

2018 PreK-8 Science Education Update Conference ---- Program “At-A-Glance”

<u>7:30 am</u>	<u>Registration Opens</u>	Northwest Hallway
<u>8:00 am</u>	<u>Exhibits</u>	Northwest Hallway
<u>8:30-9:25 am</u>	<u>Concurrent Sessions I</u>	
HH 26 John Zenchak, Juell Markowski & Karissa Dobson	Shining the Light on NGSS with Discrepant Events	3-5
HH 43 Stacy McQueen & Toni Shinall	Milk on the Moo-ve	preK-5
HH 47 Frances Steward	Children’s Literature in Science: New Releases	preK-8
HH 62 Terry Stroh	Including Coding and Engineering Tasks into your Science Classroom	preK-8
HH 82 Matthew Hagaman & Sara Smith	Technology Chains: How the Innovations of Tomorrow are Driven by Yesterday’s Technologies	3-8
<u>9:35-10:30 am</u>	<u>Concurrent Session II</u>	
HH 3 Julie Bice & Mary McMahon	The Magical Mysterious Monarch Metamorphosis and Migration	preK-adult
HH 44 Stephanie Hodgson, Clayton Overt, Jackson Penthouse & John Frey	Robot, Calling All Robots!	3-8
HH 47 Frances Steward	Children’s Literature in Science: New Releases	preK-8
HH 83 Amber Arbogast	Science Through Agriculture	preK-8
<u>10:30-11:00 am</u>	<u>Exhibits & Hospitality</u>	Northwest Hallway
<u>11:00-11:55 pm</u>	<u>Concurrent Session III</u>	
HH 26 John Zenchak, Juell Markowski & Karissa Dobson	Shining the Light on NGSS with Discrepant Events	3-5
HH 44 Kathy Mainz	STEM Design Challenge and <i>The Three Little Pigs</i>	3-5
HH 47 Frances Steward	Children’s Literature in Science: New Releases	preK-8
HH 62 Terry Stroh	Including Coding and Engineering Tasks into your Science Classroom	preK-8
HH 82 Dawn Malcolm	Using Interactive Notebooks in Science	5-8
<u>12:00-1:00 pm</u>	<u>Mini Sessions</u>	Horrabin Hall Gymnasium
A. Don Powers	Solar Motion Demonstrator	4-8
B.	NSTA Learning Center – sign up	
C. Laverne Logan	Technological Design – Zip Lines	3-8
D. Julie Ann Bice	The Power of the Flower	preK-8
E. Sebastian Szyjka	Swirly Patterns with Color Changing Milk: Make swirly patterns in milk.	K-3
F. Matthew Hagaman & Sara Smith	Lessons Developed as a Traveling Earth Science Educator	preK-8
G. Abha Singh	Science Technology Engineering Arts Mathematics (STEAM) Activities for Early Childhood Learners	preK-5
1:00-1:45	LUNCH & CONFERENCE	Horrabin Hall Gymnasium
1:45-2:30	ANNOUNCEMENTS & DOOR PRIZES	Horrabin Hall Gymnasium

2018 PreK-8 Science Education Update Conference

Welcome to the 31st Annual PreK-8 Science Education Update Conference. At 1:00 pm lunch will be held in the Horrabin Hall Gymnasium. Awards, announcement and door prize drawing will follow lunch. The conference is scheduled to conclude by 2:30 pm.

2 2 2 8:30-9:25 Concurrent Session I 2 2 2

HH 26 Shining the Light on NGSS with Discrepant Events 3-5

John Zenchak, Juell Markowski, & Karissa Dobson North Central College, Naperville, IL
Methodology in this session uses science practices to teach science content. A discrepant event is shown in which two similar setups with multiple variables yield unexpectedly different outcomes. To discover which variable is responsible for the different outcomes, participants design and conduct controlled experiments to test each variable separately.

How this session aligns with NGSS.

This presentation uses one activity to meet an NGSS performance expectation while incorporating science and engineering practices, disciplinary core ideas, and crosscutting concepts. The activity can be adapted to more than one grade level.

HH 43 Milk on the Moo-ve preK-5

Stacy McQueen & Toni Shinall Virginia Elementary, Virginia, IL Gard School, Beardstown, IL

Explore hands on activities to guide students through several of NGSS performance expectations as they learn about Dairy. Participants will learn to incorporate technology and design experiments as they make butter, ice-cream, a dairy charm and more. Learn about the Adopt a Cow program and Ag in the classroom, two great resources to help teach dairy.

How this session aligns with NGSS.

We will discuss ways to engage learners with the engineering design process and how to use and develop their natural scientific skills through hands on activities. These activies include engineering design, matter and its interactions, motion and stability, waves and their applications, interdependent relationships in ecosystems, structure, function and information processing.

HH 47 Children's Literature in Science: New Releases preK-8

Frances Steward Western Illinois University, Macomb, IL

This open session will offer participants an opportunity to browse new trade books at various grade levels and topics in science, as well as other disciplines and genres. Come late, leave early, or stay as long as you like.

HH 62 Including Coding and Engineering Tasks in your Science Classroom preK-8

Terry Stroh Niles Township, Skokie, IL

Journey through the process of storylining your science curriculum and how to implement aspects of coding and engineering into your lessons and units.

How this session aligns with NGSS.

This presentation will take teachers through the process of creating good storylines and how to implement coding and engineering into their science curriculum. This is vital as many teachers don't try to get to the engineering pieces that are important standards to help drive student engagement.

HH 82 Technology Chains:

3-5

How the Innovations of Tomorrow are Driven by Yesterday's Technologies**Matthew Hagaman & Sara Smith****Bradley University, Peoria, IL**

How do you integrate engineering and technology standards into your teaching? We will explore an interactive resource for understanding existing chains of technologies. An understanding of how electromagnets drive motors (which in turn drive many other machines) permits students to design new solutions using technology chains of their own.

How this session aligns with NGSS.

This presentation will permit teachers to better-prepare students for the ETS1-2 (Engineering Design) standard at each grade level. We use models to interpret existing technologies and design solutions with evidence from existing technologies in mind. In doing so, students engage in CCC of cause/effect, system models, energy flow, and structure/function.

② ② ② 9:35-10:30 Concurrent Session II ② ② ②**HH 3 The Magical Mysterious Monarch Metamorphosis and Migration**

preK-Adult

Julie Ann Bice &**John Woods Community College, Quincy, IL****Mary McMahon****Ranger, National Parks Service**

With the help of a little song and dance, puppets, costumes and imaginative interaction you will experience the lifecycle of one of the earth's most mysterious creatures. Highlights of the Mexican culture and the mountainous wintering grounds will also be shared. Tips for raising Monarchs in the classrooms are encouraged from Pre-K---adult with all participants. This never ending cycle and the connection with human emotion is something to be shared with children of all ages.

How this session aligns with NGSS.

This session integrates multiple Disciplinary Core Ideas and Crosscutting Concepts.

HH 44 Robot, Calling All Robots!

3-8

Stephanie Hodgson &**Liberty CUSD #2, Liberty, IL****Clayton Obert, Jackson Tenhouse, & John Frey**

In this session, dive into the world of robots. Come learn how to use different robots in your classroom and get a chance to really play and test them out! Robots in this session include Sphero, ozobot, and Cosmo.

How this session aligns with NGSS.

This presentation aligns with the cause and effect crosscutting concept. Students will be able to see the immediate results of choices they program their robot to do within a program. It also aligns with standards 3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved and MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

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preK-8

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HH 83	Science Through Agriculture	preK-8
	<i>Amber Arbogast</i>	<i>Illinois Agriculture in the Classroom, Bloomington, IL</i>
	A highlight of what Illinois Agriculture in the Classroom has to offer for Science will be provided. Expect a jam-packed session of free resources, information about our classroom grant program, creative teaching ideas, and hands-on classroom activities.	
	How this session aligns with NGSS.	

The presentation will include lessons that provide opportunity for integrating the Scientific and Engineering Practices; planning and carrying out investigations, analyzing and interpreting data, exploring ecosystem dynamics, and cause and effect relationships.

② ② ② 10:30 – 11:00 Break ② ② ②
Exhibits & Hospitality North Hallway

② ② ② 11:00-11:55 Concurrent Session III ② ② ②

HH 26	Shining the Light on NGSS with Discrepant Events	3-5
	<i>John Zenchak, Juell Markowski, & Karissa Dobson</i>	<i>North Central College, Naperville, IL</i>
	Methodology in this session uses science practices to teach science content. A discrepant event is shown in which two similar setups with multiple variables yield unexpectedly different outcomes. To discover which variable is responsible for the different outcomes, participants design and conduct controlled experiments to test each variable separately.	
	How this session aligns with NGSS.	

This presentation uses one activity to meet an NGSS performance expectation while incorporating science and engineering practices, disciplinary core ideas, and crosscutting concepts. The activity can be adapted to more than one grade level.

HH 44	STEM Design Challenge and <i>The Three Little Pigs</i>	3-5
	<i>Kathy Mainz</i>	<i>Monmouth College, Monmouth, IL</i>
	Can your team design and build a house that the big, bad, wolf cannot blow down? This presentation will share an elementary level engineering design challenge with characters that are familiar. After designing, building, testing and analyzing data, students reflect on their learning with a group discussion and written response.	
	How this session aligns with NGSS.	

NGSS-Performance Standards:3-PS2-1, 3-PS2-2, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3

NGSS Science and Engineering Practices 1-8

NGSS-Crosscutting Concepts: Cause and Effect, Scale, proportion and quantity and systems and models

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	<i>Frances Steward</i>	<i>Western Illinois University, Macomb, IL</i>
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HH 62 Including Coding and Engineering Tasks in your Science Classroom preK-8
Terry Stroh *Niles Township, Skokie, IL*
Journey through the process of storylining your science curriculum and how to implement aspects of coding and engineering into your lessons and units.

How this session aligns with NGSS.

This presentation will take teachers through the process of creating good storylines and how to implement coding and engineering into their science curriculum. This is vital as many teachers don't try to get to the engineering pieces that are important standards to help drive student engagement.

HH 82 Using Interactive Notebooks in Science 5-8
Dawn Malcolm *Churchill Junior High, Galesburg, IL*
Learn tips and ideas for how to use interactive science notebooks to improve student engagement, and content retention.

How this session aligns with NGSS.

This aligns with all three dimensions of science by utilizing models, constructing explanations, and analyzing and interpreting data.

② ② ② 12:00-1:00 Mini Sessions Horrabin Hall Gymnasium

② ② ②

A. Solar Motion Demonstrator 5-8
Don Powers *Western Illinois University, Macomb, IL*
Discover the differences in the Sun's motion using this handy device. Visit other Northern Hemisphere's locations and compare how they view the sun's motion compared to your own location.

B. NSTA eLearning Center K-12
Are you aware of the National Science Teachers Association on-line Learning Center. Create a free account with NSTA and begin to access thousands of science education resources including journal articles, videos, and much more. Creating your learning center account is absolutely free!

C. Technological Design – Zip Lines 3-8
Laverne Logan *Western Illinois University – Quad Cities, Moline, IL*
This session will feature key elements of technological design. Students will face a series of challenges as they plan/design, build, test, and re-design zip lines, using common, everyday materials. This activity targets middle to upper elementary students while focusing on Appendix J - (S-T-S) in the Next Generation Science Standards.

D. The Power of the Flower preK-8
Julie Ann Bice *John Woods Community College, Quincy, IL*
Learn about the new book *The Power of the Flower*. This book was written by a Western Illinois University graduate and dedicated to a Western Illinois University science educator. Visit with the author and discover her motivation behind writing this book.

E. Swirly Patterns with Color Changing Milk: Make swirly patterns in milk. K-3
Sebastian Szyjka *Western Illinois University, Macomb, IL*

This is a favorite kitchen chemistry experiment. Some very unusual interactions take place when milk, food coloring and soap are mixed together. Discover the scientific mysteries of soap.

F. Lessons Developed as a Traveling Earth Science Educator preK-8
Matthew Hagaman *Bradley University, Peoria, IL*

Having a hard time finding phenomena for ESS2 or ESS3 at your grade level? The Peoria Academy of Science's Geology Section pilots earth science units in classrooms throughout central Illinois, each designed to address an ESS2 or ESS3 performance expectation. Experience some free, hands-on lessons which constitute this program!

G. Science Technology Engineering Arts Mathematics (STEAM) preK-5
Activities for Early Childhood Learners

Abha Singh *Western Illinois University, Macomb, IL*
This presentation will inform teachers who teach early childhood learners how certain STEAM activities related to the applicable. Performance Expectations (NGSS) for K-2 may be incorporated in lessons.

② ② ② 1:00-1:45 Lunch ② ② ②
Horrabin Hall Gymnasium

② ② ② 1:45-2:30 Awards, Recognition & Door Prizes ② ② ②
Horrabin Hall Gymnasium

Professional Development Hours

Illinois Science Teachers Association is a recognized professional development provider and the conference is registered with the Illinois State Board of Education to provide 4 Professional Development Hours toward certificate renewal. We will be providing each teacher participating in the conference today with two forms, the Evaluation Form, found in your conference folder, to be turned in to us, and the Evidence of Completion that you will take with you as evidence of completion of the 4 Professional Development Hours. The Evidence form will be available when you turn in the Evaluation form at the conclusion of the conference, following the networking lunch, announcements and drawing for door prizes, in the Horrabin Hall Gym.

2018 PreK-8 Science Update Conference Exhibitors

*We offer our thanks to the commercial and agency exhibitors
for providing the many door prizes made available to the participants
attending the Thirty-first Annual PreK-8 Science Education Update Conference.*

Please be sure to visit their displays and express your appreciation.

Agency/Vendor on site

Illinois Association of Aggregate Producers
1115 S. 2nd Street, Springfield, IL 62704

Illinois Petroleum Resource Board
PO Box 941, Mt. Vernon, IL 62864

Illinois Science Teachers Association

MicroTech Microscope Sales & Service
603 8th Avenue, Mendota, IL 61342

Agency/Vendor not on site but contributing door prize

Illinois Department of Natural Resources
One Natural Resources Way, Springfield, IL 62702

Flinn Scientific
PO Box 8058, 113 Read St., Elburn, IL 60119

Frey Scientific & CPO Science
4818 Butler St., Oswego, IL 60543

The Scope Shoppe
PO Box 8058, 113 Read St., Elburn, IL 60119

Wards Science
1221 Suffolk St., Naperville, IL

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② 2018 PreK-8 Science Education Update Conference Presenter Biographies

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Amber Arbogast is an Education Specialist for Illinois Agriculture in the Classroom. She provides agriculture-based educational resources, training, and support to educators. She taught Middle School for 10 years. Amber holds a Master in Education from the University of Notre Dame and a Bachelor Degree in Psychology from DePaul University.

Julie Ann Bice has a Bachelor of Science in Elementary Education from Quincy University and a Master Degree in Multidisciplinary Education from WIU. She is a career teacher, college instructor, and author and illustrator of “Power of the Flower” and soon to be released “The Monarch’s Quest”. She is a recipient of the Maurice G. Kellogg Science Teacher of the Year award. She has led numerous workshops, seminars and assemblies about Monarch and Butterfly Gardening with Children.

Karissa Dobson is a senior at North Central College (Naperville) and a 1-6 preservice teacher. She facilitates a Saturday science program for 4th and 5th grade girls attending high-needs schools in the Chicago area. She collaborates with professors to investigate science teaching practices in the elementary classroom.

John Frey is a student at Liberty CUSD #2 in Stephanie Hodgson’s class.

Matthew Hagaman teaches Inquiry Education at Bradley University and develops STEM curriculum at ISU. He holds a bachelor degree in Elementary Education as well as a master degree in Instructional Design & Technology and Art Education.

Stephanie Hodgson earned her bachelor in education from WIU in 2007 and a master degree from American College of Education in 2010. She has been teaching at Liberty School for 11 years in 6-8 grades. She currently teaches science and robotics to 7th and 8th graders.

Laverne Logan earned his Ph.D. from the University of Iowa. He is a professor and in his 18th year teaching undergraduate and graduate science and middle level education classes at Western Illinois University - Quad Cities campus. Prior to coming to Western Illinois LaVerne taught elementary, middle school, and high school science in the Iowa public school system.

Kathy Mainz has a BS in Elementary Education from WIU and done extensive graduate work in science education, gifted and talented education, geology, geography, and meteorology. She has taught middle school science in Iowa and Illinois for 10 years and served as State Science and Gifted consultant for the Iowa Department of Education. Currently she is an adjunct at Monmouth College in the Department of Educational Studies and the Department of Biology and the Chemical Safety Director for Monmouth College. She has been the Director of College for Kids at Monmouth College for 11 years.

Dawn Malcolm has a Bachelor Degree from Monmouth College, Master Degree in Instructional Design and Technology from WIU, and a Library Science Certificate from ISU. She has taught at Churchill Junior High for 11 years (5 years in science and 6 years in the library). She is also a Level 2 Google Certified Educator.

Juell Markowski is a senior at North Central College (Naperville) and a 1-6 preservice teacher. She works with 4th and 5th grade girls at high-needs schools in the Chicago area as part of a Saturday science program.

Mary McMahon has a BS in Special Education and MS in Parks and Recreation, both from WIU. She is currently a National Parks Ranger with the National Parks Service. She has worked in Glacier National Park, Montana (2016, 2017 & 2018); Mammoth Cave, Kentucky (2015); and Missouri Recreation River (2014). She has led numerous seminars and workshops on bats and monarchs. She is a recipient of the Maurice G. Kellogg Science Teacher of the Year award.

Stacy McQueen is currently teaching K-5th grade special education in Virginia, Illinois. She holds degrees in both regular and special education. She has presented at the local and state level. She is a master naturalist and the current Ag in the Classroom teacher of the year for Illinois.

Clayton Obert is a student at Liberty CUSD #2 in Stephanie Hodgson’s class.

Jackson Tenhouse is a student at Liberty CUSD #2 in Stephanie Hodgson’s class.

Don Powers has a B.A. in Science Teaching and a M.A. in Science Education from the University of Northern Iowa, and a Ph.D. from Kansas State University. Don is a professor of science education at WIU, currently in his 29th year on the faculty. He has presented at the national, regional, and local levels. Dr. Powers has co-authored several grant-funded projects in elementary science and currently serves as a Regional Director for the Illinois Science Olympiad and a Regional Director for Illinois Science Teachers Association. He also serves on the Awards Committee and Archives Committee of the Illinois Science Teachers Association.

Toni Schinall has a B.A. in Elementary Education and a M.A. in TESOL with endorsements in social science, language arts, and Spanish. She is currently teaching 1st grade at Gard School in Beardstown, Illinois but has taught public and private schools at all grade levels from preK through adults.

Abha Singh is completing her tenth year at Western Illinois University where she teaches science methods and field experiences. She has her M.S. and Ph.D. from the University of Iowa in science education and environmental science and a minor in gifted education. Her current research focuses on reflective journaling by pre-service teachers.

Sara Smith, a student at Bradley University, is finishing her student teaching experience in Norwood School District 63 as she completes her degree in Elementary Education with an ESL Endorsement. She also leads the STEAM education program at the Innovative Arts Academy in Peoria.

Frances Steward has taught literacy courses at WIU for 15 years. She also serves as the Director of the WIU Children's Literature Examination Center (CLEC).

Terry Stroh is a member of the original ISBE NGSS Curriculum Modeling team. He has been a science teacher for 11 years, 4 years as Department Chair, and 2 years as District Director. He has a MAT in Secondary Education (Science) and a MED in School Leadership.

Sebastian Szyjka is completing his 8th year as a member of the Science Education Center. Dr. Szyjka earned his BA and M.A. from WIU and his Ph.D. in Curriculum and Instruction from Southern Illinois University, Carbondale. He has presented at state and national conferences and has had a number of articles published in reviewed publications as well as written and directed various grants.

John Zenchak, a professor at North Central College (Naperville), works with K-8 preservice teachers at the college, and K-8 inservice teachers in high-needs schools. His methodology has been described at national, regional, and local conferences, in NSTA's Science and Children, and tested in K-8 classrooms in the Chicago area.

*Stay informed about the upcoming
science events in Illinois &
the implementation of NGSS in the State of Illinois
by joining the
Illinois Science Teachers Association
<http://www.ista-il.org/membership.htm>*

Joining ISTA will also help provide evidence for:

- Enhancement of Content Knowledge and Pedagogical Skill
- Collaboration and Professional Inquiry to Advance Student Learning
- Participation in School Leadership Team

2018 Illinois Science Teachers Association/ Illinois Council of Teachers of Mathematics Education Conference

Theme: Engagement + Inspiration = Empowerment

October 19-20, 2018

Tinley Park Convention Center

Tinley Park, Illinois

<http://ilscience.org/event-2865978>

2019 National Science Teachers Association National Convention St. Louis April 11-14, 2019

WIU Science Education Center Faculty & Staff

Dr. Laverne Logan, Professor, on-site coordination
Dr. Donald T. Powers, Professor, conference coordinator
Dr. Abha Singh, Associate Professor, registration, on-site coordination
Dr. Sebastian Szyjka, Associate Professor, on-site coordination
Ms. Olajumoke Babatunde, Graduate Assistant, on-site coordination

We express our thanks to Western Illinois University, the College of Education and Human Services and the Department of Curriculum & Instruction for their support in making the conference possible.

Dr. Jack Thomas, WIU President
Dr. Erskine Smith, College of Education & Human Services Dean
Dr. Katrina Daytner, COEHS Associate Dean for Administration
Dr. Laura Frey, Department of Curriculum & Instruction, Chair

Maurice G. Kellogg Award for Excellence in Science Teaching Recipients

2003	Elizabeth Burton	2008	Tracy Trimpe
2004	Carol Van De Walle	2009	Mary McMahon
2005	Greg Van Vleet	2010	Judy Witten
2006	Steve Hoffman	2011	Julie Ann Bice
2007	Kent Buckrop	2012	Lisa Maxwell
2014 Maria Montalvo			

The PreK-8 Science Update Conference is supported by the
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Kellogg Science Education Endowment Fund,
College of Education and Human Services,
Department of Curriculum & Instruction, and
Illinois Science Teachers Association

Notes