



Registration is now available for the “Inside the Science Teachers’ Studio”

Pop Up Summer Conference

WHAT: “Inside the Science Teachers Studio” is a professional learning initiative provided by Building Capacity for Tennessee Science Education (BCTSE) a Partnership between TSTA, Tennessee Science Education Leadership Association, and the TnTech Oakley STEM Center.

The POP UP summer institute will showcase four outstanding TN teachers and a “best practice” they are using successfully to teach science. Each presenter will model and discuss how to engage K-12 students with an innovative practice in the classroom. For more information on each of these teaching strategies, view the *Inside the Science Teachers Studio* video interviews that are archived and can be accessed at the links below the presenter information.

WHEN: Saturday, August 27, 2016, 8:30 am – 3:00 pm

WHERE: Scales Elementary School, 6430 Murray lane, Brentwood, TN 37027

WHO: K-12 Science Educators

COST: \$50.00 workshop fee includes boxed lunch, snacks and materials

Please select both a morning and afternoon session from those sessions listed on pages 2. To register go to [LINK](#)

Schedule at a glance

8:30 am – 9:00 am	Registration, refreshments
9:00 am – 10:15 am	Inside the Science Teacher’s Studio Sessions AM
	Room 1 Stephanie Novin, K-6
	Room 2 Margie Hawkins, K-6
	Room 3 Kimberly O’Dell, 7-12
	Room 4 Jennifer Dye, 7-12
10:15 am – 10:30 am	Morning Break
10:30 am – 11:30 am	Morning sessions continue
11:30 am – 12:15 pm	Lunch

12:15 pm – 1:30 pm	Inside the Science Teacher’s Studio Sessions PM
	Room 1 Stephanie Novin, 7-12
	Room 2 Margie Hawkins, 7-12
	Room 3 Kimberly O’Dell, K-6
	Room 4 Jennifer Dye, K-6
1:30 pm – 1:45 pm	Afternoon Break
1:45 pm – 3:00 pm	Afternoon sessions continue

Featured Presenters and Session Descriptions

Developing Higher-order Thinking Skills Through Questioning Strategies

<https://new.livestream.com/accounts/3765683/events/3894521>

Presenter: Jennifer Dye, Pope John Paul II High School in Hendersonville TN,

7-12 Session:

The Science Framework, which has been used to develop the new science standards, emphasizes the importance of allowing students to engage in the practices of science. Direct involvement with these practices can give students an appreciation of the wide range of approaches used in science to understand the world, and a better understanding of how scientists work. “Constructing Explanations and Designing Solutions” is one of the core practices of science and engineering, that students should experience, as they learn disciplinary core ideas and crosscutting concepts. Engaging students with scientific hypotheses and theories to explain the natural world is a central aspect of science education, and teaching students to construct evidence-based explanations, solve problems, and design solutions is one of our most important tasks. These tasks may be facilitated by engaging students in discourse, and encouraging good questioning strategies.

Constructing logical explanations through scientific investigations begins with asking good questions. Scientific research may seem like a daunting task for any student whether high school or graduate student. Think about it for a minute, the challenge of developing a question around which the research can be designed sometimes takes those pursuing post-graduate degrees a year or more! Yet, in our classrooms the expectation is that within the context of a unit of study, students will not only research and develop the questions, but they will also design, execute and analyze the evidence. The greatest challenge in this process is often the development of strong questions.

During this session, teachers will be provided with examples from a high school biology class and video excerpts of facilitation of these methods that engage students in question development. Teachers will have the opportunity to participate in a lab activity that will allow them to begin developing the questioning skills needed to engage students in discourse of scientific concepts.

K-6 Session:

The Science Framework, which has been used to develop the new science standards, emphasizes the importance of allowing students to engage in the practices of science. Direct involvement with these practices can give students an appreciation of the wide range of approaches used in science to understand the world, and a better understanding of how scientists work. “Constructing Explanations and Designing Solutions” is one of the core practices of science and engineering, that students should experience, as they learn disciplinary core ideas and crosscutting concepts. Engaging students with scientific hypotheses and theories to explain the natural world is a central aspect of science education, and teaching students to construct evidence-based explanations, solve problems, and design solutions is one of our most important tasks. These tasks may be facilitated by engaging students in discourse, and encouraging good questioning strategies.

Constructing logical explanations through scientific investigations begins with asking good questions. Elementary school students are born asking questions. Our task is to encourage the questioning and help them develop the skills to search for explanations. The greatest challenge in this process is often the development of strong questions that stay focused. Our second task is to learn to ask strong questions as we guide the students through lessons. It is challenging to ask a question that often times leads to additional questions for the students. Time is limited in the elementary science classroom but facilitation the construction of explanations is invaluable in all of the subjects we are required to teach.

During this session, teachers will be provided with examples from a high school biology class and video excerpts of facilitation of these methods that engage students in question development. While this is not an elementary class, the techniques are the same. Teachers will then have the opportunity to participate in a lab activity that will allow them to begin developing the questioning skills needed to engage students in discourse of scientific concepts.

Promoting Student Discourse in the Classroom to Create a More Student-driven Learning Environment

<http://livestream.com/accounts/3765683/events/4005296>

Presenter: *Margie Hawkins, Winfree Bryant Middle School in Lebanon TN,*

K-6 and 7-12 Sessions

All 8 of the scientific and engineering practices lined out in the K-12 Science Framework, which our new TN Standards is based on, will require students to be able to engage in productive academic discourse with their peers. In this session you will learn about a very successful, teacher created program designed to train students to do just that. Handouts will be provided for teachers to create their own 'Negotiation Folders" to use in training their students in the critical skill. An interactive lesson will be modeled to give participants first-hand experience with how this works in a classroom setting. A link to the Teacher's Studio video with more information on this topic will also be provided.

Participants will learn why Academic Discourse is so critical to STEM programs, and science education in general, They will hear from the teacher who designed this program regarding how to implement it in a classroom and her own lessons learned along the way. They will experience a hands-on lesson utilizing the negotiation folders, will also take home copy ready handouts, and will leave with all of the knowledge and materials needed to implement an Academic Discourse program in their own classrooms.

Student-constructed Models to Support Science Learning

<http://livestream.com/accounts/3765683/events/4368626>

Presenter: Kimberly O'Dell, Clinton Elementary School, in Clinton TN,

Kimberly O'Dell is a 6th grade science and math teacher at Clinton Elementary School. She is also the STEM coordinator for the Clinton City School System. Kimberly has a Master's Degree and has been teaching for 15 years. She is a Fellow of the STEM Leadership Council through Oak Ridge Associated Universities.

One of the 8 scientific and engineering practices outlined in the K-12 Science Framework, which our new TN Science Standards are based on, is the practice of developing conceptual models. The practice of modeling aids students in visualizing and understanding scientific phenomenon, as well as developing possible solutions to engineering problems. In this workshop, teachers will experience first hand, through a series of hands-on activities, how developing conceptual models will meet the goals of the Framework.

This workshop will begin by demonstrating how to use models to assess a student's current understanding and misconceptions of a system under study. Participants will use models to develop and explore questions and explanations. As understanding deepens, the models will be changed to reflect the new understanding. Participants will

understand how to use diagrams, physical replicas, mathematical representations, analogies, and computer simulations to communicate findings. This will be connected to the evolution of scientific knowledge over time.

Participants will come away with practical ways to use grade appropriate models, as well as rubrics to assess their progress. To get the most from this workshop, participants should bring an i-pad, Chromebook, laptop, or other device.

Improving Designs and the Engineering Process

<http://livestream.com/accounts/3765683/BCTSESession4>

Presenter: Stephanie Novin, Scales Elementary School in Brentwood TN

K-6 Sessions

Improving Designs and the Engineering Process: Engineering principles and applications are essential components in the rigorous, 21st century classroom. In this session, participants will delve into the engineering process for an elementary classroom, focusing on all five steps of the engineering inquiry and design process: ask, imagine, plan, create, and improve. Participants will work through engineering challenges adjustable for all K-5 grade levels and will leave the session with valuable resources better enabling them to implement engineering in their classrooms as soon as they desire.

7-12 Sessions

Improving Designs and the Engineering Process: Engineering principles and applications are essential components in the rigorous, 21st century classroom. In this session, participants will delve into the engineering process for the intermediate and secondary classrooms, focusing on all five steps of the engineering inquiry and design process: ask, imagine, plan, create, and improve. Participants will work through engineering challenges adjustable for 7-12 grade levels and will leave the session with valuable resources better enabling them to implement engineering in their classrooms as soon as they desire.