

# Fall 2024 Science Educator Regional Professional Learning

Welcome to the Fall 2024 Science Educator Regional Professional Learning!!

This program is designed to give you some specifics about the day as well as help you determine which session you are interested in attending in the afternoon.

## Logistics

Date	Oct. 8, 2024
Location	University of Northern Iowa- <a href="#">Maucker Union</a> We will begin our day in the Maucker Union Ballrooms. <a href="#">Campus Map</a>
Time	9 a.m. – 3 p.m.
Parking	Parking is available in the <a href="#">Multimodal Ramp</a> (1215 W 23rd St, Cedar Falls, IA 50613) so please arrive early to get a spot in the ramp. This cost will be a part of your travel paid by your district. The UNI Multimodal Transportation Center parking fees will be \$0.80/hour and there are two options to pay: <a href="#">ParkMobile App this via google play</a> . –or– Use the pay machine, which is located on the 2nd floor main stairwell (at the main/ground entrance). It is important to know your stall #, which is printed on a sign in each stall, when using the machine. So for most people that would be about \$5.00.

## Morning Session

The morning session will run from 9:00-12:00. We will begin in the Maucker Union Ballrooms but will be splitting into grade bands for a great portion of the morning. You will be assigned the grade band and location that you indicated in your registration form.

## Lunch

Lunch will be provided **free of charge** by the Iowa DNR in Maucker Union Ballrooms. During lunch there will be short presentations by the DNR, the University of Northern Iowa, Iowa Science Teacher's Section of IAS, and we will recognize our Presidential Award (PAEMST) winners for Science from 2023.

## Afternoon Sessions

The afternoon sessions will follow two separate formats. There are longer sessions (2-hour) options as well as shorter sessions (1-hour). If your school is sending a team, it is suggested that you divide and conquer several of the offerings so that you can bring more learning back to your district. Note the locations of some of these sessions as they may not be located in Maucker Union. Some offerings are outside, so dress appropriately if choosing those options.

(E) = Elementary    (MS) = Middle School/Junior High    (HS) = High School

## One Hour Sessions Option (60 minute- pick 1 from 1-2 p.m.)

(By choosing the 1-hour session option, you will be able to choose 2 sessions for the afternoon- see below)

### 1-2 p.m.

#### Standards-based Grading and NGSS (MS) (HS)

Jesse Wilcox- Professor UNI

In recent years, standards-based grading has increasingly been used in secondary schools. Yet, how can we use SBG effectively with the NGSS? This session will explore how to effectively use SBG and the NGSS.

#### How to Spot Science Imposters (E) (MS)

Emily Starr - Starrmattica

Come on down! Join me in a fun, interactive game-show: Spot the Red Flag! Challenge yourself to decide whether sample STEM challenges and science materials are a nourishing meal for the mind or a sugary snack that rots your students' brains. In the process, you'll learn to identify high-impact curriculum materials and how to mold some of those less-than-perfect resources into the effective learning tools both you and your students deserve. (All contestants receive handy resource checklists as parting gifts!)

#### Iowa Standards Deep Dive (E) (MS) (HS)

Christopher Like-Iowa Department of Education

The Iowa Science Standards can be complicated with some important nuances. If you need a refresher on our standards, or are new to teaching science, this is the session for you. Come see examples of how to interpret three dimensional standards for classroom instruction.

#### Aquaponics on a Budget (E) (MS) (HS)

Dr. Michael Bechtal- Professor Wartburg College

The workshop will discuss how to make small personal aquaponics systems to teach about micro-ecosystems, plants, and animals. Participants will participate in discussions about responsibility, systems, and learning while creating their personal systems to take home. The IKEA-like plans will be given QR codes linked to IKEA-like plans to be shared with their communities/ institutions. Current ideas for personal study(ies) and continued research/ use will be shown.

## How to Use Existing Science Curricular Resources to Introduce Phenomena and Storylines (MS) (HS)

Dr. Larry Escalada, Dr. Alison Baharka- UNI

Various science curricular resources including those based on the learning cycle (e.g. PRISMS, CRISTAL, BIOMES, and GEOMES), Modeling cycle (e.g. Modeling Instruction), Problem-based learning (e.g. PROBE), and science kits (e.g. FOSS Next Generation) have been available and used in providing UNI professional development for teachers. Participants will engage in experiences on how resources like these can be used to introduce phenomena and storylines in science classrooms.

**2-3 p.m.**

## SEP #1: Asking Questions and Defining Problems (MS) (HS)

Angie Breitbach: Curriculum Director Dubuque CSD

As teachers we sometimes fall into the routine of asking all the questions and seeking student answers. This session will be about students generating the questions and how you as the teacher then facilitate the next steps of developing an investigation, analyzing data, or engaging in arguments from evidence. Bring both your student and teacher hat to this practical session!

## Science and Engineering Everyday with Picture Books (E) (MS)

Emily Starr- Starmattica

More than 100 STEM picture books await your exploration in this hands-on session. Learn how to use picture books in your reading block to encourage scientific thinking, support notice and wonder routines, model the science and engineering practices, and demonstrate the engineering design process. Take home lists of STEM picture book recommendations to help you integrate reading and science.

## Making Sense of Nature - Connecting Natural Resources to Classroom (E) (MS) (HS)

Gus Elliott

This session will introduce participants to the vast content, data, expertise, and local resources provided by the Iowa Department of Natural Resources and other conservation partners. We will dive into a local environmental sense making lesson and provide resources for you and your school to bring local outdoor phenomena into classrooms!

## Curriculum Adoption-Adaptation (E) (MS) (HS)

Christopher Like - Iowa Department of Education

Come learn about the how the science standards manifest themselves in available high quality instructional materials. Discuss curriculum adoption procedures and how curriculum should be adapted to our students' needs.

## Earning Your MA in Science Education (E) (MS) (HS)

Dr. Dawn Del Carlo- Professor UNI

Learn about the Online/Hybrid program for a Master of Arts in Science Education at the University of Northern Iowa. Discussion will include program requirements and flexibility, mode of instruction options, cost, outcomes and alumni testimonials. Applications are now accepted year round! Admission requirements and deadlines will also be discussed

## Composting with Cockroaches (E) (MS) (HS)

Dr. Dawn Del Carlo- Professor UNI

Learn about the Online/Hybrid program for a Master of Arts in Science Education at the University of Northern Iowa. Discussion will include program requirements and flexibility, mode of instruction options, cost, outcomes and alumni testimonials. Applications are now accepted year round! Admission requirements and deadlines will also be discussed.

## Composting with Cockroaches (E) (MS) (HS)

Dr. Michael Bechtal- Professor Wartburg College

The workshop will discuss how to make small composting systems with noninvasive cockroaches (*Blattella germanica*) to teach about nutrient recycling, insect reproduction, and waste reduction. Participants will participate in discussions about responsibility, systems, and learning while discussing ways to make systems in their classrooms. The IKEA-like plans will be given through QR codes to be shared with their communities/institutions. Current ideas for personal study(ies) and continued research/ use will be shown.

## Full Session Option (120 minute- pick 1 from 1:00-3:00)

(By choosing the 2-hour session option, you will be able to choose 1 session for the afternoon- nothing from above)

1-3 p.m.

## Iowa Phenomena Project (E) (MS) (HS)

Tiffany Morgan- Iowa Public Television

One way to engage students in authentic observations of phenomena and get them asking scientific questions is participation in well crafted citizen science projects. Visit the Daryl Smith Prairie and Savannah to collect cloud cover, surface temperature, and other data for the GLOBE Program. Then discuss our group data - what does our data tell us about the UNI preserve system? What new questions do you have? Craft your own scientific questions that can be investigated through descriptive, comparative, and correlative field research. Then learn how you can share your data in the Iowa Science Phenomena Website ([iowaphenomena.org](http://iowaphenomena.org)).

***These sessions are sponsored by the Iowa Conservation Education Coalition (ICEC). The first 10 participants to sign up will receive a complimentary membership to ICEC.***

## Discovering Prairies and Pollinators - How to bring Iowa's original dominant landscape to your classroom (E) (MS) (HS)

Anne Riordan, [anne.riordan@dnr.iowa.gov](mailto:anne.riordan@dnr.iowa.gov), IA DNR

Explore the structures and functions of native prairie plants and discover the amazing, correlating physical and behavioral adaptations that exist in the insects, birds and mammals who pollinate them. Observe the complete metamorphosis of the Monarch butterfly through each life cycle stage, from egg, through 5 instars of caterpillar (larva) to chrysalis (pupa) and finally in the emergence of an adult butterfly. You will learn techniques to bring these topics into your science, math, and literacy lessons. Lastly, you will learn how to make native seed balls to begin or enhance a pollinator plot in your schoolyard, or to send home for students to contribute to their local community's landscape. Supplies and free materials provided by the Iowa Department of Natural Resources.

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## More than just Hawkeyes - Exploring all Iowa Raptors! (E) (MS) (HS)

Christina Roelofs, [christina.roelofs@dnr.iowa.gov](mailto:christina.roelofs@dnr.iowa.gov)

Raptors are an amazing group of birds with so many examples right here in Iowa! Give your students the ultimate food chain experience by exploring adaptations, predator/prey relationship, and dissection. Teachers will be given a chance to interact with LIVE raptors and then take part in a hands-on dissection experience that they can take back to their classroom. Supplies and free materials provided by the Iowa Department of Natural Resources.

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## Fitting STEM in Every Day in the Primary Grades (E: K-3)

Beth Vanmeeteren- Iowa Regents Center for Early Childhood Education

Engage in Teacher Play to find and grapple with physics using simple materials that are familiar to K-3 children. Then examine a framework that allows teachers to give their children opportunities to engage in STEM thinking every day in ways that lifts literacy and mathematical learning.

## The Quantumverse (HS)

Dr. Paul Shand

Participants will engage in activities centered on quantum physics and quantum computing.

## Nature Journaling in the Greenhouse: Integrating Science with Art, ELA, and Math (E) (MS) (HS)

Dana Atwood-Blaine- Professor UNI

Enjoy UNI's beautiful botanical center while learning techniques and strategies for incorporating scientific sketching and nature journaling into students' science notebook routines. In addition to sketching, we will emphasize how the meaningful integration of math and ELA can facilitate students' sensemaking of the phenomenon. Materials and natural specimens will be provided for journaling and sketching activities. Student examples and free resources will be shared.

Participants will be introduced to, and participate in, several nature journaling activities from the free John Muir Laws "How to Teach Nature Journaling" book, as well as receive some scientific sketching guidance from the California Academy of Sciences.

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**After registering for the event, you will receive a detailed individualized agenda for the day approximately a week in advance. If you have any questions about the training, please contact Chris Like at [chris.like@iowa.gov](mailto:chris.like@iowa.gov).**