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UNI Science Education Update Conference*

Friday, April 6, 2018

AGENDA

<u>Time</u>	<u>Session Title/Description</u>	<u>Location</u>
8:45 AM	Check In & Continental Breakfast	Commons Ballroom
9:00 AM	Welcome & Introductions Mark Nook, President of UNI John Fritch, Dean of CHAS Larry Escalada, Chair of Science Education	Commons Ballroom
9:05 AM	Key Note Presentation Aileen Sullivan, 2018 Iowa Teacher of the Year	Commons Ballroom
10:00 AM	Morning Extended Sessions – See Sessions – Pick One	Locations Vary
11:30 AM	Lunch/Informal Networking	Commons Ballroom
	Information about UNI Matthew Kroeger, Associate President for Enrollment Management	
	Exhibits STEM Departments, CHAS, UNI STEM, UNI Admissions, Northeast STEM Hub, Iowa Governor's STEM Advisory Council Iowa Academy of Science, Central Rivers AEA, & UNI Tall Grass Prairie	
1:00 PM	Afternoon Session #1– See Sessions – Pick One	Locations Vary
2:00 PM	Afternoon Session #2– See Sessions – Pick One	Locations Vary
3:00 PM	End of Conference Refreshments, Evaluations, Door Prizes, & Farewells!	Commons Ballroom

**2018 UNI Science Education Update Conference funded by a UNI Foundation Grant provided by Warren Bromann*

Key Note Presentation: 9:05 am to 9:50 am

Let the Demo Speak for Itself: A Perspective from the View of a Science Teacher Commons Ballroom

*Aileen Sullivan, 2018 Iowa Teacher of the Year, UNI Alumnus, and Ames High School
Chemistry Teacher*

How do students engage with science material? How do students engage with science teachers? How many times have you been told what will happen next before you ever have a chance to see it for yourself? There are many perspectives in every classroom and successful science teaching must engage and involve all of them.

Sessions

Morning Sessions #1: 10 am to 11:20 am

Green Adaptation

Green House 035

Pam Hartman, UNI Instructor of Science Education and Lyn Countryman, UNI Professor of Science Education
Using the greenhouse to investigate plant adaptations, teachers will actively engage in two complete activities. They will have the opportunity to engage in identifying and photographing various plant adaptations in the greenhouse and will learn how to take stomata impressions. *Limited to 20 participants.*

What are the properties of physics that can help us design protection from a collision?

McCollum Science Hall 112

Paul DeChant, NBCT, FOSS Consultant

Participate in an investigation from the NGSS Middle School FOSS Gravity and Kinetic Energy Module to understand how your students learn that increasing the time it takes for an object to change speed in a collision results in less force applied to the object. (i.e. How do you design a crash helmet?)

Standards-based Grading in Science

Rod Library 301

Dawn Posekany, Solon High School Science Teacher

Solon High School was among the first schools in Iowa to embrace Standards Based Grading (SBG) in science. Dawn will share strategies for starting standards based grading and changes they have instigated since implementing SBG.

Energizing Earth Science using Experts in the Field

Rod Library 287

DeEtta Andersen, Center Point Urbana Science Teacher

Learn how to engage professional geologists, astronomers, soil scientists, and community experts to enrich your Earth Science class. In this presentation, teachers will learn strategies to make contacts with area scientists and practitioners, and see how easy it is to bring them in, either in person or virtually, to engage students in learning. Special emphasis will be on the Farm Chat program which connects farmers with students to discuss soil erosion, nitrate reduction, and more.

A Small School's Journey to NGSS Curriculum Adoption and the First Year of Implementation

Rod Library 324

Elizabeth Carpenter and Gayle Ramaeker, Lamoni CSD Science Teachers

Come hear Lamoni's journey to PreK-12 NGSS aligned curriculum adoption and how it is working for us a year later!

Afternoon Sessions #1: 1:00 – 1:50 pm

Explore the NGSS Middle School FOSS Weather and Water Module

McCollum Science Hall 112

Paul DeChant, NBCT, FOSS Consultant

Teachers will participate in investigations mirroring student activities as they assemble pressure indicators and work with them to develop a model of how the phenomena of air pressure can be investigated. Ultimately, these investigations lead students to view and understand how air pressure is measured and its effects on weather.

Where Earth and Life Sciences Intersect: Investigations of the Water-Root-Soil Interface

McCollum Science Hall 80

Laura Jackson, UNI Director of the Tallgrass Prairie Center and Professor of Biology

Laura Walter, Waverly Shell Rock High School Science Teacher

The transition from deep-rooted perennial prairies to annual row crops has profoundly changed our environment. Roots and soils are interdependent: roots extract water and nutrients from the soil while at the same time influencing the hydrology, structure, composition, and biological community of the soil. Through your active participation, we will introduce a set of inquiry-based lessons developed by a collaboration of ecologists, teachers, and naturalists to engage K-12 students in learning about earth and life sciences in the root zone.

Tinkercad for Beginners

Rod Library 301

Marcy Seavey, UNI STEM Coordinator

Does your school have a 3D printer but you don't know what to do with it? In Tinkercad for Beginners you will create an account in the free online CAD platform Tinkercad, build and save your first 3D model, and brainstorm ways to authentically connect 3D modeling to our curriculum. Access a free NASA themed "end effector" design challenge and other resources developed for the UNI 3D: Design, Develop, Discover workshop.

Planning for College Science Major Success

McCollum Science Hall 215

Colin Weeks, UNI Department of Chemistry & Biochemistry Associate Professor

This session will be a discussion of what courses students should take in high school if they plan to major in the natural sciences in college.

Afternoon Sessions #2: 2:00 to 2:50 pm

Preparing Grades K-12 Computer Science Educators in Iowa McCullum Science Hall 254

Ben Schafer, UNI Department of Computer Science Associate Professor

Computer Science (CS) is arguably one of the fastest growing disciplines in K12 education. Educators have choices from a variety of curricula at all levels in the K-12 spectrum and two different AP exams. Iowa is finalizing statewide Grades K-12 standards for CS Education and has added a CS endorsement to state licensure. In this talk we will discuss the state of CS Education in Iowa at both the school and BOEE levels. We will make teachers aware of some of the resources out there to use with students. We will also discuss CS professional development opportunities for teachers being conducted at UNI and around the state.

Are we doing a good job? Evaluating Iowa Science Standard (NGSS) Implementation with Achieve Rod Library 301

Christopher Like, Bettendorf CSD STEM Coordinator, and Tammy Askeland-Nagle, Mississippi Bend AEA Consultant

Bettendorf and Davenport Community Schools have been given the opportunity to work directly with Achieve on an audit for their Iowa Science Standard Implementation. This audit includes classroom visits, interviews with teachers, surveys, and a deep dive into school data. In this presentation, Chris will share the data he pulled to use as a baseline as well as direction on how it was analyzed. Classroom observation forms, survey questions, and other documents created and used by Achieve for their audit will also be shared.

Using X-men and comic book characters to discuss concepts of genetics, evolution, and functional anatomy McCullum Science Hall 215

Nathan Bird, UNI Department of Biology Assistant Professor

This session will explore the use of comic book characters, such as the X-men, as a tool to discuss concepts such as mutation, genetic variation, evolution, and function. Specifically, we will dissect several X-men to show how mutations happen, mutation-based change really works in the real world, and what “mutants” are already present around us. The goal is to present a method for getting students to think deeper scientifically about their favorite characters, allowing them to identify some “truth” in the fantasy and connect with the content in a fun and personal way.

NGSS Phenomena for Teaching Earth Science Latham Hall 111

Kyle Gray, UNI Associate Professor of Earth Science and Science Education

Examples of phenomena will be presented that can be used in an earth science class or in a science course that includes earth science content. We will also discuss places to find resource material; participants will leave with a list of websites that they can use to create their own phenomena.