

OSU's 2017 K-8 STEM Teacher Institute

Friday, June 16

DRAFT Schedule

Keynote 8:30-9:15	Session 1 9:30 - 10:30	Session 2 10:40-11:40	Power 1 11:50 - 12:20	Lunch 12:20 - 1:00	Power 2 1:00 - 1:30	Workshop 1:40 - 3:30
Why STEM Can't Wait Xan Black, Program Director of the Tulsa Regional STEM Alliance	Exploring Strategies for the PK-4 Algebraic Reasoning Standards (PK-4) Christine Vang	Likely-Unlikely: Teaching Probability in the Middle Grades (5-8) John Weaver & Juliana Utley	High Yield Geometry Routines to Support Student Learning (K-8) John Weaver		High Yield Algebra Routines to Support Student Learning (K-8) Juliana Utley	Middle School Math Just Got Way Harder (5-8) Levi Patrick
	Attending to the Disciplines of STEM: A Framework for Planning for and Reflecting about STEM Learning Experiences (5-8) Levi Patrick	<i>(Need title)</i> (K-5) Robbyn Glinnsmann	Disciplinary Vocabulary for ELL (and others): Strategies that Support Content Knowledge and Vice-Versa (K-3) Sheri Vasinda		Disciplinary Vocabulary for ELL (and others): Strategies that Support Content Knowledge and Vice-Versa (3-8) Sheri Vasinda	Building a Foundation for Multiplication in Grades K-4 Adrienne Sanogo
	Inquiry-Based Questioning in the Science Classroom (K-8) Stephanie Hathcock	Integrating Science & Engineering Practices into your Teaching (K-8) Toni Ivey	Citizen Weather Monitoring: An Intro to CoCoRaHS (K-5) Nicole Colston		Interactive Simulations for Science (5-8) Amy Olson	Unpacking the Physical Science Energy Standards for K-4 Stephanie Hathcock & Amy Olson
	Unplugged Coding with Rosie the Robotic Dog (K-5) Becky Hammack	Standards Based STEM on a Shoestring (PK-8) Xan Black	When is a Worm Not a Worm? - Preparing Kids for Science Fair (K-8) Julie Angle		Engineering Readers (K-8) Suzii Parsons	Embedding Engineering in Your Classroom (5-8) Jennifer Cribbs

Keynote Description:

Why STEM Can't Wait!: STEM is a popular topic that may have you wondering what's all the fuss about. This session will help explain the urgency around STEM and give helpful resources and strategies for growing STEM opportunities for students in your community.

Session Descriptions:

Session 1 (9:30-10:30):

Exploring Strategies for the PK-4 Algebraic Reasoning Standards (PK-4): Come delve into some instructional strategies to help your students develop algebraic reasoning. Discover some activities to help students recognize, explore, duplicate, extend, and create patterns. Additionally, we will explore activities to help students make sense of input/output tables and the patterns they contain and look at how these tie to the Oklahoma Academic Standards including how they facilitate students developing the mathematical actions and processes.

Attending to the Disciplines of STEM: A Framework for Planning for and Reflecting about STEM Learning Experiences (5-8): The momentum of STEM is undeniable; but we have to ensure that the time and money spent on this effort to engage our students in meaningful learning experiences is not wasted. We'll look at a framework for STEM learning experiences that will help to ensure that the learning experiences do justice to the disciplines of math and science.

Inquiry-Based Questioning in the Science Classroom (K-8): Questioning is an essential skill for both teachers and students. This session will provide an overview of the types of inquiry-based questions, how and when to use them, and examples of their effectiveness.

Unplugged Coding with Rosie the Robotic Dog (K-5): Teachers will participate in a hands-on coding activity that teaches students in K-5 to code programs *without the use of computers*. Participants will also be introduced to online coding resources for use with students from multiple age groups and experience levels.

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Session 2 (10:40-11:40):

Likely-Unlikely: Teaching Probability in the Middle Grades (5-8): With the increased emphasis on Data Analysis and Probability in the middle grades, it is important for us to examine worthwhile tasks to help students develop a deep understanding of foundational concepts. While 5th grade does not have a probability standard, there are foundational concepts in 5th grade that are needed to help prepare students for the middle grades. Come join us as we explore openers and other activities to meet the rigor of these standards.

Integrating Science & Engineering Practices into your Teaching (K-8): The Science and Engineering practices embedded within the new Oklahoma Academic Standards for Science are meant to help students develop an understanding of how scientists and engineers work. This session will provide you with an overview of planning discussions of and using the Practices within your K-8 science classroom. Examples of using the Practices will be showcased.

Standards Based STEM on a Shoestring (PK-8): This session will provide details and resources on infusing your classroom with inexpensive standards based STEM activities.

Power Session 1 (11:50-12:20):

High Yield Geometry Routines to Support Student Learning (K-8): How can the use of high yield geometry routines benefit students? We will explore a few routines to facilitate students' development of their spatial sense, vocabulary, and understanding of foundational geometric concepts. Participants will engage in high yield geometry routines and discuss connections to the mathematics teaching practices.

Disciplinary Vocabulary for ELL (and others): Strategies that Support Content Knowledge and Vice-Versa (K-3): Pairing language objectives with content objectives supports ELL students in reading, writing, talking and thinking like scientists, engineers, or mathematicians. Strategies for developing content specific vocabulary support conceptual understanding, as well. Experience effective high-tech and low-tech strategies to support the emergent bilingual scientists, engineers, and mathematicians in your classroom.

Citizen Weather Monitoring: An Intro to CoCoRaHS (K-5): CoCoRaHS (Community Collaborative, Rain, Hail, and Snow Network) is a nationwide network of volunteer backyard weather observers. In this session, you will learn more about how you and your students can easily participate in this citizen science effort. CoCoRaHS training materials, educational videos, and lesson plans (K-5) help teachers make connections to other learning about the weather and the water cycle. The neat thing about this activity is knowing that your daily observations could contribute to solving future weather puzzles in our region.

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When is a Worm Not a Worm? - Preparing Kids for Science Fair (K-8): All students should have the opportunity to get down and dirty when learning about science. Learn **WHY** involving students in science fairs gives them the unique opportunity to engage in the same problem-solving practices that scientists do. Then learn **HOW** engaging students in inquiry strengthens their understanding of scientific knowledge.

Power Session 2 (1:00-1:30):

High Yield Algebra Routines to Support Student Learning (K-8): Come explore a few key short in nature class routines that can facilitate students' developing their understanding of foundational algebraic concepts (i.e., expressions, equations, and functions) throughout the school year. Participants will engage in several high yield algebra routines and discuss connections to the mathematical practices.

Disciplinary Vocabulary for ELL (and others): Strategies that Support Content Knowledge and Vice-Versa (3-8): Pairing language objectives with content objectives supports ELL students in reading, writing, talking and thinking like scientists, engineers, or mathematicians. Strategies for developing content specific vocabulary support conceptual understanding, as well. Experience effective high-tech and low-tech strategies to support the emergent bilingual scientists, engineers, and mathematicians in your classroom.

Interactive Simulations for Science (5-8): One of the eight science and engineering standards in the NGSS is "Developing and using models". Models help students to grasp and explain challenging science concepts. Some of these concepts are easily modeled in the classroom, but others are better represented through computer-generated simulations. PhET Interactive Simulations are based on education research and are designed to engage students in learning through exploration and discovery. We will discuss strategies to meaningfully incorporate simulations into the inquiry classroom.

Engineering Readers (K-8): Trade books about science can illuminate possibility, spark imagination, and help learners understand and appreciate the complexity and relevance of science. This session highlights high-quality K-8 literature that addresses engineering concepts/processes and models critical thinking, problem solving, and teamwork. Suggestions for integrating curriculum and supporting readers will be provided.

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Workshops (1:40-3:30):

Middle School Math Just Got Way Harder (5-8): We've all looked at the new middle school standards at some point and either gasped, fainted, or laughed out loud. How can all these objectives fit into one year?! In this session, we'll look at connections within and across the standards that will allow you to focus on the things in middle school that really matter.

Building a Foundation for Multiplication (K-4): This workshop is designed to help PK-4 grade teachers understand how to support the development of multiplicative reasoning across the grades. This interactive session will allow teachers to explore the current Oklahoma Academic Standards and Mathematical Actions and Processes through activities that develop students' ability to think multiplicatively.

Unpacking the Physical Science Energy Standards for K-4: This session will trace the K-4 Oklahoma Academic Standards for Science dealing with energy in its different forms. Standards can be found in grades K, 1, 3, and 4. We will provide opportunities to engage in inquiry-based activities to support the standards, and will discuss the content and vertical alignment.

Embedding Engineering in Your Classroom (5-8): During this session, we will explore the engineering design process through an activity you can use with your students. No fancy equipment or expensive materials required! We will also explore various engineering-based opportunities that might interest you and your students.