Oct. 24, 2015

K-8: Leveraging Evidence to Support Children’s Meaningful Science Learning – Carla Zembal-Saul & LeAnna Hooper
Scientific practices, such as constructing explanations from evidence, have been shown to support students’ meaningful learning of science ideas AND about how science is done. The CLAIMS–EVIDENCE–REASONING (CER) framework is useful for structuring students’ talking and writing in ways that leverage evidence to make sense of natural phenomena. In this workshop, we will: (a) address the Next Generation Science Standards (NGSS) three dimensional learning (core ideas, scientific practices, and cross-cutting concepts) with an emphasis on scientific practices; (b) introduce CER as a framework for constructing scientific explanations; (c) demonstrate a KLEWS chart as an instructional strategy for supporting the construction of explanations; and (d) provide opportunities to view and discuss classroom science teaching.

Nov. 07, 2015

K-8: Using Geographic Information Systems (GIS) In the K-8 Science Classroom - Beth King
Problem-Solving with Geographic Information Systems (GIS) gets students interested in science, technology, engineering, and math by using technology that is hands-on and fun. GIS exposes students to spatial thinking and critical thinking that will start to prepare them for many different career fields. We will discover the ways in which geographic information systems facilitate data analysis and communication to address common geographic problems. Participants will be able to use GIS software to analyze data using a variety of techniques, including spatial and attribute queries, map overlay, and buffering. Participants will also gain experience in designing and producing effective maps as they attempt to answer scientific questions.

Dec. 05, 2015

K-8: The Art of Science Series: Design Thinking and 3D Printing – Aaron Knochel
Interested in learning more about 3D printing, CAD modeling software and how art can be incorporated into the STEM classroom? This workshop provides an overview to design innovations in 3D printing and 3D modeling software, with practical experience in the development of 3D computer models using Tinkercad (http://tinkecad.com). This workshop is intended for educators and administrators to learn more about 3D printing technologies from file creation to print production and interdisciplinary curricular approaches utilizing digital fabrication such as methodologies in iterative design, prototyping, and STEAM (Science, Technology, Engineering, Art, and Math) learning.

Jan. 23, 2016

3-8: Harnessing Energy from the Atom: Real World Applications – Candace Davison
How are fossil dating, electricity, food preservation, medical diagnostics, and shrink wrap related? Come find out how the atom is used in everyday life and how our understanding of nuclear processes spans across the disciplines. Focus on the NGSS Crosscutting Concepts in this high energy workshop. Learn more about the Breazeale Reactor, celebrating 60 years of research and training, in finding peaceful applications for the energy atoms can create.

Feb. 13, 2016

K-4: Patterns in the Sky: Astronomy for K-4 Students – Julia Plummer,
Even young children look up into the sky and ask questions about what they observe. In this workshop, we will explore methods of supporting children’s curiosities towards uncovering patterns in how the Sun, Moon, and stars appear to move across the sky or change over time. Learning to describe observations of celestial objects and their patterns of movement is a first step towards thinking spatially about astronomy. We will discuss methods to support children’s spatial abilities as they learn to explain these patterns, including the use of physical and embodied models. We will also take a field trip to Penn State’s planetarium to embed ourselves in a three-dimensional model of the day and night sky.

More Workshops on the Back!
April 9, 2016
K-8: Exploring the Stream and Wetland Ecosystem – Using Ecological Indicators for Monitoring and Assessment – by Riparia at Penn State (Robert P. Brooks, Director, Suzy Yetter, Sarah Chamberlain, Hannah Ingram)

Using a systems approach to understanding ecosystems, we’ll delve into classifying these highly valued aquatic ecosystems, and consider why and how we use science-based ecological indicators to monitor change and assess condition of these resources. Activities will involve sampling aquatic macroinvertebrates in headwater streams and aquatic plants in wetlands – no prior identification experience necessary. Techniques will be presented in ways that are easily understandable and transferable to students, and linked to the NGSS. Come join us at the wonderful and fascinating Millbrook Marsh Nature Center!

All workshops are FREE to teachers and include a free continental breakfast and lunch. Through collaboration with IU#10, Act 48 credits are available for $10.00 and each workshop is held at Penn State – University Park from 9:00 am - 2:30 pm. Come join us and leave with the knowledge, skills, and resources needed to introduce your students to various science concepts! Workshops are connected to the PA Science and Technology, and Engineering Education Standards and the NGSS. CSATS thanks the Pennsylvania Space Grant Consortium for their generous support of these workshops.

For additional information and to register, visit csats.psu.edu

Grade levels are only suggestions and all teachers are welcome to attend any workshop.

For questions, please contact Leah Bug at leahbug@psu.edu or 814-865-8397

Update September 30, 2015