WSST Conference 2024

C College E Elementary F Fieldtrip G General H High School M Middle School S Social W Workshop

APRIL 18 • THURSDAY

7:30am – 4:30pm		**Registration**	Registration Desk
8:00am – 8:50am		**Newcomers Meeting**	Meeting D
8:00am – 8:50am	E	**Working Together to Strengthen Your OpenSciEd Classroom** *Speakers: Michelle Howe* The OpenSciEd curriculum for middle school will be the highlight of this session, however information would be helpful for high school and elementary school teachers as the curriculum is rolling out for those levels. Participants will share their experiences and helpful resources as well as time to ask questions of each other to help strengthen our OpenSciEd classrooms.	Riverside Ball C
8:00am – 8:50am	H	**Teaching ocean conservation efforts with a salt water tank.** *Speakers: Jamie Lauer* After completing a Fund for Teachers fellowship on ocean conservation efforts in Puerto Rico, attendees will learn how to design learning opportunities around perseverance and failure. The focus will be on coral growth and urchin dynamics for a multitrophic approach to restoring both creatures. Many aspects of all science courses can be anchored with phenomenon in a salt water tanks system. By creating disturbances within the tank, student will learn how to use science to solve problems faced in the ocean. Attendees will also learn about local Wisconsin aquatic stores who are helping out our school with the process (including donations.)	Riverside Ball B
8:00am – 8:50am	M	**Social Sciences & Critical Thinking: Making Informed Sense of How People Interact with PBS's Above The Noise** *Speakers: Michael Hartwell* So much of our current media coverage is based on partisan opinions and bombastic, attention-grabbing content, devoid of thoughtful, fact-based perspectives. As overwhelming and dismaying as this can be for adults, just imagine what it is like for young people! What if we could teach students to use the social sciences to be better, more considerate consumers of modern media? Using PBS's award-winning collection Above The Noise and its related content, educators can give students the opportunity to leverage the research and facts behind the controversial headlines and trending topics to better inform their interpretations and opinions of what's happening in the world around them. From gun control to performative activism and everything in between, come learn about all the engaging, accessible ways social science interacts with contemporary issues and can support your students' growth to being stronger critical thinkers.	North Hall C
8:00am – 8:50am	M	**Building Future Scientists: Fostering Science Identity in Students for Lifelong Learning** *Speakers: Abby Forst, David Venne* Attendees in this session will gain insights into our district's strategic approach to realizing three pivotal science goals: Cultivating a positive affinity for science, fostering students' self-perception as scientists, and establishing meaningful connections between science and individual passions.	Meeting B

8:00am – 8:50am M **Engineering Tomorrow: Students Today, Engineers Tomorrow** Meeting C

Speakers: Ann Viegut, Liz Kysely, Brad Peck, Lisa Peck

What is Engineering Tomorrow? Guided by a diverse team of successful engineers, Engineering Tomorrow introduces middle and high school students to various science-based engineering fields through highly engaging engineering STEM labs that provide virtual learning, hands-on instruction, and mentorship opportunities. During each lab, students have the opportunity to work with professional engineers and college engineering students over video conferencing. Students gain powerful insights into the impactful work that engineers perform on a daily basis. Engineering Tomorrow employs students from the nation's top colleges and universities to mentor middle and high school students during our labs. Supported by engineers nationwide, we deliver our STEM labs, including materials, at no cost to students, teachers or schools. Participants in this session will have the opportunity to learn about Engineering Tomorrow, interact with Zoom lab hosts, see an introductory session, view lab materials and have their questions answered. Over 8,900 middle and high school students in Wisconsin and over 15,000 students in the Midwest have participated in our labs! Come and see why Engineering Tomorrow is a perfect fit for your school's Science curriculum!

8:00am – 8:50am M **The Role of Professional Learning to Support OpenSciEd Implementation** Meeting A

Speakers: Chad Janowski, Elizabeth Mayenschein, Kim Lemberger

Join us for an enlightening session on the importance of professional learning in empowering teachers to excel in OpenSciEd implementation. Discover how investing in ongoing teacher development unlocks the full potential of this innovative science curriculum, creating a transformative learning experience for both educators and students. In this session we will:

-Explore a comprehensive framework for professional learning tailored to the needs of teachers implementing OpenSciEd.

-Highlight how strategic professional development fosters a deeper understanding of the science content and the curriculum.

-Showcase how ongoing professional learning equips educators with the skills and resources to overcome obstacles and adapt to evolving educational landscapes.

-Illustrate how shared experiences and collaborative problem-solving within professional learning communities contribute to successful implementation.

8:00am – 8:50am W **Workshop: Incorporating Soil Health Assessments in Environmental Education** North Hall A

Speakers: Tim Miland, Jamie Patton

Wisconsin soils are naturally diverse, with more than 700 different soils mapped across the state! Human management of these soils, including what we add, what we plant, and how we disturb or use a soil, can influence how a particular soil looks and how it contributes to plant, animal, and human health and environmental quality. In this session, we will discuss how soils play a fundamental role in many environmental functions and cycles and how human management can both positively and negatively impact soil health. We will use basic tools and our senses to evaluate several soil biological, chemical, and physical properties used by professional conservationists to assess soil health and function. Soils from natural areas, agricultural fields, and residential environments will be evaluated to highlight common soil health differences seen under various management systems. The concepts and techniques covered in this session can be adapted for middle school and high school environmental science, agriculture, or earth science topics.

8:00am – 9:50am G **Movie Screening: Picture a Scientist** Riverside Ball A

PICTURE A SCIENTIST chronicles the groundswell of researchers who are writing a new chapter for women scientists. Biologist Nancy Hopkins, chemist Raychelle Burks, and geologist Jane Willenbring lead viewers on a journey deep into their own experiences in the sciences, ranging from brutal harassment to years of subtle slights. Along the way, from cramped laboratories to spectacular field stations, we encounter scientific luminaries - including social scientists, neuroscientists, and psychologists - who provide new perspectives on how to make science itself more diverse, equitable, and open to all.

8:00am – 9:50am H **Workshop: Storylining in Biology for Coherent Instruction** Meeting E

Speakers: Kathy Van Hoeck, Shane Cullian

The NGSS Biology Storylining Working Group has created a free, three-dimensional set of storyline units that serve as a complete curricular replacement for any introductory biology course. 3-D learning incorporates the disciplinary core ideas, the science practices and the crosscutting concepts and is the driving force of the Next Generation Science Standards. In order to better integrate the different topics typically taught in the high school biology classroom, storyline units that are coherent and phenomenon-driven have been created so that students can make sense of how science works in real world situations. This workshop serves to introduce attendees to how the IL Biology Storylines have proven to be great models of how 3-D learning, how they can be applied in today's biology instruction, and how they lead to students becoming self-directed learners and critical thinkers.

Participants will:

1. Better understand how coherent instruction works.

2. Better understand how coherent instruction impacts student learning by distinguishing between coherence and traditional lesson sequences.

3. Better understand how phenomenon-driven units are constructed through a deep-dive of the NGSS Performance Expectations that relate to each storyline.

4. Better understand how to help students become self-directed learners by participating in activities as a student would in small breakout groups.

8:00am – 9:50am W **Workshop: Fishing in the Schools** Meeting G

Speakers: Cal Sinclair, Theresa Stabo

The Wisconsin Department of Natural Resources' (DNR) Angler Education Program provides training and materials for adults to offer fishing programs in their schools and communities. The program links fishing to science through investigations of fish and their habitat and provides opportunities for interdisciplinary unit development with social studies, language arts, fine arts and physical education. Fishing equipment and other supplies are available for loan to instructors at nearly 60 tackle loaner sites. Grants are also available. The program has two main levels, Junior Angler for grades 4 – 8 and Hook, Line & Thinker for high school. A subset of materials appropriate for younger learners is also available. Successful program models include after-school fishing clubs, summer enrichment classes and school-family events, in addition to classroom use. Angler Education is part of the DNR's R3 initiative, which stands for recruitment, retention and reactivation, in this case, of anglers. A school-based fishing program can help ensure that Wisconsin's fisheries and fishing tradition will be in good hands now and in the future.

8:00am – 9:50am W **Workshop: Science in the Trees: K-2 Lessons from Project Learning Tree's New Activity Guide**

Speakers: Nicole Filizetti Meeting F

Participants in this session will get hands-on outdoor practice using some of the K-2 lessons from Project Learning Tree's newly revised "Explore Your Environment" activity guide, and leave prepared to integrate nature-based science exploration into their elementary curriculum. We will try out some "step out the door" style lessons that can be done on any type of school grounds, as well as lessons that fit well in a more heavily wooded setting. We will also spend time investigating how learning about trees and forest ecosystems connects to the NGSS, and get ideas for how teachers can integrate some of Wisconsin's fun forest-focused natural phenomenon into their lower elementary science curriculum. Participants will receive a paper copy of the "Explore Your Environment" guide to take home.

9:00am – 9:50am **Retirees Meeting** Meeting D

9:00am – 9:50am E **Books to Builds: STEM Activities to Compliment Your Favorite Read-Alouds** Riverside Ball C

Speakers: Terra Tarango

Discover innovative STEM activities tailored to complement popular read-alouds. Participants will experience firsthand five engineering challenges inspired by beloved books. This hands-on workshop empowers educators to confidently integrate STEM into their existing curriculum, enriching students' learning experiences. Leave equipped to inspire young minds with the magic of reading and the excitement of engineering.

Learning Objectives:
• Discover how to transform activities from arts and crafts to rich, STEAM experiences that meet the NGSS engineering standards
• Explore 5 popular read-alouds and 5 follow-on STEM activities
• Conduct the STEM activities during the session so you leave confident and ready to implement in the classroom

NGSS Alignment:
All five STEM activities address the NGSS engineering standards for Grades K-2 and 3-5.

9:00am – 9:50am E **AI Prompt Engineering to Support Inquiry and Phenomena-Based Science** Meeting A

Speakers: Andrea Pokrzywinski, Frank Deveraux

Facilitators will share versatile uses of AI tools from creating engaging science activities to improving educator effectiveness. Explore how engineered prompts can provide cultural connections, elicit feedback responses, prepare student goals, and invent STEM activities. Practice leveraging these tools for learner variability and student agency.

Teachers face enormous challenges to meet the needs of every student. AI tools can assist every educator as a teaching assistant and support language barriers, social-emotional needs, interventions, or cultural differences. Innovative educators who embrace AI will engage students with new strategies previously unimagined.

Educators can prompt ChatGPT and related tools to provide research-based strategies that support the whole learner to connect all students to science lessons. Educators can factor in cultural identity, student strengths, and accessibility barriers when designing activities for their science content.

Participants will make explicit distinctions between traditional methods of lesson planning and innovative AI-produced science standards-aligned instruction and activities. They will test the ability of various AI tools to provide multiple means for educators to individualize content and instruction for learner variability and provide culturally responsive learning experiences.

9:00am – 9:50am G **Chemistry Roundtable** North Hall D

Join other Chemistry teachers from Wisconsin for an informal roundtable discussion and resource sharing session. Bring a computer, any resources you would like to share and gain access to our community google drive. Are you diving into storylines - need others to connect with or are you new to the concept - want to learn more? After introductions and drive access, we may break the group of educators into smaller groups to connect specifically with what you are interested in. We are excited to make connections in teaching chemistry and have resources to dig into after the conference!

9:00am – 9:50am G **Classrooms and Invasive Species** Riverside Ball B

Speakers: Patrick Siwula, Liz Tanner

Ordering live organisms for classroom use could potentially contribute to the introduction and spread of invasive species. Invasive species pose significant environmental and economic risk. In Wisconsin, we have an invasive species rule, NR 40, which contains a list of regulated species; instructors should consult this list when ordering live organisms for classroom use. In particular, do not use any live non-native crayfish (such as red swamp crayfish), which are illegal to possess. Instead, utilize one of Wisconsin’s six native crayfish species. To further limit the risk of an invasive introduction, do not send live organisms home with your students. Attendees will learn from experienced WDNR Biologists on WI's regulations, the risk of live organism release, availability of invasive species in the online marketplace, and native alternatives that can be safely used in the classroom.

9:00am – 9:50am G **Transforming Teaching with Curriculum-Based Professional Learning** North Hall A

Speakers: Kevin Anderson, Chad Janowski

Let's face it, not all professional learning is as impactful as it could be. This year WSST and the Wisconsin Science Education Leadership Association (WSELA) have explored "The Elements" of PL that effectively transforms instruction. Participants in this session will engage in exploration of the secret sauce of effective PL, based on work by Jim Short from the Carnegie Corporation of New York, and Stephanie Hirsh of Learning Forward.

Coupling effective PL with the implementation of high-quality instructional materials (HQIM) can have a profound impact on your district's system of science instruction. Yet, often efforts fall short of preparing teachers for successful and sustainable implementation. Shifting to instruction designed for the vision of the Framework for K-12 Science Education and the Next Generation Science Standards is challenging. Districts in need of a recipe for success can follow the suggestions offered with these resources.

This session is the culmination of the first WSELA leadership focused book study. Attendees need not have participated in the book study or have read the book. Just bring your desire to make change a reality in your districts!

9:00am – 9:50am H **Rocketry + Avionics: Taking Data to New Heights** Meeting C

Speakers: Heather Arnett

Inspired by recent space launches? Wondering how to capture the excitement with your students? Join us to learn how we use rocketry and avionics to teach data analysis and system engineering in middle and high school classrooms. Our courses allows exploration of Newton's Laws through guided video modules that develop foundation knowledge, building hands-on skills, and analysis of predicted and actual data. The presentation will detail information on online open-source content and free Professional Development opportunities that includes stipend and materials for classroom implementation.

The courses are aligned to MS-PS2-2, HSPS2-1, MS-ETS1-2, HS-ETS1-4, and CSTA: 3B-DA-07.

Educators will explore the phenomena of rocketry through a hands-on activity focused on hardware and flight. They will then formulate how predictive and actual data tell the whole story of the rocket's flight. The session concludes with educators gaining familiarity with all the project's resources that foster accessibility and implementation in the classroom.

9:00am – 9:50am H **The Power of Student Consensus Models** North Hall B

Speakers: Stacey Balbach

The presentation will be about why classroom consensus on models is significant and how to develop a classroom process for building consensus on student models. During the presentation, consensus will be defined. Participants will act as students going through the consensus process as I model the teacher's roles in the process. Participants will leave the presentation with first-hand experience, student examples, and teacher resources on how to build student consensus on scientific models.

9:30am – 11:30am F **FT1: La Crosse Exploratorium (Planetarium)**

Cost $8, sign up required at registration

Ever wonder what it would be like to fly to Mars? "Destination Mars: The New Frontier" gives audiences a close-up look at the work being done globally to make the dream of getting humans to Mars a reality. Fly through the International Space Station, explore the Vehicle Assembly Building at NASA's Kennedy Space Center in Cape Canaveral, Florida, and learn about the rockets and vehicles that will return humans to the Moon and, one day, on to Mars.

Every show begins with a quick look at what you can see in the sky tonight. Then sit back for a full dome movie experience

9:30am – 12:00pm F **FT2: Genoa Fish Hatchery**

Cost $10 Prior Registration Required

The Genoa National Fish Hatchery, located on the banks of the Mississippi River 20 miles south of La Crosse, raises a variety of native fish, freshwater mussels, and dragonflies. This field trip consists of a tour of the Great River Road Interpretive Center and the buildings which make up the Hatchery, including a feeding of the fish.

10:00am – 10:50am E **Unleashing Innovation: Exploring Computational Thinking Embedded in Elementary Science Instruction** North Hall B

Speakers: Kim Lemberger

Embark on a transformative journey into the world of computational thinking with a special focus on two compelling modules: "Protecting Whales" (grade 3) and "A Weighty Problem" (grade 5) from the Smithsonian Science Education Center. This session invites educators and technology enthusiasts to discover the power of integrating computational thinking into diverse curricula while addressing real-world issues. In this session you will:

-Experience part of the "Protecting Whales" module, demonstrating how computational thinking can be taught with and without using a computer.

-Dive into the "A Weighty Problem" module, focusing on its application in mathematics and physics as students use coding to animate what they have learned.

- Brainstorm ways to adapt these modules to various grade levels and subjects.

-Explore the broader applications of computational thinking concepts across the other topics in your curriculum.

10:00am – 10:50am E **Science Essentials: 6 Skills Scientist Value Most (And How to Teach Them!)** Riverside Ball C

Speakers: Terra Tarango

In this session, you'll learn how research scientists work in a lab environment and how you can transfer those practices directly to your classroom. For example, we often give students an investigation plan to follow, but researchers must devise their own investigation plans. We often teach the science before doing a lab so that students are confirming what they've already learned, but researchers are performing investigations in which the outcomes are unknown. We need to provide correlate experiences in classroom to better prepare the next generation of scientists.

Learning Objectives

• Discover 6 practices of lab researchers that differ from science instruction

• Explore ways to incorporate these practices into classroom instruction

• Create an action plan for implementation

I use a combination of lecture, video, group discussion, and hands-on engineering to ensure all participants are engaged and confident and ready to implement more authentic science practices in the classroom.

10:00am – 10:50am G **Teacher Observations Don't Have to Suck -Lets Fix This Process With a New Tool** Meeting A

Speakers: Craig Berg

Teacher observations are often a one-shot, mostly meaningless and top-down process that provides minimal benefit to practicing professionals. Teachers should be proactive by identifying a focus for the observation, then collecting data on teacher-student interactions and levels of student engagement which are then used to present a profile of their pedagogical skills in the classroom, and used as a basis for discussing strengths and areas in need of growth. In this process teachers use data as evidence, and collecting data need not be cumbersome or time consuming. The presenter will demonstrate a new teacher observation software tool that allows teachers to become masters at observation, reflection, and providing feedback to themselves and others.

Connected to Science Teacher Professional Development Standards

Objectives Include:

1. Promote teachers as being proactive regarding teacher observations
2. Provide teachers with a plan for collecting, analyzing and presenting data to their administrators
3. High lite examples of how practicing teachers have altered the process so that the teacher observation process and conversation focuses on things that matter.

10:00am – 10:50am H **Anchoring phenomena and photoelectron spectroscopy (PES) to aid student sensemaking in atomic structure** North Hall C

Speakers: Aaron Burg

Participants will consider the use case of a specific anchoring phenomena for structuring a unit around atomic structure model creation and sense making. Photoelectron spectrographs (PES), as well as ionization energy graphs will be provided to allow participants to wonder about patterns, energy, and atomic structure.

Participants will leave with links to resources for producing their own PES diagrams that can be used as data sets or for pushing students to the next level in testing their models.

HS-PS1-1: Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.
SEP2, SEP4, SEP6, SEP7 CCC1, CCC2, CCC5, CCC6, CCC7

--Working with the ChemLEAP Community out of UW Madison

10:00am – 10:50am H **Transitioning to a Phenomenon-based Learning Space with OpenSciEd** Meeting B

Speakers: Tracy Marmolejo

In OpenSciEd units, phenomena were purposefully selected to motivate students to figure out and use target disciplinary core ideas, crosscutting concepts, and science and engineering practices. Each unit begins with ananchoring phenomenon, which is used to
draw students into the storyline by presenting an interesting, confusing or problematic phenomenon for students to engage with. Other lesson level phenomena may be
introduced at key points in a storyline to maintain interest or push students to delve more deeply. As students engage with a unit of instruction in OpenSciEd High School, they seek and use evidence to figure ideas out as they build, evaluate, and revise explanations, models and arguments. Evidence comes from investigations, simulations, new data, reliable scientific texts, and interviews with trusted friends, family and community members. Students use evidence from multiple sources to move their thinking forward in the
context of the storyline, rather than relying on the authority of the teacher or the text. Teachers will experence a mini lesson from OpenSciEd and learn how the curriculum can be used to achieve the goal of moving to three-dimensional instruction at the high school level.Teacher

10:00am – 10:50am M **Middle School Roundtable** North Hall D

10:00am – 10:50am M **Teaching Science with Soil: Ecosystem Services** Riverside Ball B

Speakers: Jenn Scott

What does burying underwear teach a farmer about crop health? In this workshop, you will develop a model to explain the interactions between soil organisms in the soil food web and physically participate in a role-playing activity that shows the ecosystem processes that are occurring beneath our feet and how they help grow food crops. Then you will learn a simple, easy way to create culture media and then plate microbes to see which soils have greater microbial activity and what that means for agriculture production. These are two activities that highlight real world applications of the science you teach in your classrooms.

Objectives:

- Create models to describe exchange of energy and nutrients in the soil food web

- Simulate ecosystem processes that occur underground through role play

- Discuss soil health and its impact on food production

NGSS: MS-LS2-3, HS-LS1-5, HS-LS2-3, HS-LS2-5

WSS: LS2.A.m, LS2.B.m/h, LS2.C.m/h, LS1.2.h

10:00am – 10:50am M **What's that smell? The Science of Wastewater** Meeting C

Speakers: Nate Tillis

This presentation will focus on how to achieve NGSS academic standards through teaching of wastewater topics in the classroom. We will focus on 5 main learning targets:

1. Complexity and Systems thinking by explaining the treatment process how it can be guided to achieve high quality discharge
2. Analyzing and interpreting data from lab analyses, or engineering sources
3. Ecosystems both inside the treatment process but also in the receiving streams, rivers and lakes
4. Engineering and design concepts for large facilities.
5. Role of water on earth as it relates to sustainability and triple bottom line

Each of these topics will be tied to a standard and will be accompanied by an activity to be done in class. Secondly, we will discuss the impact that water and wastewater have on an individual or a community and our obligation of stewardship. We will discuss how the treatment of water should be equitable, intentional, and sustainable. Lastly, this presentation will explore the career pathways in blue green jobs.

10:00am – 11:50am M **Workshop: Focusing Figuring Out on Phenomena to Promote Student Agency** Meeting D

Speakers: Adam Schafer

When on their own, folks trying to figure out why their casserole burned will not have a teacher to turn to with immediate answers. Even the internet may not be able to give concrete advice on why dinner is ruined, even though the recipe was followed exactly. In our everyday problem solving we must grapple with the uncertainties encountered on our own - exploring and testing options that seem viable and within our realm of expertise to make a better casserole. Similar processes for grappling with the uncertainty inherent to learning something new can be challenging to incorporate into a classroom environment - although current standards emphasize learning science as a practice. Our learning community has found a few pedagogical practices useful for designing opportunities to distribute agency among students so that they may experience uncertainty productively in our classrooms. In this workshop, we will apply these pedagogical practices found useful for distributing agency in a simulated classroom experience, wherein participants will make sense of an "everyday phenomenon". Afterwards, we will recognize there is not one way to distribute agency, collaboratively reflecting on ways to promote productive struggle and community-based accountability measures in our classrooms.

10:00am – 11:50am W **Workshop: Logs to Lumber** Meeting G

Speakers: Jared Schroeder

In this workshop the Wisconsin Forestry Center will guide you through the process of how to estimate lumber volume in a log, how to grade logs for quality, and how to operate a TimberKing portable sawmill to turn those logs into lumber. How close will your estimates be to the actual volume of lumber? Using geometry, you will learn how to estimate the largest squared timber the log can produce, called a cant, before sawing the log into boards.

Think of all the uses this can have in your content area! Imagine the ecological story that can be told by looking at the defects in the lumber; fire scars, broken limbs, disease, and rot are all laid bare when a log is opened. Or apply the concepts of density and force to explain how the saw speed needs to change based on the species of wood being cut. Show your students applied geometry when determining log volume and cant size. Make predictions about how the growth speed influences the physical characteristics of the lumber. All the while, your students learn about some of the careers available to them in forest industries.

10:00am – 11:50am W **Workshop: Relevant, Real-World Issues: Engage High School Students with PLT Resources**

Speakers: Nicole Filizetti Meeting F

Participants in this session will get hands-on practice with lessons from three PLT secondary curriculum guides: “Places We Live,” “Forests of the World,” and “Southeastern Forests and Climate Change,” and leave feeling comfortable teaching these lessons to students. We will also look at how these curriculum resources can be used to build a “Human Impact on Earth Systems” unit, and how they can be used to practice designing and evaluating solutions to environmental problems, part of the NGSS performance expectations. We will also think about ways that individual lessons from these resources can be used to supplement pre-existing ecosystems or natural resources units. This session will include direct instruction, hands-on activities, small group work, discussion, individual work time, and Q&A. Participants in this session will receive paper copies of the three different secondary PLT guides to take home, plus a free bonus guide.

10:00am – 11:50am W **Workshop: Wisconsin Geology Storylines** Meeting E

Speakers: Dennis Rohr

This workshop will share with you three different phenomenon-based storylines for your high school Earth Science / Geology classes that focus on Wisconsin Geology. The three storylines are titled: 1-Glaciers to Bedrock, 2-Arctic to Feedbacks, and 2-Groundwater in Wisconsin. These activities are designed to allow your students to work as collaborative teams to analyze and interpret data sets, ArcGIS layers, and hands-on lab activities. Students will investigate how Wisconsin landforms came to be through bedrock layer characteristics, ancestral rivers, and more recent glacial activity. Students will also investigate changes occurring in the Arctic Circle and Feedback loops in nature. Finally, students will investigate local and statewide groundwater issues, test and analyze their own drinking water and interpret well log reports. Each of the storylines were recently written, developed, and field tested by the presenter to meet his school districts essential NGSS Standards. They are designed to provide students a collaborative learning environment utilizing various local geologic phenomenon that we Wisconsinites may experience every day.

11:00am – 11:50am **ACS Sponsored Panel Discussion between Secondary and Post-Secondary Instructors** North Hall A

Speakers: Erin Sincox

My name is Erin Sincox and as ACS Local Section Chair, one of my goals is to offer more discussion, collaboration, and communication between all levels of chemistry (and more generally science) education. I have gathered a small panel of Post-Secondary Chemistry Instructors from multiple post-secondary institutions to dialogue about issues students face when reaching post-secondary chemistry instruction and more general science skills students need to posess as they enter STEM fields in college. Please come ready to ask questions and dialogue about how we can help students be successful in their post-secondary science endeavours!

11:00am – 11:50am E **Geology Rocks!** North Hall B

Speakers: Cindy Blobaum

Geology is ever-present but mostly overlooked in our lives. Geology impacts/describes (but is not limited to) the formation and change of the landscapes in which we live; the health and functioning of our personal bodies and all the other living things around us; and the availability of raw materials for materials production.

From the moment they walk into the room, participants will engage in easily-replicated elementary conceptual geology activities – not the identification of specific rock and mineral samples. The number of activities presented will depend on audience size, participation and discussion, but could include:

Personal Mineral Match: Participants play a game that matches mineral needs in their bodies with mineral uses in common products

Earth Burps: Participants predict and test volcanic eruption styles using readily available materials for models (NGSS – 2 ESS1 – 1; 4 ESS; MS –ESS2-2)

Rock Cycle Revealed: Participants compare/contrast easily obtained geologic samples and place them within appropriate categories of the rock cycle.(NGSS 2 PSI – 1; NGSS 5 PS! – 3)

11:00am – 11:50am E **Data Nuggets: Bringing authentic science stories and data to students** Riverside Ball C

Speakers: Andrea Pokrzywinski andreaupnorth@gmail.com

This workshop will introduce the structure of a Data Nugget, along with strategies for using them in your classroom. Data Nuggets are free activities, co-designed by scientists and teachers to provide students with practice looking for patterns and developing explanations about natural phenomena using authentic scientific data. In this workshop, Data Nuggets featuring WI-based research will be used as examples to demonstrate how to differentiate and assess Science and Engineering Practices.

Data Nuggets feature scientist role models and the story behind their research. In a Data Nugget activity, students are guided through the entire process of science, including identifying hypotheses and predictions, visualizing and interpreting data, supporting claims using data as evidence, and asking their own questions for future research. Because of their simplicity and flexibility, Data Nuggets can be used throughout the school year and across grade levels. Strategies can be implemented to increase complexity as students grow in their quantitative abilities and gain confidence working with data. Data Nuggets have the potential to improve the understanding of science in society while engaging and motivating the next generation of scientists.

11:00am – 11:50am E **Education DemoCamps: Bridging the Gap Between Classrooms and Natural History** Riverside Ball B

Speakers: Liz Leith, Shanna M. Hillard

One of the challenges a teacher faces is responding to the inevitable question, “How is this used in the real world?” This session provides a source for teachers to bring real-life science into the classroom in a hands-on and interactive way. The Natural History Education DemoCamp is an annual virtual meeting, sponsored by the Society for the Preservation of Natural History Collections, to connect teachers and science-based organizations from around the world and to promote the use of natural history collections in K-12 classrooms and public outreach events. These resources are each made available online through QUBES, including lesson plans, activity sheets, and more. Want to take a behind-the-scenes tour of a paleontologist’s lab? How about connecting Wisconsin-based conservation actions to your unit on rainforest biodiversity? This opportunity has you covered! Participants will learn about the DemoCamp and QUBES and then will work together to generate future meeting topics and resources that would be most helpful in their classrooms. We will also showcase examples of hands-on projects that can be created in the classroom using these resources. Attendance of this workshop includes an invitation to the next SPNHC NHE DemoCamp as well as printed resources for use in the classroom.

11:00am – 11:50am E **Workshop: 15 Questions To Ask Before You Adopt** Meeting C

Speakers: Heidi Harlan Allen

In this session we will use the 15-Questions developed by ECA Science Kit Services to develop a navigation guide for adopting a new science program. The objective is to have participants walk away with an understanding of how to select the right program for their district needs, as well as how to set teachers up for success for implementation. This process will share information about alignment, usability and budget, as well as exposing "blindspot" costs districts need to plan and prepare for. It will cover short term goals and long term goals of implementation. There will also be an activity related to the "usability" portion of the presentation. Participants will have a fun experience and leave with a navigation guide to support their adoption process.

11:00am – 11:50am G **Climate Change Mitigation and Hope** North Hall C

Speakers: Lisa Pitot

The NGSS do not go far enough by simply focusing on the expectation that our students “ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century” (NGSS Lead States, 2013.) More so than questions, our students are clamoring for answers. Antidotes to climate anxiety can include empowering our students with facts about our changing planet, including higher impact mitigation strategies that are within their reach. We must also engage our students in stories and realities that can bring hope. Healing the souls of our climate-anxious students by exposing them to another side of the catastrophic narratives they are bombarded with on social media can potentially minimize their anxiety, which might just maximize their willingness to join in on the high-impact mitigative actions that are within their reach.

In this pedagogical session participants will engage in an easily reproducible inquiry activity designed to uncover sustainable actions they, and thus their students can participate in that will reduce one’s Carbon Footprint. Participants will then discuss and explore research and websites that highlight the hopeful narrative of our changing planet and societal gains that are currently part of a hidden narrative that deserves a place in our curriculum.

11:00am – 11:50am G **Physics Roundtable** North Hall D

Speakers: Terry Schwaller

Join other Physics teachers from Wisconsin for an informal roundtable discussion and resource sharing session. Bring a computer, any resources you would like to share and gain access to our community google drive. Are you diving into storylines - need others to connect with or are you new to the concept - want to learn more? After introductions and drive access, we may break the group of educators into smaller groups to connect specifically with what you are interested in. We are excited to make connections in teaching physics and have resources to dig into after the conference!

11:00am – 11:50am M **Hydroponics from classroom to lunch room** Meeting B

Speakers: Lauren Picado, Dr. Mary Caucutt

Unlock the potential of hydroponics in science education, aligning with NGSS standards. This presentation delves into the science behind hydroponic systems and their ecological impact, directly addressing NGSS standards such as Ecosystems: Interactions, Energy, and Dynamics and Earth and Human Activity. Middle School standards: MSLS 1-6, 2-3 and 1-3. Differentiation is available for elementary school as well. Explore the abstract principles of nutrient cycling, sustainability, and ecological balance. Engage in hands-on activities, from constructing mini hydroponic systems to analyzing data on plant growth. Dive into real-world applications, emphasizing sustainable food production and its implications. This interactive session equips educators with the tools to inspire students while fostering an understanding of the environment and human impact.

11:00am – 11:50am W **Workshop: Unmasking Superheroes: The Science Behind the Legends** Meeting A

Speakers: Jennifer Docktor

Are you fascinated by the incredible abilities of your favorite superheroes? Have you ever wondered if there's any real science behind their powers? In this short workshop we will dive into the captivating world of comic book legends to uncover the scientific principles that could make their extraordinary feats possible – or in some cases - impossible. Participants will explore books and online resources to discover how to use superhero examples to teach about science concepts.

12:00pm – 1:00pm G **Lunch Keynote: GROW La Crosse** Riverside Ball A

Kari Bersagel-Braley

Executive Director & Co-Founder

Kari Bersagel Braley is one of the co-founders of GROW. She has worked in education for 12 years as a special education teacher, elementary classroom teacher and a literacy teacher. She is a mother and wife who feels passionately about buying and eating locally grown food. She believes in the benefits of educating her own children and the children in the community about healthy living and working to ensure that all children have access to healthy food. In her free time Kari enjoys hiking in the bluffs with her family, practicing yoga, and eating delicious food around the table with good friends and family.

Bonnie Martin

Director of Communication & Outreach

Bonnie brings skills from past experiences such as: marketing, event planning, volunteer organizing, and graphic design. She is passionate about enriching the lives of children through providing hands-on educational activities. As a leader and volunteer in her children's school PTO and 4-H club Bonnie has been able to help provide enrichment events and travel experiences for children. It was through these roles that Bonnie became familiar with GROW. She finds great value in being a part of an organization that is making a positive impact on the lives of youth and their families.

12:15pm – 12:45pm **Thursday Lunch Keynote** Riverside Ball A

1:00pm – 1:50pm **District 1 Roundtable** North Hall D

Speakers: Erik Duhn

1:00pm – 1:50pm **Keynote Follow up** Meeting A

1:00pm – 1:50pm **Using Wicked Problems in Agriculture to Engage Students in Plant Science and Biotechnology**

Speakers: Jeff Jostpille, Kelly Kramer North Hall A

Experience hands-on activities in plant science and biotechnology from the free resources on NourishTheFuture.org. These activities engage students through the lens of agriculture. Participants will discuss the differences between two major plants grown for food in Wisconsin, and discuss solutions to some of agriculture's most pressing problems. Nourish the Future lessons are geared toward students in grades 6-12 life science, chemistry, and environmental science—and aligned to the NGSS national science standards so that they can be incorporated into any setting. Participants will also learn about Nourish the Future workshops, the Teacher Leader Community, and our year-long leadership program. Join us to inspire students to see the possibilities of STEM careers in agriculture!

1:00pm – 1:50pm E **Effective Literacy and Writing Strategies in the Science Classroom** Meeting B

Speakers: Pamela Richards

Come learn how to use effective literacy strategies so that students can better understand science content. Student understanding and critical-thinking skills will improve with these techniques. Join our constructivist approach that promotes literacy in the science classroom. Participants will explore ways to seamlessly weave literacy skills into science lessons and how to increase student engagement with talking, reading, and writing in Science, no matter a student's reading abilities. We will collaboratively identify components of the curriculum that rigorously support integration of literacy in science.

1:00pm – 1:50pm E **Workshop: Bring Wisconsin Wildlife Into Your Classroom** Meeting F

Speakers: Marie Jensen

Snapshot Wisconsin is a statewide community science project that utilizes a network of trail cameras to produce wildlife management data. At this workshop, Snapshot staff will introduce the program and walk you through the various lesson plans and activities available to educators.

All Snapshot Wisconsin lesson plans and activities are free. Lesson plans are available for grades K-12 and outline curriculum connections in each educator handout, including NGSS (April 2013), Common Core (2010), AP Biology (2012-2013), IB Biology (2016), Environmental Science (2013), Environmental Systems & Societies, and Wisconsin's Standards for Science.

Learning Objectives:
- Learn about Snapshot Wisconsin and how to get involved as a community scientist
- Learn about how Snapshot Wisconsin data is used to support management decisions at the Wisconsin Department of Natural Resources
- Learn about how to access Snapshot Wisconsin's free lesson plans and activities and incorporate them into your classroom or educational programming
- Learn about how to access and explore the Snapshot Wisconsin Data Dashboard as well as how it can be used to teach about science and math concepts, data literacy, and science communication

1:00pm – 1:50pm G **Fermenters of WSST Unite** Meeting D

Speakers: Ray Scolavino

Discuss and share samples of various fermented beverages/foods and smoked meats. Designed to be a social gathering for those to share samples and ideas with fellow fermenters and meat smokers.

1:00pm – 1:50pm G **Get Real Science!** North Hall C

Speakers: Ann Franz, Chad Janowski

Have you ever heard your students say where are we ever going to need this? Our students (and many adults alike) do not recognize the real world applications of the science concepts that they are learning in school. The Northeast Wisconsin Manufacturing Alliance (NEWMA) has been traveling throughout communities in Wisconsin to expose students to a wide variety of the ways in which science is used in manufacturing. Get Real Science! videos now join the Get Real Math! video collection. Combined the collection has more than 80 videos each accompanied by a lesson plan developed by educators, for educators. Each year new videos are added to the collection filmed on location one the manufacturing floor, or in the lab of the sponsoring manufacturer. Come see how science is used in your community and learn how you can access these FREE resources for your students.

1:00pm – 1:50pm H **Technical Writing: Why lab reports are more important than you think** North Hall B

Speakers: Sonja Gasper

In education, there exists a diverse spectrum of students with varying strengths and preferences in their language arts proficiency. While creative writing often takes the spotlight, it is imperative to recognize that not every student excels in this area. This presentation aims to shed light on the importance of incorporating technical writing into the curriculum as a means of fostering academic success for all students.
The session will explore the challenges students face in mastering technical writing and methods teachers can use to ensure early and continued opportunities for academic achievement. We will focus on teaching methods to accommodate those who thrive in more structured and analytical environments and the importance of feedback. Technical writing, with its emphasis on clarity, precision, and logical organization, serves as an invaluable skill set that prepares students for success across various academic disciplines and future careers. Join the discussion as we explore valuable tools for implementing effective scaffolding in the instruction of technical writing, freshman year through undergraduate studies. Additionally, we'll examine practical methods to enhance the grading process, promoting both efficiency and the delivery of high-quality feedback, all while avoiding the overwhelming burden of a massive pile of papers to assess.

1:00pm – 1:50pm M **Our Journey with OpenSciEd** Riverside Ball C

Speakers: Gillian King, Sarah Ludwig

The OpenSciEd Instructional Model uses a storyline approach– a logical sequence of lessons that are motivated by students' questions that arise from students' interactions with phenomena. We will help other teachers understand the journey of how we started, teaching, and growing using the curriculum. We will discuss how OSE routines such as driving questions are interwoven into daily instruction and are the core to student learning.

We want to help teachers advance through a unit storyline, share activities that play specific roles in advancing the storyline with structures to help students achieve. Things we will highlight include Driving Question Boards, modeling, student discussions and engagement. We will give teachers direction on understanding the resources and how to unpack them.

While our examples will be middle school, we encourage all grade levels who are considering OpenSciEd to join us.

1:00pm – 1:50pm M **DNA Discovery Using 3DMD models** Riverside Ball B

Speakers: Stephanie Ruder

I will be showing the participants how I use various 3D Molecular Designs kits to teach DNA's structure and function in my PLTW Principles of Biomedical Science classes. This can easily be converted to any Biology class. I will be discussing how I have the students explore the structure of DNA using the dynamic DNA models and showing them the DNA starter kit from 3DMD. From there I will show the participants how I tie the structure of DNA with they Dynamic DNA models to the DNA in the flow of genetic information kit and also the Chromosome connections kits. The flow of genetic information kit shows the students how DNA is replicated and the steps of protein synthesis which I will discuss how I use this kit with the DNA models. The chromosome connections kit allows students to see DNA in action with genetics. The NGSS standard that this will connect to is HS-LS1 From Molecules to organisms: structures and process.

1:00pm – 1:50pm M **Workshop: Living in a Material World! How Materials Science Shapes the Future.** Meeting G

Speakers: Shelly Grandell

Explore materials science and help students make connections between the understanding of the STUFF things are made of and how this can change our world. Making things like cars, cellphones, medical technology, space exploration, sustainable energy and so much more possible! Materials Matter! Participants will be given an overview of the fascinating field of materials science. What is it? Who does it? How is it done? See examples of research done at the University of Wisconsin-Madison and around the world and then, spend most of the session exploring a variety of hands-on activities they can easily use in their classrooms to help students understand what materials science is, and how it utilizes knowledge from many other fields. Looking at patterns and how atomic structure determines function, x-ray diffraction, triboelectric nanogenerators, manipulating materials, the wonders of magnetism and LEDs!

5-PS1-1 and 3 Matter and Its Interactions

MS-PS3-2 and 5 - Energy

MS-PS2-3 Motion and Stability: Forces and Interactions

1:00pm – 1:50pm W **Workshop: Bridging Literacy and Science: Enhancing Reading and Writing through Science of Reading and Science Education** Meeting C

Speakers: Mike Larson

Throughout the workshop, participants will engage in hands-on activities, collaborative discussions, and reflective exercises to gain practical insights into the seamless integration of science education and the Science of Reading initiatives. They will receive valuable resources and lesson ideas that can be immediately applied in the classroom to support their students' literacy growth.

1:00pm – 2:50pm M **Workshop: Determining the Genetics of a Cash Cow** Meeting E

Speakers: Kathy Van Hoeck, Amy Fassler

In this activity, a dairy farmer wants to take advantage of the premium pricing for milk that contains more K-casein protein that cheese-makers value.

There are 3 alleles of the K-casein gene: A, B and E. E allele carriers' milk does not coagulate, dairy farmers interested in selling milk to make cheese have no interest in cows with the E allele. The B allele causes a substantial increase of milk protein yield in the cows carrying it and results in a firmer and enhanced cheese. You are to help the farmer decide which cows to invest in! Participants will use gel electrophoresis to analyze DNA samples from 2 males and 3 females to determine their genotype for production of K-casein.

Science and Engineering Practices

Developing and Using Models

Carrying Out Investigations

Analyzing and Interpreting Data

Constructing Explanations

Obtaining, Evaluating, and Communicating Information

Cross-cutting Concepts

Patterns

Cause and Effect

Structure and Function

Science is a Human Endeavour

Objectives

Understand the basic structure of DNA and its role in genetic inheritance

Comprehend how traits are passed from parent to offspring

Learn about the existence of genetic polymorphisms

Correlate genotype to phenotype

Apply knowledge to understanding a real-world problem

1:30pm – 3:30pm F **FT4: La Crosse Exploratorium (Planetarium)**

Cost $8, prior registration required

Ever wonder what it would be like to fly to Mars? “Destination Mars: The New Frontier” gives audiences a close-up look at the work being done globally to make the dream of getting humans to Mars a reality. Fly through the International Space Station, explore the Vehicle Assembly Building at NASA’s Kennedy Space Center in Cape Canaveral, Florida, and learn about the rockets and vehicles that will return humans to the Moon and, one day, on to Mars.

Every show begins with a quick look at what you can see in the sky tonight. Then sit back for a full dome movie experience

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1:30pm – 3:30pm F **FT5: La Crosse Distilling Co.**

Cost $10, prior registration required

Embark on a distillery tour at La Crosse Distilling Co. for a scientific exploration of the intricate processes behind spirit production. During the guided visit, delve into the action of fermentation and distillation, observing the precise application of scientific principles. The experience culminates in a tasting session, where the scientific precision of the distillation process manifests in the nuanced flavors of the final products.

1:30pm – 3:30pm F **FT6: The Nature Place**

Cost $10, prior registration required

The Nature Place provides K -12+ programming in the La Crosse area with a mission to inspire and cultivate meaningful connections between people and nature, for the benefit of both. This trip will tour the facilities in Myrick Park and give participants a feel for the experiences available to local students.

*Matthew Branter, Executive Director of WisCorps and administrator for The Nature Place is Friday's keynote speaker.

2:00pm – 2:50pm E **Attraction and Repulsion-It’s Magnetic** North Hall A

Speakers: Tanya Dodson

Attraction and Repulsion-It's Magnetic will take students on an adventure while investigating the effects of magnetic fields and magnetic poles on two magnets. In this presentation the audience will understand the interactions between two magnets, use them to locate a hidden magnet, and determine the magnet's orientation. Audience will then summarize ideas about magnetic forces and form a response to the Driving Question.

2:00pm – 2:50pm E **Let's Engage Students through Phenomena-based Science Instruction** Meeting B

Speakers: Pamela Richards

Looking for ways to increase student ideas in the development of investigative phenomena? We will work in collaborative teams to develop a driving question board. Let’s discuss the types of phenomena and how they can be used effectively in the STEM classroom. Bring relevancy to students’ lives! We will discuss when and why to use phenomena and gain strategies for using phenomena to teach three dimensionally. Participants will understand how to use phenomena to develop student inquiry.

2:00pm – 2:50pm E **After School Science** Riverside Ball C

Speakers: Gillian King, Sarah Ludwig

Looking to start different science related clubs where students can explore their interests and passion around science? This session is for you. We will be sharing our diverse clubs that we offer at school. Our clubs include robotics, coding, girls who code, science club and rocket club. We will talk about our experiences and how they have changed over the years. We will share how we fund them and how we make these clubs happen so all our students are able to participate.

2:00pm – 2:50pm G **Recharge your science instruction at WINGS!** North Hall C

Speakers: Dennis Rohr, Chad Janowski

Is it time for a recharge? Science teaching can be exhilarating and rewarding. It can also be tough to help all students develop a deep understanding of complex science concepts. Wisconsin's premiere professional development learning opportunity is coming once again! Veteran educators might reminisce about the impact that Science World had on their careers. WSST's current leaders can speak about the incredible networking and learning that took place at Science Futures. Now you can be a part of the Wisconsin Institute for Next Generation Science (WINGS)! The WSST professional development committee is planning a transformational experience that will fuel your passion for delivering high quality science learning experiences for your students. It will also serve as a professional retreat, giving you opportunities to reflect on the impact that you are having in the profession and the next moves you can make to lead the future in your own classroom or beyond. Other than a small registration fee, this experience will be fully funded by WSST and other sponsors. With all that you have done for kids, let us do something for you!

2:00pm – 2:50pm H **Rethinking Tracking in Introductory High School Science Courses** Meeting A

Speakers: Jackie Curran, Kathryn Eilert, Kevin Anderson

Middleton High School educators will share their work on detracking freshman/sophomore level biology and chemistry courses. We will actively involve participants in reflecting on their own practice and considering pathways to support all students through scaffolding, modifications, and embedded honors options. The beauty of this structure is that there is a wide range of learners in the room, which helps create an enriching learning experience for all. Kevin Anderson from DPI will provide some context for this type of work across the state and nation.

2:00pm – 2:50pm H **Using Primary Literature to Teach Science** North Hall D

Speakers: Jonathan Kao

In a science classroom the teacher is expected to present content, teach inquiry, promote literacy, and run experiments among many other tasks. The limitations of time and budget often compromise our ability to provide these experiences for students. In this session, primary research literature is shown to be a tool that can be used to teach content, inquiry, experimentation, and literacy while allowing access to experiments that would be budget or equipment prohibited in a high school setting. The goal of this session is to make primary literature less intimidating for both teachers and students to use as resources in the classroom. Attendees will learn the research supported benefits of including primary literature as a means of instruction, strategies to incorporate primary literature that promote literacy, unlock experiments that are either cost, equipment, or time prohibitive through primary literature, and be given example lessons using primary literature that are classroom ready for a unit on energy flow in cellular respiration.

2:00pm – 2:50pm H **We can Reverse Antibiotic Resistance!** North Hall B

Speakers: Carly Patton, Zach Pratt

Antibiotic resistance is a phenomena for students to explore evolution. In our current curriculum, students observe evolution through the selection and heritability of antibiotic resistance. Students consider ways in which antibiotic resistance can be slowed down, but may be left with the perspective that the future is bleak because new antibiotics are rarely discovered and make it all the way to human use. We want our students to see themselves as part of the solution. Bacteriophages are viruses that infect bacteria and are currently being tested as alternatives to antibiotics. In some cases, phages can reverse antibiotic resistance. We have used these principles to create a lab that models how phages can select for antibiotic-sensitive bacteria, giving students the opportunity to see themselves as innovators and scientists, and showing them that they can make a difference in STEM.

Objectives of the presentation include:

1. Describe how phages can select for populations of bacteria.
2. Explain how students can assay for whether bacteriophages select for antibiotic-sensitive bacteria
3. Discuss opportunities to include the lab into courses, including feedback on the lab we have created.

2:00pm – 2:50pm M **Inquiry-based Lessons for People and the Planet** Riverside Ball B

Speakers: Stephanie Ruder

In this inquiry-based, hands-on workshop, the presenter will demonstrate how to use 3D learning to explore human-environmental interactions and paths to sustainability. Topics include carrying capacity in nature, current land use around the globe, resource extraction, sustainable resource management, and global population trends.

Participants will engage in activities that provide an interdisciplinary scope to the issues. Activity formats include modeling and group simulations and a resource management game – all meant to stimulate discussion and further exploration. The presenter will also share interactive, digital tools. This session is applicable for teachers of Life Sciences/Biology and Environmental Science.

The presenter will discuss how to implement these activities as part of Wisconsin Standards for Science, especially DCI ESS3: Earth and Human Activity and LS2: Interactions, Energy and Dynamics Within Ecosystems.

The presented activities utilize several Science and Engineering Practices (SEP), including developing and using models, analyzing and interpreting data, asking questions, and using mathematics and computational thinking. Participants will receive lesson plans and background materials in an electronic format.

2:00pm – 2:50pm W **Workshop: How to Be a Badge-R - Utilizing the conext of Agriculture to Teach Science** Meeting D

Speakers: Beth Schaefer

Food connects us all - every student, every day. Food is personal, regional, cultural, and tasty to boot! The Midwest is home to a massive network of food production - in rural and urban areas, yet many students are unaware of how food is grown and produced in their communities. In this workshop participants will engage in interdisciplinary resources to grow student awareness and understanding of how they are connected to the environment and the agriculture around them. All participants will leave with a copy of the AgBadging Field Guide and supporting resources to implement easy prep and high engagement activities to explore the science and the impact of producing the foods, goods and resources we all depend on every day by completing hands-on exploration, and earning badges. This session represents a cross-section of several strands. This workshop is designed to help educators identify concepts of agriculture to help students become more informed users of scientific information to help them become better informed consumers.

2:00pm – 2:50pm W **Workshop: The Art & Science of Nature Journaling** Meeting G

Speakers: Jan Wellik

This hands-on, interactive workshop will provide nature journaling activities and prompts for all ages. The learning objective is for participants to develop confidence in leading nature journaling activities with their students. It is not about creating art masterpieces and the most perfect tree sketch, rather it is about engaging youth in expressing themselves creatively and connecting with nature. Guiding activities will include documenting, writing, and watercolor painting. The curriculum was created by the presenter for use with Eco Expressions nature art programs: www.EcoExpressions.org

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2:00pm – 3:50pm W **Workshop: The Watershed Game: Connecting Land Use and Water Quality for Inspiring Learning** Meeting F

Speakers: Kathy Biernat, Anne Moser

Dive into the immersive world of watersheds and join us in exploring the dynamic and educational Watershed Game, an interactive tool designed to instill environmental consciousness in students. This workshop is tailored for educators seeking engaging ways to teach about ecosystems, water conservation, and the interconnectedness of human activities with our environment, thus covering NGSS MS-ESS3-3 and MS-ESS2-4. In this hands-on workshop, we'll immerse you in the interactive Watershed Game. Imagine turning complex environmental concepts into an engaging quest for knowledge! Participants will gain experience with the Watershed Game, discovering how it effectively communicates complex environmental concepts in a fun and accessible manner. Working in teams, students apply tools (prevention, practices, plans, policies) to decrease water pollution while balancing financial resources. Our seasoned facilitators will guide you through the game's implementation strategies, providing insights and resources on differentiating it for various grade levels and sharing ways to expand on the game.

Watersheds offer a dynamic and accessible way to explore real-world environmental science, and this workshop provides a clear roadmap and lesson plan for bringing this experience to your classroom. There will be a door prize - you could win a copy of the “Watershed Game: Classroom Version”!

2:00pm – 3:50pm W **Workshop: Water Quality and Remote Sensing: How Can Images be Used to Quantify Lake Health?** Meeting C

Speakers: Paul Block, Max Beal

Increasingly, research priorities require scientists to work at the intersection of many disciplines. To complement learning in each of NGSS Disciplinary Core Ideas, students may benefit from examples of applied science and engineering that cut across physical, life, and earth sciences. The management of harmful algae in Wisconsin lakes is one example of a complex, interdisciplinary problem. This workshop presents a teaching module we have a developed that uses an open-source coding tool (Google Colab) to walk students through a pre-written python-based coding exercise that explores the uses of satellite imagery in monitoring water quality. Specifically, students will learn about harmful algae, the properties of light, and how images and water quality samples can be used to create statistical models that relate imagery data to algae abundance. Participants in the workshop will create water quality samples, take, and upload photos to the program, and run pre-written python code to investigate image data and create statistical models. Models developed in the code will then be applied to satellite imagery of a lake to estimate the abundance of algae. Participants will need a computer and a Google account to access Colab.

3:00pm – 3:50pm E **Elementary Roundtable** North Hall D

Speakers: Shelly Petzold

3:00pm – 3:50pm E **(Un)paving a path towards improving climate health and health equity** Meeting A

Speakers: Lisa Neeb, Kimberly Talarico Wolff, Shana Terai Lara

Milwaukee Public Schools (MPS), Reflo, and the Medical College of Wisconsin (MCW) have partnered over the last six years on several projects impacting student and climate health. We will present our work with the following learning objectives: 1) Describe Reflo’s schoolyard redevelopment project in MPS to improve storm water management, access to urban greenspace, and student and climate health (3-ESS3-1, MS-ETS1-1), 2) Understand emerging research on the effects of greened schoolyard features such as bioswale, grass, trees, outdoor classrooms, mindfulness nature paths, and other improved play areas on student and climate health (MS-ETS1-1), 3) Access Wisconsin-specific resources supporting the state’s requirement for environmental education, 4) Describe Climate Health Equity course for teachers on how to integrate climate education and health equity into lesson plans, 5) Describe climate education resources implemented in MPS including K-12 climate education lessons and resources aligned to the NGSS-aligned MPS science curriculum, and a climate education library book collection deployed to all K-5 MPS schools, and 6) Recognize the benefits of trees for improving student and climate health. Health equity and climate health are important themes of this work. Improving access to urban greenspace provides benefits for human health, air quality, and water quality.

3:00pm – 3:50pm E **Workshop: Writing Dialogues for YOUR Classes** Meeting D

Speakers: Craig Berg, Greg Bisbee

Dialogues have a long history in education. They were used very impactfully by both Socrates and Galileo and, a little more recently, by the presenters in elementary through college classes. Dialogues are conversations between two characters regarding a topic of interest. These are mini-plays and, as such, are meant to be acted out. Each student reads the role of one of the characters in the dialogue and acts out the stage direction. Built into the conversation is content that you would like students to know, concepts they should understand, or skills that they should practice. Dialogues actively involve students in both reading and content and are generally very popular with students. By writing your own dialogues, you can tailor the discussion to your class content and add the personal touches that draw students in to the activity. Every teacher has that topic or lesson that needs a little spark to liven it up!! Participants should bring notes, presentations, or materials on a topic. Greg and Craig will give a very brief outline on dialogues then help participants write their own dialogue.

3:00pm – 3:50pm G **Streamlining Science Instruction: Harnessing AI to Save Time and Enhance Learning** Meeting B

Speakers: Megan Sprague

Join us for an interactive session on "Empowering Educators: Streamlining Science Instruction with AI Technology." In this presentation, we will explore how cutting-edge AI tools can revolutionize your science teaching, reducing planning time while enhancing the quality of instruction.

Content: We'll delve into practical AI solutions that help educators curate, adapt, and create science lesson plans more efficiently. We'll showcase AI-powered content generation, resource recommendation, and adaptive learning platforms. You'll see how these tools align seamlessly with Next Generation Science Standards (NGSS), making your lessons more rigorous and engaging.

Activities: Participants will experience hands-on demonstrations of AI-driven platforms and tools. Engage in interactive discussions about their potential in the classroom and how they can be customized to suit your unique teaching style.

Connections to NGSS: Learn how AI can assist in aligning your lessons with NGSS, offering personalized experiences for students while ensuring curriculum compliance.

Learning Objectives:

1) Understand the role of AI in streamlining science instruction and lesson planning.
2) Identify AI tools and platforms suitable for your science curriculum and classroom needs.
3) Gain insights into how AI can enhance student engagement and achievement while adhering to NGSS.
4) Explore ways to integrate AI technologies for improved instruction in your specific science domain.
5) Collaborate with peers and presenters to brainstorm and develop personalized AI-assisted lesson plans.

This session encourages active engagement, encourages sharing of ideas, and empowers educators to harness AI for more effective science instruction while staying aligned with NGSS standards. Don't miss this opportunity to transform your teaching and free up more time for meaningful interactions with your students.

3:00pm – 3:50pm H **Costa Rica Tropical Research Experience** North Hall B

Speakers: Beth Hunt

Seeds of Change Research travels to Costa Rica and immerses high school students in two life-changing science research programs: Tropical Field Research and Bioinformatics Research (3 college credits, 30 CEUs). These programs explore the issue of antibiotic resistance and the need to develop new antibiotics with the help of the latest genetic analysis tools and evolutionary symbiotic relationships among microbes and insects. Our Antibiotic Bioprospecting teacher's workshop (30 CEUs) is for teachers who want to incorporate this vital issue into their high school curriculum. Come learn about summer tropical science research immersion programs and discover how to "mine" insect microbiomes to discover antibiotic-producing microbial candidates in your high school lab!

3:00pm – 3:50pm H **Forestry Workforce Curriculum in Action** Riverside Ball C

Speakers: Klint Hischke, Jared Schroeder

Spring semester 2024 Menominee Indian High School began piloting the Wisconsin Forestry Center's applied curriculum designed to address the worker shortage in Wisconsin's forest industries. Menominee Tribal Enterprises is providing full support for the curriculum and classroom activities providing opportunities for the students to learn about the realities and skills needed to be successful in forest industry careers. The curriculum is designed to maximize experiential and applied learning in the forest as well as in the classroom while at the same time tying back into industry careers. This update will provide an overview of the successes and challenges experienced at the intersections of STEM, place-based, applied, and career and technical education as well as explore the future CTE and credit opportunities for students who go through the program. The Wisconsin Forestry Center applied curriculum is scheduled for general release for the 2025/26 school year.

3:00pm – 3:50pm M **From Atoms to Oceans: Modeling the Properties of Water** Riverside Ball B

Speakers: Mark Arnholt

This hands-on modeling workshop is crafted to empower teachers with a deep understanding of the properties of water. Central to the workshop are the concepts of polar and nonpolar covalent bonding and the implications this has on water's physical and chemical properties. Physical models will allow participants to embark on a journey through the three phases of water and unfold the mysteries behind water's shape-shifting abilities as it flows through our everyday lives. This interactive session will allow teachers to use Augmented Reality to understand the electronegativity-driven polar nature of water molecules. The resulting intramolecular forces will provide tangible ways to discuss the roles of cohesion, surface tension, and capillary action in biological systems. Practical teaching strategies, pedagogy, and NGSS will be highlighted as model together!

3:00pm – 3:50pm M **Bring Wood Ducks Into Your Classroom with the WWA** North Hall A

Speakers: Jessica Peterson, Ryan Peterson

Ryan & Jessica have teamed up with The Wisconsin Waterfowl Association (WWA) to build and test an environmental science unit about wetland habitats that is centered on wood ducks. A new partnership with Tactacam in 2023 allows teachers to easily bring the ducks into their classrooms daily. The unit aims to increase awareness of wetland habitats and species and is made to be easily adjustable to match your students' age and the different

time constraints in varied classrooms. The curriculum has been used in almost 20 schools across the state and is freely available through the WWA.

In this session, Ryan & Jessica will give an overview of the curriculum and highlight some potential ways it could be incorporated into your school. The use of cellular game cameras to monitor nest boxes will be discussed. They will also spend a little time sharing wood duck nest box stories and best practices for keeping and maintaining nest structures for these beautiful residents of Wisconsin.

3:00pm – 3:50pm M **Workshop: Improv to Improve (Science) Communication in your Classroom** Meeting G

Speakers: Shelly Grandell

Help students build a learning community in your classroom! Be ready to go back to your classroom with tools and techniques to build a more communicative, inclusive environment. Practice guiding students (maybe other teachers and admin too!) through activities that will enhance communication skills. During this interactive workshop, participants will practice using improvisational activities and games designed to improve their communication skills in a fun and encouraging environment.These fun activities will enable participants to practice: 1) vocal and visual communication, 2) active listening skills, 3) responding quickly to unexpected situations, 4) storytelling skills. All attendees are expected to fully participate in the workshop.

3:00pm – 3:50pm W **Workshop: Supporting ALL students: making sense of phenomena through shared experiences.** Meeting E

Speakers: Caryn Walker

Phenomena is emphasized in the Next Generation Science Standards, but why? In this session, participants will learn about the role phenomena play in access and equity through relevant, shared experiences that increase student engagement and learning. We will engage in a lesson using FOSS Pathways that shows the instructional experiences.

4:00pm – 5:30pm	G	**WESTA Rock Raffle** *Speakers: Shannon Previte* Join WESTA - Wisconsin Earth Science Teacher's Association - for the annual ROCK RAFFLE - during the vendor's social! Doors open at 4pm, and raffle tickets will be your golden ticket to a world of super cool rocks, fossils, minerals, earth science kits for the classroom, and back this year - the coveted classroom Stereoscope - donated by Capital Microscope & Balance, Burlington, WI - for your students to view all sorts of wonder. GRAB 4 TICKETS FOR JUST $1 OR GO ALL-IN WITH 25 TICKETS FOR $5! - THE DRAWINGS ANNOUNCED BEFORE 5:30 PM, SO BE THERE TO WITNESS THE UNVEILING OF YOUR POTENTIAL GEOLOGICAL JACKPOT. If donating as well as hoping to win - BRING YOUR DONATIONS WITH YOU TO THE CONFERENCE - Drop off at check in arrival / badge pick up on THURSDAY. New this year - all donators get one free raffle ticket - obtain when dropping off donation!	Vendor Hall
4:00pm – 6:00pm	S	**Vendor Social**	Vendor Hall
6:15pm – 8:15pm	S	**Membership Social Sponsored by the President of WSST** *Speakers: Kristin Michalski* Come test your savvy as we battle to see who is crowned the WSST winner of trivia. Topics will **not** be limited to science, join us at 6:15 pm in Riverside Ballroom A. Find the trivia sign-up near the registration area. You can sign up as a small team or be randomly placed on a team. If not interested in trivia, you are also invited to join us for conversation, collaboration and relaxation. After trivia, stay for music by Crooked Willow, a mixture of old time music, Jazz inspired tunes, Americana covers, and unique pop covers! Door prizes will be given all night long! All WSST Members are invited! Light snacks and beverages will be provided.	Riverside Ball A