framework project** - developed by Professor Elizabeth Keren-Kolb at the University of Michigan. Triple E stands for Extend, Enhance and Engage. The research-based premise for Triple E is this: When students can access and use the same tools outside of school as they use in school, their learning more easily transfers from the classroom into the real world.

At NGSX we are guided by a similar framework applied to teacher learning. Teachers need tools that easily migrate from their experiences in professional learning programs to their classroom. If this happens, professional learning becomes less siloed, less removed from where teachers do their work – with students in their classrooms. While conversation about the pros and cons of virtual vs. in person professional learning continues, at NGSX we believe now more than ever, teachers need support in bridging the gap between their own learning and the multiple ways learning now takes place for students.

At this juncture, two Virtual Science Notebooks have been developed. The images above are for the NGSX **Oceans, Climate Science and Big Data Pathway** and a partnership project between the **Nāwahī School in Hawaii** and NGSX. Nāwahī is an immersion school focusing on the cultivation of the Hawaiian language. Through this partnership NGSX and a team from Nāwahī are developing a professional learning module focused on sensemaking across all subjects. (As of this writing the Nāwahī team is considering renaming the virtual notebook as a Virtual Sensemaking Notebook.)



While both projects are quite different from one another, the Virtual Notebooks are proving to be valuable in each context. Based on our future data collection and analysis for these two projects, we intend to integrate VSNs in other NGSX pathways. The goal of NGSX continues to be to lessen the gap between one's professional development and one's classroom. The Virtual Notebook, like other NGSX PD tools, is well positioned to continue to help close this gap.

A series of VSN pages from the OCSBD Pathway.



CALENDAR OF UPCOMING PATHWAY SESSIONS

- ◆ **Becoming a Next Gen Science Teacher**
Farmington, Michigan
5 upcoming sessions: November 2021, December 2021, January 2022, February 2022 & March 2022
- ◆ **PLANS Pathway for Administrators**
Delaware – tentative December 2021
- ◆ **PLANS Pathway for Administrators**
Colorado – January 2022
- ◆ **Oceans, Climate Science & Big Data**
a national session with dates to be determined

Please contact **Kirsten Boutiette** (nextgenexemplar@gmail.com) if your district or state is considering organizing an NGSX professional learning session with one of our pathways. Do check our website (NGSX.org) for a complete list and description of pathways.

Like so many teachers, administrators, curriculum directors, and those in other key educator and administrator roles across the country, we continue to monitor the status of Covid and Covid variants to determine how best to do our part in keeping NGSX pathway participants and facilitators safe. While Covid remains a reality, making in-person PD a challenge, we continue to be very pleased with the quality of our virtual pathways. The high level of interactivity that occurs in these pathways is impressive. Our collective hats are off to all the NGSX designers, including our videographer, who have made this level of interactivity achievable. Virtual pathways, over Zoom, allow NGSX to continue to make high quality, well facilitated PD possible while Covid continues to be a presence in our lives.

