UNI Science Education Update Conference

March 31, 2023

Agenda

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<tr>
<th>Time</th>
<th>Session Title/Description</th>
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<tr>
<td>8:30 AM</td>
<td>Check In, Continental Breakfast, &amp; Exhibits</td>
<td>Commons Ballroom</td>
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<tr>
<td>9:00 AM</td>
<td>Welcome &amp; Introductions&lt;br&gt;John Fritch, Dean of College of Humanities, Arts &amp; Sciences&lt;br&gt;Larry Escalada, Director of Science Education</td>
<td>Commons Ballroom</td>
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<td>9:05 AM</td>
<td>Key Note Morning Presentation&lt;br&gt;Christopher Like, Science Program Consultant, Iowa Department of Education</td>
<td>Commons Ballroom</td>
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<tr>
<td>10:00 AM</td>
<td>Morning Extended Sessions – See Sessions – Pick One&lt;br&gt;Locations Vary</td>
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<tr>
<td>11:30 AM</td>
<td>Lunch/Provost Welcome/Key Note Presentation/Networking Focus Groups/Exhibits&lt;br&gt;&lt;br&gt;Provost Welcome&lt;br&gt;Jose Herrera, Provost and Executive Vice President for Academic Affairs&lt;br&gt;&lt;br&gt;Key Note Lunch Presentation&lt;br&gt;Robert Good, UNI Alumnus, Professor of Medicine at Carle Illinois College of Medicine, and Internal Medicine Attending Physician at Carle Health&lt;br&gt;&lt;br&gt;Networking Focus Groups:&lt;br&gt;UNI Computer Science Endorsement Program (Ben Schafer)&lt;br&gt;UNI MA in Science Education (Dawn Del Carlo)&lt;br&gt;UNI Physics Endorsement Program (Jeff Morgan)&lt;br&gt;Iowa Science Olympiad (Jill Maroo)&lt;br&gt;Teacher Externships (Meghan Lang)</td>
<td>Commons Ballroom</td>
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Exhibits:
UNI Science Education (Dawn Del Carlo and Alison Beharka)
UNI Physics (Paul Shand and Jeff Morgan)
UNI Computer Science (Ben Schafer)
UNI Tall Grass Prairie Center (Brianna Hull and Mallory Sage)
Northeast Iowa STEM Hub (Jeff Beneke)
Iowa Science Olympiad (Jill Maroo)
Iowa PBS (Cody Smith and Tiffany Morgan)
MicroTech Microscope Sales & Service (Warren Holmes)
Iowa Lakeside Laboratory Regents Resource Center (Rebecca Kauten and Ashley Scheve)
Iowa Children’s Water Festival (Kristie Wildung)
Upper Iowa University-Environmental Issues Instruction (Barb Ehlers)
Iowa Agricultural Literacy Foundation (Alyson McCarty)
Green Iowa Americorps-Iowa Conservation Coalition (Maggie Voyles)

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!

Key Note Morning Presentation: (9:05 am – 9:50 am)
Iowa Science Update - Examining Coherent Science Teaching
Commons Ballroom
Christopher Like, Science Program Consultant, Iowa Department of Education
This presentation will consist of a quick update from the Department of Education on the status of the Science Standards as well as present a model of coherent science teaching.

Key Note Lunch Presentation: (11:30 am – 12:00 pm)
Building Your Teaching Legacy
Commons Ballroom
Dr. Robert Good, UNI alumnus, Professor of Medicine at University of Illinois Carle Illinois College of Medicine and Internal Medicine Attending Physician at Carle Health
Review of techniques to develop the legacy and what that means to the students.

SESSIONS

Morning Sessions #1 (10:00 am – 11:20 am)
Wild About the Outdoors
Rod Library 286
Holly Schulte, Outdoor Skills Specialist, Iowa DNR
The session will include some quick engaging activities for teaching with outdoor observations and habitats from the national award-winning Project WILD and Aquatic WILD resources. I will also share links to additional online resources including age appropriate books, Iowa’s natural resources, and outdoor observation and investigation.

NGSS and OpenSciEd: Transform your instruction to put your students in the role of scientists
McCollum Science Hall 112
Michelle Tindall, Professional Learning Facilitator, Activate Learning
Participants will learn how OpenSciEd’s instructional model puts students in the active role of doing science. As students move through the five routines of an OpenSciEd unit, they are exposed to all three dimensions of the NGSS, Disciplinary Core Ideas, Science and Engineering Practices, and Crosscutting Concepts. Come learn more about the five routines used in OpenSciEd and how OpenSciEd supports instruction based upon the NGSS through the use of phenomena, storylines, investigations, modeling, and classroom discourse.

The Importance of Hyper Local Phenomena for Your Classroom
Rod Library 287
Cody Smith, Media Integration Specialist, and Tiffany Morgan, Instructional Media Coordinator, for Iowa PBS and Arielle Sexton and Lexi Wiltgen, 1st Grade Teachers, Bondurant-Farrar School District
Iowa Science Phenomena is a website from Iowa PBS which is entirely "User-Generated." Come learn about the importance of utilizing hyper-local phenomena in your classroom, hear about the impact of this from a teacher who has done it, and workshop a phenomena yourself, including an opportunity to design something that is useful for your classroom and that can be contributed to the Iowa Science Phenomena website.

Enhancing Science Notebooks with Scientific Sketching and Nature Journaling
Schindler Education Center 218
Dana Atwood-Blaine, Associate Professor/Jacobson Elementary STEM Follow, Department of Curriculum & Instructor, University of Northern Iowa
Learn techniques and strategies for incorporating scientific sketching and nature journaling into students’ science notebook routines by engaging in the activities yourself. These exercises are about close observation and focused attention; you do not need any artistic skill to be successful at scientific sketching or nature journaling. Additionally, nature journaling has been shown to be an effective practice to add to a teacher’s Social Emotional Learning toolkit. This workshop is appropriate for all K-12 teachers.

Iophonics: Iowa Educational Aquaponics
McCollum Science Hall 118
Michael Bechtel, Associate Professor of Science Education, Biology Department, Wartburg College
Will explain and share experiences, ideas, and expansion of Iophonics: Iowa Educational Aquaponics. An IKEA-like plan for use by PK-12 teachers to show how to get involved, and explain the growth in interest.

How Structuring our Physics Courses with Grades Based on Standards has Transformed our Pedagogy
Rod Library 324
Sara Karbeling, Physics Teacher, and Camille Chalkley, Science Teacher, Liberty High School, Iowa City
In the past 5 years, Liberty High School’s physics team (Iowa City) developed a robust standards-based grading system, informed by research and designed from the ground up. Learn about the effects that mindset shifts have had on our culture and outlook.
Watershed-based Conservation Case Study Workshop
Rod Library 373
Elizabeth Ripley, Conservation and Cover Crop Outreach Specialist, Iowa State University
The workshop focuses on new Watershed-Based Case Studies that were developed to be easy and ready to use by educators for grades 8-12. All materials will be provided, including a flash drive containing booklets for educators and students, as well as PowerPoints and agendas. The workshop will be interactive and an opportunity to explore the case studies firsthand.

Afternoon Sessions #1 (1:00 pm – 1:50 pm)

OpenSciEd: Instructional Routines that Put Your Students at the Center of the Learning
McCollum Science Hall 112
Michelle Tindall, Professional Learning Facilitator, Activate Learning
Participants will experience how OpenSciEd makes use of phenomenon-driven storylines, driving question boards, investigations, and discourse. Participants will be introduced to the storyline approach, a sequence of lessons that is motivated by students’ questions related to their interactions with phenomena. Participants will also navigate an OpenSciEd unit using five routines - activities that play specific roles in advancing the storyline to help increase students’ understanding of the science content.

Propagation Demonstration (1 pm to 1:50 pm only)
UNI Botanical Center
Stephanie Witte, Botanical Center Manager and Hannah Gilchrist-Loy, Horticulturist, Department of Biology, University of Northern Iowa
Participants will be provided a propagation demonstration for stem section, stem tip, leaf section and leaf tip as well as propagation of a plantlet. Participants will be able to walk away with potential plants. Limited to 15 to 20 participants. The UNI Botanical Center will also be open all day for all visitors. Participants can walk through the greenhouses from 8 am to 4 pm during visit hours. Self-guided tour booklets are available.

Science Innovation in 45 Minutes or Less
Rod Library 287
Leslie Flynn, Director & Associate Clinical Professor, & Maria Hasken-Averkamp, Educational Support Services Manager, University of Iowa STEM Innovator Program and Pamela Joslyn, Science Teacher, Muscatine Community Schools
Join this interactive session to learn how to engage your students in science innovation to solve real-world problems. This takeaway activity illustrates how science progresses from idea generation to solution development. Along the way, see how students engage in the NGSS practices and processes of science and engineering. The innovation process develops students’ workforce and college-ready skills and mindsets. Hear from a Muscatine secondary science educator on how she is implementing innovation in her science classroom.

The Science and STEM of Iowa’s Grape Industry
Rod Library 286
Cathryn Carney, Education Program Manager, Iowa Agriculture Literacy Foundation
Iowa is full of science phenomena rooted in agriculture. In this session participants will explore earth science as they compare production of an Iowa specialty crop, grapes, to those in California. Participants will learn about integrating agriculture into STEM as they engineer a value-added product (jelly).

Check Out A New Curricula Combining Electrical Energy and Environmental Issues
Curricula developed by ISEC use real-world issues to engage students while teaching how electricity is generated and delivered to their home. Each unit also focuses on careers in the electrical industry. Join us to explore these materials yourself.

Chemistry Unit 1: Rate Your Reactions
McCollum Science Hall 118
Holly Garcia and Natalie Dirkx, Science Teachers, Adel-Desoto-Minburn Community School District
Start the school year with an engaging unit all about chemical reactions and their rates! This unit for NGSS PS1-5 uses experiments and modeling to help students naturally learn the language of chemical reactions...even before knowing the parts of the atom!

Afternoon Sessions #2 (2:00 pm – 2:50 pm)

Iowa Science Olympiad FAQs / Q&A
Latham Hall 232
Jill Maroo, Iowa State Director, Science Olympiad
Spend some time with the Iowa State Director for answers to your questions on what Science Olympiad is and how you can use it at your school

Considering the Crosscutting Concepts
Schindler Education Center 222
Dana Atwood-Blaine, Associate Professor/Jacobson Elementary STEM Follow, Department of Curriculum & Instructor, University of Northern Iowa
Come further your understanding of the most misunderstood dimension of the NGSS. This presentation will engage participation in collaborative learning activities to take a deep dive into the Crosscutting Concepts.

How Grading for Equity Changed the Way I Teach
Rod Library 373
Andy Berns, Assistant Professor of Computer Science, and Ben Schafer, Professor of Computer Science and Director of CSEd@UNI, University of Northern Iowa
If you are anything like us, you are likely frustrated with the amount of time you spend both grading and then "quibbling" with students about grades - oftentimes in situations that have no real connection with classroom learning. Members of the computer science department at UNI have been discussing teaching and learning together for years and we were thrilled to discover the 2019 book Grading for Equity by author and educator Joe Feldman. In it he writes "There is growing awareness that traditional grading practices have become a barrier to meaningful student learning." From this belief he presents a style of classroom management and grading built on three pillars: that grades should be accurate, bias-resistant, and provide intrinsic student motivation. For the last three years we have been using this style of grading in a variety of computer science and education courses and it has fundamentally changed the way we teach. In this session we will present on the WHAT and WHY of Grading for Equity and share with you the HOW as we discuss the ways we have used this grading structure in our own classrooms.

Accessibility Online. All Students means all students.
Rod Library 324
Jennifer Bliss, STEM Consultant, Iowa Educational Services for the Blind and Visually Impaired, and Christopher Like, Science Program Consultant, Iowa Department of Education
Much of the technology around us has been designed for persons with different needs. We can now set an alarm just by asking a device to do so. We can enter stores without touching doors, and read captions for the news on television while listening to music on earbuds. Online curriculum needs to mirror this type of access to give all students the ability to engage with content. Can the visually impaired student in a biology classroom use a microscope? Where are videos with captions for hearing impaired students? Can a student with limited dexterity independently access interactive slides? Deliberate planning of online lessons and selective use of virtual resources can help foster your students’ independence and alleviate barriers. Come learn from the experts.

**Hands-On Living Lessons for Any Aged Learner-Science Education Majors-Wartburg College**
McCullom Science Hall 118
Annie Dietz, Keli Potter, Alex Holden, Rose Larson, & Kate Heithoff, Science Teaching Majors, Wartburg College
Undergraduate science teaching majors will be providing a series of short presentations including the “Effects of Biophilia on Secondary Science Classrooms”, “Blatticomposting in the Classroom with NE Iowa area school districts”, and “Aquaponics Ideas for PK-12 classrooms Building upon Ioponics Lessons”.

**Doing It All - Meaningful Integration of Science with Social Studies, Math, and ELA**
Rod Library 287
Mandie Sanderman and Chelsie Byram, Science Consultants, Central Rivers AEA
Presenters will share two units in which science is integrated with ELA, math, and social studies. This session will share the process of unit creation and how incorporation with other content areas strengthens science instruction. Two units will be shared—one for kindergarten and one for 3rd grade as well as discussion on how integrated units can be created for other grade areas.

**Environmental Issues Instruction: Nourishing our Water and Soil Through Sustainable Agriculture**
Rod Library 286
Barb Ehlers, Director of Environmental Issues Instruction and Associate Professor of Education, Upper Iowa University and Cathryn Carney, Education, Program Manager, Iowa Agriculture Literacy Foundation
We will present a lesson from our Environment Issues Instruction professional development curriculum on properties of soil. This will be an interactive hands-on activity for participants to experience how to teach the properties of soil.